Environmental Impact Statement

665 Eliza Street, Arthur

Prepared for

Tribute/Sorbara Arthur Holdings Inc.

1815 Ironstone Manor, Unit 1
Pickering, Ontario L1W 3W9

February 28, 2025
Project No. P2022-616

Prepared by

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FORWARD

February 28, 2025

Lucy Stucco
Executive V.P., Tribute Communities

Sorbara/Tribute Arthur Holdings Inc.
1815 Ironstone Manor, Unit 1
Pickering, ON, L1W 3W9

Re: 665 Eliza Street, Arthur, ON, Environmental Impact Statement

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Dear Lucy Stucco

GeoProcess Research Associates Inc. is pleased to present the following Environmental Impact Statement for the lands located at 665 Eliza Street in the Township of Arthur, Ontario. We understand that the lands are the proposed site of future residential development. This EIS reports the findings from both in-field and desktop assessments conducted by GeoProcess and identifies the potential impacts and mitigation measures associated with the proposed development as they relate to the property's natural heritage and hydrological features and functions.

If you have any questions regarding this report, please do not hesitate to let us know.

Regards,

GEOPROCESS RESEARCH ASSOCIATES INC

Ian Roul, M.Sc.
Senior Ecologist

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1. Introduction

GeoProcess Research Associates Inc. (GeoProcess) has been retained by Sorbara/Tribute Arthur Holdings Inc. to complete an Environmental Impact Statement (EIS) for the proposed development located at 665 Eliza Street in Arthur, Ontario, herein referred to as the "Subject Property". The Subject Property plus an additional 120 metres (m) of adjacent land are herein referred to as the "Study Area". The Subject Property is the proposed site of single detached, semi-detached, and townhouse residences and associated infrastructure. Refer to Map 1 for the property boundaries and location.

The Subject Property falls under the County of Wellington Official Plan and contains a watercourse regulated by the Grand River Conservation Authority (GRCA). This EIS has been prepared to assess potential negative impacts of the proposed development on the natural heritage features and provides recommendations on the natural area boundaries, mitigation measures, and design measures to accommodate or enhance existing natural features and functions.

1.1. Study Area

It is our understanding that the Subject Property is approximately 56.6 hectares (ha) in size and is currently being used as agricultural lands with a homestead, two sheds, a maintenance garage, and a barn. The Subject Property is split by Eliza Street, with one section on the east side (38.19 ha) and one section of the west side (18.41 ha) south of Wells Street. It is approximately 2.1 kilometres (km) north of the intersection of Wellington Road 109 and Highway 6. A GRCA-regulated tributary of Farley Creek (herein referred to as the "Farley Creek tributary") is present within the Subject Property, aligned from south to northwest. The Farley Creek tributary and its floodplain are designated as Core Greenland in Schedule B6-2 of the County of Wellington Official Plan. Existing conditions are illustrated in Map 2 for reference.

2. Policy Context

Municipal, provincial, and federal natural heritage policies applicable to the Subject Property have been reviewed and are described below.

2.1. Provincial Planning Statement (2024)

The Provincial Planning Statement (PPS) 2024 is administered under Section 3 of the *Planning Act*. It became effective October 20, 2024, and replaces the Provincial Policy Statement 2020. The PPS applies to planning decisions made on or after that date. It provides policy direction for land use and development within the Province of Ontario and provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment. The policies of the PPS may be complemented by provincial and municipal plans and policies.

The PPS defines eight natural heritage features and provides planning polices for each, listed below. The function of Natural Heritage Features and Areas is further clarified by the definition of a Natural Heritage System, which is *"a system made up of natural heritage features and areas, and linkages intended to provide*

connectivity (at the regional or site level) and support natural processes which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems."

- Significant wetlands
- Coastal wetlands
- Fish habitat
- Significant woodlands
- Significant valleylands
- Habitat of endangered species and threatened species
- Significant Wildlife Habitat
- Significant Areas of Natural and Scientific Interest (ANSIs)

Sections 4.0 and 5.0 of the PPS deal with development and site alteration and where these activities shall not be permitted. Section 4.0 policies surround the conservation of biodiversity, and protection of the health of the Great Lakes, natural heritage, water, agricultural, mineral, and cultural heritage and archaeological resources for their economic, environmental, and social benefits. Section 5.0 directs development away from areas of natural or human-made hazards to mitigate risks to public health or safety and property damage from natural hazards, including the risks that may be associated with the impacts of a changing climate.

Policies in Section 4.1 are particularly relevant as they surround development and site alteration in and adjacent to natural heritage features. These policies and select others are outlined below in Table 1.

Table 1. Applicable Policies of the Provincial Policy Statement

Policy Number	Policy
(4.1 - Natural Heritage) 4.1.2	The diversity and connectivity of natural features in an area and the long-term *ecological function* and biodiversity of *natural heritage systems* should be maintained, restored, or, where possible, improved, recognizing linkages between and among *natural heritage features and areas*, *surface water features,* and *groundwater features*.
4.1.3	*Natural heritage systems* shall be identified in Ecoregions 6E & 7E, recognizing that *natural heritage systems* will vary in size and form in *settlement areas, rural areas*, and *prime agricultural areas*.
4.1.4	*Development* and site alteration shall not be permitted in a) *significant wetlands* in Ecoregions 5E, 6E, and 7E and b) *significant coastal wetlands.*
4.1.5	Development and site alteration shall not be permitted in: a) *significant wetlands* in the Canadian Shield north of Ecoregions 5E, 6E and 7E; b) *significant woodlands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River); c) *significant valleylands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River); d) *significant wildlife habitat*; e) *significant areas of natural and scientific interest*; and f) *coastal wetlands* in Ecoregions 5E, 6E and 7E that are not subject to policy 4.1.4(b)

Policy Number	Policy
	unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.
4.1.6	*Development* and *site alteration* shall not be permitted in *fish habitat* except in accordance with *provincial and federal requirements*.
4.1.7	*Development and site alteration* shall not be permitted in *habitat of endangered species and threatened species*, except in accordance with *provincial and federal requirements*.
4.1.8	*Development* and *site alteration* shall not be permitted on *adjacent lands* to the *natural heritage features and areas* identified in policies 4.1.4, 4.1.5, and 4.1.6 unless the *ecological function* of the *adjacent lands* has been evaluated and it has been demonstrated that there will be no *negative impacts* on the natural features or their *ecological functions*.
(4.2 - Water) 4.2.2	*Development* and *site alteration* shall be restricted in or near *sensitive surface water features* and *sensitive groundwater features* such that these features and their related *hydrologic functions* will be protected, improved, or restored, which may require mitigative measures and/or alternative development approaches.
(5.2 - Natural Hazards) 5.2.1	Development shall generally be directed to areas outside of: a) *hazardous lands* adjacent to the shorelines of the *Great Lakes - St. Lawrence River System* and *large inland lakes* which are impacted by *flooding hazards, erosion hazards* and/or *dynamic beach hazards*; b) *hazardous lands* adjacent to *river, stream* and *small inland lake systems* which are impacted by *flooding hazards* and/or *erosion hazards*; and c) *hazardous sites*.
5.2.4	Planning authorities shall prepare for the impacts of a changing climate that may increase the risk associated with natural hazards.

2.2. Endangered Species Act (2007)

The Endangered Species Act (ESA) (2007) provides protection to species designated as Threatened or Endangered on the Species at Risk in Ontario list (Ministry of Environment, Conservation, and Parks (MECP), 2019). The habitat of some species at risk is also protected under the ESA. Protected habitat is a habitat identified as essential for life processes including breeding, rearing, feeding, hibernation, and migration.

The ESA (Subsection 9(1)) states that:

"No person shall,

(a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;

(b) possess, transport, collect, buy, sell, lease, trade, or offer to buy, sell, lease, or trade,

(i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,

(ii) any part of a living or dead member of a species referred to in subclause (i),

(iii) anything derived from a living or dead member of a species referred to in subclause (i); or

(c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii) or (iii)."

Clause 10 (1)(a) of the ESA also states that:

"*No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario list as an endangered or threatened species.*"

An authorization or permit between the proponent and the MECP is required to authorize activities that would otherwise be prohibited by subsections 9(1) and 10(1) of the ESA.

There are three applicable regulations under the ESA, 2007; O. Reg. 230/08 - the Species at Risk in Ontario (SARO) List, O. Reg. 242/08 (General), and O. Reg 830/21 (Exemptions – Barn Swallow, Bobolink, Eastern Meadowlark and Butternut). These regulations serve to identify which species and habitats receive protection and provide direction on the current implementation of the ESA.

2.3. County of Wellington Official Plan (2024)

The County of Wellington Official Plan (CWOP) is a legal document intended to give direction over the next 20 years to the physical development of the County and its local municipalities and to the long-term protection of County resources. All land use and servicing decisions must conform to the policies of this plan. The CWOP was adopted by Wellington County Council on September 24, 1998, and was approved by the Ministry of Municipal Affairs on April 13, 1999. This report references the consolidated version of the CWOP that was last updated in July 2024.

The Greenlands System is a key part of the CWOP and is intended to include those features and areas that are part of Wellington's natural heritage or areas in which natural or human-made conditions may pose a threat to public safety. These often interrelated areas include:

- Wetlands
- Environmentally sensitive areas
- Streams and valley lands
- Ponds, lakes, and reservoirs
- Areas of natural and scientific interest
- Woodlands
- Fish and wildlife habitat
- Floodplains and hazardous lands
- Threatened or endangered species

The Greenlands System is designated on Schedule B6 – Land Use for Wellington North of the CWOP and is divided into two broad categories – Core Greenlands and Greenlands. While the Greenlands System is based on features that have been mapped at a municipal scale, the diversity and connectivity of natural features in an area and long-term ecological function and biodiversity of natural heritage systems should be maintained,

restored or, where possible, improved, recognizing linkages between and among natural heritage features, surface water and groundwater features. As per Schedule B6-2 of the CWOP, the Subject Property contains designated Core Greenlands, a watercourse, and Future Development land use.

2.3.1. Section 5.4 – Core Greenlands

Within the Greenlands System, certain areas have greater sensitivity or significance. These areas will be identified in policy and protected. These areas have been included in the "Core" Greenlands designations and include:

- Provincially Significant Wetlands
- All other wetlands
- Habitat of endangered or threatened species and fish habitat
- Hazardous lands

Hazardous lands exist along the watercourse throughout the Subject Property. Section 5.4.3 of the CWOP states that development and site alteration should be directed away from areas subject to flooding and erosion hazards and areas in which conditions exist that pose risks to public health and safety or property caused by natural hazards.

2.3.2. Section 5.6 – Development Control

Within the Core Greenlands designation, development and site alteration shall not be permitted within Provincially Significant Wetlands or in significant habitat of threatened or endangered species, except in accordance with provincial and federal requirements. Development shall only be permitted if:

a) There are no negative impacts on significant features and functions and no significant negative impacts on other Greenlands features and functions.

b) The hazardous lands policies of Section 5.4.3 of the CWOP are met.

c) The development conforms to policies of the applicable adjacent or underlying designation.

According to Section 5.6.4 of the CWOP, Core Greenland areas shall be placed in a restrictive zone that prohibits buildings, structures, and site alterations except as may be necessary for the management or maintenance of the natural environment. Zoning by-laws may establish setbacks from Core Greenland areas in which no buildings or structures shall be permitted.

2.4. Grand River Conservation Authority

On April 1, 2024, a new Regulation came into force – *Ontario Regulation 41/24 – Prohibited Activities, Exemptions and Permits Regulation* (hereinafter referred to as "the Regulation"). The Regulation, issued under the CA Act, replaced all 36 individual Conservation Authority regulations (including Regulation 150/06) with one consistent province-wide regulation. The "pollution" and "conservation of land" tests for granting permission were removed from the Act and a new emphasis on public safety was added. Conservation authorities may grant permission for development activities if in the opinion of the Conservation Authority

the proposal is not likely to affect the control of flooding, erosion, dynamic beaches, unstable soil or bedrock and when the development activities are not likely to create conditions or circumstances that in the event of a natural hazard might jeopardize the health or safety of persons or result in the damage or destruction of property.

Section 28 (1) of the Act states that "Subject to subsections (2), (3) and (4) and section 28.1, no person shall carry on the following activities, or permit another person to carry on the following activities, in the area of jurisdiction of an authority:

1. Activities to straighten, change, divert, or interfere in any way with the existing channel of a river, creek, stream or watercourse or to change or interfere in any way with a wetland.
2. Development activities in areas that are within the authority's area of jurisdiction and are,
    a. hazardous lands,
    b. wetlands,
    c. river or stream valleys the limits of which shall be determined in accordance with the regulations,
    d. areas that are adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to an inland lake and that may be affected by flooding, erosion, or dynamic beach hazards, such areas to be further determined or specified in accordance with the regulations, or
    e. other areas in which development should be prohibited or regulated, as may be determined by the regulations. 2017, c. 23, Sched. 4, s. 25."

The Subject Property is located within the jurisdiction of the GRCA and contains a regulated watercourse.

The following natural heritage feature setbacks are prescribed as per GRCA policies:

Feature	Setback
Riverine Flooding Hazard – Following Engineering Study	5 m
Riverine Flooding Hazard – Approximated/Estimated	15 m
Watercourse Channel	15 m
Wetland	30 m*

*As per section 8.4.9 of the GRCA Policies document, *development within an area of interference less than or equal to 30 m from a wetland may be permitted* where an EIS demonstrates that:

- there are no negative or adverse hydrological or ecological impacts on the wetland.
- all development is located outside the wetland and maintains as much setback as feasible,
- development is located above the water table, and
- septic systems are located a minimum of 15 m from the wetland and 0.9 m above the annual maximum water table.

3. Methodology

The following provides the methodologies followed to complete the background studies and execute the field program designed to characterize the natural heritage features within and adjacent to the Subject Property.

3.1. Background Studies

Background planning policy documentation and information sources relevant to the Subject Property were reviewed and evaluated to identify natural heritage features and constraints. A list of documents and information sources consulted to support this study is provided below:

- County of Wellington Official Plan (2024)
- Grand River Conservation Authority Web-GIS mapping application
- *Endangered Species Act (2007)* and Species at Risk in Ontario List (O. Reg. 230/08)
- Natural Heritage Information Centre (NHIC) Database, 1 km x 1 km square 17NJ3754 and 17NJ3755
- Ontario Breeding Bird Atlas (OBBA) and eBird
- Ontario Reptile and Amphibian Atlas
- Ontario Butterfly and Moth Atlases
- iNaturalist- NHIC Rare Species of Ontario
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk Map
- Google Earth Pro

3.2. Field Work

GeoProcess conducted field studies to characterize and inventory the natural heritage features and wildlife activity of the Subject Property and surrounding landscape. A summary of the field work details is provided below in Table 2. Map 3 shows the corresponding field work locations.

Table 2. Completed Field Work

Activity	Timing	Date	Staff
Floristic Studies (two-season)	Spring (May-June) Summer (July-August)	June 14, 2024 August 21, 2024	A. Meeker, E. Veres, S. Dowle
Breeding Bird Surveys	Visit 1 Visit 2	June 14, 2024 July 4, 2024	A. Meeker, E. Veres
Amphibian Surveys	Visit 1 (>5°C) Visit 2 (>10°C)	April 10, 2024 May 1, 2024	L. Barnett, S. Dowle, E. Veres

	Visit 3 (>17°C)	June 4, 2024	
Watercourse Characterization	July-August	August 28, 2024	S. Dowle

3.2.1. Floristic Studies

A two-season floristic inventory was completed in the spring and summer of 2024. Species nomenclature and ranking were determined provincially by the Ministry of Natural Resources Natural Heritage Information Database (S_Ranks). Vegetation communities were mapped and described according to the Ecological Land Classification (ELC) system for Southern Ontario (Lee et al., 2008). Vegetation community boundaries were determined using desktop analysis and further refined in the field. The results of this assessment are found in Section 4.4, Ecological Land Classification, Map 3, and Appendix A.

3.2.2. Breeding Bird Surveys

Breeding bird surveys were undertaken on two separate dates by a breeding bird expert under appropriate weather conditions. The area was surveyed using a travelling count approach to search for birds within the feature, recording presence, abundance, and level of breeding evidence using the Ontario Breeding Bird Atlas (OBBA) protocols. Travelling counts are one of the survey methods that are listed under the OBBA and are implemented when the surveyor is travelling more than 50 m. Using the travelling count method, bird surveys were conducted on an 'area search' basis. This method involves the surveyor restricting their species list to a particular area such as a woodlot, wetland, or field. This approach is also included as an observation type within the OBBA.

3.2.3. Amphibian Surveys

Amphibian surveys were completed following the Marsh Monitoring Program protocol (MMP and BSC, 2000). This required three visits between mid-April and the end of June under proper air and weather conditions. Surveys were conducted 30 minutes following local sunset and completed by midnight where there were light winds, no rain, and air temperatures of 5°C, 10°C, and 17°C or higher for each of the three visits, respectively.

3.2.4. Incidental Wildlife Surveys

Formal surveys for mammals, reptiles, and insects were not completed, but incidental observations were completed during other survey times. The results are found in Section 4.8.

3.2.5. Watercourse Characterization

An assessment and characterization of the watercourse feature's habitat qualities and function were performed following the Ontario Stream Assessment Protocol (OSAP). Background information and secondary sources, including the Ministry of Natural Resources and Forestry (MNRF), were utilized to further characterize the watercourse features for the Subject Property. An active fish community assessment was not proposed (i.e. electrofishing). The results of this assessment are presented in Section 4.7.

3.2.6. Species at Risk Screening and Assessment

An assessment and screening of potential Species at Risk was conducted for the Subject Property based on Federal and Provincial status. Following the MECP (2019) Client's Guide to Preliminary SAR Screening, this screening was based on a review of the NHIC, the regional species list, atlases (breeding bird, butterfly and moth), citizen science databases (i.e. iNaturalist), and any additional lists provided by the MECP. The preliminary screening was submitted as a memo to sar@ontario.ca for assignment to a management biologist for review. The Species at Risk assessment results are found in Section 5. Data sources utilized for screening are described in Appendix B.

For the purpose of the screening, SAR are defined as:

- Endangered and Threatened species that are on the Species at Risk in Ontario (SARO) list and protected by the provincial ESA (2007)
- Endangered and Threatened aquatic species that are listed on Schedule 1 of the federal Species at Risk Act, 2002 (SARA) and protected by the SARA

Species of Conservation Concern (SOCC) are defined as:

- Special Concern species on the SARO list
- Endangered, Threatened and Special Concern terrestrial species listed on Schedule 1 of SARA, but not protected by the ESA.
- Species with provincial ranks of S1 to S3. Provincial ranks (S ranks) are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number of occurrences in Ontario and are not legal designations. Provincial S ranks are defined as follows:

  S1: Critically imperiled; usually fewer than 5 occurrences
  S2: Imperiled; usually fewer than 20 occurrences
  S3: Vulnerable; usually fewer than 100 occurrences
  S4: Apparently secure; uncommon but not rare, usually more than 100 occurrences
  S5: Secure, common, widespread and abundant
  ? S-rank followed by a "?" indicates the rank is uncertain

3.2.7. Significant Wildlife Habitat Screening and Assessment

A screening for Significant Wildlife Habitat following the Ministry of Natural Resources and Forestry Significant Wildlife Habitat Technical Guide (2000) and Significant Wildlife Habitat Criteria Schedule for Ecoregion 6E (January 2015) was conducted for the Subject Property. Potential SWH identified was assessed during the complementary field studies. The results of this assessment are found in Section 6.

4. Existing Conditions

4.1. General Landscape Position

The Subject Property is located within the Conestogo River Subwatershed in the northwest portion of the Grand River Watershed. Within GRCA's Watershed Report Card, the Conestogo River Subwatershed received a 'Poor' grade for wetland cover and a 'Poor' grade for forest cover. Overall, the rural landscape has been dominated by agricultural activity for many decades, leaving patches of natural heritage features spread sporadically among farmlands. The Subject Property is surrounded by agricultural lands on all sides, with the urban centre of Arthur (Township of Wellington North) approximately 1 km south.

4.2. Physiography and Geology

The Subject Property is situated on clay to silt-textured till derived from glaciolacustrine deposits or shale (Chapman and Putnam, 1984). The sedimentary rocks underlying the Subject Property are from the Guelph Formation, which is the uppermost bedrock stratum for a large part of the Grand River watershed, stretching a 30 km swath from Dundalk to the Hamilton International Airport (Janzen, 2018).

4.3. Natural Heritage Systems

4.3.1. Watercourse

As per the GRCA's mapping tool, the Subject Property contains a regulated watercourse, the Farley Creek tributary. The watercourse transects the property from south to northwest. The watercourse conveys flows beneath Eliza Street, crosses the western portion of the Subject Property, and continues under Wells Street before draining into Farley Creek west of Wells Street. The watercourse has associated floodplain limits and two small riparian woodlots, one north of the homestead dominated by white cedar and Norway spruce and the other just west of the culvert dominated by willows.

The existing watercourse on the east side of Eliza Street has been historically altered for agricultural purposes; the watercourse has been channelized to accommodate drainage and to optimize the land for crops. This channelized reach has a narrow riparian buffer, while adjacent lands beyond are actively farmed. Aerial imagery from 1934 indicates that, at that time, drainage within the area consisted of a system of gullies that did not include the current watercourse.

4.3.2. Core Greenlands

The designated Core Greenland on the Subject Property, as seen in Schedule B6-2 of the Township of Wellington North in the County of Wellington Official Plan, appears to be associated with watercourse floodplain limits as identified by the GRCA.

4.3.2.1. Floodline (Hazard Lands)

As per Section 8.1 River or Stream Valleys – Riverine Flooding Hazards of the *Grand River Conservation Authority Policies for the Administration of the Prohibited Activities, Exemptions and Permits Regulation Ontario Regulation 41/24*, it is stated that: *where the Riverine Flooding Hazard is determined by an engineering*

study using provincial standards and criteria, a 5 metre (16 foot) allowance is added. Where the Riverine Flooding Hazard is approximated or estimated, a 15 metre (50 foot) allowance is added. In headwater areas, an allowance of 15 metres (50 feet) from the channel bank defines the Regulated Area. An engineered floodplain limit was determined by SCS Consulting Group Ltd. (SCS) (Appendix E).

4.3.2.2. Habitat of Threatened and Endangered Species

As per Section 5.4 *Core Greenlands* in the CWOP, *Development is not allowed in provincially significant wetlands or the habitat of endangered or threatened species.* No habitat for species listed as threatened or endangered was observed in the Study Area.

4.4. Vegetation Communities

Vegetation communities were surveyed by collecting species observations and classification as per *Ecological land classification for Southwestern Ontario: first approximation and its application* (Lee et al. 1998).

4.4.1. Ecological Land Classification

The results of the two-season ELC are presented below in Table 3 and shown on Map 3. A full botanical inventory can be found in the ELC field sheets in Appendix A. Four vegetation communities were identified within the Study Area.

Table 3. Ecological land classification communities

ELC Code and Classification	Vegetation		Comments
MAM Meadow Marsh	Canopy	Willow sp. (*Salix sp.*)	Along the riparian zone. Sandy loam soil with mottles appearing at 35 cm.
	Sub-canopy		
	Ground	Reed Canary Grass (*Phalaris arundinacea*), Orchard Grass (*Dactylis glomerata*)	
SWT Swamp Thicket	Canopy	Crack Willow (*Salix euxina*)	Along the riparian zone. Loam soil with mottles present at 50 cm.
	Sub-canopy	Manitoba Maple (*Acer negundo*), Crack Willow	
	Ground	Reed Canary Grass, Dame's Rocket (*Hesperis matronalis*), Jewelweed (*Impatiens capensis*), Cutgrass (*Leersia sp.*)	
CUM Cultural Meadow	Ground	Wild Carrot (*Daucus carota*), Timothy Grass (*Phleum pratense*)	Silty loam soil on previously tilled agriculture.
CUP	Canopy	Norway Spruce (*Picea abies*), White Spruce (*Picea glauca*)	Area around a residential house. Several

Mixed Plantation	Sub-canopy	Manitoba Maple, White Cedar (*Thuja occidentalis*)	landscape/planted species. Silty loam soil.
	Ground	Reed Canary Grass, Orchard Grass, Wood Avens (*Geum urbanum*), Garlic Mustard (*Alliaria petiolata*)	

Meadow Marsh: This riparian community is located on the west side of Eliza Street. This meadow hugs the stream banks in the riparian zone. Dominated by reed canary grass (*Phalaris arundinacea*), there was also an abundance of orchard grass (*Dactylis glomerata*) in the ground layer. A few trees and shrubs were interspersed within this community, including willows (*Salix sp.*) in the canopy layer and red-osier dogwood (*Cornus* sericea) and red raspberry (*Rubus idaeus*) in the understory.

Swamp Thicket: This riparian community is located around the outlet of the culvert on the west side of Eliza Street. Crack willow (*Salix* euxina) and Manitoba maple (*Acer negundo*) are the dominant species in the canopy and sub-canopy. Chokecherry (*Prunus virginiana*) and red-osier dogwood are occasional within the understory. The ground layer is abundant in reed canary grass, dame's rocket (*Hesperis matronalis*), cutgrass (*Leersia sp.*), and jewelweed (*Impatiens capensis*).

Cultural Meadow (CUM): This community is located north of the Farley Creek tributary west of Eliza Street, this area was tilled agriculture containing no plants in the spring. In the summer, the ground layer consisted of an abundance of wild carrot (*Daucus carota*), Timothy grass (*Phleum pratense*), and perennial sow thistle (*Sonchus arvensis*).

Mixed Plantation (CUP): This community is located between the homestead and Farley Creek tributary. This community is made up of an abundance of landscape/horticultural species. The canopy consists of several different tree species, with the most abundant being Norway spruce (*Picea abies*) and occasionally white spruce (*Picea glauca*) and silver maple (*Acer saccharinum*). White cedar (*Thuja occidentalis*) and Manitoba maple are occasional within the sub-canopy, and the ground layer consisted of an abundance of orchard grass, wood avens (*Geum urbanum*), garlic mustard (*Alliara petiolata*), and spotted dead-nettle (*Lamium maculatum*).

Straightened Riparian Corridor: This community is located on the east side of Eliza Street, along the banks of the straightened watercourse adjacent to the agricultural fields. Total canopy cover is less than 10%, with only a few silver maple trees and one eastern cottonwood (*Populus deltoides*) scattered throughout the community. The sub-canopy cover is less than 10% as well, made up of eastern cottonwood and Manitoba maple. The ground layer is dominated by reed canary grass and smooth brome (*Bromus* inermis), with an abundance of orchard grass and jewelweed.

4.5. Breeding Bird Surveys

Breeding bird surveys were conducted on two separate dates within the Study Area under suitable conditions between 5 am and 10 am as per OBBA protocols (Table 4). Two breeding bird transects were established for the Subject Property, one on the west side of Eliza Street and one on the east side, both following along the riparian corridor (Map 3). One species at risk was found within the Subject Property.

Table 4. Breeding Bird Survey Conditions

Visit Date	Visit Time	Wind Speed [Beaufort scale]	Rain	Noise Code (1-5)
June 14, 2024	07:54-09:49	3	0	3
July 4, 2024	07:13-07:40	0	0	2

Species heard and or observed within the search area were recorded and the highest level of breeding evidence (using Ontario Breeding Bird Atlas [OBBA] protocols) was determined after completion of both surveys (Table 5).

Table 5. Breeding Bird Survey Results

Common Name	Site 1		Site 2		SRank	SARO	COSEWIC
	Quantity	BE	Quantity	BE			
American Crow	1	S	1	X	S5		
American Goldfinch	3	T	2	S	S5		
American Robin	2,1,1,1	T,FY,CF,NE	5	T	S5		
Baltimore Oriole	2	P	-	-	S4B		
Barn Swallow	**3**	**T**	**10,5**	**T,V**	**S4B**	**SC**	**THR**
Black-capped Chickadee	-	-	3	S	S5		
Brown-headed Cowbird	-	-	1	S	S5		
Cedar Waxwing	2	S	1	S	S5		
Common Grackle	-	-	6,2	S,CF	S5		
Eastern Kingbird	1	H	-	-	S4B		
Gray Catbird	1	S	-	-	S5B, S3N		
Great Blue Heron	-	-	1	X	S4		
Hawk sp.	-	-	1	H	N/A		
House Sparrow	-	-	2	T	SNA		
House Wren	3	A	-	-	S5B		
Killdeer	2	S	2	T/P	S4B		
Mallard	-	-	9	H	S5		
Mourning Dove	1	S	3	S	S5		

Red-winged Blackbird	4	T/A	6	T	S5
Rock Pigeon	-	-	2	H	SNA
Savannah Sparrow	-	-	3	T	S5B, S3N
Song Sparrow	3	T/P	5	T	S5
Tree Swallow	1	H	1	S	S4, S5B
Warbling Vireo	1	S	-	-	S5B
Willow Flycatcher	1	S	-	-	S4B
Yellow Warbler	1	S	-	-	S5B
Gull sp.	-	-	2	X	N/A

**In the species columns, Breeding Evidence (BE) was identified for each species based on the highest level of BE observed. The number recorded represents the highest one-day total for that species with the associated breeding code.*

Table 6. Species Ranking System

Rank System	Code	Meaning
OBBA Breeding Level		
Possible	**H**	Species observed in breeding season in suitable nesting habitat.
	S	Singing male present or breeding calls heard in breeding season in suitable habitat.
Probable	**P**	Pair observed in their breeding season in suitable habitat.
	T	Permanent territory presumed through registration of territorial song or presence of adult bird in breeding habitat on at least 2 days, one week or more apart at the same place.
	D	Courtship or display between a male and female, or two males including courtship feeding and copulation.
	V	Visiting probable nest site.
	A	Agitated behavior or anxiety calls of adults.
	B	Brood patch on adult female or cloacal protuberance on adult male.
	N	Nest building or excavation of nest hole.
Confirmed	**DD**	Distraction display or injury feigning.
	NU	Used nest or eggshell found (occupied/laid during atlas period).
	FY	Recently fledged young or downy young.
	AE	Adults leaving or entering nest site in circumstances indicating occupied nest.
	FS	Adult carrying faecal sac.
	CF	Adult carrying food for young.
	NE	Nest containing eggs.
	NY	Nest with young seen or heard.
NHIC S-Rank		
SH	Possibly Extirpated (Historical); species occurred historically, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years.	
S1	Critically Imperiled. Extremely rare in Ontario; usually 5 or fewer occurrences in the province.	
S2	Imperiled. Very rare in Ontario; usually between 6 and 20 occurrences in the province.	
S3	Vulnerable. Rare to uncommon in Ontario; usually between 21 and 60 occurrences in the province; may have fewer occurrences, but with some extensive examples remaining.	

S4	Apparently secure. Considered to be common in Ontario. It denotes a species that is apparently secure, with over 80 occurrences in the province.
S5	Secure. Indicates that a species is widespread in Ontario. It is demonstrably secure in the province.
?	Indicates some uncertainty with the classification due to insufficient information.
SNR	Not Ranked.
SNA	Not Applicable, a conservation status rank is not applicable because the species is not a suitable target for conservation activities.
COSEWIC/ESA & SARA Rankings	
SC	Special Concern.
END	Endangered.
THR	Threatened.
EX	Extirpated.

Out of the 27 summer resident bird species (all with some breeding evidence), there was one species at risk observed, the Barn Swallow (*Hirundo rustica*).

The highest level of breeding evidence obtained during surveys was "confirmed" breeding (OBBA, 2001); this evidence was obtained for two species due to observations of recently fledged young (FY), birds carrying food (CF), and nest containing eggs (NE). Nine species were observed exhibiting "probably" breeding behaviour as pairs observed in their breeding season in suitable habitat (P), singing in permanent territory during both rounds of surveys (T), and exhibiting agitated behaviour or anxiety calls (A). Fourteen summer residents were observed singing (S) in suitable habitat (H) during the breeding season, indicating "possible' breeding evidence (OBBA, 2001). The other two species were seen as flyovers (X).

Based on the breeding bird surveys, the barn located on the residential property at 665 Eliza Street provides habitat for the barn swallows, provincially ranked as a species of Special Concern.

4.6. Amphibian Surveys

Amphibian surveys were completed following the Marsh Monitoring Protocol and temperature requirements. The Subject Property contained one survey station, which can be found on Map 3. Results of the amphibian surveys are provided in Table 7. Spring peepers were the only amphibian heard calling outside of the station during the second visit.

Table 7. Amphibian Call Survey Results

Visit	Start Time	Air Temp (°C)	Wind (Beau-fort)	Precip	Cloud Cover (10ths)	Species Calling (Call Code-# of Individuals)		Background Noise (Code – Notes)	Notes
						In Station	Out of Station		
Station 1									
1 (>10°C)	20:25	14	0	None	3	--	--	4	Noise from road, trickling water, and loud birds
2 (>17°C)	22:10	16	3	None	0	--	SPPE3	2	Full chorus 300m outside station directly north. Noise from road, dog barking, and trickling water in watercourse.
3 (>17°C)	23:04	20	2	None	2	--	--	2	Noise from road and trickling water in watercourse.

4.7. Watercourse Characterization

The Subject Property lies within the Conestogo River Subwatershed, which is itself part of the Grand River Watershed. The Farley Creek tributary bisects the Subject Property and is located within the County of Wellington's Regional Core Greenlands System. An assessment of the watercourse on the west side of Eliza Street, between Eliza Street and Wells Street, was conducted on August 28, 2024, to characterize its form and fish habitat function. The Ontario Stream Assessment Protocol (OSAP) Rapid Assessment Methodology was followed.

This section of the Farley Creek tributary is a permanently flowing stream with a slow current conveying flow from the channelized reach on the east side of Eliza Street. Within the study reach, average bankfull width and depth were measured to be approximately 2.71 m and 0.75 m, respectively. The average wetted width and depth of the surveyed channel were approximately 1.04 m and 0.15 m, respectively. The watercourse within this study reach is situated within a willow woodland area and enters a meadow marsh area before reaching a culvert at Wells Street. Fine sediment and clay were the dominant substrate types through the run, riffle, and the second pool habitat; cobbles and gravel were most dominant in the first pool, and clay and boulders dominated the third pool. Most of the surveyed channel had no in-stream vegetation cover with only a small percentage of cover in pool 2, pool 3, and run 3. Both banks were undercut and displayed evidence of erosion in all the surveyed areas indicating vulnerability with less than half of the banks protected. The riparian vegetation community included species such as reed canary grass, orchard grass, red-osier dogwood, red raspberry, and crack willow.

4.8. Incidental Wildlife

Incidental wildlife was recorded during each site visit, the observations are provided in Table 8.

Table 8. Incidental Wildlife Summary

Scientific Name	Common Name	Evidence	Abundance
Sylvilagus floridanus	Eastern Cottontail	visual	1
Anas platyrhynchos	Mallard	audio	2
Agelaius phoeniceus	Red-winged Blackbird	audio	5
Turdus migratorius	American robin	audio/visual	1
Melospiza melodia	Song Sparrow	audio	1
Charadrius vociferus	Killdeer	audio	1

5. Species at Risk Screening

The Endangered Species Act, S.O. 2007, was passed to protect the biodiversity of Ontario by using the best available scientific, community, and indigenous traditional knowledge and the precautionary principle as its doctrine. The purpose of the Act is to identify species at risk, protect species at risk and their habitats, and to promote the recovery of species at risk and stewardship activities which assist in these goals. The Committee on the Status of Species at Risk in Ontario (COSSARO) functions to maintain an up-to-date database of information pertaining to species in Ontario and their classification. COSSARO advises the Minister of Natural Resources and Forestry, who makes and files a regulation that lists all plant and animal species classified by COSSARO as extirpated, endangered, threatened, or of special concern. This regulation is the Species at Risk in Ontario List (Ontario Regulation 230/08). Ontario Regulation 242/08 provides general policies concerning exemptions and habitat specifications for those listed SAR species.

5.1. SAR Long List

A Long List of potential SAR was developed for the Study Area based on Provincial and Federal status. Following the MECP Client's Guide to Preliminary SAR Screening (2019), this screening was based on a review of the NHIC database (Atlas ID: 17NJ3754 and 17NJ3755), the regional species list, atlases (Ontario Breeding Bird, Butterfly, Moth, Reptile and Amphibian; Atlas Square: 17NJ35), citizen science databases (i.e. iNaturalist and eBird), and any additional sources provided by the MECP. Descriptions of the various data sources are included in Appendix B. Observations of SAR within these squares do not necessarily represent observations within the boundaries of the Study Area. The SAR Long List is provided in Table 9 below for data sources acquired on November 11, 2024.

Table 9. SAR Screening Results

Species		Status		
Common Name	Scientific Name	S_Rank	SARO	SARA
		Birds		
Chimney Swift[2,4]	Chaetura pelagica	S3B	THR	Threatened
Eastern Wood-pewee[1,2,4]	Contopus virens	S4B	SC	Special Concern
Bank Swallow[2,4]	Riparia riparia	S4B	THR	Threatened
Barn Swallow[2,4]	Hirundo rustica	S4B	SC	Threatened
Bobolink[1,2,4]	Dolichonyx oryzivorus	S4B	THR	Threatened
Eastern Meadowlark[1,2,4]	Sturnella magna	S4B, S3N	THR	Threatened
Grasshopper Sparrow[2]	Ammodramus savannarum	S4B	SC	0
Bald Eagle[2]	Haliaeetus leucocephalus	S4	SC	0
Lesser Yellowlegs[4]	Tringa flavipes	S3S4B, S5M	THR	0
Red-necked Phalarope[4]	Phalaropus lobatus	S3B, S4M	SC	Special Concern
Black Tern[4]	Chlidonias niger	S3B, S4M	SC	0
Rusty Blackbird[4]	Euphagus carolinus	S4B, S3N	NAR	Special Concern
Horned Grebe[4]	Podiceps auritus	S1B, S3N, S4M	SC	0
Common Nighthawk[4]	Chordeiles minor	S4B	SC	Special Concern
Hudsonian Godwit[4]	Limosa haemastica	S3B, S4M	THR	0
		Amphibians and Reptiles		
Midland Painted Turtle[3]	Chrysemys picta marginata	S4	0	Special Concern
Snapping Turtle[3,7]	Chelydra serpentina	S4	SC	Special Concern
Butler's Garter Snake[7]	Thamnophis butleri	S2	END	Threatened
		Insects		
Monarch[5,7]	Danaus Plexippus	S2N, S4B	SC	Special Concern
		Plants		
Butternut[7]	Juglans cinerea	S2?	END	END

Sources: [1] NHIC Database, [2] OBBA, [3] Ontario Reptile and Amphibian Atlas, [4] eBird Database, [5] Ontario Butterfly Atlas, [6] DFO Aquatic SAR Map, [7] iNaturalist

5.2. SAR Assessment

Based on the screening, in combination with vegetation communities and other environmental features observed during field work, the following species were identified for further assessment:

- Bald Eagle
- Bobolink
- Eastern Meadowlark
- Grasshopper Sparrow
- Monarch
- Barn Swallow

5.2.1. Possibly Occurring

An assessment of the above list found that the Study Area has the potential to provide habitat for the species described below.

5.2.1.1. Bald Eagle

The bald eagle was already assessed as a species of Special Concern when the *Endangered Species Act* took effect in 2008. Adults are easily recognized by their bright white head and tail, which contrast with a dark brown body, while immature birds have mostly dark heads and tails. Young birds attain adult plumage in about five years. Bald eagles nest in a variety of habitats and forest types, almost always near a major lake or river. They usually nest in large trees like pines and poplars. In Ontario, they nest throughout the north, mostly in the northwest near Lake of the Woods. After being extirpated in southern Ontario and then intensively re-introduced, the bald eagle can now be seen again along the shores of Lake Erie. Their largest threat was the introduction of pesticides such as DDT; however, currently, their population decline is mostly due to development along shorelines and pollution.

Bald Eagle may make use of trees within the riparian area along the watercourse between Eliza Street and Wells Street for perching.

5.2.1.2. Bobolink

Bobolink was listed as Threatened in the Province of Ontario on September 28, 2010. The preferred breeding habitat for Bobolink consists of hayfields, pastures, and meadows which are dominated by a mixture of grasses and broad-leaved forbs (e.g., red clover, dandelion, timothy grass). It also occurs in wet prairie, graminoid peatlands, abandoned fields, no-till cropland, small-grain fields, and reed beds. It does not *typically* occupy agricultural fields of row crops such as corn, soybean, and wheat.

Bobolink density is significantly higher in areas with relatively low amounts of total vegetative cover, low alfalfa cover, and low total legume cover but with high litter cover and high grass-to-legume ratios (e.g., hayfields ≥ 8 yrs. old). The nests tend to be sited in wet habitats, transitional between drier soils and areas

providing poor drainage, and are always on the ground, often at the base of large forbs such as meadow rue, golden alexander, clover, etc. Bobolink avoids nesting in habitats dominated by overly dense shrubs and overly deep litter layer (>2cm). Bobolink density and likelihood of occurrence increase as a function of distance from forest edges (Martin et al., 1995; COSEWIC 2010). The primary threat to the species is loss of habitat through the conversion of hayfields to other crops and mowing practices.

Small patches of meadow habitat are present on the Subject Property; however, these are likely too small to satisfy the habitat requirements of nesting bobolink. Potential suitable nesting habitat is dependent on the type of seasonal row crops on the agricultural lands (e.g., hay). No bobolink were observed during breeding bird surveys, therefore, the agricultural fields are not likely to provide a suitable habitat.

5.2.1.3. Eastern Meadowlark

The eastern meadowlark was designated as Threatened under the Ontario *Endangered Species Act* on January 13, 2012. This species primarily resides south of the Canadian Shield within mid-height meadows and open areas, including agricultural crops (hay and alfalfa), pastures, orchards, fallow fields, and other similar ecosites. The species uses shrubbery and fence posts for perching and singing. The eastern meadowlark is a migratory songbird of medium build with distinct colouring. Their throat and belly are bright yellow against a brown with black-streaked head and back. They have a black "V" across their breast area and white flanks. The species is threatened by habitat loss on breeding grounds from several factors, including land use change, farming practices, pesticides, and habitat fragmentation.

Small patches of meadow habitat are present on the Subject Property; however, they are likely too small to satisfy the habitat requirements of nesting bobolink. Potential suitable nesting habitat is dependent on the type of seasonal row crops on the agricultural lands (e.g., hay). No eastern meadowlark were observed during breeding bird surveys, therefore, the agricultural fields are not likely to provide a suitable habitat.

5.2.1.4. Grasshopper Sparrow

The grasshopper sparrow was listed as Special Concern on the Species at Risk in Ontario list on March 31, 2015. The grasshopper sparrow habitat includes open grassland areas with well-drained, sandy soil. It also nests in hayfields and pastures, alvars, and occasionally in grain crops such as barley. The nests are well-hidden in fields and are made from woven grasses in a small cup shape. The grasshopper sparrow range can be found throughout southern Ontario, most commonly in grasslands. This small brown songbird is threatened by changes in land use converting grasslands into row crops. Harvesting of crops or mowing of meadows and grasslands before the young can fledge nests also result in the decline of this species.

Potential suitable nesting habitat is dependent on the type of seasonal row crops on the agricultural lands (e.g., hay). No grasshopper sparrows were observed during the breeding bird surveys, therefore, the agricultural fields do not likely provide suitable habitat.

5.2.1.5. Monarch

The Monarch was already assessed as Special Concern when the *Endangered Species Act* took effect in 2008. The Monarch is a showy orange and black butterfly with small white spots. These butterflies are relatively large, with a wingspan reaching 93-105 millimetres. Monarch caterpillars feed exclusively on milkweed plants; therefore, their preferred breeding habitat is meadows and open areas. Adult butterflies can be found in

more diverse habitats where they feed on nectar from a variety of wildflowers. Monarchs spend the winter in Oyamel Fir forests found in central Mexico. The largest threat to Ontario Monarchs is habitat loss and fragmentation at overwintering sites in central Mexico, where forests are being logged and converted into agricultural fields and pastures. Widespread pesticide and herbicide use throughout the Monarch's range may also limit recovery.

Milkweed plants were not observed during vegetation surveys; thus, suitable habitat for monarch is likely to be limited.

5.2.2. Confirmed Presence

One species at risk was observed on site by GeoProcess staff during the breeding bird surveys. The sections below describe the implications of their presence within the Subject Property.

5.2.2.1. Barn Swallow

The barn swallow was designated as Special Concern under the Ontario *Endangered Species Act* on January 13, 2012. It is found throughout southern Ontario and to the north as far as Hudson Bay. This species uses almost exclusively human-made structures on which to mount their cup-shaped nests. Males show a glossy colouring of steel blue on their back and breast band, while females have a pale underbelly and short tail feathers. The tail feathers form a distinctive deep fork with a line of white spots across the end. Since the mid-1980's the population has been in decline due to causes not well understood. Modernization of buildings, especially barns, and the use of agricultural pesticides are probable threats.

Barn swallows were observed singing and foraging on site and entering the two barn structures on the Subject Property, indicating the likelihood of nesting within the barns. A careful examination by a qualified biologist for nest cups within both structures should be completed prior to removal of these structures.

6. Significant Wildlife Habitat Screening

Significant Wildlife Habitat (SWH) is considered natural heritage and is protected as per Section 2.1 of the Provincial Policy Statement, 2014. The Significant Wildlife Habitat Technical Guide (OMNRF, 2000) aids in land use planning by providing the identification, description, and prioritisation of significant wildlife habitat in Ontario. The associated Ecoregion Criteria Schedules are used to further provide detailed criteria for assessing and confirming SWH within Ontario. This section will provide a screening in the form of a summary table followed and an assessment of the potentially or confirmed occurring SWH.

Significant (and/or sensitive) Wildlife Habitat features and functions as described within the OMNRF Significant Wildlife Habitat Ecoregion Criteria Schedule for Region 6E (OMNRF, 2015) were reviewed and evaluated for the Study Area. The documented groups wildlife habitat into five main categories:

- Seasonal concentration areas of animals
- Rare vegetation communities or specialized habitats for wildlife
- Specialized Habitat for Wildlife
- Habitat for species of conservation concern

- Animal movement corridors

The full screening found in Appendix C consisted of a review of the ELC codes and habitat criteria for candidate SWH. Any SWH on the Subject Property or adjacent lands was noted in Column 4, and a rationale was provided in Column 5. In the case of potential SWH, Confirmed Defining Criteria Studies were reviewed, and applicable mitigation measures (in summary form) were also provided in Column 5.

6.1. SWH Assessment

Based on a review of background information and accompanying field studies, the assessment indicated the presence of candidate SWH within one of the five categories, including:

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

No candidate or confirmed SWH was found in the categories of seasonal concentration areas of animals, rare vegetation communities, specialized habitat for wildlife, or animal movement corridors.

6.1.1. Habitat for Species of Conservation Concern

Special Concern and Rare Wildlife Species – Barn swallows were seen around the barn and maintenance garage on both breeding bird site visits and were noted to be flying in and out of the structures, assumingly visiting a possible nest site. Confirmation of nest cups within the structures should be performed by a biologist prior to removal of the structure. If active nests are observed, removal of the structure must be delayed until young have fledged the nest.

7. Proposed Development

The proposed site plan will occupy an approximate area of 55.34 ha to accommodate the construction of a residential development consisting of single and semi-detached homes, townhouses, parklands, internal roads, and two stormwater management ponds. The proposed development also includes a naturalized linear corridor to accommodate a natural channel and floodplain alignment for the reach of the Farley Creek tributary on the east side of Eliza Street. The reach of the Farley Creek tributary that is east of Eliza Road is proposed to be realigned to accommodate the development plan, while the reach between Eliza Road and Wells Street will be maintained. See Map 5 for a comparison of the proposed site plan with the natural heritage system limits.

7.1. Natural Heritage System Buffers

Setbacks are required for various natural heritage features as outlined in municipal and conservation authority policies.

7.1.1. Watercourse and Core Greenlands

The Natural Heritage System (NHS) along the Farley Creek tributary east of Eliza Street is proposed to be realigned with a naturalized linear corridor to accommodate a natural channel and floodplain alignment. The Farley Creek tributary will generally follow the existing creek alignment, with an increased corridor width to

allow for natural meandering. The corridor will incorporate a toe erosion allowance, stable slope allowance, and the appropriate erosion access allowances to mitigate future hazards. A preliminary desktop meander belt width assessment completed by GeoProcess staff was submitted in a memo on November 1, 2024, and a draft report was sent on January 8, 2025 (Appendix D). Corridor sizing was prepared based on the review of existing conditions from topographic surveys and flow data provided by SCS. The final selected belt width was 24.6 m, based solely on corridor sizing related to long-term geomorphic process and does not consider flood hazard or geotechnical components.

The NHS along the Farley Creek tributary between Eliza Street and Wells Street within the Subject Property requires a setback of 15 m on either side.

7.2. Stormwater Management, Grading and Servicing Requirements

Two stormwater management (SWM) facilities have been proposed on the Subject Property; one in the northwest along the east side of Wells Street (West SWM Pond) and another in the north on the east side of Eliza Street (East SWM Pond). The Functional Servicing and Stormwater Management Report (FSSR) for the Subject Property was prepared by SCS in February 2025 (SCS 2025).

Stormwater from the development will be directed to three primary destinations: the East and West Stormwater Management (SWM) Ponds, and the Farley Creek tributary. The East SWM Pond will manage flows from the eastern catchments, while the West SWM Pond will handle flows from the western areas. Both ponds will eventually discharge treated water into Farley Creek. Uncontrolled flows from various catchments will drain directly into Farley Creek via overland and channelized flow through roadside ditches. Additionally, where grading limitations prevent connection to the SWM ponds, storm sewer systems will direct flows to a Wells Street outlet, which also ultimately discharges into Farley Creek.

The stormwater management ponds have been sized to meet the "Enhanced" level of water quality control that is required for the development. The SWM Ponds will contain permanent pools which will provide quality control by removing sediment from the storm runoff conveyed to the SWM facility. Erosion control and protection will be provided through attenuation of water in the SWM Ponds which will gradually release detained volumes over time.

7.2.1. Channel Realignment

A channel realignment has been proposed to address the backwater condition at Eliza Street and limit the extent of the regulatory floodplain associated with the Farley Creek tributary that is present on the Subject Property. The proposed realignment will be located east of Eliza Street and will include upgrades to the culvert at the Eliza Street crossing. The proposed channel will consist of a 24.6m wide meander belt width. An 8m toe erosion setback will also be applied, producing a total channel bottom width of 40.6 m.

7.2.2. Erosion Mitigation

The FSSR demonstrates that the proposed development meets the receiving watercourse erosion mitigation criterion by analyzing both existing and post-development stormwater conditions. Under existing conditions, stormwater on the Subject Property generally drains to Farley Creek or the Farley Creek tributary via overland flow and channelized flow through ditches along the boulevard of Eliza Street. Limited stormwater

management measures are currently in place, with the Eliza Street and Wells Street culverts being the primary drainage control features. To ensure compliance with the erosion mitigation criterion, defined as retention of the 25 mm rainfall runoff event for a minimum of 24 hours, a hydrologic model was developed to assess post-development runoff based on the 25 mm, 4-hour Chicago rainfall event.

The proposed stormwater management strategy includes two stormwater ponds – the east SWM Pond and west SWM pond – designed to retain and control runoff in accordance with the established criterion. The storage volumes of these ponds are sized to accommodate the runoff volumes determined through hydrologic modeling, ensuring that stormwater is retained and gradually released in the Farley Creek tributary over the required 24-hour period. By implementing these measures, the proposed stormwater system mitigates potential erosion impacts on the receiving watercourse.

8. Environmental Impact Assessment

Impacts on the various natural heritage features associated within and adjacent to the Subject Property were considered in the impact analysis. Table 10 presents the natural heritage components considered in this assessment, the proposed activity associated with that component, potential short-term and long-term impacts, recommended mitigation measures, and if any residual effects are anticipated. Potential impacts were assessed using secondary source information, including an overlay of the proposed site plan.

8.1. Impact Summary Table

Table 10. Impact Summary Table

Feature and Function	Proposed Activity	Potential Impacts	Recommend
		Short-Term Impacts	
Natural Heritage System (NHS)	Grading, Servicing & Development	Release of dust as a result of construction activities	Implement dust suppr site grading when con winds are
Breeding Birds	Site Clearing/Tree Removal	Impacts to nests and nesting birds	Vegetation and tree cl between April 1-Sept Migratory Birds Con clearing is to occur du a nest survey shoul qualified biologist proposed works to ide not to be disturbed fledged. Nests are no the young have fledg deemed inactive. Educ wildlife encounters. Th a work area setback b nesting bi

Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
Surrounding Habitat	Grading, Servicing & Development	Release of petroleum products or other contaminants into surrounding habitats.	To prevent contaminant runoff into the nearby natural heritage features, equipment maintenance and refuelling need to be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling should be conducted at least 30m from the Woodland and Core Area. Construction material, excess material, construction debris, and empty containers should be stored in one location with proper containment and spill control measures in place.	No residual effects expected if mitigation measures are followed.
Local and Migrating Wildlife	Grading, Servicing & Development	Soil compaction and rutting outside of the construction zone	Implement a construction restoration plan to detail how the site will be remediated once construction is complete and install fencing to delineate where the extent of the development footprint is limited.	Minimal residual effects anticipated.
Adjacent Woodland	Grading, Servicing & Development	Damage to riparian area. Erosion and sedimentation release to the watercourse.	Implement silt fencing along the development limit to ensure construction activities and sediment do not migrate to the adjacent NHS. Avoid construction during high-volume rain events or significant snow melts/thaws. Construction should resume once soils have stabilized to avoid the risk of erosion, soil compaction, or the potential for sediment	Inspection of the erosion and sediment controls (e.g. silt fences, sediment traps, outlets, vegetation, etc.) by a qualified environmental professional (i.e. CAN-CISEC designation or approved equivalent) with follow-up reports to the governing municipality should ensure proper implementation throughout the development. Fencing should be left in place until after

Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
			release into nearby natural features/watercourses.	construction works are complete and the site has sufficiently stabilized/re-vegetated. No residual effects are expected.
Local and Migrating Wildlife	Grading, Servicing & Development	Noise from construction works on local and migrating wildlife.	Limited measures can be employed as a certain level of construction noise will occur. Limit construction activities at sunrise and sunset during the active spring breeding bird season.	Noise impacts to wildlife present within the surrounding landscape may occur, however they will be occurring during the construction phase of the project, which is a relatively short period of time. It is anticipated that wildlife may avoid the area during construction. Once the construction activities are complete, the noise associated with construction activities will end and wildlife will return. As the majority of the wildlife found within the local landscape is tolerant of disturbances, they are anticipated to return to the area once construction activities end.
Local and Migrating Wildlife	Channel Realignment	Realignment activities for the channel east of Eliza Street may temporarily disrupt fish & wildlife movement along the watercourse and riparian corridor.	Complete a fish and wildlife salvage prior to conducting channel excavation work. Establish and maintain erosion and sediment control measures to reduce risk of wildlife entering the work area.	No residual effects are expected.
Long-Term Impacts				

Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
Aquatic & Riparian Habitat	Channel Realignment	Increase in channel length in the Study Area. Increase in riparian vegetation protection zone east of Eliza Street.	Implement a natural channel design and restoration plan to ensure that the new channel and riparian areas along the new channel corridor provide suitable habitat for aquatic and riparian species. Use native plantings and incorporate habitat features for wildlife.	The increased length of the channel will provide additional aquatic habitat relative to existing conditions. The vegetation protection zone that will be incorporated will result in an increase in riparian habitat compared to the existing riparian zone which is actively farmed close to the watercourse banks.
Local and Migrating Wildlife	Development	Light pollution resulting in changes to animal behaviour.	Lights directed downward will reduce the amount of ambient light issuing from the Subject Property. It is recommended that downward-casting lighting is used across the site and lights are not directed towards the NHS.	Due to the overall size and density of the proposed development it is likely to create additional ambient light pollution. If mitigation measures are implemented and followed by the new residents, the overall impacts of light pollution on wildlife and insects can be reduced. The shielding and downward casting lights and closing window coverings at night are good steps to reducing impacts. This combined with an educational component should help address the concern. It is likely there will be some impact due to night-time lighting as all outdoor lighting will not be eliminated.
Breeding Birds	Grading, Servicing & Development	Removal of farm structures providing barn swallow habitat.	Construct artificial barn swallow habitat in the proposed channel realignment corridor.	No residual effects are expected if replacement habitat is constructed.
Breeding Birds	Development	Bird Strikes/Deaths	Developments close to natural areas with glass surfaces pose a threat to birds. Birds can	Bird-friendly measures are recommended to be considered when designing the residential

Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
			see through glass and what is reflected on glass, but not the glass itself. There are several options to reduce bird strikes depending on whether the treatments are before or after the glass has been installed. 1) Pre-installation measures include: Frit and etched patterns; opaque materials and frosted glass; reducing features that create 'fly-through' conditions like glass corners; window muntins; exterior shutters; UV-treated glass. 2) Temporary Solutions: Encourage tenants to install their own deterrent measures on the outside of the windows like decals, ribbon, tape. Encourage tenants to turn off their lights at night during migration windows in the spring and fall. The majority of songbirds migrate at night, bright lights can cause confusion and draw migrating birds off course and result in additional bird strikes, delaying their migration. Making design choices with birds in mind before construction is the most effective way to reduce bird strikes. Encouraging individual tenants to install their own mitigative measures is not as effective as not everyone may want to participate.	area. There is the potential for residual negative impact on the local and migrating avian population from bird strikes. For more information on bird strikes and bird-friendly building design, visit Flap Canada's website.
Natural Heritage System	Snow Storage	Salt runoff	All snow storage locations have yet to be determined. However, snow storage will likely occur within road right-of-ways and some parking areas. All snow melt from these	The treatment of all snow storage melt water prior to release to the environment will mitigate impacts from both volume and contaminant releases. Impacts from salt will be

Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
			locations will be captured in the SWM system and provided enhanced level quality and quantity treatment. Untreated snow storage melt water will not be discharged directly to the environment.	managed through the Township of Wellington North's winter salt application program, which aims to reduce overall salt use during the winter. There is low likelihood that sodium enriched water will be discharged into the surrounding natural environment.
Surrounding Habitat	During Construction	Movement of invasive species to and from the site	Machinery is a major vector for spreading terrestrial invasive species into new areas as they may spread seeds or plant parts to other properties. Contractors are to follow the Clean Equipment Protocol for Industry (2013) as laid out by the Ontario Invasive Plants Council.	Some invasive species were found on site during floristic surveys. Minimal residual effects are expected while adhering to the recommended mitigation measures.
Natural Heritage System	Post-Development	Encroachment, dumping and spread of invasive species	Thorn baring plants will be implemented in the vegetated buffer to deter humans and pets from entering the Core Greenlands Area. Fencing installation along property boundaries to discourage local residential use of the NHS.	The NHS will be maintained by 15-30m setback. Surrounding land use currently supports residential development and agriculture, as a result, no long-term residual effects are anticipated from the proposed development. Opportunities for native planting with the vegetated buffer will serve to improve the ecological features and functions associated with the Subject Property.
Watercourse	Development	The release of unwanted pets/invasive species such goldfish, koi, and red-eared sliders into the stormwater management pond could result in negative impacts downstream if they	Install one educational sign that describes the importance of a stormwater management pond and the native plants installed there and	Residual impacts are expected to reduce with appropriate communication materials (e.g. interpretive signage).

Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
		were to enter into the Farley Creek tributary.	discourage people from dumping anything into the facility.	

8.2. Direct Impact Assessment

Direct impacts are directly attributed to the proposed development activities, often occurring during the construction phase or associated with physically altering the landscape or removing vegetation communities. Construction activities including grading, servicing, and site development, can cause direct impacts on the surrounding habitats and potential local and migrating wildlife.

Based on the existing disturbances in the area, the history of agriculture on the site dating back to at least 1954 based on aerial imagery, the proposed development will not result in any measurable negative impacts to the adjacent NHS composition, structure, or function except for a potential reduction of groundwater inputs due to the increase in impermeable area and coincidental lack of infiltration measures.

The NHS along the Farley Creek tributary on the east side of Eliza Street is proposed to be realigned with a naturalized linear corridor to accommodate a natural channel and floodplain alignment. The Farley Creek tributary will generally follow the existing creek alignment, with an increased corridor width to allow for a natural meandering form. The corridor will incorporate a toe erosion allowance, stable slope allowance, and the appropriate erosion access allowance. This corridor is anticipated to increase the length of the channel within the Study Area and thus increase the amount of aquatic and riparian habitat relative to pre-development conditions. The lands adjacent to the channel east of Eliza Street are currently farmed up to the top of bank in many locations, resulting in a riparian buffer that ranges from approximately zero (0) to ten (10) metres wide. The increased natural heritage system corridor will be approximately 70 metres wide. This corridor width increase is anticipated to result in an overall improvement to aquatic and riparian habitat east of Eliza Street. Potential benefits include improved thermal regulation and general fish habitat via an increase in vegetation cover along the watercourse. Water quality improvements may also occur as a result of increased interception of runoff from erosion and pollution.

The natural heritage system along the Farley Creek tributary between Eliza Street and Wells Street is not proposed to be reduced in size. The 15 m buffer will be planted with self-sustaining native vegetation and will result in the mitigation of negative impacts on the function of the nearby NHS.

8.3. Indirect Impact Assessment

Indirect impacts are those which occur as a secondary result of the proposed activity, and not necessarily as a direct result of the activity. These are usually associated with effects such as population growth, density changes, or alterations/additions to road networks. Indirect impacts can include light pollution, which can cause confusion in migrating birds at night, potentially resulting in window strikes. Mitigation recommendations are provided where possible.

The proposed development will increase the population in the local area, which will result in more traffic, noise and light. These factors can all have negative impacts on natural areas. In the case of this development at the Subject Property, it will result in a shift of wildlife use and interactions because of the increased population density and its associated daily activities. Light pollution could be an issue with the increase in nighttime lighting. It is recommended that outdoor lighting is kept to a minimum, is downcast, and covered on its sides to reduce horizontal projection and window coverings are used to reduce its effects when lights are kept on for extended periods at night.

As the property will only support wildlife habitat for those species most tolerant of an urban setting, it is unlikely that future wildlife utilizing the property will be impacted by the increase in traffic and noise. Species utilizing the site will be accustomed to urbanization and may include animals such as grey squirrel, raccoon, mice, fox, and common backyard bird feeder birds. Residents planting pollinator gardens can have a positive influence on many insects, including bees and butterflies.

8.4. Cumulative Impacts

Cumulative impacts are environmental changes due to past, present and the reasonably foreseeable future impacts. The Study Area and surrounding landscape have experienced ongoing disturbance from historical and current agricultural land use therefore cumulative impacts on the natural heritage system are difficult to predict and isolate from existing influences. The natural area has already undergone and continues to undergo anthropogenic stressors from agricultural practices. These stressors have played a role in the form and function of the NHS, including ambient noise, tolerant wildlife and vegetation communities, and stormwater and agricultural runoff. The proposed development includes realignment of a portion of the Farley Creek tributary and planting of a riparian buffer which will help mitigate the impacts of stormwater runoff in the future. Implementing the suggested mitigation measures will ensure that potential cumulative impacts will be negligible.

9. Mitigation Measures and Recommendations

The following mitigation measures are recommended to avoid and minimize impacts. The measures have two distinct intended outcomes: mitigation to reduce the impact on the natural heritage system and mitigation to reduce the impact of active construction.

9.1. Natural Heritage System Measures

Before machinery is active on site, a visual search of the work area should be conducted before work commences each day, particularly for the period when most wildlife is active (generally April 1st to October 31st). Visual inspections will aim to locate snakes, turtles, and other ground-dwelling wildlife such as small mammals. Visual searches should also include inspection of machinery and equipment left in the work area overnight before starting equipment to ensure that wildlife is safely out of the work area.

Other natural heritage system measures include:

- Inspection by a qualified person(s) to conduct regular monitoring of all sediment erosion measures implemented to ensure they are in working order. Any deficiencies observed are to be recorded and immediately reported to the site contractor.
- Minimize outdoor lighting and direct it down and away from natural areas.
- Architectural considerations to minimize bird strikes, which could include window glazing, frosting or etching, UV-treated glass, or exterior window coverings (i.e. shutters or muntins), awnings or canopies over entryways.
- The proposed channel realignment should include habitat structures for fish and wildlife and be planted with native species only.

9.2. Construction Measures

General construction-related mitigation measures include the following:

- Clearing of vegetation within the Subject Property as part of site preparation should be conducted in late summer or winter months (September to March) so as not to coincide with breeding bird season. If clearing is to proceed within the breeding bird window, the Subject Property should be screened by a qualified bird biologist to determine if any migratory songbirds are nesting within the work zone. Any identified nests are to be protected until it is confirmed that the young have fledged from the nest.
- Construction activities should be limited at sunrise and sunset when birds are most active during the breeding bird season to reduce construction noise impacts.
- Implementation of the erosion and sediment control plan (ESC) is recommended to prevent releases of sediment into the adjacent natural areas. The ESC plan and monitoring should be reviewed and carried out by a qualified professional (i.e. CAN-CISEC certification). Any deficiencies observed are to be recorded and immediately reported to the site contractor. Gaps in fencing should be repaired immediately. ESC measures should not be removed until the site is deemed sufficiently stabilized by a qualified environmental professional.
- Heavy machinery should be washed prior to entering the Subject Property to prevent the spread of invasive species.
- Topsoil removed during stripping is recommended to be stockpiled for reapplication post-construction.
- A construction work plan should designate specific locations for stockpiling soils and other materials or outline the location of materials trucked offsite.
- Implementation of dust control measures is recommended to reduce dust impacts on the adjacent lands.

10. Policy Conformity

The proposed development conforms with the policies of the County of Wellington Official Plan as it relates to Natural Heritage. Specifically, it protects the Core Greenlands feature and watercourse with appropriate buffers. It increases the buffer surrounding the watercourse, which is generally absent, especially on the east side of Eliza Street. The proposed a channel realignment for the straightened channel on the east side of Eliza Street will accommodate a larger area for a natural channel and floodplain. Planning, design, offsetting, and construction measures identified for the Study Area will promote the protection of natural features outlined in this preliminary EIS.

11. Closing

This EIS completed a policy review, conducted biophysical surveys to document the existing ecological conditions, reviewed the proposed site plan, functional servicing report, and hydrogeological report. From a natural heritage perspective, the proposed plan meets the

requirements of the County of Wellington's Official Plan and with the implementation of the standard mitigation measures described can proceed without negative impacts to the natural heritage system.

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Environmental Impact Statement – 665 Eliza Street, Arthur ON

Prepared for Sorbara/Tribute Arthur Holdings Inc.

February 28, 2025

Prepared by:

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Emily Veres, BAS, CERPIT
Terrestrial Ecologist

Disclaimer

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Information obtained during the site investigations or received from third parties does not exhaustively cover all possible environmental conditions or circumstances that may exist in the study area. If a service is not expressly indicated, it should not be assumed that it was provided. Any discussion of the environmental conditions is based upon information provided and available at the time the conclusions were formulated.

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Project Number P2022-616

Maps

GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2022-616
CHECKED BY:	IR	DATE:	Jan 23, 2025

0 200 400 600 800 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Imagery from Google Earth.
[2] Contains information licensed under the Open Government Licence – Ontario.

Map 1.

Key Map

Environmental Impact Statement
Arthur, Wellington North Development

Tribute/Sorbara Arthur Holdings Inc.

G:\Shared drives\Projects-2022\P2022-616 665 Eliza Road, Arthur-Due Diligence\GIS\NH Map.qgz

GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2022-616
CHECKED BY:	IR	DATE:	Jan 23, 2025

0 200 400 600 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
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Map 2.

Existing Conditions

Environmental Impact Statement
Arthur, Wellington North Development

Tribute/Sorbara Arthur Holdings Inc.

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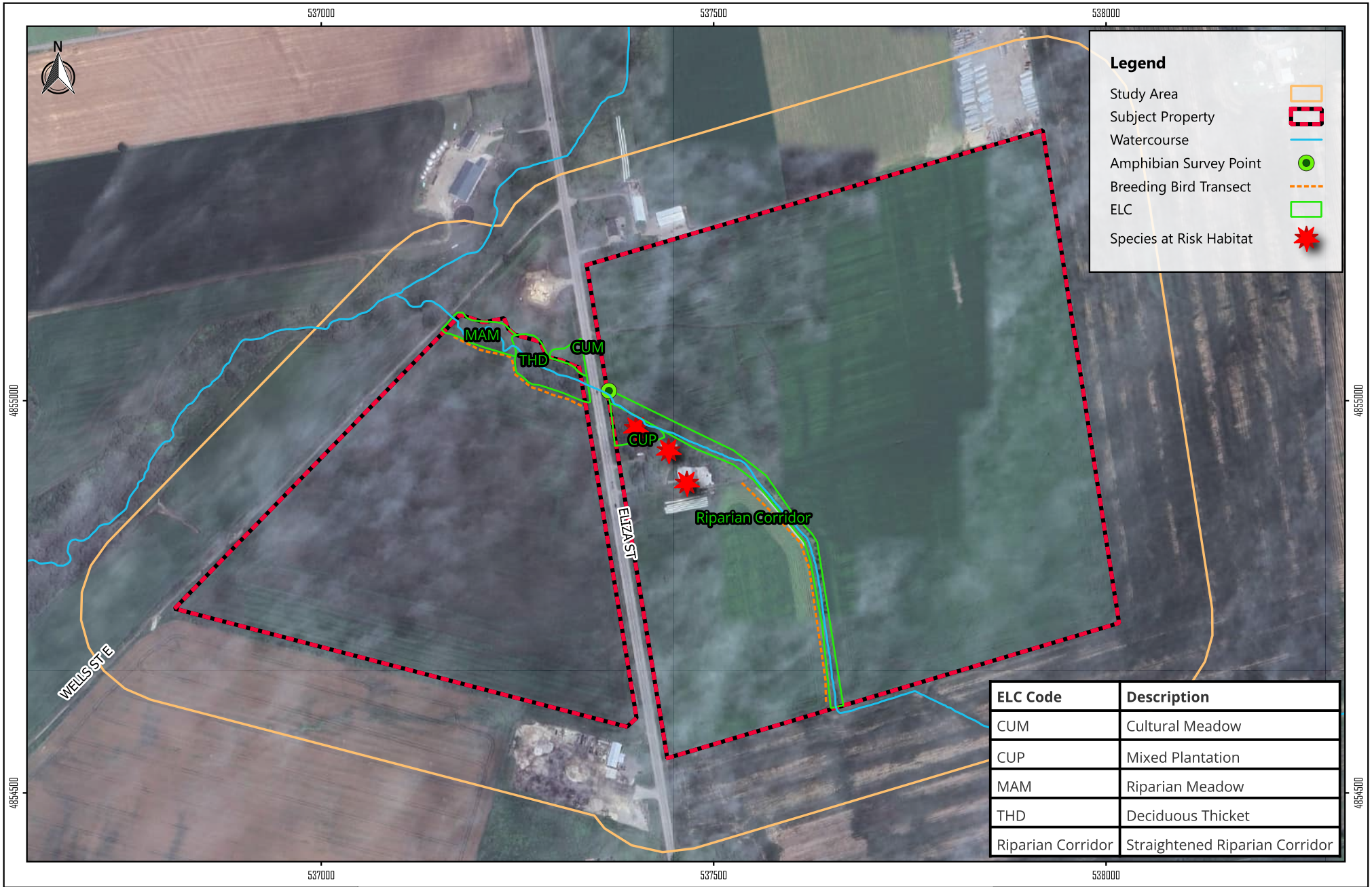

ELC Code	Description
CUM	Cultural Meadow
CUP	Mixed Plantation
MAM	Riparian Meadow
THD	Deciduous Thicket
Riparian Corridor	Straightened Riparian Corridor

GeoProcess RESEARCH ASSOCIATES

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CHECKED BY:	IR	DATE:	Jan 31, 2025

0 200 400 600 m

NAD83 / UTM zone 17N (EPSG:26917)

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Map 3.

Natural Heritage Surveys

Environmental Impact Statement
Arthur, Wellington North Development

Tribute/Sorbara Arthur Holdings Inc.

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GeoProcess RESEARCH ASSOCIATES

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0 200 400 600 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Imagery from Google Earth.
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Map 4.

Natural Heritage Surveys

Environmental Impact Statement
Arthur, Wellington North Development

Tribute/Sorbara Arthur Holdings Inc.

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CHECKED BY:	IR	DATE:	Jan 23, 2025

0 200 400 600 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Imagery from Google Earth.
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Map 5.

Proposed Development

Environmental Impact Statement
Arthur, Wellington North Development

Tribute/Sorbara Arthur Holdings Inc.

G:\Shared drives\Projects-2022\P2022-616 665 Eliza Road, Arthur-Due Diligence\GIS\NH Map.qgz

Appendix A

ELC Field Sheets

ELIZA

ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

SITE: 1 ELIZA STREET | POLYGON: CULT MEADOW

SURVEYOR(S): SD | DATE: 24-08-21 | TIME: start / finish

UTMZ: | UTME: | UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
O TERRESTRIAL O WETLAND O AQUATIC	O ORGANIC O MINERAL SOIL O PARENT MIN. O ACIDIC BEDRK. O BASIC BEDRK. O CARB. BEDRK.	O LACUSTRINE O RIVERINE O BOTTOMLAND O TERRACE O VALLEY SLOPE O TABLELAND O ROLL. UPLAND O CLIFF O TALUS O CREVICE / CAVE O ALVAR O ROCKLAND O BEACH / BAR O SAND DUNE O BLUFF	O NATURAL O CULTURAL	O PLANKTON O SUBMERGED O FLOATING-LVD. O GRAMINOID O FORB O LICHEN O BRYOPHYTE O DECIDUOUS O CONIFEROUS O MIXED	O LAKE O POND O RIVER O STREAM O MARSH O SWAMP O FEN O BOG O BARREN O MEADOW O PRAIRIE O THICKET O SAVANNAH O WOODLAND O FOREST O PLANTATION

SITE	COVER
O OPEN WATER O SHALLOW WATER O SURFICIAL DEP. O BEDROCK	O OPEN O SHRUB O TREED

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	—	—	
2	SUB-CANOPY	—	—	
3	UNDERSTOREY	—	—	
4	GRD. LAYER	4	4	ALC CAR2 = PHLE PRAT

HT CODES: 1 = >25 m 2 = 10<HT≤25 m 3 = 2<HT≤10 m 4 = 1<HT≤2 m 5 = 0.5<HT≤1 m 6 = 0.2<HT≤0.5 m 7 = HT<0.2 m

CVR CODES 0= NONE 1= 0% < CVR ≤ 10% 2= 10 < CVR ≤ 25% 3= 25 < CVR ≤ 60% 4= CVR > 60%

STAND COMPOSITION: | BA:

		< 10	10 - 24	25 - 50	> 50
SIZE CLASS ANALYSIS:	—	—	—	—	—
STANDING SNAGS:	—	—	—	—	—
DEADFALL / LOGS:	—	—	—	—	—

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE :	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
✓					

SOIL ANALYSIS:

TEXTURE: SILTY LOAM	DEPTH TO MOTTLES / GLEY	g = —	G= —
MOISTURE: 2	DEPTH OF ORGANICS: —		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK: 100		(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:		CULTURAL MEADOW
COMMUNITY SERIES:		
ECOSITE:		
VEGETATION TYPE:		
INCLUSION		
COMPLEX		

Notes:

ELC
STAND CHARACTERISTICS

SITE:
POLYGON:
DATE:
SURVEYOR(S):

TREE TALLY BY SPECIES:

PRISM FACTOR

SPECIES	TALLY 1	TALLY 2	TALLY 3	TALLY 4	TALLY 5	TOTAL	REL. AVG
TOTAL							100
BASAL AREA (BA)							
DEAD							

STAND COMPOSITION:

COMMUNITY PROFILE DIAGRAM

Notes:

ELC
SOILS ONTARIO

SITE:	(2LF 2A STREET)
POLYGON:	CUA MEADOW
DATE:	24-08-21
SURVEYOR(S):	

			Slope					UTM		
A	PP	Dr	Position	Aspect	%	Type	Class	Z	EASTING	NORTHING

SOIL	1	2	3	4	5
TEXTURE x HORIZON	SILTY LOAM 0-100 CM AGRICULTAL SOIL, TILLED THIS YEAR				
A TEXTURE	SILTY LOAM				
COURSE FRAGMENTS					
B TEXTURE					
COURSE FRAGMENTS					
C TEXTURE					
COURSE FRAGMENTS					
EFFECTIVE TEXTURE	SILTY LOAM				
SURFACE STONINESS					
SURFACE ROCKINESS					
DEPTH TO / OF					
MOTTLES	—				
GLEY	—				
BEDROCK	100				
WATER TABLE	—				
CARBONATES					
DEPTH OF ORGANICS					
PORE SIZE DISC #1					
PORE SIZE DISC #2					
MOISTURE REGIME	2				
SOIL SURVEY MAP					
LEGEND CLASS					

ELC
PLANT SPECIES LIST

SITE:	
POLYGON:	
DATE:	
SURVEYOR(S):	

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.

SPECIES CODE	LAYER 1	2	3	4	COL.
DAUC CARO				A	
PHLE PRAT				A	
SYMP NOVA				O	
ERIG CANA				R	
SONC ARVE				A	
SOLI ALT				O	
ASCL SYRI				R	
ARCT MINU				R	
ERIG STRIG				R	
CIRS CANA				R	
EUTH GRAM				O	
POA PRAT				O	

ELC

MANAGEMENT / DISTURBANCE

SITE: ELLA STREET
POLYGON: SLAT METHOD
DATE: 24-08-21
SURVEYOR(S): SD

DISTURBANCE / EXTENT	0	1	2	3	SCORE †
TIME SINCE LOGGING	> 30 YRS	15 - 30 YRS	5 - 15 YRS	0 - 5 YEARS	
INTENSITY OF LOGGING	NONE	FUEL WOOD	SELECTIVE	DIAMETER LIMIT	
EXTENT OF LOGGING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
SUGAR BUSH OPERATIONS	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF OPERATIONS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
GAPS IN FOREST CANOPY	NONE	SMALL	INTERMEDIATE	LARGE	
EXTENT OF GAPS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
LIVESTOCK (GRAZING)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF LIVESTOCK	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
ALIEN SPECIES	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF ALIEN SPECIES	NONE	LOCAL	WIDESPREAD	EXTENSIVE	9
PLANTING (PLANTATION)	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF PLANTING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
TRACKS AND TRAILS	NONE	FAINT TRAILS	WELL MARKED	TRACKS OR	
EXTENT OF TRACKS/TRAILS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
DUMPING (RUBBISH)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DUMPING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
EARTH DISPLACEMENT	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISPLACEMENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
RECREATIONAL USE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF RECR. USE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
NOISE	NONE	SLIGHT	MODERATE	INTENSE	
EXTENT OF NOISE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	4
DISEASE/DEATH OF TREES	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISEASE / DEATH	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
WIND THROW (BLOW DOWN)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF WIND THROW	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
BROWSE (e.g. DEER)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BROWSE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
BEAVER ACTIVITY	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BEAVER	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
FLOODING (pools & puddling)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FLOODING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
FIRE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FIRE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
ICE DAMAGE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF ICE DAMAGE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	/
OTHER	NONE	LIGHT	MODERATE	HEAVY	
EXTENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	13

† INTENSITY x EXTENT = SCORE

ELC

WILDLIFE

SITE:
POLYGON:
DATE:
SURVEYOR(S):
START TIME: END TIME:

TEMP (°C):	CLOUD (10th):	WIND:	PRECIPITATION:

CONDITIONS:

POTENTIAL WILDLIFE HABITAT:

	VERNAL POOLS		SNAGS
	HIBERNACULA		FALLEN LOGS

SPECIES LIST:

TY	SP. CODE	EV	NOTES	#

TY	SP. CODE	EV	NOTES	#

FAUNAL TYPE CODES (TY):
B = BIRD M = MAMMAL H = HERPETOFAUNA L = LEPIDOPTERA F = FISH O = OTHER

EVIDENCE CODES (EV):
BREEDING BIRD - POSSIBLE:
SH = SUITABLE HABITAT SM = SINGING MALE

BREEDING BIRD - PROBABLE:
T = TERRITORY D = DISPLAY P = PAIR
A = ANXIETY BEHAVIOUR N = NEST BUILDING V = VISITING NEST

BREEDING BIRD - CONFIRMED:
DD = DISTRACTION NU = USED NEST FY = FLEDGED YOUNG
NE = EGGS NY = YOUNG FS = FOOD/FAECAL SACK
AE = NEST ENTRY

OTHER WILDLIFE EVIDENCE:
OB = OBSERVED VO = VOCALIZATION CA = CARCASS
DP = DISTINCTIVE PARTS HO = HOUSE/DEN FY = EGGS OR YOUNG
TK = TRACKS FE = FEEDING EVIDENCE SC = SCAT
SI = OTHER SIGNS (specify)

ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

SITE: P2022-616 | POLYGON: Mixed Plantation
SURVEYOR(S): EV, AM | DATE: JUNE 14, 2024 Nov. 25, 2024 | TIME: start / finish
UTMZ: | UTME: | UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
● TERRESTRIAL ○ WETLAND ○ AQUATIC	○ ORGANIC ● MINERAL SOIL ○ PARENT MIN. ○ ACIDIC BEDRK. ○ BASIC BEDRK. ○ CARB. BEDRK.	○ LACUSTRINE ○ RIVERINE ○ BOTTOMLAND ○ TERRACE ○ VALLEY SLOPE ● TABLELAND ○ ROLL UPLAND ○ CLIFF ○ TALUS ○ CREVICE / CAVE ○ ALVAR ○ ROCKLAND ○ BEACH / BAR ○ SAND DUNE ○ BLUFF	○ NATURAL ● CULTURAL	○ PLANKTON ○ SUBMERGED ○ FLOATING-LVD. ○ GRAMINOID ○ FORB ○ LICHEN ○ BRYOPHYTE ○ DECIDUOUS ○ CONIFEROUS ● MIXED	○ LAKE ○ POND ○ RIVER ○ STREAM ○ MARSH ○ SWAMP ○ FEN ○ BOG ○ BARREN ○ MEADOW ○ PRAIRIE ○ THICKET ○ SAVANNAH ○ WOODLAND ● FOREST ○ PLANTATION

SITE	COVER
○ OPEN WATER ○ SHALLOW WATER ● SURFICIAL DEP. ○ BEDROCK	○ OPEN ○ SHRUB ● TREED

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	PICE ABIE >> PICE GLAU
2	SUB-CANOPY	3	2	THUJ OCCI > ACER NEGU
3	UNDERSTOREY			
4	GRD. LAYER	5-7	3	DACT GLOM = GEUM URBA = ALLI PETI

HT CODES: 1 = >25 m 2 = 10<HT<25 m 3 = 2<HT<10 m 4 = 1<HT<2 m 5 = 0.5<HT<1 m 6 = 0.2<HT<0.5 m 7 = HT<0.2 m
CVR CODES 0 = NONE 1 = 0% < CVR ≤ 10% 2 = 10 < CVR ≤ 25% 3 = 25 < CVR ≤ 60% 4 = CVR > 60%

STAND COMPOSITION: | BA:

SIZE CLASS ANALYSIS:		< 10		10 - 24		25 - 50		> 50
	O		O		O		N	
STANDING SNAGS:	N	< 10	N	10 - 24	N	25 - 50	N	> 50
DEADFALL / LOGS:	R	< 10	N	10 - 24	N	25 - 50	N	> 50

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE :		PIONEER		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS:

TEXTURE: Silty loam	DEPTH TO MOTTLES / GLEY	g = N/A	G= N/A
MOISTURE: Dry	DEPTH OF ORGANICS:	0cm	(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:	>60 cm	(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:		
COMMUNITY SERIES:		
ECOSITE:		
VEGETATION TYPE:	Mixed Plantation	
INCLUSION		
COMPLEX		

Notes: Botanical inventory completed June 14, 2024
Soils and tree prism completed Nov. 25, 2024

ELC
STAND CHARACTERISTICS

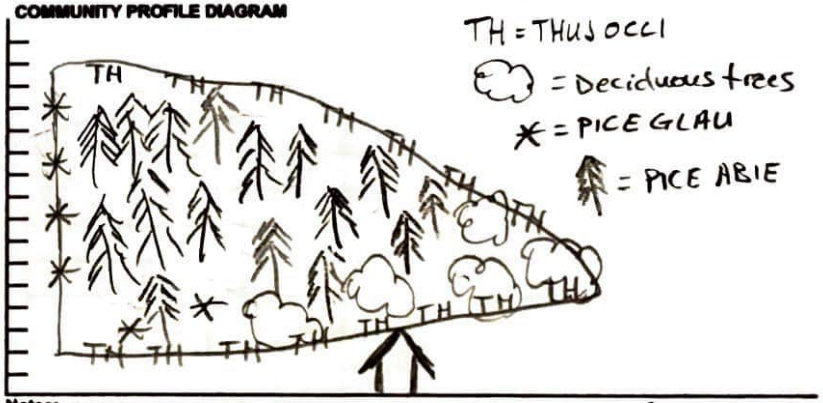
SITE: P2022-616
POLYGON: Mixed Plantation
DATE: Nov. 25, 2024
SURVEYOR(S): EV

TREE TALLY BY SPECIES:
PRISM FACTOR: BA2

SPECIES	TALLY 1	TALLY 2	TALLY 3	TALLY 4	TALLY 5	TOTAL	REL. AVG
PICE ABIE	5					5	
TOTAL	5						100
BASAL AREA (BA)							
DEAD							

STAND COMPOSITION:

COMMUNITY PROFILE DIAGRAM



Notes: THUJ OCCI around outside edge in a few deciduous trees. Inside is all PICE ABIE and PICE GLAU

ELC
SOILS ONTARIO

SITE: P2022-616
POLYGON: Mixed Plantation
DATE: Nov. 25, 2024
SURVEYOR(S): EV

	P/A	PP	Dr	Position	Aspect	Slope %	Slope Type	Slope Class	Z	UTM EASTING	UTM NORTHING
1	A										
2											
3											
4											
5											

SOIL TEXTURE x HORIZON	1	2	3	4	5
	A 0-60cm				
A TEXTURE	Silty loam				
COURSE FRAGMENTS	—				
B TEXTURE					
COURSE FRAGMENTS					
C TEXTURE					
COURSE FRAGMENTS					
EFFECTIVE TEXTURE					
SURFACE STONINESS					
SURFACE ROCKINESS					
DEPTH TO / OF MOTTLES	N/A				
GLEY	N/A				
BEDROCK	>60cm				
WATER TABLE	>60cm				
CARBONATES	—				
DEPTH OF ORGANICS	0cm				
PORE SIZE DISC #1	. /				
PORE SIZE DISC #2					
MOISTURE REGIME					
SOIL SURVEY MAP					
LEGEND CLASS					

ELC
PLANT SPECIES LIST

SITE: P2022-616
POLYGON: Mixed Plantation
DATE: JUNE 14, 2024
SURVEYOR(S): AM, EV

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.
PICE ABIE	A				
THUJ OCCI		O			
JUGL NIGR	R		R		
PICE GLAU	O				
POPU DELT	R				
ULMU AMER	R				
ACER NEGU	R	R			
ACER SACC	O				
PINU RESI	R				
PICE PUNG	R				
AESC HIPP	R				
GLED TRIA	R	R			
BETU PAPY	R				
ACER PLAT	R				
FRAX PENN	R				

SPECIES CODE	LAYER 1	2	3	4	COL.	
LAMIUM MACULATUM				O		contained to section close to house
CIRCAEA LUTETIANA				O		
ALLI PETI				O		
PHAL ARUN				O		
DACT GLOM				O		
ARCT MINO				O		
GEUM URBA				O		
HESP MATR				O		
MYOSOTIS SYLVATICA				R		Forget me not
ALLIUM GIGANTEUM				R		
MYRRHIS ODORATA				R		sweet cicely

ELC
MANAGEMENT / DISTURBANCE

SITE: P2022-616
POLYGON: Mixed Plantation
DATE: Nov. 25, 2024
SURVEYOR(S): EV

DISTURBANCE / EXTENT	0	1	2	3	SCORE †
TIME SINCE LOGGING	> 30 YRS	19 - 30 YRS	8 - 18 YRS	0 - 8 YEARS	0
INTENSITY OF LOGGING	NONE	FUEL WOOD	SELECTIVE	DIAMETER LIMIT	0
EXTENT OF LOGGING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
SUGAR BUSH OPERATIONS	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF OPERATIONS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
GAPS IN FOREST CANOPY	NONE	SMALL	INTERMEDIATE	LARGE	1
EXTENT OF GAPS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
LIVESTOCK (GRAZING)	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF LIVESTOCK	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ALIEN SPECIES	NONE	OCCASIONAL	ABUNDANT	DOMINANT	1
EXTENT OF ALIEN SPECIES	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
PLANTING (PLANTATION)	NONE	OCCASIONAL	ABUNDANT	DOMINANT	9
EXTENT OF PLANTING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
TRACKS AND TRAILS	NONE	FAINT TRAILS	WELL MARKED	TRACKS OR	0
EXTENT OF TRACKS/TRAILS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DUMPING (RUBBISH)	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF DUMPING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
EARTH DISPLACEMENT	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF DISPLACEMENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
RECREATIONAL USE	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF RECR. USE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
NOISE	NONE	SLIGHT	MODERATE	INTENSE	1
EXTENT OF NOISE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DISEASE/DEATH OF TREES	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF DISEASE / DEATH	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
WIND THROW (BLOW DOWN)	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF WIND THROW	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BROWSE (e.g. DEER)	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF BROWSE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BEAVER ACTIVITY	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF BEAVER	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FLOODING (pools & puddling)	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF FLOODING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FIRE	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF FIRE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ICE DAMAGE	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF ICE DAMAGE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
OTHER	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	

† INTENSITY x EXTENT = SCORE

ELC
WILDLIFE

SITE: P2022-616
POLYGON: Mixed Plantation
DATE: Nov. 25, 2024
SURVEYOR(S): EV
START TIME: END TIME:

TEMP (°C): 4°C | CLOUD (10th): 10 | WIND: 2 | PRECIPITATION: 0
CONDITIONS:

POTENTIAL WILDLIFE HABITAT:

	VERNAL POOLS		SNAGS
	HIBERNACULA		FALLEN LOGS

SPECIES LIST:

TY	SP. CODE	EV	NOTES	#
B	BCCH	S		3

TY	SP. CODE	EV	NOTES	#

FAUNAL TYPE CODES (TY):
B = BIRD M = MAMMAL H = HERPETOFAUNA L = LEPIDOPTERA F = FISH O = OTHER

EVIDENCE CODES (EV):

BREEDING BIRD - POSSIBLE:
SH = SUITABLE HABITAT SM = SINGING MALE

BREEDING BIRD - PROBABLE:
T = TERRITORY D = DISPLAY P = PAIR
A = ANXIETY BEHAVIOUR N = NEST BUILDING V = VISITING NEST

BREEDING BIRD - CONFIRMED:
DD = DISTRACTION NU = USED NEST FY = FLEDGED YOUNG
NE = EGGS NY = YOUNG FS = FOOD/FAECAL SACK
AE = NEST ENTRY

OTHER WILDLIFE EVIDENCE:
OB = OBSERVED VO = VOCALIZATION CA = CARCASS
DP = DISTINCTIVE PARTS HO = HOUSE/DEN FY = EGGS OR YOUNG
TK = TRACKS FE = FEEDING EVIDENCE SC = SCAT
SI = OTHER SIGNS (specify)

Riparian meadow

ELC COMMUNITY DESCRIPTION & CLASSIFICATION

SITE: P2022-616 | POLYGON: 1A
SURVEYOR(S): AM, EV | DATE: June 14/24 | TIME start / finish:
UTMZ: | UTME: Nov. 25/24 | UTMN:

POLYGON DESCRIPTION

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

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	1	SALIX SP.
2	SUB-CANOPY	3	1	PRUN SERO = ACER NEGU
3	UNDERSTOREY	4	1	CORN SERI = RUBU IDAE
4	GRD. LAYER	6	4	PHAL ARUN = DACT GLOM

HT CODES: 1 = >35 m 2 = 10<HT≤35 m 3 = 2<HT≤10 m 4 = 1<HT≤2 m 5 = 0.5<HT≤1 m 6 = 0.2<HT≤0.5 m 7 = HT≤0.2 m
CVR CODES: 0 = NONE 1 = 0% < CVR ≤ 10% 2 = 10 < CVR ≤ 25% 3 = 25 < CVR ≤ 50% 4 = CVR > 50%

STAND COMPOSITION: | BA:

SIZE CLASS ANALYSIS:	N/A	< 10		10 - 24		25 - 50		> 50
STANDING SNAGS:	O	< 10	R	10 - 24	R	25 - 50	N	> 50
DEADFALL / LOGS:	O	< 10	O	10 - 24	N	25 - 50	N	> 50

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE :		PIONEER		YOUNG	✓	MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS

TEXTURE: SANDY LOAM	DEPTH TO MOTTLES / GLEY	g = 35cm	G = 52cm
MOISTURE: 3	DEPTH OF ORGANICS:	0cm	(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:	>70cm	(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:		
COMMUNITY SERIES:		
ECOSITE:		
VEGETATION TYPE:	Riparian Meadow	
INCLUSION		
COMPLEX		

Notes: SOIL

A 0-35cm	LOAM
B 35-70cm	SANDY LOAM

- some small rocks in B

ELC PLANT SPECIES LIST

SITE: P2022-616
POLYGON: 1A
DATE: June 14/24
SURVEYOR(S): AM, EV

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.
MALU DOME	R				
SALIX SP.	O		R		
PRUN SERO		R			
ULMU AMER			R		
ACER NEGU		R			
CORN SERI			O		
RUBU IDAE			O		
PRUN VIRG			R		
CRATAEGUS SP.			R		

SPECIES CODE	LAYER 1	2	3	4	COL.
TRAG PRAT				R	
DACT GLOM				A	
HESP MATR				O	
ECHI LOBA				O	
BROM INER				O	
LOLI PRAT				R	
IMPA CAPE				O	
PHAL ARUN				D	
SOLI CANA				O	
VICI CRAC				O	
SYMP SP.				R	
URTI DIOI				O	
ARCT MINO				R	

ONE SNAG ~15m tall and ~26 DBH w cracks

ELC — COMMUNITY DESCRIPTION & CLASSIFICATION

SITE: P2022-616		POLYGON: Willow Riparian	
SURVEYOR(S): AM, EV, SD	DATE: JUNE 14, 2024 AUG. 21, 2024	TIME: start	finish
UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION

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

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	1-2	3	SALIX EUXINA
2	SUB-CANOPY	2-3	3	SALIX EUXINA = ACER NEGUNDO
3	UNDERSTOREY	4	3	CORN SERI = PRUN VIRG >> LONI TART
4	GRD. LAYER	5-7	4	LEERSIA = PHAL ARUN > IMPA CAPE >> HESP MATR

HT CODES: 1 = >25 m 2 = 10<HT<25 m 3 = 2<HT<10 m 4 = 1<HT<2 m 5 = 0.5<HT<1 m 6 = 0.2<HT<0.5 m 7 = HT<0.2 m

CVR CODES 0 = NONE 1 = 0% < CVR ≤ 10% 2 = 10 < CVR ≤ 25% 3 = 25 < CVR ≤ 60% 4 = CVR > 60%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	O	< 10	A	10 - 24	A	25 - 50	O	> 50
STANDING SNAGS:	R	< 10	R	10 - 24	R	25 - 50	R	> 50
DEADFALL / LOGS:	R	< 10	R	10 - 24	R	25 - 50	R	> 50

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE :		PIONEER		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS:

TEXTURE: LOAM	DEPTH TO MOTTLES / GLEY	g = 50cm	G = 52cm
MOISTURE: 4	DEPTH OF ORGANICS:	0cm	(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:	>100 cm	(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:		
COMMUNITY SERIES:		
ECOSITE:		
VEGETATION TYPE:	Willow Riparian	
INCLUSION		
COMPLEX		

Notes:

ELC — STAND CHARACTERISTICS

SITE: P2022-616
POLYGON: Willow Riparian
DATE: June 14, 2024
SURVEYOR(S): AM, EV

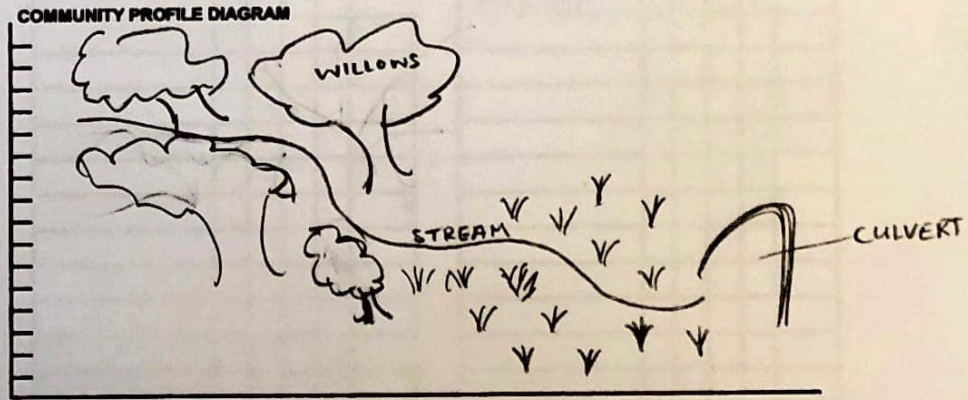
TREE TALLY BY SPECIES:

PRISM FACTOR: BA2

SPECIES	TALLY 1	TALLY 2	TALLY 3	TALLY 4	TALLY 5	TOTAL	REL AVG
SALIX EUXINA	• •					2	
TOTAL	2						100
BASAL AREA (BA)							
DEAD							

STAND COMPOSITION:

COMMUNITY PROFILE DIAGRAM



Notes:

ELC
SOILS ONTARIO

SITE: P2022-616
POLYGON: Willow Riparian
DATE: August 21, 2024
SURVEYOR(S): SD

	P/A	PP	Dr	Position	Aspect	Slope %	Type	Class	Z	UTM EASTING	UTM NORTHING
1	A										
2											
3											
4											
5											

SOIL TEXTURE x HORIZON	1	2	3	4	5
	A 0-47cm / B 47-100cm				
A TEXTURE	LOAM				
COURSE FRAGMENTS	/				
B TEXTURE	CLAY LOAM				
COURSE FRAGMENTS					
C TEXTURE					
COURSE FRAGMENTS					
EFFECTIVE TEXTURE					
SURFACE STONINESS					
SURFACE ROCKINESS					
DEPTH TO / OF MOTTLES	50cm				
GLEY	52cm				
BEDROCK	>100cm				
WATER TABLE	>100cm				
CARBONATES					
DEPTH OF ORGANICS					
PORE SIZE DISC 01					
PORE SIZE DISC 02					
MOISTURE REGIME	4				
SOIL SURVEY MAP					
LEMMON CLASS					

ELC
PLANT SPECIES LIST

SITE: P2022-616
POLYGON: Willow Riparian
DATE: JUNE 14, 2024 and AUG. 21, 2024
SURVEYOR(S): AM, EV, SD

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

	SPECIES CODE	LAYER 1	2	3	4	COL.
T	SALIX EUXINA	D	D	A	O	
	ACER NEGU		O	O	O	
	JUGL NIGR		O	R		
	ULMU AMER			R		
	MALU DOME			R		
S	RUBU IDAE				O	
	VITI RIPA				O	
	CORN SERI			O	O	
	PRUN VIRG			O		
	LONI TART			O		
	RIBE AMER				O	

	SPECIES CODE	LAYER 1	2	3	4	COL.	
H	LEERSIA sp.				A		← CUTGRASS
	HESP MATR				A		
	PHAL ARUN				A		
	DACT GLOM				O		
	IMPA CAPE				O		
	ARCT MINO				R		
	ECHI LOBA				O		
	ALLI PETI				O		
	GEUM URBA				O		
	URTI DIOI				O		
	RANU ACRI				R		
	CIRCAEA LUTETIANA				R		CIRC
	BROM INER				O		
	POA PALU				O		
	SONC ARVE				R		
	TUSS FARF				O		
	ASCL SYRI				R		

ELC
MANAGEMENT / DISTURBANCE

SITE: P2022-616
POLYGON: Willow Riparian
DATE: Aug. 21, 2024
SURVEYOR(S): SD

DISTURBANCE / EXTENT	0	1	2	3	SCORE †
TIME SINCE LOGGING	> 30 YRS	15 - 30 YRS	5 - 15 YRS	0 - 5 YEARS	0
INTENSITY OF LOGGING	NONE	FUEL WOOD	SELECTIVE	DIAMETER LIMIT	0
EXTENT OF LOGGING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
SUGAR BUSH OPERATIONS	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF OPERATIONS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
GAPS IN FOREST CANOPY	NONE	SMALL	INTERMEDIATE	LARGE	0
EXTENT OF GAPS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
LIVESTOCK (GRAZING)	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF LIVESTOCK	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ALIEN SPECIES	NONE	OCCASIONAL	ABUNDANT	DOMINANT	4
EXTENT OF ALIEN SPECIES	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
PLANTING (PLANTATION)	NONE	OCCASIONAL	ABUNDANT	DOMINANT	0
EXTENT OF PLANTING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
TRACKS AND TRAILS	NONE	FAINT TRAILS	WELL MARKED	TRACKS OR	0
EXTENT OF TRACKS/TRAILS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DUMPING (RUBBISH)	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF DUMPING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
EARTH DISPLACEMENT	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF DISPLACEMENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
RECREATIONAL USE	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF RECR. USE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
NOISE	NONE	SLIGHT	MODERATE	INTENSE	1
EXTENT OF NOISE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DISEASE/DEATH OF TREES	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF DISEASE / DEATH	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
WIND THROW (BLOW DOWN)	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF WIND THROW	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BROWSE (e.g. DEER)	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF BROWSE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BEAVER ACTIVITY	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF BEAVER	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FLOODING (pools & puddling)	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF FLOODING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FIRE	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF FIRE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ICE DAMAGE	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT OF ICE DAMAGE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
OTHER	NONE	LIGHT	MODERATE	HEAVY	0
EXTENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	

† INTENSITY x EXTENT = SCORE

ELC
WILDLIFE

SITE: P2022-616
POLYGON: Willow Riparian
DATE: Aug. 21, 2024
SURVEYOR(S): SD
START TIME: END TIME:

TEMP (°C):	CLOUD (10th):	WIND:	PRECIPITATION:

CONDITIONS:

POTENTIAL WILDLIFE HABITAT:

	VERNAL POOLS	✓	SNAGS
	HIBERNACULA	✓	FALLEN LOGS

SPECIES LIST:

TY	SP. CODE	EV	NOTES	#	TY	SP. CODE	EV	NOTES	#

FAUNAL TYPE CODES (TY):
B = BIRD M = MAMMAL H = HERPETOFAUNA L = LEPIDOPTERA F = FISH O = OTHER

EVIDENCE CODES (EV):

BREEDING BIRD - POSSIBLE:
SH = SUITABLE HABITAT SM = SINGING MALE

BREEDING BIRD - PROBABLE:
T = TERRITORY D = DISPLAY P = PAIR
A = ANXIETY BEHAVIOUR N = NEST BUILDING V = VISITING NEST

BREEDING BIRD - CONFIRMED:
DD = DISTRACTION NU = USED NEST FY = FLEDGED YOUNG
NE = EGGS NY = YOUNG FS = FOOD/FAECAL SACK
AE = NEST ENTRY

OTHER WILDLIFE EVIDENCE:
OB = OBSERVED VO = VOCALIZATION CA = CARCASS
DP = DISTINCTIVE PARTS HO = HOUSE/DEN FY = EGGS OR YOUNG
TK = TRACKS FE = FEEDING EVIDENCE SC = SCAT
SI = OTHER SIGNS (specify)

Appendix B

Species at Risk Screening Resources

Table B 1. SAR screening resources

Screening Resource	Description
Natural Heritage Information Center (NHIC)	The Natural Heritage Information Center (NHIC), operated by the Ontario Ministry of Natural Resources and Forestry, collects, reviews, manages and distributes information on Ontario's biodiversity. Data distributed by the NHIC is used in conservation and natural resource management decision making and was a primary resource for this report. Through the NHIC Make-a-Map tool, data on species, plant communities, wildlife concentration areas and natural areas is made accessible to the public and professionals using generalized 1-kilometer grid units to protect sensitive information. The mapping interface provides current and historical occurrences of SAR within the specified grid unit. The database also identifies environmental designations which provide insight into habitat potential including wetland, areas of natural and scientific interests and woodlands.
Breeding Bird Atlas	The atlas divides the province into 10×10 km squares and then birders find as many breeding species as possible in each square. Atlassers who know birds well by song complete 5-minute "Point Counts", 25 of which are required to provide an index of the abundance of each species in a square. Data from every square are mapped to show the distribution of each species. Point count data from each square show how the relative abundance of each species varies across the province.
eBird	eBird data document bird distribution, abundance, habitat use, and trends through checklist data collected within a simple, scientific framework. Birders enter when, where, and how they went birding, and then fill out a checklist of all the birds seen and heard during the outing. eBird's free mobile app allows offline data collection anywhere in the world, and the website provides many ways to explore and summarize your data and other observations from the global eBird community. eBird hotspots that are within 1 km of the Study Area are selected for species review.
Ontario Moth Atlas	The Ontario Moth Atlas is a project of the Toronto Entomologists' Association. The atlas currently covers about 250 species from 7 of the best-known families. The atlas presently includes 62,000 records. The last update of the atlas was in April 2020. The atlas is updated at least every 3 months. Most atlas data come from iNaturalist records. However, there is some data from Chris Schmidt of Agriculture Canada, the BOLD (Barcode of Life Datasystems) project of the University of Guelph, and from other records submitted directly to the TEA. The atlas uses the same 10×10 km squares at the Breeding Bird Atlas.
Ontario Butterfly Atlas	The Ontario Butterfly Atlas is a project of the Toronto Entomologists' Association (TEA). The TEA has been accumulating records and publishing annual seasonal summaries (Ontario Lepidoptera) for 50 years, with the first edition appearing in 1969. Atlas data comes from eButterfly records, iNaturalist records, BAMONA records, and records submitted directly to the TEA. The atlas uses the same 10×10 km squares at the Breeding Bird Atlas.
i-Naturalist	i-Naturalist is a nature app that helps public identify plants and animals. Using algorithms as well as scientists and taxonomic experts' multiple observations can be identified at a research scale. This data generated by the iNat community can be used in science and conservation. The program actively distributes the data in venues where scientists and land managers can find it. I-Naturalist has a project group for (NHIC) Rare species of Ontario. GeoProcess only records observations with-in 1 km of the Study Area.
Fisheries and Ocean Aquatic Species at Risk Maps	The DFO has compiled critical habitat and distribution data for aquatic species listed under the Species at Risk Act (SARA). The interactive map is intended to provide an overview of the distribution of aquatic species at risk and the presence of their critical habitat within Canadian waters. The official source of information is the Species at Risk Public Registry. Using this map, a 1 km radius circle is outlined around aquatic features located within the Study Area.

Appendix C

Significant Wildlife Habitat Screening

EcoRegion 6E

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
Seasonal Concentration Areas of Animal					
Waterfowl Stopover and Staging Areas (Terrestrial)	CUM, CUT1 - plus evidence of annual spring flooding within these ecosites. *Fields with seasonal flooding and waste grains in certain areas are specific to Tundra Swan	•Fields with sheet water during Spring (mid-March to May). •Agricultural fields with waste grain are not SWH unless they have spring sheet water available.	No	No habitat features on site or species aggregation.	•Any mixed species aggregations of 100+ individuals. • the flooded field plus 100-300m radius, dependant on localized site and adjacent land use. • Annual Use of Habitat is documented from information sources or field studies. •Specific evaluation methods required.
Waterfowl Stopover and Staging Areas (Aquatic)	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	•Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. •Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.	No	No habitat features on site.	•Aggregations of 100+ of species listed for 7 days, results in >700 waterfowl use days. •Areas with annual staging for ruddy ducks, canvasbacks and redheads. •The combined area of the ELC ecosites and a 100m radius area. •Wetland area and shorelines associated with sites identified within the SWHTG, Appendix K, are significant wildlife habitat. •Annual Use of Habitat is documented from information sources or field studies. •Specific evaluation methods required.
Shorebird Migratory Stopover Area	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	•Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. •Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores in May to mid-June and early July to October. • No sewage treatment or storm water management ponds.	No	No habitat features on site.	•Presence of 3 or more of listed species and >1000 shorebird use days during spring or fall migration period. •Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. •The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area. •Annual Use of Habitat is documented from information sources or field studies. • Specific evaluation methods required.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
Raptor Wintering Area	Combo of one of each Community Series from one of each: Forest (FOD, FOM, FOC) and Upland (CUM, CUT, CUS, CUW). Bald Eagle: Forest on shoreline area adjacent to large rivers and lakes.	•A combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. •Need to be >20ha. •Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands. •Field area of the habitat is to be wind swept with limited snow depth or accumulation. •Eagle sites have open water and large trees and snags available for roosting.	No	No habitat features on site.	•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. •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. •The habitat for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Specific evaluation methods required.
Bat Hibernacula	CCR1 CCR2 CCA1 CCA2 *Buildings are not to be considered SWH	•May be found in caves, mine shafts, underground foundations and Karsts. •Active mine sites are not considered SWH.	No	No habitat features on site.	•All sites with confirmed hibernating bats are SWH. •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.). • Specific survey methods required.
Bat Maternity Colonies	All Ecosites in: FOD FOM SWD SWM	•Maternity colonies can be found in tree cavities, vegetation and often in building. *Buildings are not considered SWH. •Not found in caves or mines in ON. •Located in Mature Deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees. •Prefer snags in early stages of decay (class 1-3 or class 1 or class 2). •Silver-haired Bats prefer older mixed or deciduous forests with at least 21 snags/ha.	Candidate	Mature willows and dead trees are present in the riparian area between Eliza Street and Wells Street.	•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. • Specific evaluation methods required.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
Turtle Wintering Areas	Snapping and Midland Painted: SW, MA, OA, SA and FEO/BOO Series. Northern Map: Open water areas such as deeper rivers or streams and lakes.	•Wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. •Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. *Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.	No	No habitat features on site.	•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. •Search for congregations in Basking Areas in spring and fall.
Reptile Hibernaculum	Any ecosite other that very wet. Talus, Rock Barren, Crevice, Cave, Alvar may be directly related. Observations of congregations in spring or fall is good indicator.	•Sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. •Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. •Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. •Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures.	No	No habitat features on site.	•Presence of snake hibernacula used by a minimum of five individuals of a snake sp. **OR** individuals of two or more snake spp. •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). • If there are Special Concern Species present, then site is SWH. •The feature in which the hibernacula is located plus a 30m radius area is the SWH. • Hibernacula are used annually, often by the same individuals (strong site fidelity) and other life processes often take place near by.
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns.	•Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area.	No	No habitat features on site.	•Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
	CUM1 CUS1 BLS1 CLO1 CLT1 CUT1 BLO1 BLT1 CLS1	*Does not include man-made structures, recently (2 years) disturbed soil areas or liscenced Mineral Aggregate Operation.			•A colony identified as SWH will include a 50m radius habitat area from the peripheral nests. •Field surveys to observe and count swallow nests are to be completed during the breeding season. •Specific evaluation methods required.
Colonially-Nesting Bird Breeding Habitat (Tree/Shrub)	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	•Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. •Most nests in trees are 11 to 15m from ground, near the top of the tree.	No	No habitat features on site.	•Presence of 5 or more active nests of Great Blue Heron or other listed species. •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. •Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells.
Colonially-Nesting Bird Breeding Habitat (Ground)	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM, CUT, CUS	•Nesting colonies on islands or peninsulas associated with open water or in marshy areas. •Brewers Blackbird colonies found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands.	No	No habitat features on site.	•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. •Presence of 5 or more pairs for Brewer's Blackbird. •Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. •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. •Studies would be done during May/June when actively nesting. • Specific evaluation methods required.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
Migratory Butterfly Stopover Areas	Combo of one of each Field (CUM, CUT, CUS) and Forest (FOC, FOD, FOM, CUP).	•Minimum 10ha in size with combo of field and forest located within 5km of Lake Erie or Lake Ontario. •Should not be disturbed. •Field/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. •Should provide protection from the elements, often spits of land or areas with the shortest distance to cross the Great Lakes.	No	No habitat features on site.	•Presence of Monarch Use Days (MUD) during Fall migration (Aug/Oct). •Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. •MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant.
Landbird Migratory Stopover Areas	All Ecosites within: FOC FOM FOD SWC SWM SWD	•Woodlots >10ha in size and within 5km of Lake Erie and Lake Ontario. •If woodlands are rare in area, smaller size can be considered. •If multiple woodlands located along shoreline, those <2km from shoreline are more significant. •Sites have a variety of habitats; forest, grassland and wetland complexes. •The largest sites are more significant. •Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Erie and Lake Ontario are Candidate SWH.	No	No habitat features on site.	•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. •Studies should be completed during spring (Mar to May) and fall (Aug to Oct) migration using standardized assessment techniques. • Specific evaluation methods required.
Deer Yarding Areas	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include: FOM FOC SWM SWC Or these ELC Ecosites: CUP2 CUP3 FOD3 CUT	•Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also	No	No habitat features on site.	No Studies Required: •Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths >40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. •Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
		be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. •The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. •OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual. •Woodlots with high densities of deer due to artificial feeding are not significant.			by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). •Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. •If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule.
Deer Winter Congregation Areas	All forested ecosites within: FOC, FOM, FOD, SWC, SWM, SWD + conifer plantations much smaller than 50ha may be used.	•Woodlots will typically be >100ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. •Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. •Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. *Woodlots with high densities of deer due to artificial feeding are not significant.	No	No habitat features on site.	•Will be mapped by MNRF. •All woodlots exceeding the criteria are significant unless determined to be not by the MNRF. •Studies to be completed during winter when >20cm of snow is on the ground, using aerial survey or pellet count.
Rare Vegetation Communities					

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
Cliffs and Talus Slopes	Any Ecosite within: TAO, CLO, TAS, CLS, TAT, CLT	•A Cliff is vertical to near vertical bedrock >3m in height. •A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris. Most cliff and talus slopes occur along the Niagara Escarpment.	No	No habitat features on site.	•Confirm any ELC Vegetation Type for Cliffs or Talus Slopes.
Sand Barren	SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always < or equal to 60%	•A sand barren area >0.5ha in size. •Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. •Vegetation can vary from patchy and barren to tree covered, but less than 60%.	No	No habitat features on site.	•Confirm any ELC Vegetation Type for Sand Barrens. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.)
Alvar	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2, Five Alvar Indicator Species: 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum	•An Alvar site >0.5ha in size, only known sites are found in the western islands of Lake Erie. •An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. •Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. •Vegetation cover varies from patchy to barren with a less than 60% tree cover.	No	No habitat features on site.	•Studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site is Significant. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). •The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
Old Growth Forest	FOD FOC FOM SWD SWC SWM	•Woodland areas 30ha or greater in size or with at least 10ha interior habitat assuming 100m buffer at edge of forest. •Characterized by heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	No	No habitat features on site.	•If dominant trees species of the area are >140 years old, then the area containing these trees is Significant Wildlife Habitat. •The forested area containing the old growth characteristics will have experienced no recognizable forestry activities. •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.
Savannah	TPS1 TPS2 TPW1 TPW2 CUS2	•A Savannah is a tallgrass prairie habitat that has tree cover between 25–60%. •No minimum size to site. •Site must be restored or a natural site. *Remnant sites such as railway right of ways are not considered to be SWH.	No	No habitat features on site.	•Field studies confirm one or more of the Savannah indicator species found in Appendix N, Ecoregion 6E of the SWHTG, OMNR (2000). •Entire area of the ELC Ecosite is SWH. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic species).
Tallgrass Prairie	TPO1 TPO2	•A Tallgrass Prairie has ground cover dominated by prairie grasses. •An open Tallgrass Prairie habitat has <25% tree cover. •No minimum size to site. •Site must be restored or a natural site. *Remnant sites such as railway right of ways are not considered to be SWH.	No	No habitat features on site.	•Field studies confirm one or more of the Prairie indicator species in Appendix N, Ecoregion 6E of the SWHTG, OMNR (2000). •Area of the ELC Ecosite is the SWH. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.)
Other Rare Vegetation Communities	See the Significant Wildlife Habitat Technical Guide (OMNR, 200), Appendix M for Provincially Rare S1, S2 and S3 ELC Vegetation Types.	•ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M. •May include beaches, fens, forest, marsh, barrens, dunes and swamps. See OMNRF/NHIC for up-to-date list of rare vegetation communities.	No	No habitat features on site.	•Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG, OMNR (2000). •Area of the ELC Vegetation Type polygon is the SWH.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
Specialized Habitat for Wildlife					
Waterfowl Nesting Area	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4. *Note: includes adjacency to Provincially Significant Wetlands	•A waterfowl nesting area extends 120m from a wetland (> 0.5ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. •Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. •Upland areas should be at least 120m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests.	No	No habitat features on site.	•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). •Specific evaluation methods required. •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 120m from the wetland and will provide enough habitat for waterfowl to successfully nest.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	•Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. *Nests located on man-made objects are not to be included as SWH. •Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy.	No	No habitat features on site.	•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 300m radius around the nest or the contiguous woodland stand is the SWH *with additional requirements. •For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH *with additional requirements. •To be significant a site must be used annually. •When found inactive, the site must be known to be inactive for >3years or suspected of not being used for >5years before being considered not significant.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
					•Observational studies to determine nest site use, perching sites and foraging areas need to be done from early March to mid August. •Specific evaluation methods required.
Woodland Raptor Nesting Habitat	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	•All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. •Interior habitat determined with a 200m buffer. •Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. •In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.	No	No habitat features on site.	•Presence of 1 or more active nests from species list is considered significant. •Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH. (the 28ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) •Barred Owl – A 200m radius around the nest is the SWH. •Broad-winged Hawk and Coopers Hawk – A 100m radius around the nest is the 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.
Turtle Nesting Areas	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	•Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. •For an area to function as a turtle nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. *Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH.	No	No habitat features on site.	•Presence of 5 or more nesting Midland Painted Turtles **OR** 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 dependant 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.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
		•Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.			•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.
Seeps and Springs	Where ground water comes to the surface. Often, they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system.	No	No habitat features on site.	•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 the habitat.
Amphibian Breeding Habitat (Woodland)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	•Presence of a wetland, pond or woodland pool (including vernal pools) >500m2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). •Some small wetlands may not be mapped and may be important breeding pools for amphibians. •Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat.	No	No suitable habitat features on site.	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 Codes of 3. •A combo of observational and call count surveys required during the spring (March-June). •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)	ELC Community Classes: SW MA FE BO OA SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing	•Wetlands >500m2 (about 25m diameter), supporting high species diversity are significant. •Some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. •Presence of shrubs and logs increase significance of pond for some amphibian	No	No suitable habitat features on site.	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.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
	predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	species because of available structure for calling, foraging, escape and concealment from predators. •Bullfrogs require permanent water bodies with abundant emergent vegetation.			•The ELC ecosite wetland area and the shoreline are the SWH. •A combo of observational and call count surveys will be required during the spring (March-June). •If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered.
Woodland Area-Sensitive Bird Breeding Habitat	All Ecosites withing: FOC FOM FOD SWC SWM SWD	•Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30ha. •Interior forest habitat is at least 200m from forest edge habitat.	No	No habitat features on site.	•Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. *any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. •Conduct field investigations in spring and early summer. •Specific evaluation methods required.
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)					
Marsh Bird Breeding Habitat	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites	•Nesting occurs in wetlands. All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. •For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water.	No	No habitat features on site.	•Presence of: 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes OR breeding by any combination of 5 or more of the listed species. •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. •Specific evaluation methods required.
Open Country Bird Breeding Habitat	CUM1 CUM2	•Large grassland areas (includes natural and cultural fields and meadows) >30ha. •Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years).	No	No habitat features on site.	•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.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
		•Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. •The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.			•Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Specific evaluation methods required.
Shrub/Early Successional Bird Breeding Habitat	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	•Large field areas succeeding to shrub and thicket habitats >10ha in size. •Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no rowcropping, haying or livestock pasturing in the last 5 years). •Shrub thicket habitats (>10ha) are most likely to support and sustain a diversity of these species. •Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.	No	No habitat features on site.	•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 as 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. • Specific evaluation methods required.
Terrestrial Crayfish	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1- with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish.	•Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. •Usually the soil is not too moist so that the tunnel is well formed. •Can often be found far from water.	No	No habitat features on site.	•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 ecoelement 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.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
Special Concern and Rare Wildlife Species	**All plant and animal element occurrences (EO) within a 1 or 10km grid. All Special Concern and Provincially Rare plant and animal species.**	**identified within a 1 or 10km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites**	**Yes**	**See SAR Screening Section.**	**•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.**
Animal Movement Corridors					
Amphibian Movement Corridors	Corridors may be found in all ecosites associated with water.	Corridors will be determined based on identifying the significant breeding habitat for these species. Movement corridors between breeding habitat and summer habitat. Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from this Schedule.	No	No habitat features on site.	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.
Deer Movement Corridors	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	•Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH. A deer wintering habitat identified by the OMNRF as SWH will have corridors that the deer use during fall migration and spring dispersion.	No	No habitat features on site.	•Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. •Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200m wide with gaps <20m and if following riparian area with

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
		•Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges).			at least 15m of vegetation on both sides of waterway. •Shorter corridors are more significant than longer corridors.
Exceptions for EcoRegion 6E					
Mast Producing Areas (Black Bear) •EcoDistrict 6E-14	All Forested habitat represented by ELC Community Series: FOM FOD	•Black bears require forested habitat that provides cover, winter hibernation sites, and mast-producing tree species. •Forested habitats need to be large enough to provide cover and protection for black bears. •Woodland ecosites >30ha with mast-producing tree species, either soft (cherry) or hard (oak and beech).	No	Site not located within EcoDistrict 6E-14	•All woodlands >30ha with a 50% composition of these ELC Vegetation Types are considered significant: FOM1-1 FOM2-1 FOM3-1 FOD1-1 FOD1-2 FOD2-1 FOD2-2 FOD2-3 FOD2-4 FOD4-1 FOD5-2 FOD5-3 FOD5-7 FOD6-5
Lek (Sharp-tailed grouse) •EcoDistrict 6E-17	CUM CUS CUT	•The lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography. •Leks are typically a grassy field/meadow >15ha with adjacent shrublands and >30ha with adjacent deciduous woodland. Conifer trees within 500m are not tolerated. •Grasslands (field/meadow) are to be >15ha when adjacent to shrubland and >30ha when adjacent to deciduous woodland. •Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying). •Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting.	No	Site not located within EcoDistrict 6E-17	•Studies confirming lek habitat are to be completed from late March to June. •Any site confirmed with sharp-tailed grouse courtship activities is considered significant. •The field/meadow ELC ecosites plus a 200m radius area with shrub or deciduous woodland is the lek habitat.

Appendix D

Meander Belt Width Assessment Report

665 Eliza Street Meander Belt Width Assessment

FINAL REPORT

Prepared for

Tribute/Sorbara Arthur Holdings Inc.

1815 Ironstone Manor, Unit 1
Pickering, Ontario
L1W 3W9

February 7, 2025
Project No. P2022-616

Prepared by

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2	Feb 7, 2025	Final	Issued as final	SG/JK	CA

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1. Introduction

GeoProcess Research Associates Inc. (GeoProcess) has been retained by Tribute/Sorbara Arthur Holdings Inc. to undertake a meander belt width assessment for two properties in Arthur, ON. The first property is located at 665 Eliza Street and the second is bounded by Wells Street, Macauley Street and Eliza Street, with no municipal address; collectively, these two properties are referred to as the "Subject Properties" (Figure 1). An unnamed tributary to Farleys Creek traverses the Subject Properties, which is located within the jurisdiction of the Grand River Conservation Authority (GRCA).

The proposed development plan for the Subject Properties consists of single and semi-detached homes, townhouses, parklands, internal roads, and two stormwater management ponds. East of Eliza Street, realignment of the Farleys Creek Tributary is proposed within a naturalized corridor. The purpose of this report is to delineate the meander belt (riverine erosion hazard) to inform development limits and sizing of the proposed realigned stream corridor. The following tasks were undertaken in support of this study:

- Background review of available mapping and delineation of watercourse reaches for the portion of Farleys Creek Tributary relevant to the Subject Properties;
- Historical assessment of trends in land use and channel planform over time;
- Reconnaissance-level field investigation to characterize existing geomorphic conditions on a reach basis following standard rapid geomorphic assessment protocols;
- In conformance with relevant policies and regulations, delineate the meander belt for relevant reaches of the Farleys Creek Tributary; and
- Provide geomorphic design recommendations for the naturalized linear corridor.

2. Policy Context

Municipal and provincial policies applicable to this study have been reviewed and are described below.

2.1. Provincial Policy Statement (2020)

Section 5.2 of the Provincial Planning Statement (MMAH 2024) issued under the *Planning Act* (1990) outlines areas of provincial interest with respect to natural hazards (i.e., flooding, erosion, unstable soils). The MNR (2002) Technical Guide - Rivers and Streams: Erosion Hazard Limit was prepared to outline standardized procedures for the delineation and management of erosion hazards in the Province of Ontario. The guide differentiates the applicability of riverine erosion hazard protocols based on two generalized landform systems: confined and unconfined valley systems. The erosion hazard limit associated with unconfined valley systems consists of the meander belt plus an erosion access allowance. For confined valley systems, the erosion hazard limit is governed by geotechnical considerations, including the stable slope allowance and an applicable toe erosion allowance (i.e., channel migration component), as well as an erosion access allowance, as illustrated in Figure 2.

GeoProcess RESEARCH ASSOCIATES

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CHECKED BY:	CA	DATE:	Feb 07, 2025

0 125 250 375 500 m

NAD83 / UTM zone 17N (EPSG:26917)

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Figure 1.

Subject properties.

Meander Belt Width Assessment
665 Eliza Street, Arthur

Tribute/Sorbara Arthur Holdings Inc.

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	Confined	Unconfined
Watercourse Profile		
Typical Geologic Setting	Valley corridors	Glaciated plains, flat to gently rolling

Hazard Allowances	Confined	Unconfined
Stable Slope	Yes	No
Toe Erosion	Yes	No
Meander Belt	No	Yes
Access Allowance	Yes	Yes

Figure 2: River and stream systems landform classification and applicability of landform components to the hazard allowance designation (adapted from MNR, 2002 Technical Guide)

2.2. County of Wellington Official Plan (2024)

The County of Wellington Official Plan (CWOP) is a legal document intended to give direction over the next 20 years, to the physical development of the County, its local municipalities and the long-term protection of County resources. All land use and servicing decisions must conform to the policies of this plan. The CWOP was adopted by Wellington County Council on September 24, 1998, and was approved by the Ministry of Municipal Affairs on April 13, 1999. This report references the consolidated version of the CWOP that was last updated July 2024.

The County's Greenlands System is "*intended to include those features and areas which are part of Wellington's natural heritage or areas in which natural or human-made condition may pose a threat to public safety*." These areas include:

- Wetlands
- Environmentally sensitive areas
- Streams and valley lands
- Ponds, lakes and reservoirs
- Areas of natural and scientific interest
- Woodlands
- Fish and wildlife habitat
- Floodplains and hazardous lands
- Threatened or endangered species

As per Schedule B6-2 of the CWOP (County of Wellington 2024), the Subject Properties contain designated Core Greenlands, a watercourse, and Future Development land use. The Core Greenlands designation

includes areas subject to flooding and erosion hazards. Section 5.4.3 of the Official Plan states that development must avoid areas that pose a threat to public health or safety.

2.3. Grand River Conservation Authority

On April 1, 2024, *Ontario Regulation 41/24 – Prohibited Activities, Exemptions and Permits Regulation* (hereinafter referred to as "the Regulation") came into force. Conservation authorities may grant permission for development activities if, in the opinion of the Conservation Authority, the proposal is not likely to affect the control of flooding, erosion, dynamic beaches, unstable soil or bedrock and when the development activities are not likely to create conditions or circumstances that in the event of a natural hazard might jeopardize the health or safety of persons or result in the damage or destruction of property.

The Farleys Creek Tributary is a regulated watercourse under *Ontario Regulation 41/24*. Section 8.2 of the GRCA (2024) Policies for the Administration of the Prohibited Activities, Exemptions and Permits Regulation document defines the Regulated Area for riverine erosion hazards. As defined in Section 8.2,

> *The Riverine Erosion Hazard within river or stream valleys is that area of riverbank and lands adjacent to watercourses where erosion is actively occurring or where development activity could create slope stability issues.*

The Riverine Erosion Hazard applies to both apparent (confined) and not apparent (unconfined) valley systems. Valley systems with valley walls greater than 3 m in height are considered apparent, with or without a floodplain. When a watercourse *is not contained within a clearly visible valley section*, it is considered unconfined/not apparent. The Regulated Area for watercourses with no apparent valley is defined as: "*the greater of the extent of the Riverine Flooding Hazard plus the prescribed allowance or the Meander Belt Allowance plus an allowance of 15 metres (49.2 feet).*"

3. Historical Assessment

A series of historical aerial photographs spanning approximately 45 years were reviewed to evaluate changes in channel form and land use conditions over time. Table 1 summarizes key historical observations, while Appendix A illustrates an overlay of the channel planform as delineated for each year of record.

Table 1: Summary of historical observations (1979-present).

Year	Observation
1979	Land use within and surrounding the Subject Properties consists of agriculture. Eliza Street and a farm access road have been constructed. Within the Subject Properties the existing barn and residence can be observed. East of Eliza Street, the tributary has been channelized within a narrow riparian corridor. A driveway crossing of the tributary can also be observed, along with an associated upstream backwater zone. Downstream of the driveway, there is evidence of channel planform adjustment in the form of slumping banks and secondary flow paths. West of Eliza Street, the tributary maintains a sinuous planform within a wider, vegetated corridor. Active erosion is evident through the formation of scour pools downstream of Eliza Street and at the farm access road crossing. There is evidence of channel planform adjustment in the form of erosion and slumping along banks and the formation of secondary flow paths
1984	Except for the construction of a residence at 8565 Eliza Street and a commercial trucking business at 8035 Line 2, there is no discernible change in land use. or channel planform relative to 1979. East of Eliza

Year	Observation
	Street, minimal change in channel planform can be observed. West of Eliza Street, adjustments in channel planform can be observed through the development of a secondary meander pattern.
2024	No discernible changes in land use or channel planform can be observed.

4. Existing Conditions

The following section summarizes existing geomorphic conditions within the Subject Properties.

4.1. Reach Delineation

To facilitate a systematic evaluation of the portion of Farleys Creek Tributary relevant to the Subject Properties, the watercourse was delineated into reaches. Reaches are sections of the watercourse that are relatively consistent in terms of channel form and function and can, therefore, be expected to respond consistently to impacts, such as changes in hydrology and sediment inputs, as well as to other modifying factors (Montgomery and Buffington 1997).

Two reaches were delineated within the Subject Properties: Reaches FCT-1 and FCT-2 (Figure 3). Reach breaks were defined based on changes in the degree of historic alteration, riparian vegetation, and channel planform. Reach FCT-1 extends approximately 125 m upstream of the property limit, flowing through an unconfined and channelized corridor within the property to Eliza Street. Reach FCT-2 extends from Eliza Street to the tributary confluence with Farleys Creek. Reach FCT-2 maintains a sinuous planform within a broader, unconfined valley corridor.

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0 150 300 450 m

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Figure 3.
Reach delineation and existing conditions characterization for FCT-1 and FCT-2.

Meander Belt Width Assessment
665 Eliza Street, Arthur
Tribute/Sorbara Arthur Holdings Inc.

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4.2. Field Investigation

To characterize existing geomorphic conditions along Reaches FCT-1 and FCT-2 of the Farleys Creek Tributary, a reconnaissance-level field investigation was conducted by GeoProcess staff on December 19, 2024. A photographic record of conditions at the time of the assessment is provided in Appendix B; photo locations are shown on Figure 3.

4.2.1. Methods

The following standardized rapid visual assessment methods were applied:

- RGA (MOE 2003) - provides a standardized semi-quantitative assessment of the geomorphic stability of the channel and corresponding processes (bank erosion, bed incision, and other indicators of active channel processes). The stability index (SI) produces scores that indicate whether the channel is stable/in regime (SI>21), transitional/stressed (0.21<SI<0.4), or in adjustment (SI>0.4).
- RSAT (Galli 1996) - provides a standardized assessment of overall stream health, encompassing instream habitat, water quality, riparian conditions, and biological indicators. Each stream characteristic is given a numeric score along with a corresponding health classification: excellent (42-50), good (30-41), fair (15-29), and poor (<16).

4.2.2. Results

Reach FCT-1

Within the extent assessed, Reach FCT-1 was characterized as a substantially altered watercourse situated within an unconfined valley setting. Bankfull widths ranged from 1.6 – 3.2 m, while bankfull depths ranged from 0.32 – 1.4 m. Channel bed materials consisted of silt, sand and cobbles, while bank materials were comprised of a mixture of clay, silt and sand. Channel banks were characterized as steep with a vertical face. Riparian vegetation consisted of a narrow band of grasses adjacent to agricultural fields.

An RGA score of 0.26 classified Reach FCT-1 as being 'in transition' (stressed). Aggradation was identified as the dominant mode of adjustment, as evidenced by deposition in the overbank zone, poor longitudinal sorting of bed materials, and siltation in pools. Minor evidence of widening (basal scour along channel banks) and planform adjustment (bars poorly formed/reworked/removed) was also observed. An RSAT score of 29 indicated a 'fair' degree of overall stream health, with channel stability and physical instream habitat identified as limiting factors.

Reach FCT-2

Within the extent assessed, Reach FCT-2 was characterized as a sinuous, well-defined watercourse situated within an unconfined valley setting. Terraces flanking the downstream portion of the corridor were noted as a localized physical constraint to channel migration. Bankfull widths ranged from 1.3 – 3.1 m, while bankfull depths ranged from 0.27 – 0.78 m. Channel bed materials consisted of silt, sand, cobbles, boulders and exposed till, while bank materials were comprised of a mixture of clay, silt, sand and till. Channel banks were characterized as steep with a vertical face. Riparian vegetation consisted of grasses, shrubs and trees.

An RGA score of 0.39 classified Reach FCT-2 as being 'in transition' (stressed). Widening was identified as the dominant mode of adjustment, as evidenced by basal scour along the majority of channel banks, presence of fracture lines along top of bank and exposed tree roots/large organic debris, Evidence of aggradation (coarse materials in riffles embedded, deposition in overbank zone) and degradation (scour pools downstream of culverts, channel worn into underlying till) was also observed. An RSAT score of 37 indicated a 'good' degree of overall stream health, with channel scour/deposition identified as a limiting factor.

5. Meander Belt

The meander belt width is generally defined as the lateral extent that a meandering channel has historically occupied and will likely occupy in the future (i.e., 100-year planning timeframe). The Toronto Region Conservation Authority (TRCA 2004) Belt Width Delineation Procedures document outlines standards of practice for delineating the meander belt in southern Ontario.

5.1. Reach FCT-1

Given the extent to which the Farleys Creek Tributary has been historically modified within the Subject Properties (channelization from agricultural practices), an empirical modeling approach was applied to determine a recommended meander belt width. Referencing the upstream contributing drainage area, modeled 2-year flow, channel slope and bankfull dimensions (Table 2).

Table 2: Catchment and channel parameters – Farleys Creek Tributary.

Reach	Drainage Area (ha)[1]	2 Year Discharge (m3/s)[1]	Channel Slope (%)[1]	Bankfull Width (m)[1,2]	Bankfull Depth (m)[1,2]
FCT-1	200.16	2.17	1.4%	2.0	0.5

[1]Provided by SCS Consulting Group Ltd. (SCS)
[2]Estimated from available satellite imagery and topographic base plan

The empirical modeling approach employed the TRCA (2004) equation:

$$W_b = -14.827 + 8.319 \ln(\gamma Qs * DA)$$

where W_b is the meander belt width (m), γ is the specific weight of water (kg/m^{2}s^2), Q is the 2-year flow, s is the channel gradient (m/m), and DA is the drainage area (km^2). Based on correspondence with SCS, it is understood that post-development flows are expected to be less than or equal to the existing flows within the Farleys Creek Tributary. As such, use of the modeled existing condition 2-year flow in the equation was considered a conservative approach, and the TRCA equation standard deviation factor of safety was not applied.

The following Williams (1986) equations were also applied:

$$W_b = 18A^{0.65} \quad \text{[Williams 1986]}$$

$$W_b = 4.3W_{bkf}^{1.12} \quad \text{[Williams 1986]}$$

where W_b is the meander belt width (m), A is the cross-sectional area of the bankfull channel (m^2) and W_{bkf} is the bankfull width (m).

The Ward (2002) equation was applied, with factor of safety incorporated, as follows:

$$W_b = 6{W_{bkf}}^{1.12} \qquad \text{[Ward 2002]}$$

where W_b is the meander belt width (ft) and W_{bkf} is the bankfull width (ft).

Table 3 lists meander belt dimensions calculated using the empirical equations. Of the methods applied, the TRCA equation yielded the largest recommended dimension. Considering the channelized nature of the watercourse, and that it was not possible to determine historical rates of channel migration, the recommended meander belt dimension of 24.6 m was derived using a weighted average approach (TRCA result weighted twice relative to the other models) to ensure a conservative approach.

Table 3: Meander belt empirical modeling results – Farleys Creek Tributary.

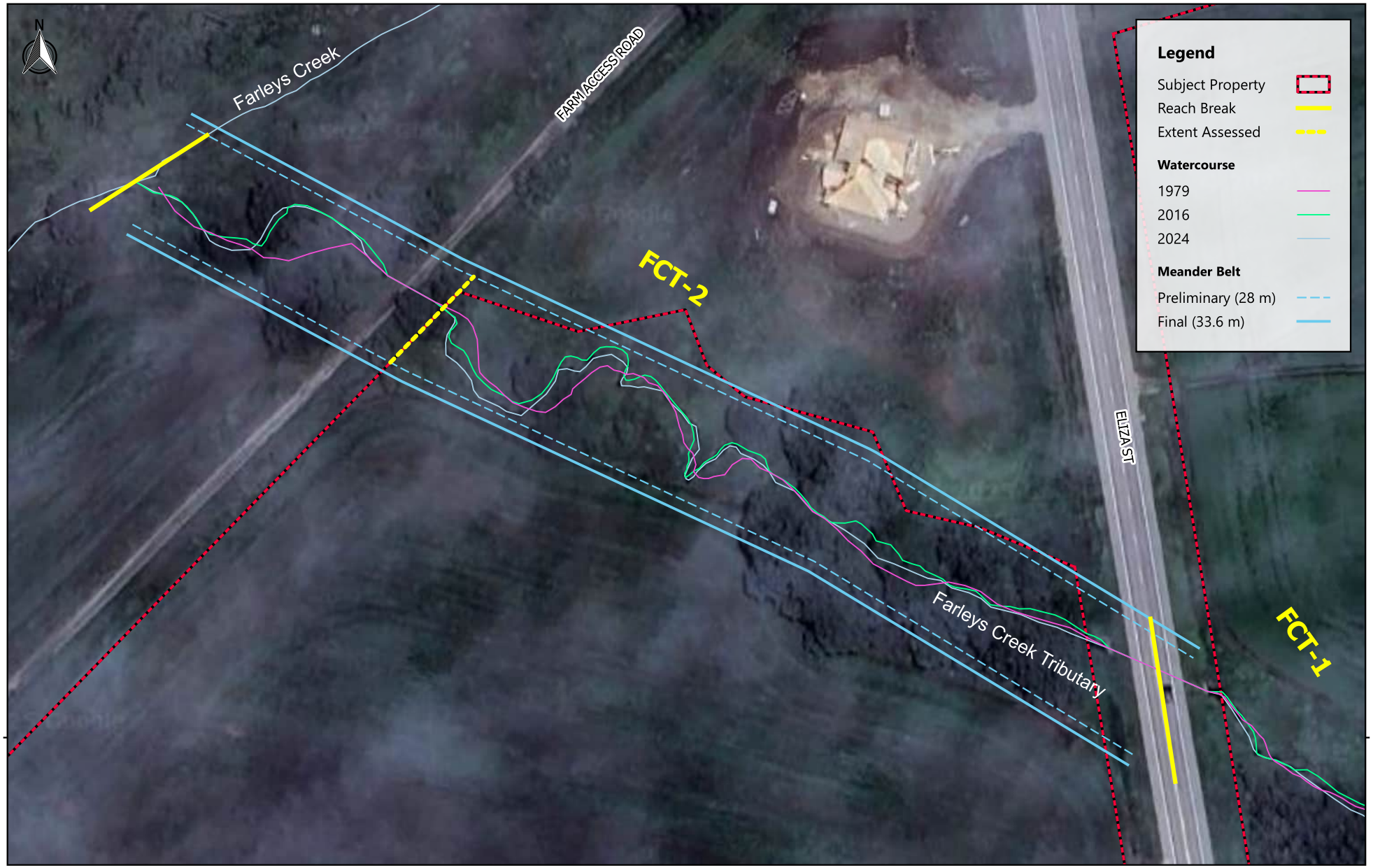
Reach	TRCA, 2001	Williams, 1986		Ward, 2002	Recommended Meander Belt (Weighted Average)
		Area	Depth		
FCT-1	38.3 m	20.0 m	11.3 m	15.0 m	24.6 m

5.1.1. Corridor Design

It is understood that the proposed Farleys Creek Tributary linear corridor will generally follow the existing watercourse alignment. To accommodate geomorphic design requirements, the bottom width of the corridor will be sufficient to accommodate the 24.6 m meander belt dimension recommended for Reach FC-1. This dimension will support the reinstatement of a natural, sinuous planform and allow for potential long-term adjustments in channel form. As applicable, the corridor will also incorporate a toe erosion allowance, stable slopes and an access allowance.

5.2. Reach FCT-2

Following methods outlined in the TRCA (2004) procedures, the 28 m preliminary meander belt for Reach FCT-2 was based on the lateral extent of governing (outermost) meander bends over the available historical record. To account for potential long-term adjustments in the hydrologic regime and/or channel form, a 20% factor of safety was applied, resulting in a recommended meander belt dimension of 33.6 m. Meander belt limits for Reach FCT-2 are shown on Figure 4.



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	JK	PROJECT NO.:	P2022-616
CHECKED BY:	CA	DATE:	Feb 07, 2025

0 50 100

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Imagery from Google Earth.
[2] Contains information licensed under the Open Government Licence – Ontario.

Figure 4.

Meander belt delineation for FCT-2.

Meander Belt Width Assessment
665 Eliza Street, Arthur
Tribute/Sorbara Arthur Holdings Inc.

G:\Shared drives\Projects-2022\P2022-616 665 Eliza Road, Arthur-Due Diligence\GIS\Project\WR_2024-02-07_MBW_P2022-616.qgz

6. Conclusion

GeoProcess was retained by Tribute/Sorbara Arthur Holdings Inc. to undertake a meander belt width assessment for two properties in Arthur, ON: one located at 665 Eliza Street and the second bounded by Wells Street, Macauley Street and Eliza Street, with no municipal address. The purpose of this report was to delineate the meander belt (riverine erosion hazard) to inform the determination of development limits and sizing of the proposed linear stream corridor east of Eliza Street.

Based on a review of available background information, including historical aerial imagery, and field confirmation of existing geomorphic conditions, meander belt dimensions of 24.6 m (Reach FCT-1) and 33.6 m (Reach FCT-2) are recommended for the portion of Farleys Creek Tributary relevant to the Subject Properties. The 24.6 m meander belt dimension for Reach FC-1 will be incorporated into the bottom width dimension of the proposed linear corridor design to ensure that the corridor size is sufficient to support a natural, sinuous planform and potential long-term adjustments in channel form.

7. References

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665 Eliza Street Meander Belt Width Assessment
Final Report

Prepared for Tribute/Sorbara Arthur Holdings Inc.

Version	Date	Issue	Description
1	January 8, 2025	For client review	DRAFT MBW Assessment
2	February 7, 2025	Final	Final MBW Assessment

Prepared by:

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Reviewed by:

Cameron Adams, BASc., P.Eng.
Water Resources Engineer

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Information obtained during the site investigations or received from third parties does not exhaustively cover all possible environmental conditions or circumstances that may exist in the study area. If a service is not expressly indicated, it should not be assumed that it was provided. Any discussion of the environmental conditions is based upon information provided and available at the time the conclusions were formulated.

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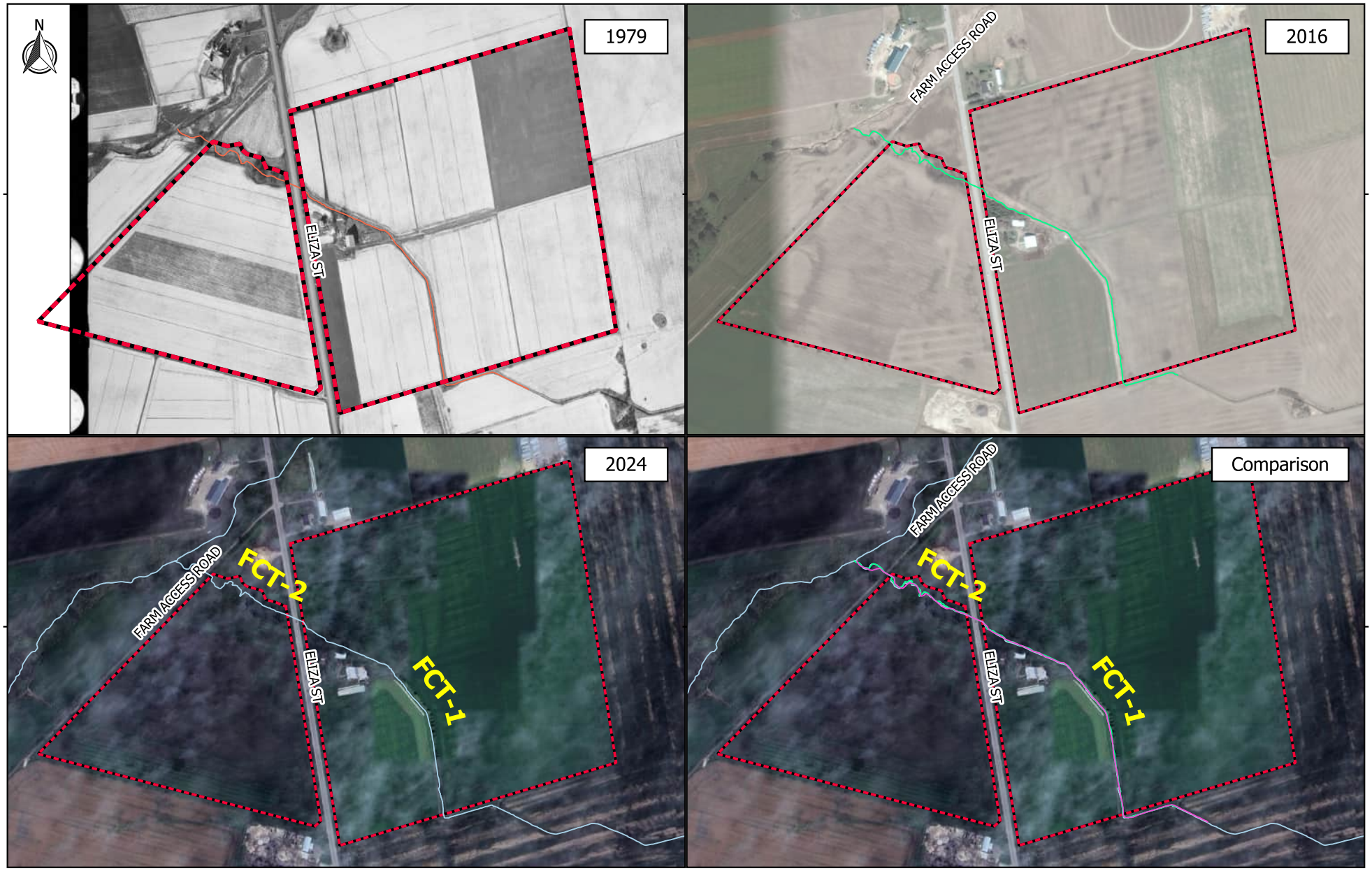
Project Number P2022-616

Appendix A

Historic Watercourse



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	JK	PROJECT NO.:	P2022-616
CHECKED BY:	CA	DATE:	Feb 07, 2025

LEGEND

- Subject Property
- 1979 Watercourse
- 2016 Watercourse
- 2024 Watercourse

0 0.15 0.3 km

NAD83 / UTM zone 17N ()

Notes:
[1] 1:8000 Aerial Image Flown Spring 1979
[2] 2016 and 2024 Imagery from Google Earth.
[3] Contains information licensed under the Open Government Licence – Ontario.

Appendix A.

Historic Watercourse

Meander Belt Width Assessment
665 Eliza Street, Arthur

Tribute/Sorbara Arthur Holdings Inc.

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Appendix B

Photographic Record

Photograph 1
Location 1
Reach FCT-1

Upstream view of general conditions at the extent assessed.

Photograph 2
Location 2
Reach FCT-1

Downstream view of 1.0 m CSP farm crossing with debris jam.

Photograph 3
Location 2
Reach FCT-1

Upstream view of riffle feature located downstream of large scour pool and tile drain outlet on right bank (photo left).

Photograph 4
Location 3
Reach FCT-1

Downstream view of a slightly steeper section with a narrowing flow path and minor evidence of planform adjustment with a narrow meander within the channelized ditch.

Photograph 5
Location 4
Reach FCT-1

Upstream view of run with wide bankfull width and embedded coarse materials.

Photograph 6
Location 4
Reach FCT-1

Upstream view of Left bank undercutting of confined ditch embankment. Note, that large cobble materials were likely added as ad hoc protection as they are not representative within this reach.

Photograph 7
Location 5
Reach FCT-1

The upstream end of the Eliza Street 2.8 m diameter CSP with a large sand deposit as flows transition through sharp bend into the culvert.

Photograph 8
Location 6
Reach FCT-2

Upstream view of the Eliza Street CSP with minimal sign of scour or erosion.

Photograph 9
Location 6
Reach FCT-2

View of channel bed gravel deposit downstream of the Eliza Street CSP.

Photograph 10
Location 7
Reach FCT-2

Upstream view of riffle grade bound by dense willow roots.

Photograph 11
Location 8
Reach FCT-2

Downstream view of right bank erosion and woody debris within the channel.

Photograph 12
Location 9
Reach FCT-2

Upstream view of a sharp meander bend with erosion all the left bank valley wall contact resulting in a fallen fence post.

Photograph 13
Location 10
Reach FCT-2

Downstream view of right valley wall contact with fracture banks and well sorted point bar of fine to coarse gravels.

Photograph 14
Location 11
Reach FCT-2

Exposed till materials in channel bed.

Photograph 15
Location 12
Reach FCT-2

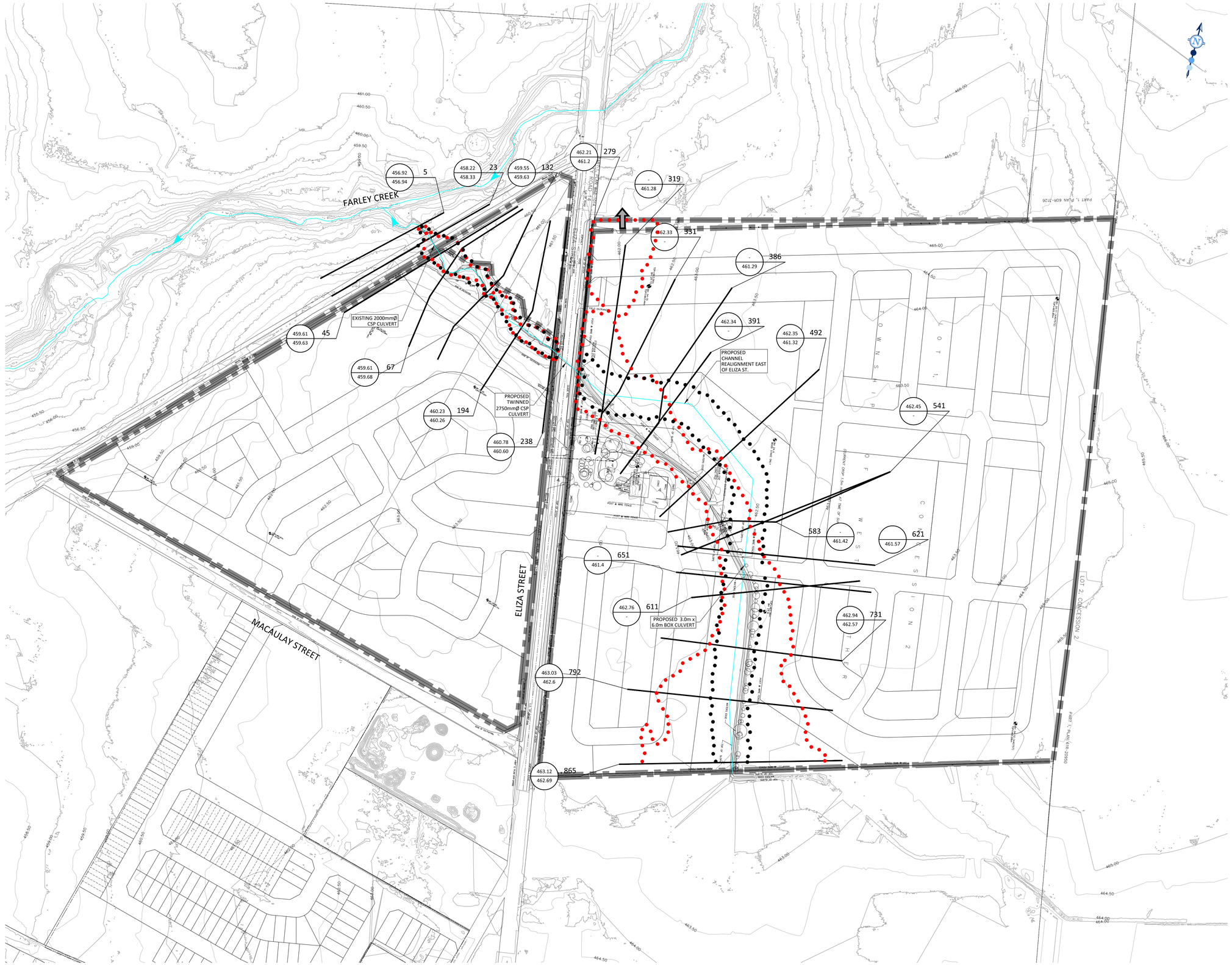
Upstream view of wood debris resulting in an alternative flow path.

Photograph 16
Location 12
Reach FCT-2

Downstream view of Wells Street East with 1.8 m tall and 2.8 m wide CSP at downstream extent of the Subject Property.

Appendix E

SCS Engineered Floodplain



LEGEND:

- LIMIT OF PARTICIPATING PROPERTY
- 456.92 / 456.94 — 5 — EXISTING REGULATORY FLOOD ELEVATION; HYDRAULIC SECTION ID; PROPOSED REGULATORY FLOOD ELEVATION
- FLOODLINE ELEVATION LEADER
- HEC CROSS-SECTION
- EXISTING REGULATORY FLOODPLAIN
- PROPOSED REGULATORY FLOODPLAIN
- WATERCOURSE
- 467.00 — EXISTING CONTOUR AND ELEVATION
- EXISTING REGULATORY FLOODPLAIN SPILL

*NOTE: LAYOUT IS SCHEMATIC ONLY, DETAILS TO BE PROVIDED AT DETAILED DESIGN STAGE.

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665 ELIZA ST, ARTHUR - TRIBUTE

PROPOSED FLOODPLAIN

DESIGNED BY:	L.W.	CHECKED BY:	P.A.T.
SCALE:	1:2000	DATE:	NOVEMBER 2024
PROJECT No:	2504	FIGURE No:	2.3

File: P:\2504 665 Eliza St, Arthur – Tribute\Drawings\Prelim Eng\Fig\Report Figures\2504P-FLOD-EXST-2.2.dwg – Revised by <LWINTEMUTE> : Mon, Oct 07 2024 – 11:26am