



BURNSIDE

**Scoped Environmental Impact
Statement
Revision 2**

**The Development Squad GP Inc.
418, 424, 430 Aqueduct Street and 650,
656, 664, 670, and 678 Niagara Street,
Welland ON**

September 2024

Distribution List

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1	June 7, 2024	Revised site plan, additional information regarding Species at Risk
2	September 10, 2024	Revised Site Plan

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1.0 Introduction and Purpose

R.J. Burnside & Associates Limited (Burnside) has been retained by The Development Squad GP Inc. to complete a combined Environmental Impact Statement (EIS) for the subject lands at 418, 424, 430 Aqueduct Street and 650, 656, 664, 670 and 678 Niagara Street in Welland Ontario.

The Site Plan Application is proposing five buildings including residential and commercial uses. The development envelope will also include a landscaped area and parking lot. There will be a protected area with the retained forest community with its associated buffer at the northeast corner of the site.

An EIS is required by the Niagara Peninsula Conservation Authority (NPCA) as a regulated watercourse, a partially open swale that is classified as a watercourse is present at the west limit of the site.

Niagara Region (the Region) identified that the wooded areas present within the site limits may also meet the criteria as Significant Woodland. A constraint analysis of the on-site features is also required to characterize and determine if there is appropriate protection provided from potential impacts.

The Niagara Region Environmental Impact Study Guidelines (January 2018) were used to prepare the approved EIS Terms of reference. The TOR (dated April 27, 2021) is provided in Appendix A in addition to further scope requirements received from the Region. A virtual meeting was held on June 9, 2021, with NPCA staff in lieu of a written response. The focus of the NPCA's study direction was about characterizing the regulated feature at the west limit using the Evaluation, Classification, and Management of Headwater Drainage Features (TRCA & CVC, 2014) in conjunction with supporting modules from the Ontario Stream Assessment Protocol (OSAP) as a standalone document. The NPCA staff also conveyed an interest in the protection and reconnection of this feature through the site while maintaining function with a supporting buffer.

This revised EIS is intended to assess impacts and mitigation in the context of the latest development plan.

2.0 Relevant Policy and Regulatory Framework

2.1 Migratory Birds Convention Act, 1994

The *Migratory Birds Convention Act, 1994* (MBCA) and the *Migratory Bird Regulations* (MBR) are federal legislative requirements that are binding on members of the public and all levels of

government, including federal and provincial governments. The legislation protects certain species¹, controls the harvest of others, and prohibits commercial sale of all species.

One key responsibility under the MBCA is described in Section 6 of the associated MBR:

Subject to subsection 5(9), no person shall

- *Disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird, or*
- *Have in his possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird except under authority of a permit therefore.*

The “incidental take” of migratory birds and the disturbance, destruction or taking of the nest of a migratory bird is prohibited. “Incidental take” is the killing or harming of migratory birds due to actions, such as economic development, which are not primarily focused on taking migratory birds. No permit can be issued for the incidental take of migratory birds or their nest or eggs as a result of economic activities. These prohibitions apply throughout the year. Environment Canada and the Canadian Wildlife Service have compiled nesting calendars that show the variation in nesting intensity, by habitat type and nesting zone, within broad geographical areas distributed across Canada. While this does not mean nesting birds will not nest outside of these periods, the calendars can be used to greatly reduce the risk of encountering a nest. Environment Canada advises avoidance as the best approach.

2.2 Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) provides general policies on land use patterns, resources, and public health and safety that guide development across Ontario. Section 2.1 (Natural Heritage) identifies provincially significant features that will be reviewed within this EIS.

Eight types of natural heritage features are identified in Section 2.1 of the PPS. In summary, development and site alteration are not permitted within, or adjacent to, the following features unless it can be demonstrated that there will be no negative impacts to the feature or its ecological functions:

- Significant wetlands in Ecoregions 5E, 6E and 7E
- Significant coastal wetlands
- Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E
- Significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)

¹ Bird species not regulated under the Act include Rock Dove, American Crow, Brown-headed Cowbird, Common Grackle, House Sparrow, Red-winged Blackbird, and European Starling. In addition, raptors are not regulated under the MBCA. However, they are protected under provincial legislation which restricts and regulates the taking or possession of eggs and nests. Furthermore, if the species identified is protected under Ontario's Endangered Species Act, 2007 or the federal Species at Risk Act, additional restrictions may apply.

- Significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)
- Significant Wildlife Habitat (SWH)
- Significant Areas of Natural and Scientific Interest (ANSI)
- Coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4

In addition, development and site alteration on, and adjacent to, fish habitat and the habitat of endangered and threatened species will only be permitted in accordance with provincial and federal regulatory requirements.

2.3 Endangered Species Act, 2007

The *Endangered Species Act, 2007* (ESA), provides protection for Species At Risk (SAR) and their habitat. The ESA was administered by the Ministry of Natural Resources and Forestry (MNRF), but is now the jurisdiction of Ministry of Environment, Conservation and Parks (MECP). The Act presents policies for the protection of extirpated, endangered and threatened species, as well as species of special concern. These four categories of species form the Species at Risk in Ontario (SARO) List, which are classified by the Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is also responsible for maintaining criteria for assessing and classifying SAR.

The ESA helps protect species (Section 9) and their habitat (Section 10). Section 9(1)(a) of the ESA states:

No person shall kill, harm, harass, capture or take a living member of a species that is listed on the SARO list as Extirpated, Endangered and Threatened.

Section 10(1)(a) of the ESA states,

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.

The legal protection delay period for Black ash under the ESA has lapsed since the first submission of this EIS. Additional information has been provided in 4.4.4 regarding the spring 2024 site investigation to review for Black ash.

2.4 Niagara Peninsula Conservation Authority Ontario Regulation (O. Reg.) 155/06

The NPCA administers Ontario Regulation 161/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Through this regulation, NPCA has the ability to:

- Prohibit, regulate or require the permission of the authority for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, or for changing or interfering in any way with a wetland.
- Prohibit, regulate or require the permission of the authority for development, if in the opinion of the authority, the control of flooding, erosion, dynamic beaches or pollution may be affected by the development.

The western limits of the Site contain a feature regulated by O. Reg. 155/06.

2.5 Regional Municipality of Niagara Official Plan (2022 Consolidation)

The Niagara Region's Official Plan (ROP) is the long-term, strategic policy planning framework for managing growth coming to Niagara. The policies of this Plan will guide land use and development thereby influencing economic, environmental, and planning decisions until 2051 and beyond. The sections of the ROP are a response to the directives that support housing supply diversity and growth, enhancing the sustainability and resilience of the build and natural environment, planning and managing growth for economic prosperity, connecting communities within and adjacent to the Region, and elevating the livability and engaging qualities of communities, facilities and attractions.

The ROP provides an outline of objectives and policies regarding the protection and management of natural environment system (NES). The region's NES system includes the regional natural heritage system and water source and water resource systems as well as provincial natural heritage systems.

Specifically, the regional NHS consists of unevaluated / non-provincially significant wetlands, other woodlands, valleylands, and wildlife habitat, as well as components such as linkages, buffers, supporting features and areas, and enhancement areas. The provincial natural heritage system includes the following features: fish habitat, wetlands, life science areas of natural and scientific interest (ANSIs), significant valleylands, significant woodlands, significant wildlife habitat (including habitat of special concern species), sand barrens, savannahs, tallgrass prairies, and alvars (Growth Plan, 2019). The protection of the NES is critical for ensuing biodiversity and continued ecological function of the NES within Niagara Region (NROP, 2022). The above areas, with the exception of wildlife habitat, rare ecological communities (i.e., grasslands), and significant valleylands, are identified on Schedule C1 and C2 of the ROP. Other unmapped features must be identified through the EIS process.

Schedule C1 – Natural Environment System Overlay and Provincial Natural Heritage Systems does not recognize any component of the Natural Environment System within the site limits. No Growth Plan Natural Heritage System or Greenbelt Plan Natural Heritage System components extend into Urban Areas. The subject site is located within the City of Welland Urban Area.

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Schedule C2 – Natural Environment System: Individual Components and Features. Only one feature, "Other Woodlands", are identified as being present within the Study Area. Other Woodlands are defined as:

"woodlands determined to be ecologically important in terms of features, functions, representation, or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system. Other woodlands include all terrestrial treed vegetation communities where the percent tree cover is >25 per cent. Other woodlands would not include woodlands meeting the criteria as significant woodlands."

The woodlands areas within the Subject Lands have been identified by Niagara Region planning staff to potentially be classified as Significant Woodlands as the subject lands may contain significant wildlife habitat of Endangered and Threatened Species.

Per Section 3.1.9.6.2 of the ROP,

"Development and site alteration shall not be permitted in (areas outside of a Provincial Natural Heritage System) the following natural heritage features and areas unless it has been demonstrated through the preparation of an environmental impact study that there will be no negative impacts on the natural features or their ecological functions:

- a) other woodlands;*
- b) significant valleylands;*
- c) significant wildlife habitat; and*
- d) areas of natural and scientific interest."*

Furthermore, per Section 3.1.9.8.1 of the ROP,

"A proposal for new development or site alteration outside of a Provincial natural heritage system which is adjacent to a natural heritage feature or area shall require an environmental impact study and/or hydrological evaluation to determine that there will be no negative impacts on the feature, ecological function, or hydrologic function in accordance with the adjacent lands distances outlined in Table 3.1 (of the ROP)."

Due to the presence of woodlands and the potential for Significant Habitat of Endangered and Threatened Species and SWH to occur within the Subject Lands, an EIS is required to be submitted as a part of planning and development applications.

2.6 Regional Woodlands Conservation By-law No. 2020-79

The Region of Niagara Woodlands Conservation By-law regulates the protection and conservation of woodlots within the Niagara Region. The function of this by-law is to regulate the removal of trees and to ensure the conservation of woodlots and that tree harvesting, or removals are conducted utilizing good forestry practices. The woodland conservation by-law applied to woodlands that meet the following density and size requirements:

- Woodlands that are 1.0 hectare or more in size
- Woodlands having an area of less than 1.0 hectare upon delegation of such authority to the Region by a local municipality in Niagara
- Heritage and significant community trees identified and designated by the council of a local municipality, but only upon delegation of such authority to the Region

The south woodland does not meet the minimum size requirement of 1.0 ha and since the Town of Welland has provided the Region authority to regulate woodlands spanning less than one hectare, the bylaw does not apply. The north woodland may be greater than 1.0 ha when including the offsite component, based on estimation by air photos.

2.7 Niagara Region Tree and Forest Conservation Bylaw (By-law No. 30-2008)

A Good Forestry Practices Permit is also required if removals are occurring within a Sensitive Natural Area.

The definition of a Sensitive Natural Areas is lands that are located within a woodlands and:

“within the Environmental Protection designation of the Natural Heritage System and adjacent lands, as defined in the Regional Policy Plan; or,

within a Natural Area as designated in the Niagara Escarpment Plan.”

2.8 City of Welland Official Plan (June 2019)

As per Schedule A of the City of Welland Official Plan (hereafter known as the CWOP), the subject lands have been designated as an Intensification Area. Intensification is described by the PPS (2020) as *“the development of a property or site at a higher density than currently exists”*. This intensification can be completed through a number of ways including infill development and the development of underutilized lots in a previously developed area (PPS, 2020). As such, the proposed development is consistent with the land use planning identified within the Municipal OP.

As per Schedule B1 of the Municipal OP, the subject lands are designated as high-density residential. High density residential areas require a minimum density of 61 to 121 units per hectare. Although the land use of the proposed development is consistent with the land use

designated in the CWOP, based on pre-consultation with the City of Welland, a site-specific zoning requirement is required to increase the minimum density by 20%, permitting a minimum of 114-227 units.

2.8.1 City of Welland Core Natural Heritage System

The Core Natural Heritage System is comprised of the following components:

- Core Natural Areas, classified as either Environmental Protection Areas or Environmental Conservation Areas
- Natural Heritage Corridors connecting the Core Natural Areas
- Fish Habitat

The core natural areas described within the Municipal OP are consistent with those listed within the Regional OP.

Based on the Schedule C of the Municipal OP, the subject lands have not been classified as a Core Natural Heritage Feature. However, natural heritage features including Significant Habitat of Threatened and Endangered Species, SWH, and Significant habitat of Species of Special Concern are not included on Schedule C or C1 of the Municipal OP. These areas are typically identified during the planning and development review process.

3.0 Preliminary Review of Secondary Source Information

The following documents were reviewed to assess the environmental constraints to, and opportunities for, development of the Site:

- Aerial photography (SWOOP 2020)
- The Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC) database to identify records of rare species on, and in the vicinity of, the Site
- Ontario Nature's Herp Atlas database to identify records of herptiles in the area
- NPCA's Regulation 155/06 Mapping
- Schedules C1 and C2 of The Regional Municipality of Niagara Official Plan (2022 Consolidation)
- Ontario Breeding Bird Atlas (OBBA), 2001-2005 for records of birds breeding in the area

A summary of the background data review is presented in Table 3.1. Based on the review, no significant wildlife habitat features are present within the subject lands.

Records of SAR avifauna, mammals, reptiles, and amphibians in the broad region are provided in the SAR screening table in Appendix B.

Table 3.1: Potential Natural Heritage Features in Vicinity of the Site

Feature	Existing Records	Data Source
Features of Provincial Significance		
Significant Wetlands Ecoregion E	No records identified	NHIC
Significant Wildlife Habitat Ecoregion 7E	Seasonal Concentrations of Animals: - Bat Maternity Colonies - Reptile Hibernacula - Rare Vegetation Communities of Specialized Habitat for Wildlife - Amphibian Breeding Habitat (Woodland) - Habitats for Species of Conservation Concern - Terrestrial Crayfish Records of several provincially rare species ² were identified. Animal Movement Corridors No historical records identified.	NHIC, OBBA, ON Herp Atlas
Habitat of Endangered and Threatened Species	A total of 14 Threatened, 22 Endangered, and 12 Special Concern SAR have been historically identified adjacent to the site. Also, one Threatened and two Special Concern SARA species. The list of these species is provided in provided in Appendix B.	NHIC, OBBA, ON Herp Atlas

3.1 Aquatic Background Information Review

Burnside's Aquatic Ecology staff have reviewed the following sources of information regarding the aquatic conditions of the watercourse:

- Aerial Imagery
- Niagara Peninsula Conservation Authority
- Ministry of Natural Resources and Forestry (MNRF) Aquatic Resources Area (ARA) mapping (2017)
- Department of Fisheries and Oceans (DFO) SAR mapping (2019)
- NHIC mapping (2020)
- Ontario Hydro Network mapping (2010)

² Provincially rare species are considered to be those designated as special concern or with an S-Rank of 1-3, based on NatureServe rankings for provincial/state rarity.

The watercourse identified by the NPCA is not classified as a fish-bearing watercourse by the MNRF, DFO, or the Ontario Hydro Network (OHN) mapping. This feature is likely only used as a drainage feature to convey stormwater from the adjacent lands. It may also function as a headwater drainage feature.

4.0 Existing Conditions

Several types of analyses were completed to characterize the existing conditions of the site. The following section characterizes the site based on secondary source information and targeted site investigations completed by ecologists.

4.1 Land-use and Landscape Setting

The development lands are comprised of eight residential lots, each containing a single-family dwelling with attached or detached garages. The yards are primarily manicured turf with open grown landscape trees. Wooded areas are found at the east limit of four of the lots. An NPCA-regulated watercourse⁹ that is an open swale throughout the subject lands, is located along the western limit of the subject lands.

The surrounding land use to the east and south of the subject lands is largely residential, consisting of detached single-family dwellings. Three additional wooded residential lots and the Woodlawn Cemetery is located to the north of the subject lands. A remnant old-growth woodlot, Aqueduct Park, located 100 m to the south of the subject lands and is separated by single-family residences and a municipal road.

4.2 Physiography

4.2.1 Surficial Geology and Soils

The surficial geology within Niagara Region consists of glacial and post-glacial deposits. Specifically, the Subject Lands are located within the Haldimand Clay Plain. Soils within the Haldimand Clay Plain consist of glacial till overlain by lacustrine deposits from Lake Warren. Although soils mapping is not available for the Subject Lands, soils within this area of the Niagara region consists primarily of clays or mixtures of silt, sand, and clays. The topography within the Haldimand Clay Plain is relatively flat with few local features that break the topography (Shaw, 2007; NPCA, 2009).

Bedrock geology of the area consists of sedimentary rocks overlain the glacial and post-glacial deposits. In the generally vicinity of the Study Area, the Guelph formation, which consists of dolostone limestone, overlies the Lockport Formation (NPCA, 2009).

4.2.2 Topography and Drainage

Based on Burnside's Functional Servicing and Stormwater Management Report (2023), under existing conditions, the property is divided into two separate drainage areas.

- Drainage Area 1 consists of the westerly portion of the existing site with a total area of 3.07 ha. Drainage Area 1 ultimately outlets to the existing 1,200 mm storm sewer within Niagara Street which flows in a northerly direction Woodlawn Road. The existing drainage ditch along the frontage of the properties flows North through the two single-family homes to the north and into a headwall that inlets to the 1,200 mm storm sewer.
- Drainage Area 2 consists of the northeasterly portion of the existing site with a total area of 0.25 ha. This is a portion of the wooded area which will make up a portion of the protected area onsite. This area drains to the east where it would be collected by the existing rear yard catchbasins in the existing subdivision.
- Drainage Area 3 consists of the southeast corner of the existing site with a total area of 0.54 ha. This area outlets to the east where the storm drainage is captured by catchbasins within an easement that ultimately outlets to Gadsby Avenue.

Under the existing conditions, is an external drainage area which outlets through the subject site. There is an existing external drainage area along the south edge of the site which outlets into the existing drainage ditch located on the west side of the site.

Currently, there is an existing ditch located along the west side of the residential lots which collects the stormwater from the existing yards and conveys it in a northerly direction. This existing ditch falls under the NPCA Regulation Lands.

4.3 Surface Water Features

There are no areas of standing water on the site but there are two areas with seasonal saturated soil conditions:

- An isolated area, central to the property, with vegetation that demonstrates facultative wetland species of trees, shrubs and groundcovers. This feature dries out seasonally and is anticipated to have resulted from an isolated area of poor drainage. Additional information is provided in section 4.4.3.
- A slough was identified within the northeast woodland. It is dominated by Silver maple in the canopy and dense Green ash regeneration around the perimeter of the feature. Manna grass (*Glyceria sp.*) and Spotted Jewelweed (*Impatiens capensis*) are found within the ground layer throughout the feature.

4.4 Vegetation

Surveys were completed to identify and confirm the presence of natural heritage features within and immediately adjacent to the site. Vegetation has been described using the Ecological Land

Classification manual for Southern Ontario. Individual species were also identified and recorded for the purposes of identifying locally rare species or designated SAR.

4.4.1 Background Review

Background review for vegetation communities included identifying rare ELC communities within the Niagara Region as listed within Appendix M of the Significant Wildlife Habitat Technical Guide (MNRF, 2015a). A review of rare and SAR plants with records in the Study Area and surrounding lands was also conducted by way of an NHIC review.

A comprehensive list of candidate SAR flora was created prior to ELC / vegetation surveys to ensure that these plants were specifically targeted if suitable habitat was encountered.

ELC communities were initially parceled out based on broad vegetative characteristics observed through aerial imagery prior to field studies.

4.4.2 Field Methodology

Vegetation communities were assessed during a three-season vegetation analysis. Community classification followed the Ecological Land Classification system for Ontario, using both the First Approximations (Lee *et al.* 1998) and the 2015 updated draft system (Wester *et al.* 2015) where applicable. This study included a three-season botanical inventory. Fieldwork was completed by Burnside staff through field visits completed on May 27, July 26, and September 7, 2021. All onsite vegetation communities were extensively reviewed for vascular plant species, vegetation community classification, habitat features and functions. A full list of vascular plants identified within the Study Area is included in Appendix D – Botanical Inventory.

Surveys for White Wood Aster (*Eurybia divaricate*) were conducted during the late summer. Surveys were conducted by walking regularly spaced transects within the northeast cultural woodland.

4.4.3 Results

Vegetation Communities

A total of three vegetation communities were identified within the site.

CUW: Cultural Woodland

This community is found at the rear portions of 664, 670, and 678 Niagara Street but extends northward onto the lots offsite and ends at the cemetery. This feature is similar to a natural forest, but the canopy is less than 60% which characterizes it as a woodland. The canopy and subcanopy layers are dominated by American beech (*Fagus grandifolia*) with lesser associates of Silver maple (*Acer saccharinum*), White oak (*Quercus alba*) and Sugar maple (*Acer saccharum*). It is anticipated that may have been a Dry-Fresh Sugar Maple – Beech Deciduous

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Forest (FODM5-1) but may have been subject to select cutting by residents. The subcanopy is characterized as 60% and greater cover due to the open canopy in the upper vegetation layer. Ground layer vegetation is sparse at the south limit of the woodland, where the White Wood Aster which has a low tolerance to competition is found. The ground layer at the north limit of the woodland is denser where forbs including Blue-stemmed goldenrod (*Solidago caesia*), Panicked aster (*Symphotrichum lanceolatum*) and Broad-leaved Enchanter's Nightshade (*Circaea canadensis*) are found. An isolated slough area is also found within this feature that contains vegetation tolerant of saturated soil conditions.

The onsite component of the dripline of the woodland trees was staked with Region staff on September 30, 2021, and then surveyed by the project surveyors. The onsite component of woodland is approximately 4,750 square meters and a total of approximately 1.1 ha when including the offsite extension to the north.

Photo 1: Sparse groundcover conditions in throughout the south portion of the woodland.



CVR: Residential

The majority of the site is dominated by this feature that is comprised of manicured turf, landscape trees, gardens, and houses with associated outbuildings and driveways. The majority of the existing lots have a front yard that is being managed as manicured turf, but the rear yards vary in management: The rear yards associated with 664, 670, and 678 Niagara Street and 424 and 430 Aqueduct Street have manicured turf that vary in width from approximately 10 to 85 meters. The middle lots (650 and 656 Niagara Street) have areas of unmowed yard and a swamp-like feature (further discussed below). The front yard of 418 Aqueduct Street is manicured turf with trees but the rear yard is characterized woodland (see CUW description below). Mature Red oak, Silver maple, Norway maple and Sugar maple are found throughout the yards, with a variety of other mid-aged to immature individuals of coniferous and deciduous landscape trees.

A swale runs generally parallel to the Aqueduct and Niagara Streets. The south end of the ditch is within the road ROW in front of 418 Aqueduct Street and extends closer to the houses (onto private lands) as it extends northward. Turf is mowed right up to the edge of the ditch on all of the lots except 418 Aqueduct Street where grass and meadow forbs are left to grow.

The swamp inclusion found in the middle of the subject site is approximately 0.12 ha. It is understood that the trees within the community were cut prior to the proponents purchasing the lands. All of the trees throughout this area were cut and are dense regenerating trunk sprouts, regenerating Green ash and forbs and graminoids. Ground layer vegetation tolerant of seasonally-saturated soils including Manna grass sp., Spotted Jewelweed, Hop sedge (*Carex lupulina*) and Devil's beggarticks (*Bidens frondosa*) is found growing throughout this area.

Photo 2: Swamp Inclusion**CUW: Cultural Woodland**

This feature is south at the southeast corner of the subject lands, entirely within the rear yard of 416 Niagara Street. It is approximately 0.21 ha in size. Typically, it is too small to map as a distinct ELC community (<0.5 ha) but was reviewed as a separate community since due to the importance of the northeast woodland. The majority of the trees are believed to be planted and manicured turf and mowed trails of cool season grasses are found throughout. The canopy and subcanopy within this feature Silver maple and Red oak are the dominant canopy cover with associates of Shagbark hickory and Catalpa. The areas between trails are dominated by Glossy buckthorn with abundant Green ash regeneration, with Poison ivy and Virginia creeper in the ground layer due to the light penetration through the open canopy. Scots pine grows in a hedgerow along the east limit of the property.

Photo 3: Regenerating Woody Vegetation**4.4.4 Botanical Inventory**

A detailed list of plants identified on the subject lands can be found in Appendix D. The following summarizes the flora observed on the subject lands during field surveys:

- 72 plant taxa were observed: 70 were identified to species or subspecies level. 51 (71%) were native and 21 (29%) were non-native to Ontario.
- All but one native species were Secure (S5) or Apparently Secure (S4) in Ontario. The species that were Vulnerable (S3) was:
 - White Wood Aster (*Eurybia divaricata*) (S3)
- Ten species were observed that are considered rare (R), rare historic (RH) or uncommon (U) to the Niagara Region (Oldham, 2010):
 - Gray's Sedge (*Carex grayi*) (R)
 - White Wood Aster (*Eurybia divaricata*) (U)
 - Black Ash (*Fraxinus nigra*) (U)
 - Pointed Broom Sedge (*Carex cf. scoparia*) (U)
 - Red-osier Dogwood (*Cornus sericea*) (U)
 - Sharp-lobed Hepatica (*Hepatica acutiloba*) (U)
 - Canada Lettuce (*Lactuca canadensis*) (U)
- Two SAR flora were recorded on the subject lands:
 - White Wood Aster (*Eurybia divaricate*) (THR)

– Black Ash (Endangered)

A site visit to determine presence of Black ash that is subject to the ESA was conducted on May 30, 2024. Individuals that are protected by the ESA are:

- 1.37m tall or greater, or 8cm DBH or greater
- Healthy as determined by a qualified professional

No Black ash were found that meet these criteria despite an exhaustive search through the area that it was originally recorded.

4.5 Breeding Birds

4.5.1 Field Methodology

Breeding Bird Surveys

Standard breeding bird surveys were completed by a Burnside ecologist and were conducted according to the Forest Bird Monitoring Program (FBMP) or the Ontario Breeding Bird Atlas (OBBA) protocol, tailored to the needs of this project. The methodology is summarized below and in Table 4.1.

- Surveys were conducted between May 24 and July 10, which is the recommended date range for surveying according to the FBMP.
- Surveys were conducted under the following weather condition requirements: counts were not completed if it was raining, there was thick fog, or if winds were greater than 19 km per hour (i.e., >3 on the Beaufort scale). Generally, weather conditions were conducive for auditory and visual surveys, with winds less than 19 km per hour, and no precipitation.
- Each point count location was chosen based on habitat units that captured the different vegetation habitats present.
- Surveying at each point count station in forested lands lasted for ten minutes for each station within the woodland ecosites and five minutes for the station located outside of the woodland. All species of birds were recorded; refer to Figure 2.
- All birds observed and heard were recorded at each habitat unit location, including level of breeding evidence (see Appendix E).

Table 4.1: Summary of Breeding Bird Survey Conditions Conducted by Burnside Staff

Breeding Bird Survey Date	Observer	Time of Day (Start/End) (24 hour)	Weather Conditions
			(Air Temp °C/ Beaufort Sky Code ¹ /Wind Scale ²)
05-June-21	Sarah Yoshida	09:05 - 10:05	Start: 18°C; End: 20°C Sky: 1 Wind: 2-3
06-July-21	Sarah Yoshida	08:40 - 09:44	Start: 19°C; End: 23°C

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Breeding Bird Survey Date	Observer	Time of Day (Start/End) (24 hour)	Weather Conditions
			(Air Temp °C/ Beaufort Sky Code ¹ /Wind Scale ²)
			Sky: 2 Wind: 2-3
¹ NAAMP/ Beaufort Sky Codes 0 = clear (no cloud cover) 1 = partly cloudy (scattered or broken) or variable 2 = cloudy or overcast 3 = sandstorm, dust storm or blowing snow 4 = fog, smoke, thick dust, or haze 5 = drizzle or light rain 6 = rain 7 = snow or snow/rain mix 8 = showers 9 = thunderstorms		² Beaufort Wind Scale 0 = calm, smoke rises vertically (0-2km/hr) 1 = Light air movement, smoke drifts (3-5) 2 = Slight breeze, wind felt on face; leaves rustle (6-11) 3 = Gentle breeze, leaves & twigs in constant motion (12-19) 4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30); 5 = Fresh breeze, small trees begin to sway (31-39) 6 = Strong breeze, large branches in motion (40-50)	

The forest breeding bird surveys were conducted in four habitat units labelled as BBS-1 - BB-4 (Figure 2).

Structural Surveys

Surveys of structures within the subject lands were carried out by Burnside Biologists on July 26, 2021, following the completion of breeding bird surveys, to determine the potential for Barn Swallows and Chimney Swifts to be nesting within the subject lands.

To assess the potential presence of Barn Swallows (BARS) nesting, Burnside Biologists assessed the inside and outside of auxiliary structures for evidence of nesting.

To assess the potential presence of Chimney Swift nesting, chimneys of residences were assessed using a UAV for the following:

1. If chimneys were sufficiently large to accommodate nesting swifts (minimum width of 2.5 standard brick lengths)
2. If chimneys were capped
3. If chimneys were lined with metal

4.5.2 Results

Breeding Birds

A total of 14 summer resident bird species exhibiting some level of breeding evidence (possible, probable or confirmed) were observed on the subject lands during targeted breeding bird surveys (see Appendix E).

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Four species were observed on the subject lands during the breeding bird window but no breeding evidence (i.e., suitable breeding habitat or breeding behavior) was recorded: American Crow (*Corvus brachyrhynchos*), Ring-billed Gull (*Larus delawarensis*), Turkey Vulture (*Cathartes aura*), and Yellow-bellied Sapsucker (*Sphyrapicus varius*).

All species of bird observed during breeding bird studies are common feeder birds that are often found in urban areas.

One area-sensitive species, White-breasted Nuthatch (*Sitta carolinensis*), was recorded calling within the north woodland on the subject lands near Station 1. According to MNRF's Significant Wildlife Habitat Technical Guide (Appendix G) (OMNR 2000), some species require large areas of suitable habitat for long term population survival. Fragmentation of essential habitats can result in overall declines in populations. Typically, the habitat requirements for White-breasted Nuthatches are mature hardwood trees greater than 30 cm DBH within woodlands spanning at least 10 ha. White-breasted Nuthatches have, however, been known to nest in shade trees in suburban areas, such as those found within the subject lands (OMNR, 2000).

Structural Surveys

No evidence of Barn Swallow nesting was observed on or within auxiliary structures on the subject lands. No nests were observed on the outside of any of the residences within the subject lands.

Three chimneys located at 430 Aqueduct Street and two uncapped chimneys at 664 Niagara Street were identified within the subject lands as potential Chimney Swift habitat. All chimneys were not found to be suitable to support Chimney Swift confirmed by the completion of UAV surveys. Confirmation of lining or capping of the chimneys can be provided by the proponent.

Despite suitable habitat being present within the subject lands, neither one of the species was detected during standard breeding bird studies are not considered to be present within the subject lands.

4.6 Calling Anurans

4.6.1 Field Methodology

Burnside staff conducted amphibian breeding call surveys following the Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (Bird Studies Canada (BSC), during the 2021 breeding season. Surveys were conducted on April 27, May 14, and June 7, 2021, by qualified ecologists to detect potential early, mid and late season amphibian breeding activity in Southern Ontario. It is understood that the call survey should have happened in the first half of April to follow the protocol for this part of Ontario but feedback from the Region received on April 19 suggested these studies may be required. April 27 had the first appropriate weather conditions for completing the study.

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Five survey stations were chosen to provide assessment on potential amphibian breeding populations within anticipated habitat adjacent to the subject property.

The Marsh Monitoring Program guidelines state that three call surveys should be completed when nighttime air temperatures are greater than 5°C, 10°C and 17°C, respectively, and when wind strength is less than 19 km/h (≤ 3 on the Beaufort Scale). Conditions during the surveys are outlined in Table 4.2 below.

Table 4.2: Details of Amphibian Breeding Call Surveys Conducted by Burnside Staff

April 27, 2021	Amphibian Breeding Call Survey #1
Time (24h): 20:45-21:35	Air Temp (°C): 12
Sky Code ¹ : 1	Wind Scale ² : 3
May 14, 2021	Amphibian Breeding Call Survey #2
Time (24h): 21:04-21:38	Air Temp (°C): 10
Sky Code ¹ : 0	Wind Scale ² : 1
June 7, 2021	Amphibian Breeding Call Survey #3
Time (24h): 21:29-22:06	Air Temp (°C): 20
Sky Code ¹ : 2	Wind Scale ² : 1
¹ NAAMP/ Beaufort Sky Codes 0 = clear (no cloud cover) 1 = partly cloudy (scattered or broken) or variable 2 = cloudy or overcast 3 = sandstorm, dust storm or blowing snow 4 = fog, smoke, thick dust, or haze 5 = drizzle or light rain 6 = rain 7 = snow or snow/rain mix 8 = showers 9 = thunderstorms	² Beaufort Wind Scale 0 = calm, smoke rises vertically (0-2km/hr) 1 = Light air movement, smoke drifts (3-5) 2 = Slight breeze, wind felt on face; leaves rustle (6-11) 3 = Gentle breeze, leaves & twigs in constant motion (12-19) 4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30); 5 = Fresh breeze, small trees begin to sway (31-39) 6 = Strong breeze, large branches in motion (40-50)

4.6.2 Results

A single amphibian species was recorded during the amphibian breeding surveys within the Study Area. One Western Chorus Frog (*Pseudacris triseriata*) was overheard during the first breeding survey on April 27, 2021, at Station 3. No other species of amphibians or call events were recorded within the Study Area. Based on these results, none of the communities located in the subject property were suitable for amphibian breeding habitat. No SARA or SAR designated amphibians were recorded during the field investigations.

4.7 Bats

Since 2013, four bat species have been listed as Endangered under the ESA due to rapid declining population sizes caused by White-nose Syndrome (WNS). Under the ESA, SAR bat species and their general habitat are protected. This protection includes maternity roosting habitat used by SAR bat species to raise their young during spring and summer seasons.

Among the four listed species, three are known to form maternity roosting colonies in forested habitats: Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*). Little Brown Myotis and Northern Myotis are known to form maternity roosting colonies in tree “snags”; free standing dead or dying trees that have begun to exhibit signs of decay (i.e., dead branches, cracks, crevices, or fungal corks) (Watt and Caceres, 1999). Tri-coloured bats are known to roost in dead foliage of trees, with a preference for maple and oak trees.

The Study Area features a small, wooded area which may support bat species. Correspondence with MECP biologists and municipal planners indicated that the potential presence of at-risk bat species should be included as part of the EIS process.

4.7.1 Methodology

The survey methodology was based on the Guelph District Ministry of Natural Resources Survey Protocol for Species at Risk Bats within Treed Habitats (MNRF, 2017).

Treed communities were identified based on a review of aerial photography and background reports. According to the protocol, coniferous, deciduous and mixed wooded ecosites, including treed swamps, that include trees that are at least 10 cm diameter-at-breast height should be considered candidate maternity roost habitat (MNRF 2017).

- Small habitat areas (< 10 ha) require a comprehensive walkthrough of the ecosite to look for snag trees, as opposed to larger sites where sub samples and snag density surveys are more appropriate. Given that each forested community survey was < 10 ha, comprehensive walkthrough surveys were completed for both leaf-off and leaf-on surveys.

Bat surveys consist of two surveys, a leaf-off survey to determine the location and density of snags on-site and acoustic surveys.

4.7.2 Results

Leaf-off Survey

A leaf-off survey was conducted on May 14, 2021, to review for candidate bat maternity roosting habitat within treed areas within the Study Area.

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Leaf-off surveys of treed habitat for maternity / roosting colonies focus on Little Brown Myotis and Northern Myotis. These species prefer to roost in tree cavities or under loose bark, cracks and crevices of snags.

The following criteria were recorded for each candidate tree identified during this survey:

- Tree snag height
- Number of cavities or crevices often originating as cracks, scars, knot holes or woodpecker cavities
- Snag diameter breast height (DBH) (>25 cm)
- Proximity to other identified snags
- Amount of loose, peeling bark (naturally occurring / due to decay)
- Location of cracks, crevices, and loose / peeling bark high on the tree (>10 m) or is chimney-like with a low entrance
- Tree species
- Open area / forest gap
- Snag Decay Class (1 to 6)

The quality of each candidate tree identified was analyzed using the criteria above, listed in order of importance.

In addition to the criteria recorded above, each candidate tree was recorded with a GPS waypoint and a photo inventory. Incidental observations were also recorded during the surveys.

Results – Snag Surveys & Snag Density Calculations

In total, 12 candidate BMH trees were identified during the leaf-on and leaf-off surveys, with the wooded area in the subject lands containing a snag density of 16.95 snags/ha in the northern woodland and 13.04 snags/ha in the remnant woodland in the southern portion of the subject lands (Figure 5). Only one snag tree was found to be of “high quality”, nine snags were found to be of “medium quality”, and one snag was found to be of “low” quality. The remaining snag was not found to meet the criteria of “low”.

Acoustic Surveys

According to the survey methodology, the next step in determining presence / absence of SAR bat species involves an acoustic survey. Due to restrictive timing constraints of acoustic monitoring, it was assumed that treed areas where leaf-on surveys were not completed likely featured candidate Tri-colored BMH habitat as White and Red Oak Trees as well as Sugar Maples were observed during vegetation surveys. Additionally, due to the site's size and the limited extent of suitable BMH beyond the wooded area to the north and the proximity to suitable foraging habitat, it was presumed that the selected location would be able to detect any bat species present.

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One acoustic monitoring station was selected by Burnside staff to assess the presence of SAR bats within the Study Area (Figure 2). The location was selected due to its proximity to the best snag trees to target Little Brown Myotis / Northern Myotis and its proximity to suitable foraging habitat. Details regarding the selection of the monitoring stations are outlined in correspondence with B. Brothers (Management Biologist, Permissions and Compliance) from the Species at Risk Branch of the MECP in June 2021 (Appendix A).

Passive acoustic monitoring was conducted by Terrastory Environmental Consulting Inc. (Terrastory) between June 23 and July 6, 2021, for a total of 14 nights using a stationary SM4BAT full spectrum digital song meter (Wildlife Acoustics) and an ultrasonic microphone (SMM-U1). Acoustic detectors were set to record bat passes from sunset to sunrise. Only one echolocation device was used due to the limited extent of potential bat maternity habitat within the subject lands. Recordings were assessed manually, assisted by auto-classification software. Additional details regarding the methodology used during acoustic surveys, including data analysis, can be found in Appendix F - Terrastory Bat Report.

Additionally, Burnside staff used a Wildlife Acoustics' Echo Meter Touch 2 Pro bat acoustic detector to detect real-time bat echolocations using a smartphone. Kaleidoscope Pro Auto-ID classifiers were applied to automatically identify calls in real-time. Surveys were conducted over the course of 14 nights between June 23 to July 6 in appropriate weather conditions within the time frames specified in the *Survey Protocol for Species at Risk Bats within Treed Habitats* (MNRF, 2017). Biologists conducted surveys at one discrete point located with 10 m of the best snag tree, the largest tree in a cluster of snags.

Snags were scored based on an internal protocol developed by Burnside's biologist based on two Species at Risk habitat survey protocols that have been distributed by the MNRF Guelph District:

Survey Protocol for Species at Risk Bats in Treed Habitats Little Brown Myotis, Northern Myotis, & Tri-Coloured Bars (April 2017); and,

Uses of Buildings and Isolated Trees by Species at Risk Bats – Surveying Methodology (April 2017)

Table 4.3 below lists the weather conditions during the survey period. Weather data is for the Environment Canada Welland-Pelham Station located approximately 10 km west of the Subject lands.

Table 4.3 Bat Acoustic Survey Weather Conditions

Survey Date	Maximum Daily Temp. (°C)	Minimum Daily Temp. (°C)	Total Daily Precipitation (mm)	Notes
23-Jun-21	21.7	7.3	0	Temperatures below 10°C occurred in early morning in advance of bat exit surveys, night temperatures are suitable for bat acoustic monitoring
24-Jun-21	27.8	12.5	0	
25-Jun-21	27.7	19.2	4.2	Precipitation from 2200 - 2359
26-Jun-21	27.5	19.5	11.3	Precipitation from 0000 - 0700
27-Jun-21	29.6	21.7	0	
28-Jun-21	29.6	20.8	0	
29-Jun-21	31.6	20.4	0	
30-Jun-21	26.6	18.7	1	Precipitation occurring in the late morning / early afternoon, no impact on bat surveys
1-Jul-21	26	15.9	2.7	Precipitation occurring at 600 and remainder in late afternoon / early evening, no impact on bat surveys
2-Jul-21	23.2	13.5	3.4	Minor precipitation (0.2mm) at 0100, remainder in late afternoon
3-Jul-21	23.4	12	0	
4-Jul-21	26.8	12.5	0	
5-Jul-21	28.5	14.7	3.4	Precipitation at 0100 hrs
6-Jul-21	29.1	20.3	0	

Results – Acoustic Surveys (Terrastory)

In total, 93 passes were detected across the 14 nights. The most commonly recorded species (approximately 80% of all call sequences) was Big Brown Bat (*Eptesicus fuscus*) and Silver-haired Bat (*Lasionycteris noctivagans*) which collectively comprised of 53.8% or 50 passes. Of the total number of calls, 37.63% of the calls were not reliably distinguished between the two species due to the considerable overlap between amplitude and peak frequencies between both species. In comparison, 7.52% and 8.60% of the total number of calls were of high enough quality to be reliably distinguished between Big Brown Bats and Silver Haired Bats respectively. The second most commonly encountered species call sequences were identified as Hoary Bat (*Lasiurus cinereus*), which comprised 45.1% of all call sequences

recorded. Finally, 1.1% of calls were identified from Eastern Red Bat (*Lasiurus borealis*), comprising of only one of 93 passes.

It is important to note that the number of detections is not necessarily equivalent to the number of individual bats present at a given site. One individual may trigger an acoustic detector on several occasions while foraging or passing by a given area.

It should be noted that Terrastory observed that the number of bat detections was relatively low, noting that light to moderate rain on several evenings during the monitoring period likely limited foraging activity. However, an additional four days of additional surveys were carried out in addition to the ten-day minimum to account for nights with poor weather.

SAR Bats

No SAR bats were identified from the total of 93 bat call sequences recorded during acoustic surveys at the Study Area.

Table 4.4: Bats documented via Ultrasonic Acoustic Monitoring within the Study Area by Terrastory.

Survey Station	Start Date	End Date	Species Detected (No. of Passes)
BA-1	23 June 2021 (PM)	6 July 2021 (AM)	Big Brown Bat (7)
			Silver-haired Bat (8)
			Big Brown Bat / Silver-haired Bat (35)
			Hoary Bat (42)
			Eastern Red Bat (1)
			TOTAL PASSES (93)

4.8 Incidental wildlife

Incidental observations of wildlife were collected during field investigations. Observations were documented to provide a general characterization of the habitat functions of the site. Examples include tracks, scat, carcasses, live sightings, etc.

Only one species was incidentally observed, Eastern Gray Squirrel (*Sciurus carolinensis*), which are common, widespread and abundant in the province. It is anticipated that wildlife tolerant of agriculture operations including American Skunk (*Mephitis mephitis*), and Virginia Opossum (*Didelphis virginiana*) use the site for foraging and habitat.

4.9 Headwater Drainage Feature Assessment

Headwater Drainage Features (HDFs) are small zero-order and first order intermittent and ephemeral streams, swales and connected headwater wetlands (CVC & TRCA, 2014). HDF's can have many hydrological and ecological functions which help to maintain watershed health, such as water quality, flow attenuation, season habitat for fish, insects and amphibians,

sediment influences, and allochthonous input from organic material. In many cases, these features may qualify as “watercourses” under the Conservation Authorities Act, which are described as “*identifiable depressions in the ground in which flow of water regularly or continuously occurs*”.

In 2014, the Toronto Region Conservation Authority (TRCA) and Credit Valley Conservation (CVC) finalized and adopted the Evaluation, Classification, and Management of Headwater Drainage Features (HDF Guidelines). The HDF Guidelines, in conjunction with supporting modules from the Ontario Stream Assessment Protocol (OSAP, 2017), outlines a process for assessing and classifying natural drainage features. These protocols were utilized to assess the contribution of these drainage systems to the watershed and determine appropriate mitigation and management procedures.

In total, eight reaches of a single HDF feature were identified within the Subject Lands. The feature is located along the western limit of the Subject Lands and conveys flows offsite from south to north. This feature flows across manicured lawns of single-family residences along Aqueduct Street and Niagara Street. Downstream (west) of Niagara Street this feature is enclosed for approximately 435 m, discharging to the Welland Canal.

All eight reaches were classified as grassed swales or enclosed due to the lack of a defined bed with substrate sorting. This feature was also found to be dry during all survey visits. This feature also provides limited value as terrestrial habitat. Although amphibian call surveys were not completed at this feature, this feature lacks standing water and habitat structure to support breeding amphibians.

Based on the hydrological characteristics, riparian vegetation, potential fish habitat, and terrestrial habitat value, all reaches were found to not be of management concern per the management decision matrix provided in Figure 2 of the HDF Guideline (TRCA/CVC, 2014).

The Headwater Drainage Feature Assessment Report can be found in Appendix G.

5.0 Identification of Provincially Significant Features

5.1 Provincially Significant Wetlands

There are no Provincially Significant Wetlands within the Study Area vicinity.

5.2 Significant Valleylands

There are no Significant Valleylands within the Study Area vicinity.

5.3 Significant Woodlands

Section 3.1.9 of the ROP indicates that environmental protection areas include significant ecological and landscape features including significant woodlands outside of a Provincial Natural Heritage System and outside the Niagara Escarpment Plan Area. Schedule L of the ROP identifies significant woodlands as wooded areas meeting one or more of the following criteria:

two hectares or greater in size;

one hectare or greater in size meeting at least one of the following criteria:

naturally occurring (i.e., not planted) trees (as defined in the species list of Appendix D in the Greenbelt Technical Paper);

treed areas planted with the intention of restoring woodland;

10 or more trees per hectare greater than 100 years old or 50 cm or more in diameter;

wholly or partially within 30 m of a provincially significant wetland or habitat of an endangered or threatened species;

overlapping or abutting one or more of the following features:

permanent streams or intermittent streams;

fish habitat;

significant valleylands;

0.5 hectares or greater in size meeting at least one of the following criteria:

a provincially rare treed vegetation community with an S1, S2 or S3 in its ranking by the MNRF's N.H.I.C.;

habitat of a woodland plant species with an S1, S2 or S3 in its ranking or an 8, 9, or 10 in its Southern Ontario Coefficient of Conservatism by the NHIC, consisting of 10 or more individual stems or 100 or more sq.m of leaf coverage;

any woodland overlapping or abutting one or more of the following features:

significant wildlife habitat;

habitat of threatened species and endangered species; or,

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non-provincially significant wetlands

any size overlapping or abutting one or more of the following features:

provincially significant wetland; and

life science area of natural and scientific interest

The northernmost woodland along the rear of the property has been reviewed based on the criteria listed above and was found to be significant due to the presence of White Wood Aster, which is designated as a 'Threatened' species within a woodland greater than 0.5 ha.

Given the presence of Significant Woodlands, ROP Sections 3.1.9.8 and 3.1.9.10 prescribe the regulations associated with significant woodlands and mandatory minimum buffers that apply to the woodland located on the subject lands respectively.

Per Section 3.1.9.78 of the ROP, development and site alteration are not permitted within significant woodlands.

Per Section 3.1.9.10 of the ROP,

"Within settlement areas, mandatory buffers from natural heritage features and areas are required. The width of an ecologically appropriate buffer would be determined through an environmental impact study and/or hydrological evaluation at the time an application for development or site alteration is made...The width of the buffer would be based on the sensitivity of the ecological functions from the proposed development or site alteration, and the potential for impacts to the feature and ecological functions as a result of the proposed change in land use."

Buffer widths in this case are to be prescribed based on the presence of White Wood Aster within the woodlands. Additional information regarding prescribed buffer widths will be discussed in Section 7.5.

5.3.1 Other Woodlands

Other woodlands are woodlands that do not meet the criteria to be considered significant woodlands within Niagara Region. Per the ROP, development or site alteration are not permitted within "other woodlands" unless the proponent has demonstrated there will be no negative impacts to the features or its ecological functions.

The ROP defines other woodlands as a "terrestrial treed area must have ≥ 25 per cent tree cover and meet one or more of the following criteria:

an average minimum width of 40 m and is ≥ 0.3 ha, measured to crown edges; or

any size abutting a significant woodland, wetland or permanent stream.”

Treed areas are considered to be abutting one another when they are either located immediately adjacent to one another or are within 20 meters of one another.

Given the southernmost CUW community is ≤ 0.3 ha and is located > 50 meters from the southern margin of the swamp inclusion, it does not meet the criteria to be considered an “other woodland”. As such, this feature is not a natural heritage feature and area per the ROP and as such does not receive any additional protection under the ROP.

5.4 Significant Areas of Natural and Scientific Interest

No areas of Natural and Scientific Interest (ANSI) within the subject lands of within the study area vicinity.

5.5 Significant Wildlife Habitat

Determination of SWH is broadly categorized and described in the Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (NHRM) (MNRF, 2010). Additionally, the MNRF’s Significant Wildlife Habitat Technical Guide (SWHTG) (MNRF, 2000) and SWH Criteria Schedules for Eco-regions 6E and 7E (MNRF, 2015a) are additional supplemental documents intended to assist in identifying SWH. The four categories of SWH are identified as:

1. Habitats of seasonal concentrations of animals
2. Rare vegetation communities or specialized habitat for wildlife
3. Habitat of species of conservation concern
4. Animal movement corridors

SWH has not been identified on schedule mapping, though the ROP does identify that SWH has the potential to occur within the Region’s natural heritage systems. The assessment of SWH completed as a part of the study will use the broad descriptions from the Significant Wildlife Habitat Technical Guide (SWHTG) and SWHTG Ecoregion 7E Criterion Schedule (MNRF, 2015).

Based on the results of the field investigations and background information collected, no SWH features were found to be present within the Subject Lands.

5.6 Significant Habitat of Endangered and Threatened Species

Burnside’s background review revealed the potential for SAR in the site and vicinity. Under the ESA, species listed as Threatened and Endangered are afforded species and habitat protection.

However, while Special Concern species are afforded individual protection, they are not afforded habitat protection. As part of the SAR screening table, potential for Special Concern species and their habitat was evaluated within the site. All findings can be found in the SCC and SAR screening table in Appendix B of this report.

One SAR, White Wood Aster (WWA), is confirmed to inhabit the site based on the findings of the three-season botanical inventory. There were 91 individuals found to occur within the remnant northeast woodland. No WWA specimens were found within the southern woodland.

Habitat of WWA includes open, dry-mesic to mesic deciduous forests containing Sugar Maple, Beech, Bitternut Hickory (*Carya cordiformis*) and Ironwood. This species requires a relatively open tree canopy and sufficient light in order to be supported and as such, it is tolerant to low levels of disturbance that result in openings in canopy cover (ECCC, 2018).

No other SAR subject to the ESA were found to occur within the Subject Lands.

6.0 Description of Development Proposal

The proposed development at 650-678 Niagara Street and 418-430 Aqueduct Street will include the demolition of the existing buildings on site and the construction of a mixed-use development that will consist of five buildings including residential and commercial uses.

- Building A consists of a ten-storey residential tower with two-storey units at grade and associated amenity spaces.
- Building B consists of one eight-storey and one sixteen-storey residential tower which includes a seven-storey podium housing the associated amenities, retail and two levels of above grade parking. Buildings A and B share a two-level underground parking garage.
- Building C consists of a sixteen-storey residential tower which includes an eight-storey podium housing commercial space and two-storey units at grade and associated amenities. Building C has a two-level underground parking garage.
- Building D and Building E each consist of four-storey stacked townhouse units and at grade parking.

The proposed development will include three private roads to service the proposed residential buildings in addition to a pedestrian promenade and landscaped areas on site.

A 0.71 ha area in the northeast corner of the existing property is proposed to be protected and will not be considered as part of the development site area. The proposed redevelopment will have a modified site area of 3.17 ha.

6.1 Protection of Natural Features

A 0.71 ha area in the northeast corner of the existing property is proposed to be retained. The woodland and its buffer will be protected by a chain-link fence with no access gates to the new

development area. A variable area of manicured turf with native landscape trees will separate the new interior road from the protected area.

This protected area has been established through the implementation of a variable buffer that will protect the WWA and natural heritage features and functions of the woodland. The buffer provides a 30-metre setback from WWA through the south portion and transitions to a 10-metre buffer from the dripline for most of the remaining portion of the woodland. The buffer at the north portion limit of the site is proposed to be 5 meters from the staked dripline. This north limit is characterized as a mature (83 cm) Red oak with manicured turf around the west portion of its base, but the canopy is contiguous with the woodland canopy trees. This reduced buffer will still protect the mature tree and woodland but there is a reduced sensitivity in this area due to no natural vegetation below the west portion of the tree's canopy. All buffer land is currently manicured turf grass, gardens and rear yard amenities. The buffer will be planted with native trees and shrubs to enhance the existing woodland.

Existing household waste and structures will be removed from the woodland. Isolated invasives species management is recommended to occur around the WWA to reduce the competition of the existing non-native groundcover vegetation.

6.2 Stormwater Management Plan

The FSR report and associated figures prepared by Burnside, dated September 2024, illustrate how the stormwater management is currently being managed and how it will be managed post development.

The proposed redevelopment has been designed with one drainage area that will outlet to the existing storm sewer within Niagara Street. The subject site has been designed to control the post development flows to the pre-development levels for all storm events up to and including the 100-year storm (2, 5, 10, 25, 50, and 100-year storm events). As the site is proposing to connect directly into the existing 1200 mm diameter storm sewer in Niagara Street, to prevent surcharging, the flow from the site will be over-controlled and reduced to the two-year pre-development levels for each storm event and on-site storage has been provided accordingly.

Existing drainage patterns on adjacent properties shall not be altered and stormwater runoff from the subject redevelopment shall not be directed to drain onto adjacent properties.

The controlled flow for the site is proposed to outlet via 375 mm diameter storm sewer connection to the existing 1200 mm diameter storm sewer within Niagara Street.

Under the proposed conditions, there are two external drainage areas which will be conveyed through the subject site. External Drainage Area 1 is 0.04 ha in size and consists of the area to the south of the property which will enter the site stormwater system via headwall along the south side of Private Street C. External Drainage Area 2 is 0.06 ha in size and consists of a

portion of the boulevard with storm flow that will be captured via catchbasin and discharge into the site. Both external drainage areas are proposed to be conveyed through the storm sewer system for all storms up to and including the 100-year event. As the site will be controlled to the two-year pre-development levels at the outlet, the allowable release rate has been adjusted to include the 100-year storm flow contributing to the site from both external drainage areas. External Drainage Areas 1 and 2 contribute a storm flow of 4.5 L/s and 6.1 L/s in the 100-year storm event, respectively. When these flows are added to the allowable release rate of 247.4 L/s, the adjusted allowable release rate to be considered going forward is 258.0 L/s [247.4 L/s + 4.5 L/s + 6.1 L/s].

The quality control requirements for the proposed development will be met by a treatment train approach consisting of an underground storage tank to capture the stormwater on site which is equipped with an Isolator Row which provides 50% TSS removal, then the tank will retain the 5 mm rainfall event volume for reuse for irrigation. Based on the City of Welland and Region of Niagara Design Standards, the 5 mm rainfall event represents approximately 50% of the total annual rainfall depth. This volume being retained and reused for irrigation on site, results in 50% of the annual rainfall being retained, removing 50% of the annual loading of TSS, as this runoff will not enter the storm sewer system. When the runoff reduction is applied, the remaining TSS is treated to an additional 50% TSS removal. Based on the calculations, the proposed development achieves a TSS removal rate of 82%.

To minimize the concerns of resuspension of settled pollutants resulting from the flow on site being captured and reused on site, an oil and grit separator unit has been proposed upstream of the outlet from the subject site. Additional details for the make and model of oil and grit separator will be provided at the time of detailed design.

7.0 Impacts and Mitigation

The proposed development has the potential to impact the natural heritage features and functions summarized in Table 7.1 of this report.

Potential impacts to these features can be categorized as:

- Direct (within the footprint of the development)
- Indirect (adjacent to the development but affected by spin-off effects)

The proposed development has the potential to impact the natural heritage features in the Study Area.

Potential impacts to these features can be categorized as:

- Direct (within the footprint of the development)
- Indirect (adjacent to the development but affected by spin-off effects)
- Induced (a consequence of changes in human behaviours in response to the new development)

The most significant direct impact may be interpreted as the removal of all onsite vegetation besides the northeast woodland.

Effects on natural features and functions that may occur that are further discussed:

- Loss or disturbance to migratory birds or their nests
- Loss of wildlife habitat
- Impacts to vegetation
- Impacts to natural features
- Erosion / sedimentation and unintentional grading encroachment into the retained natural features
- Direct impacts to regulated SAR habitat
- Occupants dumping or informally using the protected woodland and buffer
- Lighting on buildings may cause potential disruption wildlife Window strikes by birds Impacts of construction noise on wildlife
- Impacts to Species at Risk (White Wood Aster) Habitat
- Natural heritage features impacts associated with fuel or other contaminants
- Dust impacts to wildlife
- Introduction of invasive species during the construction process or encroachment reducing habitat quality
- Impacts from altered stormwater contributions, altering the soil moisture regime or lower quality stormwater inputs

7.1 Significant Woodland

The Significant Woodland identified will not be directly impacted by the proposed development due to the buffer. Native tree and shrub enhancement plantings will be installed within the buffers. These areas still may be subject to indirect effects associated with construction during the short-term. Potential indirect and induced impacts are discussed in further detail below in Table 7.1 below.

7.2 Wetlands

The onsite wetland inclusion is isolated and seasonal, anticipated to result from localized poor drainage, will be removed.

7.3 Threatened Species

Indirect impacts to Threatened species may occur in absent of sufficient mitigation measures.

Burnside has proposed a 30-metre Critical Function Zone (CFZ) rather than 50 meters. The 30-metre buffer from the recorded plants will not reduce the quality of habitat or impact the WWA. The longstanding use of lands adjacent to wooded feature as manicured turf and mesic treed feature precludes any WWA habitat expansion into these areas. Discussions with the

MECP regarding the proposed buffer distance are ongoing, and MECP will be provided with a copy of this EIS. Additional measures to enhance WWA habitat including invasive species management, buffer enhancement, and restricting access to the woodland using a chain-link fence.

7.4 Landscape Connectivity

Overall, development within the subject lands is unlikely to impact landscape connectivity. The Significant Woodland is physically isolated from other natural areas as adjacent residential and commercial land use constitute a significant barrier to providing meaningful connectivity functions. These functions include but are not limited to safe passage for wildlife and supporting and connecting core natural features.

7.5 Summary of Potential Impacts to Natural Heritage Features & Proposed Mitigation Measures and Monitoring Activities

Potential impacts proposed mitigation and monitoring activities are presented and summarized below in Table 7.1.

Table 7.1: Summary of Potential Impacts and Proposed Mitigation

	Potential Impact	Duration (D), Geographic Extent (GE) and Magnitude (M) of the Impact	Proposed Mitigation
Land Clearing within the Development Envelope	Loss of or disturbance to migratory birds or their nests (Direct impact)	D: Short-term, occurring only once. GE: Limited to the CUW community and open grown landscape trees within the rear and front yards of the residential properties. M: Moderate, bird habitat in the development envelope is low to moderate. Disturbance would not affect birds at the population level; however, disturbance of bird nests is in contravention of the MBCA.	Land clearing should be completed outside of the breeding bird season (Nesting Zone C1 core breeding window, or when 41-100% are predicted to be nesting for all habitat types, is late March to August 31). If this is not possible, a bird specialist should survey the site prior to clearing to confirm that no active nests of migratory birds are present. Any active nests should be fenced and left undisturbed until young have fledged, as determined by a qualified biologist. All tree pruning and removals should be carried out by a qualified tree service under the direction of a certified arborist. Enhancement plantings recommended within buffers that will provide additional habitat and food source for birds.
	Loss of wildlife habitat (Direct impact)	D: Short-term, occurring only once. GE: Limited to the development envelope. M: Low for urban tolerant wildlife. Vegetation communities subject to removal currently provides limited roosting and foraging habitat to non-SAR bats including Hoary Bats, Big Brown Bats, and Eastern Red Bat, during the bat active window (April – September). Tree removal is limited to open-grown trees within manicured turf and the south cultural woodland.	The manicured lawn and landscape trees currently provide little habitat value to wildlife, but it may be used turtles as nesting habitat. The south CUW community that is to be removed is limited in extent and does not provide habitat to support sensitive forest species including habitat for END, THR or SSC and does not meeting any criteria to be considered SWH. Higher quality habitat in the northeast cornered is being retained and will continue to provide habitat for bats. Suitable habitat is also anticipated to be available offsite within Aqueduct Park. All tree removal to occur through fall, winter and early spring months (i.e. October to late March) to avoid impacts to roosting bats. Enhancement plantings recommended within buffers of the north woodland that will provide additional habitat and food source for wildlife.
	Impacts to vegetation (direct and indirect impacts)	D: Short-term, occurring only once. GE: Limited to the development envelope but could impact tree root zones of trees on the adjacent properties. M: Moderate. The open-grown trees and south woodland will be removed to accommodate the development elements. Construction activities within the trees’ root zones north, east, and south of the property limit may occur causing impact to adjacent off-site vegetation.	A grading setback will need to be established to ensure offsite trees are not impacted. New planting areas will be implemented around the development’s periphery to add additional habitat for wildlife and to provide a visual barrier. Tree protection fencing with ESC measures as determined by the arborist report will be installed along the disturbance limits to delineate the construction area. No construction activities should be completed beyond the limits of the fencing to ensure protection of adjacent natural features. Regularly monitor fence and correct deficiencies immediately. Monitoring to be coordinated with monitoring of ESC measures

	Potential Impact	Duration (D), Geographic Extent (GE) and Magnitude (M) of the Impact	Proposed Mitigation
	Impacts to natural features (Direct and indirect impacts)	D: Short-term, occurring during grading for road construction and long-term, due to adjacent residential occupancy. GE: Impacts could extend beyond the development envelope. M: Low due to existing longstanding residential use.	A variable buffer will be applied to the northernmost woodland. A chainlink fence without gate access will be installed to separate the proposed development envelope and the natural features.
Occupant damage to retained natural features	Occupants dumping or informally using the protected woodland and buffer (Induced impact)	D: Long-term GE: Throughout natural heritage system M: Moderate, access to areas could happen wherever feature and buffer are abutting development	The buffer and chainlink fence without gate access will be installed to separate the proposed development envelope and the natural feature to prevent impacts of dumping and trespass by occupants.
Lighting	Lighting on buildings may cause potential disruption wildlife (Indirect impact)	D: On-going in evening. GE: Could potentially extend into natural areas, affecting the patterns of nocturnal wildlife. M: Moderate. Lighting within the high-density residential buildings may cause indefinite disruptions to local wildlife within the areas adjacent to the development envelop. Moderate alterations from existing conditions are anticipated as two high density residential areas are proposed rather than single-family residences. Potential impacts to birds are likely to include increased window strikes by birds during migration. Light pollution in urban areas is also well documented to impact bats. Documented impacts on bats include behavioral changes including avoiding commuting routes or flyways impacted by light, delaying emergence from roosts, roost abandonment, and reduced reproductive success (Stone et al. 2015). Light trespass may also impact adjacent residences.	Lighting on buildings should be directed downward and away from the retained natural features as per 2017 Best Practices for Effective Lighting – companion to Bird-Friendly Development Guidelines (City of Toronto, 2017) Plantings with buffer will eventually act as a physical barrier for light into the retained woodland.
Building Design	Window strikes by birds. (Indirect impact)	D: Long-term, in perpetuity. GE: Impacts confined to areas within direct vicinity of site. M: Low to moderate. Wildlife strikes are hypothesized to be directly correlated with building window area and proportion of developed land and as such, will vary over time and based on the final building design and future development in the site vicinity (Hager et al. 2013).	Long-term protection of birds may be accomplished through the implementation the Bird Friendly Guidelines such as those found at https://birdsafes.ca/workplaces-safe-for-birds/ or created by the City of Toronto and City of Markham.
Noise	Impacts of construction noise on wildlife (Indirect impact)	D: Short term, during construction phase only.	Environmental noise will be reduced through the standard operating practices and conformity with noise by-law requirements.

	Potential Impact	Duration (D), Geographic Extent (GE) and Magnitude (M) of the Impact	Proposed Mitigation
		GE: Impacts confined to areas within direct vicinity of site. M: Low, noise anticipated to occur during daylight hours.	The inspector will ensure that all operational plans and construction timing associated with noise reduction are being followed. Wildlife in the area is anticipated to be habituated to the noise of the urban conditions and the proposed work is not anticipated to add significantly to it.
Species at Risk	Impacts to Species at Risk (White Wood Aster) Habitat (Direct and Indirect impact)	D: Short-term, occurring once. GE: Impacts confined to areas within direct vicinity of site. M: low to moderate	The MECP was contacted regarding providing and appropriate buffer to the WWA individuals. Brianne Brothers, Management Biologist, Permissions and Compliance Section, Species at Risk Branch suggested that a 50 metre buffer should be applied unless the EIS can demonstrate a reduced buffer can be supported based on Burnside’s findings. Burnside is proposing a 30-meter critical function zone (buffer) from White Wood Aster colonies. It is Burnside’s opinion that a 30-meter buffer will be sufficient to protect WWA individuals due to the existing use of the areas from 30 - 50 meters away from the colonies consist of maintained turfgrass, outbuildings, houses, and impermeable surfaces which do not function as habitat for WWA. Measures to prevent further degradation of existing WWA on-site include the installation of chain-link fencing to prevent residents from dumping household wastes including introduction of non-native plant seeds, foreign soil, or composting waste. Additional discussion regarding the reduction in the critical function zone distance and if an overall benefit authorization will need to occur with the MECP.
Spills	Natural heritage features impacts associated with fuel or other contaminants (Direct impact)	D: Short-term. GE: Limited to construction envelope. M: Low to High, dependent on extent and location of spill.	The contractor must develop and immediately implement a spill response plan. No construction activity or machinery will be permitted beyond the silt fence limits of construction. Equipment refueling and maintenance will be conducted a minimum of sensitive receptors (i.e. drainage features and stormwater drains). Work should be scheduled to avoid wet, windy, and rainy period. A copy of the spill management plan and a spill kit must be always kept on-site.
Dust	Dust impacts to wildlife (Indirect)	D: Short-term. GE: Impacts could extend beyond the development envelope.	Dust levels should be regularly monitored for the duration of construction by an environmental monitor. As required, dust from the work area will be controlled using suppressants.

	Potential Impact	Duration (D), Geographic Extent (GE) and Magnitude (M) of the Impact	Proposed Mitigation
		M: Moderate as construction activities are anticipated to be extensive.	
Invasive Species	Introduction of invasive species during the construction process or encroachment reducing habitat quality	D: Long-term. GE: Impacts could extend beyond the development envelope. M: Low provided appropriate mitigation measures are implemented.	An environmental monitor should ensure that all equipment entering the construction limits should be clean and washed free of dirt / mud, plant material. Contractors should follow the Clean Equipment Protocol for Industry (Halloran et al. 2013). Invasive species management is recommended as part of the mitigation prescribed for the woodland, to promote the WWA.
Alterations to soil moisture regimes through creation of impervious surfaces and water quality	Impacts by altered stormwater contributions, altering the soil moisture regime or lower quality stormwater inputs	D: Long-term. GE: Impacts could extend beyond the development envelope. M: Moderate if moisture regime of the woodland is disrupted or impacted from poor water quality.	The existing stormwater conditions have overland flow directed towards catchbasins. The proposed stormwater management plan will continue to manage stormwater, directing drainage from the site through new catchbasins towards a stormwater storage tank for re-use in irrigation and an outlet to storm sewer at the northwest corner of the site (on Niagara Street). No grading will occur within the protected woodland and no additional drainage will be directed toward it. The quality control requirements for the proposed development will be met by a treatment train approach consisting of an underground storage tank to capture the stormwater on site which is equipped with an Isolator Row which provides 50% TSS removal.

7.6 Restoration and Compensation

Buffer Treatment

Buffer treatments will be applied to the lands between the protected natural feature and the proposed development.

Installation of shrubs and trees will occur using a variety of native species that reflect the species within the woodland and / or allow for the creation of a dense edge to enhance the existing established edge habitat.

A buffer planting plan will be created during the detailed design phase of the project.

Invasive Species Management

Control of weeds that may impact the long-term success of the WWA, buffer plantings and aesthetics of the retained area will be prescribed in the landscape plan at the detailed design stage. The invasive species management period will coincide with the plant warranty for the landscape components.

8.0 Monitoring Plan and Adaptive Management

Monitoring is required to be carried out by various personnel throughout the development period prior to resident occupancy. Table 8.1 outlines the required monitoring to occur at stages of the development.

Table 8.1: Summary of Monitoring & Adaptive Management Requirements

Monitoring Type	Personnel Responsible	Frequency	Adaptive Management
Prior to Construction			
Erosion control measures and tree protection fence	Environmental monitor	Following installation	Fix deficiencies
During Construction			
Plantings (damage)	Environmental monitor	As needed, when adjacent to construction	Replacement plantings, if required, should be planted following damage
Erosion control measures and tree protection fence	Environmental monitor	Weekly or after significant weather events, as specified by the ESC plan	Fix measures immediately

Monitoring Type	Personnel Responsible	Frequency	Adaptive Management
Wildlife	All workers	When encounters occur	Wildlife should be allowed to leave the site or, a qualified biologist should be retained to relocate wildlife as necessary.
Post Construction			
Hazard tree inspection	Project arborist	Once, prior to occupancy	Remove hazardous limbs and trees
Plantings (workmanship and establishment)	Project landscape architect	Once, following substantial completion. Additional visits based on warranty requirements	Replace plantings
Invasive species management	Landscape Contractor	Once, with planting plus twice per year coinciding with plant warranty	More frequent application may be required

9.0 Compliance with Applicable Policies

Table 9.1 demonstrates how the proposed development complies with applicable provincial, regional and municipal policies respecting natural heritage and natural hazard features.

Table 9.1: Compliance of Proposed Development with Policies

Feature	Applicable Policies	Policy Intent	How Addressed
Migratory Birds	Migratory Birds Convention Act, 1994	Migratory birds and their nests should not be killed or disturbed.	Land will be cleared outside of the breeding season, which generally occurs the April 1 to August 31, in order to avoid disturbance to nests. If this is not possible, a pre- construction nest survey will be completed no greater than 48 hours prior to the proposed site preparation and clearing activities by a qualified biologist. If nesting species are identified, an appropriate species-specific buffer will be applied until the nest is no longer active.
Protection of designated Natural Heritage Features	Section 2.1.5 of the Provincial Policy Statement (2020)	Development is not permitted within, or adjacent to, natural features habitat unless it can be demonstrated that no negative impact will result to the feature or its ecological functions.	The following designated natural heritage features were not present on the subject lands: - PSWs, ANSIs, SWH, or Significant Valleylands A significant woodland is present within the Subject lands: - The proposed development is set back with a buffer from the retained feature. - Buffer plantings are proposed to enhance buffer protection Additional mitigation measures including those listed above will be implemented into the final design to prevent impacts to significant woodlands.
Protection of Habitat of Endangered and Threatened Species	Endangered Species Act, 2007 and Species at Risk Act, 2002 Section 2.1.8 of the Provincial Policy Statement	Development and site alteration are not permitted in the habitat of endangered and threatened species except in accordance with provincial and federal requirements.	Although a definition of critical habitat is not currently available, development will be occurring within the recommended 50-meter CFZ of WWA. The CFZ in this case will be reduced from 50 metres to 30 metres to accommodate the proposed development. The woodland on-site that supports WWA are to be retained and additional measures to prevent the further degradation of the remaining habitat on-site are also proposed. Additional discussion with the MECP regarding if the reduction in CFZ in this case are acceptable, or if additional SAR permitting will be required.
NPCA Regulated Features	O. Reg. 155/06	Disturbance to regulated lands requires NPCA authorization	A permit will be obtained prior to removing the on-site portion of the drainage feature regulated by the NPCA. This feature does not meet the criteria to be considered a watercourse per the HDF Guide (TRCA, 2014). The NPCA will also be consulted during the removal of the regulated drainage feature. The regulated features along the west side of the residential lots that collects stormwater from the existing yards northwards towards the existing 1,200 mm diameter storm sewer within Niagara Street. Burnside’s FSR and SWM Reports (2023, Revised Sept 2024)) identifies that the proposed redevelopment has been designed with one drainage area that will outlet to the existing storm sewer within Niagara Street. The subject site has been designed to control the post development flows to the pre-development levels for all storm events up to and including the 100-year storm. This feature will connect directly into the existing 1,200 mm diameter storm sewer within Niagara Street.
Protection of Natural Features	A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2006)	Natural features that are a part of larger systems require protection	The north woodland was delineated with Niagara Region staff and buffers have been incorporated into the design.

Feature	Applicable Policies	Policy Intent	How Addressed
			Subject Lands are located within Official Plan Settlement Designations and are located outside the Growth Plan Natural Heritage System.
Region of Niagara Natural Environment System	Regional Municipality of Niagara Official Plan (2022 Consolidation)	An EIS is required for site development or alteration within 50 meters of other woodlands and habitat of endangered and threatened species OR 120 meters of a Significant Woodlands. Mandatory buffers from natural heritage features and areas are required within settlement area. The width of an ecologically appropriate buffer is to be determine through the EIS process at the time of development or site alteration.	Site alterations are not permitted unless an EIS demonstrates that there will be not negative impacts on the feature or its ecological function. A scoped EIS has been prepared in accordance with the approved TOR. A buffer will be established along the woodland boundary. The proposed boundary is greater than the minimum prescribed buffer to a Significant Woodlands outside of Settlement Areas and Outside a Provincial Natural Heritage System (20 meters). Development is located well outside the delineated boundary of the Significant Woodland. Based on the finding of the EIS and the proposed mitigation measures, no direct or indirect negative impacts to the adjacent natural heritage features are anticipated for the following reasons: • The proposed development is setback with a buffer from the woodland • The proposed buffer will be planted with native species • Indirect effects can be mitigated through fencing, design, effective ESC measures, and regular environmental inspections Provided all mitigation measures are adhered to as written, impacts to woodland its ecological function will not be impacted by the proposed development.
Regional Woodlands Conservation By-law No. 2020-79	Regional Woodlands Conservation By-law No. 2020-79	The removal of trees within woodlots greater than 1.0 ha is regulated based on tree density.	As the existing south woodlot does not meet the minimum size requirement of 1.0 ha and since the City of Welland has provided the region authority to regulate woodlands spanning less than one hectare, the bylaw does not apply.
Niagara Region Tree and Forest Conservation Bylaw (By-law No. 30-2008)	Niagara Region Tree and Forest Conservation Bylaw (By-law No. 30-2008)	The removal of trees within woodlands is prohibited in woodlands greater than 1.0 ha unless exempted under section 4 of the by-law.	Tree removals will not occur within the significant woodland. Open-grown trees and trees proposed for removal with the CUW may require individual assessment at the detailed design stage.
City of Welland Core Natural Heritage System	City of Welland Official Plan, June 2017	Characterization / protection and enhancement of Core Natural Heritage Systems	Based on Burnside’s assessment, the subject lands are considered an Environmental Protection Area (EPA) due to the presence of habitat of Endangered or Threatened species. As per Section 6.1.2.3.C of the Municipal OP, Development and site alteration is not permitted within EPAs. This EIS has been prepared in accordance with the approved TOR. Provided all mitigation measures are adhered to as written, impacts to features with the EPA and their ecological function will not be impacted by the proposed development.

10.0 Future Commitments

A Tree Preservation Plan (TPP) will be completed during the detailed design phase of the project following the finalization of a grading plan. A planting plan for the significant woodland buffer and landscape plantings will also be prepared during the detailed design phase of the project.

Additional coordination will be carried out with the MECP regarding the reduction of the CFZ of White Wood Aster to determine if additional permitting under the ESA will be required.

11.0 Recommendations and Conclusions

Burnside has been retained by the proponent to complete an EIS for the proposed development at 418, 424, 430 Aqueduct Street and 650, 656, 664, 670 and 678 Niagara Street, in Welland. This EIS provides a comprehensive analysis and discussion of the natural features within the Study Area.

The remnant woodland in the northeast corner of subject lands was found to be a regionally significant woodland due to the presence of a threatened species, White Wood Aster. Development will be buffered from the on-site natural heritage feature and as such, impacts to these features and their ecological function are not anticipated provided all mitigation measures are implemented as described.

12.0 References

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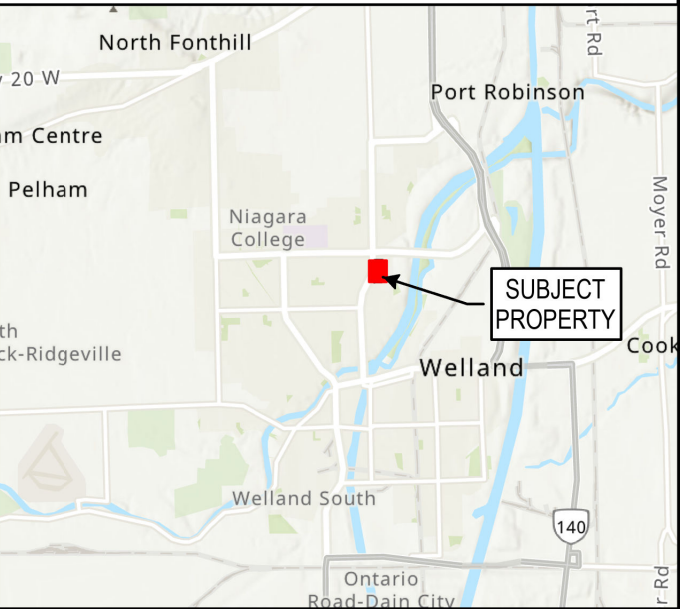
[THE DIFFERENCE IS OUR PEOPLE]



Figures



Subject Lands



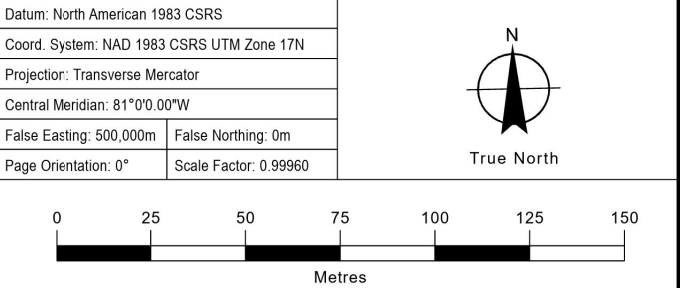
Sources:

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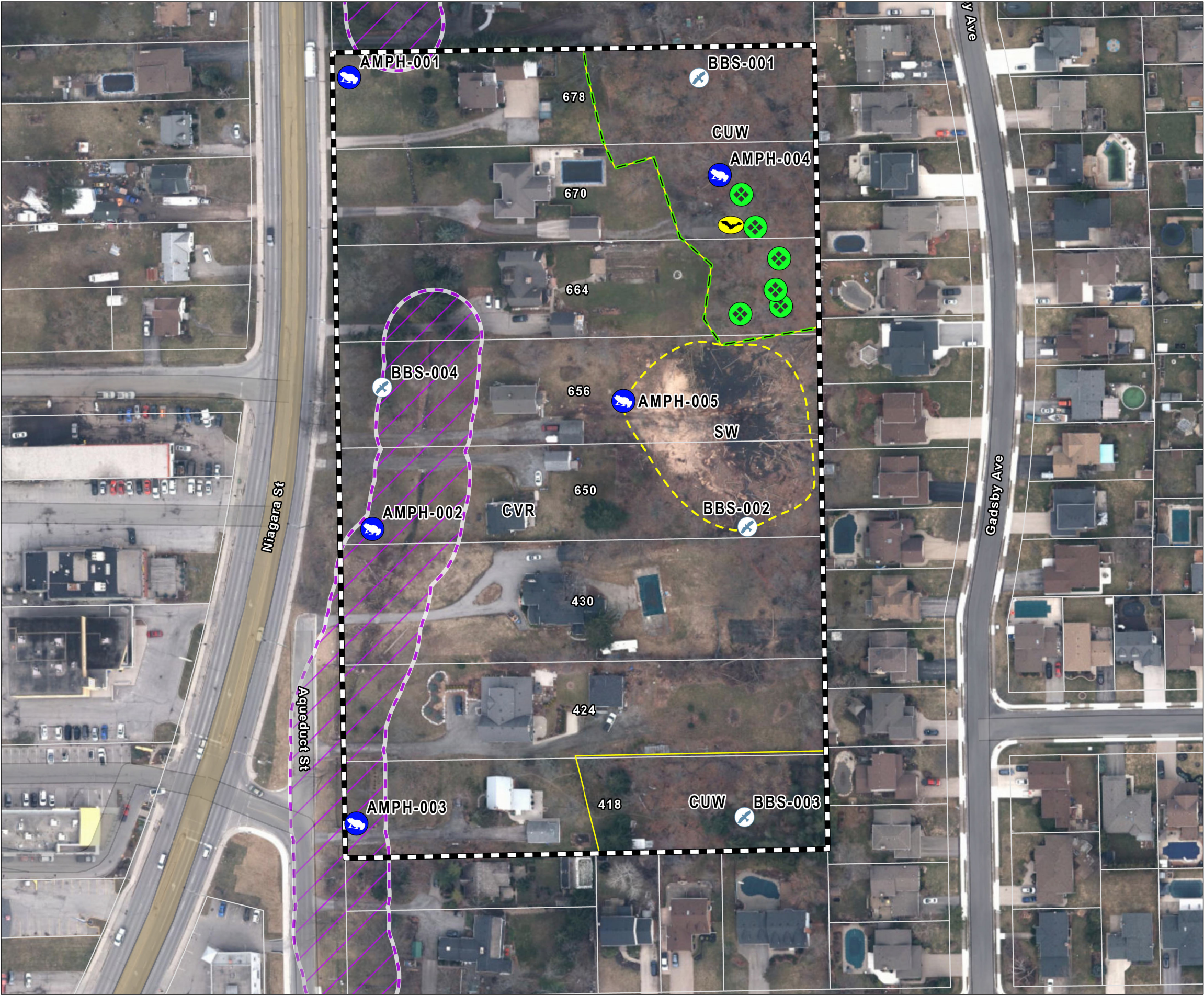
Client

THE DEVELOPMENT SQUAD GP INC.

Figure Title

418-430 AQUEDUCT AND 650-679 NIAGARA STREET ENVIRONMENTAL IMPACT STUDY STUDY AREA

Drawn	Checked	Date	Figure No. 1
HN	KB	2024/06/06	
Scale		Project No. 300052233	
H 1:2,000			



- White Wood Aster
- Bat Acoustic Monitoring Station
- Breeding Bird Survey Station
- Amphibian Survey Station
- Woodland Limit Staked with Niagara Region (Sept 30, 2021)
- Ecological Land Classification
- Ecological Land Classification (Inclusion)
- NPCA Regulated Area
- Subject Lands

ELC Descriptions
CUW - Cultural Woodland
CVR - Residential
SW - Swamp

- Sources:**
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Datum: North American 1983 CSRS		
Coord. System: NAD 1983 CSRS UTM Zone 17N		
Projection: Transverse Mercator		
Central Meridian: 81°0'0.00"W		
False Easting: 500,000m	False Northing: 0m	
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Metres



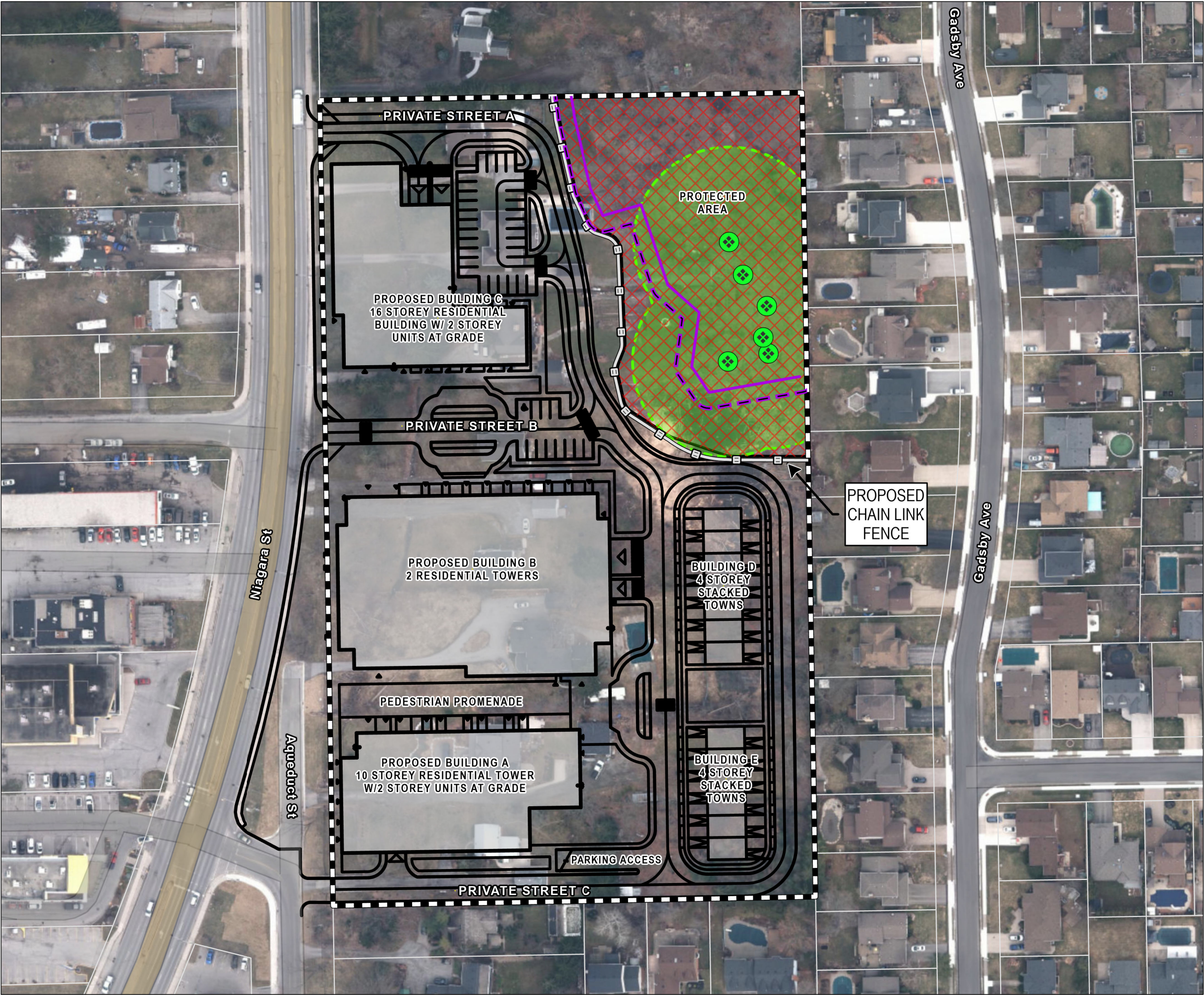
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THE DEVELOPMENT SQUAD GP INC.

Figure Title

418-430 AQUEDUCT AND 650-679 NIAGARA STREET ENVIRONMENTAL IMPACT STUDY EXISTING CONDITIONS

Drawn	Checked	Date	Figure No. 2
HN	KB	2024/06/06	
Scale		Project No. 300052233	



- Proposed Development
- Proposed Chainlink Fence
- Protected Area
- White Wood Aster
- White Wood Aster 30m Buffer
- Woodland Limit Staked with Niagara Region (Sept 30, 2021)
- Woodland Limit 5m Buffer
- Subject Lands

Sources:

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Datum: North American 1983 CSRS		
Coord. System: NAD 1983 CSRS UTM Zone 17N		
Projection: Transverse Mercator		
Central Meridian: 81°0'0.00"W		
False Easting: 500,000m	False Northing: 0m	
Page Orientation: 0°		Scale Factor: 0.99960

0 25 50 75 100
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Client

THE DEVELOPMENT SQUAD GP INC.

Figure Title

418-430 AQUEDUCT AND 650-679 NIAGARA STREET ENVIRONMENTAL IMPACT STUDY PROPOSED DEVELOPMENT

Drawn	Checked	Date	Figure No. 3
HN	KB	2024/09/06	
Scale		Project No.	
H 1:1,250		300052233	



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix A

EIS Terms of Reference, Region Response, and MECP Correspondence Regarding White Wood Aster



May 12, 2021

Via: Email (Adam.Boudens@niagararegion.ca and jabrahamse@npca.ca)

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

Adam Boudens,
Senior Environmental Planner/Ecologist
Planning and Development Services,
Niagara Region
1815 Sir Isaac Brock Way,
P.O. Box 1042
Thorold, ON L2V 4T7

Dear Jessica and Adam

**Re: EIS Terms of Reference – Scoped Environmental Impact Statement
Site Plan Approval: 418, 424, 430 Aqueduct Street and 650, 656, 664, 670 and 678
Niagara Street, City of Welland
Project No.: 300052233.0000**

1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained to complete a Scoped Environmental Impact Study (EIS) for the subject lands.

An EIS is required by the Region and Niagara Peninsula Conservation Authority (NPCA) to accompany the development application. The following Terms of Reference have been prepared with regard for the *NPCA Policy Document: Policies of the Administration of Ontario Regulation 155/06 and the Planning Act.* (Section 12.4.4) dated September 2018 and the *Niagara Region Environmental Impact Study Guidelines* dated January 2018.

It is understood that a site meeting with Region and NPCA will clarify the scope of the EIS.

2.0 Understanding of the Project

The development lands are comprised of eight residential lots, each containing a single-family dwelling. These properties are found at 418, 424, 430 Aqueduct Street and 650, 656, 664, 670 and 678 Niagara Street.

The proposed development is comprised of two buildings, landscape area and visual screening provided by retained trees at the south, north and east limits of the site.

The NPCA regulates a feature at the west limit of the site (front of residential lots) that is a partially open swale with manicured turfgrass and partially buried through some of the lots. A

feature that contains some plant species with wetland tolerance and was seen with standing water in a spring ecologist site visit was identified in the middle of the property.

The pre-consultation comments from the NPCA from September 17, 2020 are as follow:

The NPCA requests a site visit on the property to assess the status of the regulated watercourse that runs through the property. If the watercourse remains a regulated feature, a 15 metre buffer is required on either side, and any site alteration or development proposed within this area will require a NPCA work permit, potentially an EIS, and review of the Stormwater Management Plan.

The pre-consultation comments from the Region from September 17, 2020 are as follow:

The Regional Environmental Team would like a constraints analysis for the trees on-site – consider having the Region's ecologist visit site at the same time as the NPCA contact to identify if there are any features.

Pre-consultation notes data March 18, 2021 were also provided following the addition of new properties.

From NPCA: A regulated watercourse and 15 m buffer on either side traversing all of the subject lot fabric included in this proposal.

- The proposed development appears to have the watercourse removed. In its current form the NPCA cannot comment as to whether the development can be supported until further studies are completed.*
- The NPCA will require an Environmental Impact Study (EIS) required to assess the regulated features and their functions on and adjacent to the subject property which should be the extent of the study area.*
- This assessment should include the characterization and analysis of anticipated impacts to the ecological and hydrological functions of the watercourse and associated habitat contributions.*
- Once the features within the study area are understood, the proposed development should be designed in such a way that the identified features and functions are maintained and/or enhanced to the satisfaction of NPCA staff.*
- Should the watercourse be proposed to be changed, diverted or altered from its current configuration the applicant will be required to identify how natural channel design principles will be applied and that adequate space exists on the subject lands to accommodate this design. A NPCA work permits will be required for any proposed changes, diversions and/or alterations to the regulated watercourse traversing all of the properties.*

From Niagara Region: Core Natural Heritage Comments:

There are currently no mapped natural heritage features on the subject properties. However, based on aerial imagery available to the Region, it appears that there are wooded areas located throughout the subject properties. As per

Regional Official Plan (ROP) policy 7.B.1.8, Environmental Planning staff require the completion of a Constraints Analysis to determine if these features meet the criteria for identification as Core Natural Heritage System features (Significant Woodland, Significant Wildlife Habitat, Habitat of Endangered or Threatened species, etc.).

Depending on the results of the Constraints Analysis (first step of Environmental Impact Studies [EIS]), an impact analysis may also become a requirement of approval. Consistent with ROP policy 7.B.2, a Terms of Reference should be developed in consultation with municipal and regional staff. Provided permission to enter is granted, staff would be happy to visit the site in order to confirm our requirements and provide scoping. NPCA has requested an EIS, one EIS with TOR approved by NPCA and Region will be required.

The NPCA's existing site regulated lands are illustrated on the figure below with the outline of the subject properties (red dashed line).

Figure 1: NPCA Regulation Limits and Study Area from the NPCA Watershed Explorer



Also, a treed area at the east (rear) portion of the property has been reviewed and considered for designation as a Significant Woodland, according to the Niagara Region Official Plan. Policy 7.B.1.5 states: To be identified as significant a woodland must meet one or more of the following criteria:

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

A constraints analysis of the onsite features is required to determine if they meet the criteria for identification as Core Natural Heritage System features (Significant Woodland, Significant Wildlife Habitat, Habitat of Endangered or Threatened species).

Ecological field investigations have been initiated, including preliminary review of ecological site conditions and an April frog call survey. No evidence for supporting Significant Wildlife Habitat or Habitat of Endangered or Threatened species has been documented based on the ecological investigations to date.

It is Burnside's opinion that Significant Woodland is not supported on the site due to the approximate 1.63 ha of total woodland area that is onsite and offsite woody vegetation contiguous with the onsite feature. Therefore, it is less than the 2 ha threshold for being with the urban area boundary of the city. Also, interior woodland habitat or older growth forest is not found in the onsite woodland. No Environmental Protection Areas or Environmental Conservation Areas as identified in Policies 7.B.1.3 or 7.B.1.4 are present on the site. Definition of the onsite regulated feature is not anticipated to be considered a watercourse or water body, and the woodland is less than 2 ha.

3.0 EIS Framework

The sections provided below document the sections of the EIS.

1.0 Introduction

This section will identify the project background and introduce the project context.

2.0 Policy and Legislative Framework

A list of the applicable policies and regulations will be provided and the components that apply to the subject lands and proposed development.

It is understood that the following designations apply to portions of or the entire site:

- Migratory Birds Convention Act (1994);
- Provincial Policy Statement (2020);
- Endangered Species Act (2007);
- Regulated Lands under Ontario Regulation 155/06 (NPCA);
- Niagara Region Official Plan (2014 Consolidation); and
- City of Welland Official Plan (November 2019 Revision).

3.0 Existing Conditions

A description of the site and lands immediately adjacent will be provided based on the background desktop review and the site investigations.

3.1 Site Description

This section will provide further details of the site including:

3.1.1 Physiography

A description of the onsite soils will be completed based on historical mapping. A general description of the topography will be given based on the site visits and the topographic mapping.

3.2 Natural Heritage Features

A description of the site's characteristics including plant species, ecological features (as per Ecological Land Classification) and potential wildlife habitat will be provided.

A review of the NPCA regulated feature according to the MTO/DFO/MNRF Environmental Guide for Fish and Fish Habitat will be completed by an aquatic ecologist, if required.

3.3 Wildlife

Data provided in online resources such as the Ontario Breeding Bird Atlas and the Ontario Reptile and Amphibian Atlas, as well as incidental observations will be provided.

Frog call surveys carried out according to the Marsh Monitoring Program (MMP) will be continued in May and June.

Records of incidental wildlife observations will also be documented in this section.

3.3.1 Species at Risk and their Habitat

Findings of the Natural Heritage Information Centre (NHIC) investigation will also be provided. Potential for supporting habitat of the NHIC recorded species and Significant Wildlife Habitat on the site will be discussed.

4.0 Description of Development

The proposed development will be described which will include reviewing opportunities to retain portions of the woodland feature as screening at the north, east and south limits of the site. The NPCA regulated feature will be enclosed to maintain its stormwater conveyance function through the site.

5.0 Description of Ecological Impacts

All anticipated impacts to natural heritage features and functions on the site, and on adjacent lands. Impacts will be qualified as short or long-term, and direct or indirect. A table summarizing these impacts will be provided at the end of this section.

5.1 Description of Mitigation Measures

Potential impacts will be analyzed for the appropriateness of mitigation measures, timing and actions that may minimize, eliminate, or offset direct impacts or other detrimental effects to the site and surrounding lands. The effectiveness of mitigation in reducing environmental impacts to the site and the surrounding landscape will be discussed, and recommended strategies (timing windows, development setbacks, etc.) will be justified.

6.0 Policy and Legislative Conformity

Conformity of the development within policies and legislation will be discussed within this section and will be summarized within a table.

7.0 Recommendations and Conclusions

A professional opinion of the development based on the EIS analysis that indicates that the application is maintaining or enhancing the natural heritage features and functions described in the document.

8.0 Appendices

The Terms of Reference of the EIS and agency comments will be provided within this section as well as data from background sources.

9.0 Figures

A number of figures will be prepared that include:

1. A context plan that illustrates the property location and limits within the adjacent natural heritage communities and properties.

2. An existing conditions plan that contains an aerial photo with the ecological communities onsite and on adjacent lands, as well as agency designations.
3. The proposed development in context with the ecological communities and designations as well as guidelines to mitigation.

Please advise that these Terms of Reference are acceptable to initiate our reporting on the site.

We would like to organize a site visit for the NPCA to assess the status of the regulated feature. The Region has also requested a site visit is coordinated to review the constraints associated with the treed feature on the site to confirm the scope of the EIS.

It is believed that there are limited ecological functions and no constraints present on the site based on our investigations completed to date. The NPCA regulated feature is proposed for enclosure due to its anticipated limited function and the woodland feature has been identified as not significant.

Yours truly,

R.J. Burnside & Associates Limited



Kevin Butt, B.Sc. (Env). Eco. Rest. Cert.
Certified Arborist & Terrestrial Ecologist
KB:sd

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052233 Bryant EIS TOR 2021-05-10
12/05/2021 4:31 PM

Kevin Butt

From: Boudens, Adam <Adam.Boudens@niagararegion.ca>
Sent: Thursday, May 27, 2021 10:34 AM
To: Kevin Butt; Jessica Abrahamse
Cc: Steven Roorda; Spencer Brown; Nancy Frieday; Earl, Lindsay; Lampman, Cara
Subject: RE: EIS TOR: Aqueduct and Niagara Street Bryant Development, Welland
Attachments: 052233 Bryant EIS TOR 2021-05-12.pdf

Hi Kevin,

Thanks for coordinating the site visit yesterday. As discussed, Regional staff request that the proposed work plan be revised to include Breeding Bird surveys, Bat surveys, and a three season botanical inventory.

Should these additional requirements be acceptable, staff will accept the R. J. Burnside & Associates Limited proposed EIS TOR along with this e-mail as the final EIS TOR, with both appended to the EIS.

Please do not hesitate to contact me if you have any questions or require additional information.

Have a nice weekend,
Adam

Adam Boudens
Senior Environmental Planner/Ecologist

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

From: Kevin Butt <Kevin.Butt@rjburnside.com>
Sent: Thursday, May 20, 2021 5:34 PM
To: Jessica Abrahamse <jabrahamse@npca.ca>; Boudens, Adam <Adam.Boudens@niagararegion.ca>
Cc: Steven Roorda <Steven.Roorda@rjburnside.com>; Spencer Brown <Spencer.Brown@rjburnside.com>; Nancy Frieday <nfrieday@gspgroup.ca>
Subject: RE: EIS TOR: Aqueduct and Niagara Street Bryant Development, Welland

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Jessica,
That's unfortunate but understood. As requested, here are some photos of the regulated feature. It is also visible from google streetview as well since it immediately east of the sidewalk.

We have additional photos if required.

Kevin

From: Jessica Abrahamse <jabrahamse@npca.ca>

Sent: Tuesday, May 18, 2021 2:22 PM

To: Kevin Butt <Kevin.Butt@rjburnside.com>; Adam.Boudens@niagararegion.ca

Cc: Steven Roorda <Steven.Roorda@rjburnside.com>; Spencer Brown <Spencer.Brown@rjburnside.com>; Nancy Friedday <nfriedday@gspgroup.ca>

Subject: RE: EIS TOR: Aqueduct and Niagara Street Bryant Development, Welland

Hi Kevin,

Unfortunately due to the stay at home order being extended NPCA staff will be unable to attend the site visit on May 26th. As an alternative could you please send some pictures of the watercourse? If more information is needed after review of the pictures we can schedule a site visit once the stay at home order has been lifted. I apologize for any inconvenience this may cause.

With Best Regards,

Jessica Abrahamse M.E.S.
Watershed Planner

250 Thorold Road West, 3rd Floor
Welland, On
L3C 3W2
(905) 788-3135 Ext. 235

jabrahamse@npca.ca

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NPCA Mapping Tool

Thank you for your email. Due to the COVID-19 pandemic, the NPCA has taken measures to protect staff and public while providing continuity of services. NPCA enforcement, permitting and planning functions are continuing to operate, however there may be delays in receiving responses to inquiries or complaints due to staff restrictions and remote work locations. Updates with regards to NPCA operations and activities can be found on our website at **MailScanner has detected a possible fraud attempt from "urldefense.proofpoint.com" that could be a fraud attempt as the link does not match the site its claiming to be www.npca.ca/our-voice**, the NPCA Facebook page at **MailScanner has detected a possible fraud attempt from "urldefense.proofpoint.com" that could be a fraud attempt as the link does not match the site its claiming to be <https://www.facebook.com/NPCAOntario>** and on Twitter at **MailScanner has detected a possible fraud attempt from "urldefense.proofpoint.com" that could be a fraud attempt as the link does not match the site its claiming to be https://twitter.com/NPCA_Ontario**.

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For mapping on features regulated by the NPCA please go to our GIS webpage at **MailScanner has detected a possible fraud attempt from "urldefense.proofpoint.com" that could be a fraud attempt as the link does not match the site its claiming to be <https://gis-npca-camaps.opendata.arcgis.com/>** and utilize our Watershed Explorer App or GIS viewer.

To send NPCA staff information regarding a potential violation of Ontario Regulation 155/06 please go to the NPCA Enforcement and Compliance webpage at **MailScanner has detected a possible fraud attempt from "urldefense.proofpoint.com" that could be a fraud attempt as the link does not match the site its claiming to be <https://npca.ca/administration/enforcement-compliance>**.

From: Kevin Butt <Kevin.Butt@rjburnside.com>

Sent: May-12-21 9:29 PM

To: Jessica Abrahamse <jabrahamse@npca.ca>; Adam.Boudens@niagararegion.ca

Cc: Steven Roorda <Steven.Roorda@rjburnside.com>; Spencer Brown <Spencer.Brown@rjburnside.com>; Nancy Frieday <nfrieday@gspgroup.ca>

Subject: EIS TOR: Aqueduct and Niagara Street Bryant Development, Welland

Jessica and Adam,

Please find attached the EIS TOR for the site that assembles 8 residential properties to create the proposed Bryant development.

It would be good to set up an onsite meeting to review the conditions of the wooded feature and regulated feature.

Can I suggest a day for the week of the 24th (understood that it's a short week)? Does Wednesday May 26 at 11am work? We need to give the tenants advance notice of being onsite.

Thanks in advance for your review and consideration of a meeting time.

Kevin



Kevin Butt, B.Sc. (Env.)

Rest Cert, TRAQ

ISA Certified Arborist &
Terrestrial Ecologist

Leader, Environmental
Planning and Assessment

R.J. Burnside & Associates Limited

292 Speedvale Avenue West, Guelph, ON N1H 1C4

Office: 519-823-4995 Direct: 226-486-1552

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Technical Memorandum

Date: September 20, 2021 **Project No.:** 300052233.0000

Project Name: The Bryant (Aqueduct Street & Niagara Street), Welland

Client Name: 2786966 Ontario Inc.

Submitted To: Brianne Brothers, Ministry of Environment, Conservation & Parks (MECP),

Submitted By: Kevin Butt

Reviewed By: Spencer Brown

R. J. Burnside & Associates Ltd (Burnside) is completing the ecological investigations to support the Environmental Impact Study (EIS) for the properties found at 418, 424, 430 Aqueduct Street and 650, 656, 664, 670 and 678 Niagara Street in Welland. The proposed development, called The Bryant, will redevelop the existing 8 single family residential lots into a higher density design.

Our site investigations to date have consisted of surveys for breeding birds, determination of building and chimney support of Barn swallow and Chimney swift, bats (leaf on acoustic monitoring and leaf off), frog calls and incidental wildlife surveys. None of these surveys have found onsite support for SAR. Our third of a 3-season plant inventory has identified White wood aster (*Eurybia divaricata*) within a remnant wooded area at the northeast corner of the site. There were 91 individuals found on September 7, 2021.

Your email dated June 22, 2021 indicated that White wood aster (WWA) may be in the area. It is understood that it has been positively identified at the following adjacent sites: Aqueduct Park, Woodlawn Park and Ricelawn Park.

Below are some photos taken on September 7, 2021 at The Bryant site.







WWA is listed as Threatened on the Species at Risk in Ontario (SARO) and Threatened under the federal Species at Risk Act (SARA). Environment and Climate Change Canada (ECCC) prepared the Recovery Strategy for the WWA in Canada in 2018 to meet its requirements under the SARA. This recovery strategy was adopted under the Endangered Species Act (ESA).

It is understood that that preservation of the woodland portion where the WWA is found and a buffer is required to protect the species and its habitat. We consulted the *Recovery Strategy for the White Wood Aster in Ontario* (<https://files.ontario.ca/mecp-rs-white-wood-aster-2019-12->

[05.pdf](#)) for guidance and applicability to the proposed development. The habitat regulation under the ESA has not been developed but the recovery strategy identifies that “in cases where the suitable habitat extends for less than 50 m around a White Wood Aster, a critical function zone capturing an area within a radial distance of 50 m is also included as critical habitat”.

The onsite forest community that it is found within is Sugar maple – Beech with a sparse ground layer and understory. The existing characteristics of the site have remained generally the same for a long time. Air photos from the City of Welland that date back to 1954, illustrate the woodland, residences, and manicured turf that can be seen currently on the site. Garlic mustard and Periwinkle is invading the woodland edge and household debris and yard waste has been dumped over the property fence by adjacent neighbours on Gadsby Avenue.

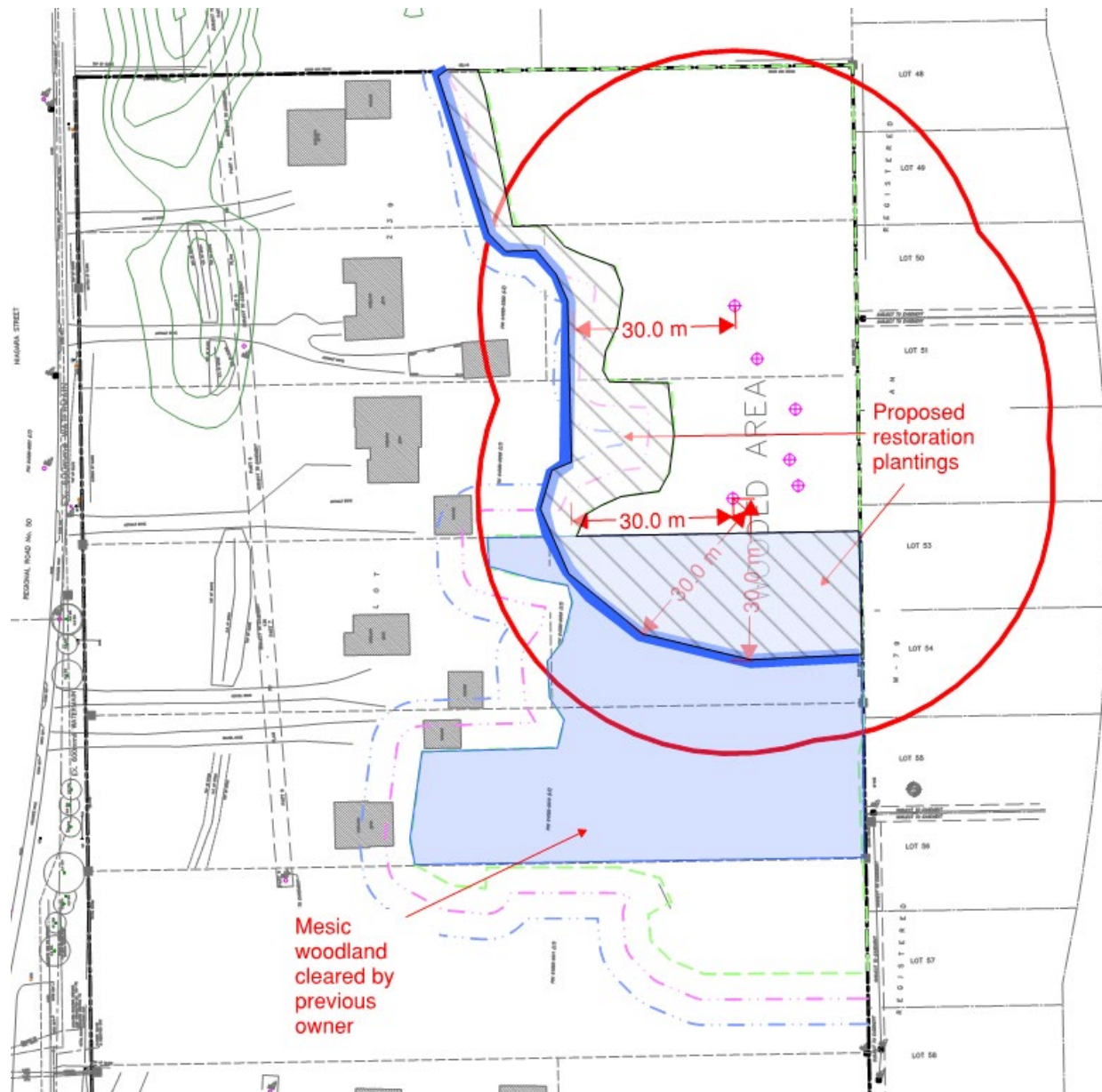
We are confident that no additional individuals are found onsite to the north and south of the identified locations. Lands to the south are seasonally wet to mesic soil conditions and dominated by Green ash. These lands were also cleared of trees by the previous landowner. North of the identified WWA locations (still within the woodland), the groundlayer becomes significantly denser which WWA doesn't compete with very well. We believe that there is no critical habitat (Sugar maple – Beech with sparse groundlayer and understory) that extends beyond where it currently grows.

The map below illustrates the following attributes:

- Centroids of the WWA colonies (approximately 1 metre in radius around the magenta point)
- Cumulative 50 metre buffers (red) applied to the WWA centroids
- Woodland limit from LIO records (light green dashed line)
- 5 and 10 metre buffers on the LIO woodland (magenta and blue dashed lines)



An EIS will be prepared and circulated that will contain the proposed development and the buffers / setbacks required for protecting the WWA and its associated habitat. The wooded feature will be retained and minimum buffers applied in consultation with Niagara Region due its status as Regionally Significant (i.e. 5 or 10 metres from the wooded feature edge). Protection of the WWA requires larger buffers, potentially 50 metres, through the interpretation of the recovery strategy; however, we are confident that a 30 metre buffer (critical function zone) from the plants will not reduce the quality of habitat or impact the WWA. The longstanding use of lands adjacent to wooded feature as manicured turf and mesic treed feature precludes any WWA habitat expansion into these areas. The image below illustrates what would be the preferred buffer setback.



In exchange for a reduced buffer, the proponent could install restoration plantings (expanding the Sugar maple – Beech forest), carry out invasive species control at the woodland edge (to reduce competition to the WWA) and remove household and yard waste from the woodland.

Please confirm that a 30 metre buffer is suitable as illustrated above.

R.J. Burnside & Associates Limited

A handwritten signature in black ink, appearing to read "Kevin Butt", with a long horizontal stroke extending to the right.

Kevin Butt

ISA Certified Arborist and Terrestrial Ecologist

KB:js

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052233 Bryant Development MECP letter 2021-09-20
9/20/2021 12:13 PM

Kevin Butt

From: Brothers, Brianne (MECP) <Brianne.Brothers@ontario.ca>
Sent: Tuesday, October 05, 2021 3:16 PM
To: Kevin Butt
Cc: Spencer Brown
Subject: RE: White wood aster: Aqueduct Development (Welland)

Hi Kevin,

Thank you for the attached technical memorandum. Based on section 7.1 of the Recovery Strategy, “a critical function zone distance of 50 m (radial distance) is identified as critical habitat when the biophysical attributes around an individual plant or patch of plants extend for less than 50 m.” I think this would apply to the Aqueduct development, since the biophysical attributes surrounding the plants extent less than 50 m, as there are manicured and developed lands surrounding the plants.

Furthermore, it is not clear at what exact distances physical and/or biological processes begin to negatively affect White Wood Aster, existing research provides a logical basis for suggesting a minimum critical function zone distance of 50 m for rare plant species occurrences. The area within the critical function zone distance may include habitat that does not contain the biophysical attributes described for the species and may not be currently mapped as part of the area containing critical habitat.

Based on the information above, I think a 50 m buffer should be applied for the Aqueduct development in Welland.

I hope this helps. If there are any questions, please let me know.

Sincerely,

Brianne

Brianne Brothers

A/Management Biologist, Permissions and Compliance Section
Species at Risk Branch
Ministry of the Environment, Conservation and Parks
(905)-321-5736 | Brianne.brothers@ontario.ca

From: Kevin Butt <Kevin.Butt@rjburnside.com>
Sent: September 27, 2021 9:38 PM
To: Brothers, Brianne (MECP) <Brianne.Brothers@ontario.ca>
Cc: Spencer Brown <Spencer.Brown@rjburnside.com>
Subject: RE: White wood aster: Aqueduct Development (Welland)

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Brianne,
Just following up if you can review the attached document and provide some feedback.

Thanks Brianne,
Kevin

From: Kevin Butt
Sent: Monday, September 20, 2021 12:18 PM
To: Brothers, Brianne (MECP) <Brianne.Brothers@ontario.ca>
Cc: Spencer Brown <Spencer.Brown@rjburnside.com>
Subject: White wood aster: Aqueduct Development (Welland) - Bats and SAR studies

Brianne,
Please find attached a letter regarding White wood aster that was found on this development site. We are requesting clarification from MECP that a buffer of 30 metres from the plants can be accommodated in some locations (already disturbed by others) while a full 50 metre buffer is being provided in others.

Thanks for your assistance and please reach out if we can help with additional clarification or questions.

Kevin



Kevin Butt, B.Sc. (Env.) Rest Cert, TRAQ
Leader, Environmental Planning and
Assessment

R.J. Burnside & Associates Limited
292 Speedvale Avenue West, Unit 20, Guelph, Ontario,
N1H 1C4
Office: 800-265-9662 **Direct Line:** 226-486-1552
www.rjburnside.com



From: Brothers, Brianne (MECP) <Brianne.Brothers@ontario.ca>
Sent: Tuesday, June 22, 2021 3:53 PM
To: Kevin Butt <Kevin.Butt@rjburnside.com>
Subject: RE: Aqueduct Development (Welland) - Bats and SAR studies

Hello Kevin,

Thank you for reaching out. It looks like you've covered most of the bases in terms of SAR bats, but I've attached some messaging for your review (also included below). One thing I would flag is that we recommend the use of broadband detectors for at least 10 sampling nights when undertaking acoustics for SAR bats.

As for other SAR potentially in the area, please review the species below:

- White Wood Aster
- Chimney Swift
- Barn Swallow

I would agree with your assessment that Northern Bobwhite is an older record and the habitat likely does not support the species anymore.

SAR Bats

The purpose of this note is to support compliance with Ontario's *Endangered Species Act, 2007* (ESA) by providing consistent and practical survey guidance for species at risk bats.

Where a project or activity is planned in a manner that pro-actively avoids adverse effects to bats (does not contravene s. 9 or s. 10 of the ESA), there is no need to conduct species at risk bat surveys. For more information on the interpretation of ESA s. 9 and s. 10 prohibitions, see [Policy Guidance on Harm and Harass under the Endangered Species Act | Ontario.ca](#) and [Categorizing and Protecting Habitat under the Endangered Species Act | Ontario.ca](#), respectively. Ultimately, it is the proponent's responsibility to assess potential impacts of their planned activity on species at risk bats and take the appropriate steps to achieve compliance with the ESA.

Treed Habitats (Maternity and Day Roosts)

- Avoidance considerations: If a proposed activity will avoid impairing or eliminating the function of habitat for supporting bat life processes (e.g. remove, stub, etc. a small number of potential maternity or day roost trees in treed habitats) but the timing of tree removal will avoid the bat active season (April 1 – September 30 in Southern Ontario / May 1 to August 31 in Northern Ontario), then there is no need to conduct species at risk bat surveys of treed habitats. The damage and destruction assessment may vary geographically as the availability of other nearby maternity and day roost trees differs across the province of Ontario. For further guidance please contact SAROntario@ontario.ca.
- Protocol attached: “Treed Habitats – Maternity Roost Surveys”
- Important additions and exceptions to this protocol:
 - In Step 1, the Ecological Land Classification (ELC) codes listed are meant to provide guidance, however any area with suitable roost trees should be considered potential maternity or day roost habitat. In areas where ELC is unavailable, the project area will need to be mapped by a qualified professional experienced in ecosite classification.
 - There are numerous peer-reviewed publications demonstrating that trees measuring less than 25 cm DBH (diameter at breast height) support maternity and day roosts of little brown myotis, northern myotis and tri-colored bat. Within tri-colored bat range, “snag/cavity” trees within the protocol includes any maple, oak or other tree taxon that may retain dead leaf clusters throughout the year. Detailed descriptions of tree species, size and age composition and physical attributes are very helpful for evaluating the value of specific treed habitats to species at risk bats.
 - Step 2: Snag Density Calculations – Field visits to determine the best locations for deploying Acoustic Monitoring Systems are encouraged. However, snag density may also be calculated by following methods in Step 5: Detailed Mapping of Snag/Cavity Trees and does not necessarily need to precede acoustic monitoring (Steps 3 and 4).
 - Note that Step 5: Detailed Mapping of Snag Cavity Trees is important to quantify the magnitude of impacts to bat species at risk under an ESA permitting scenario. This information may also be used to inform activity alternatives that reduce and/or completely avoid impacts to bat species at risk.
 - For large projects impacting greater than 10 ha of treed habitat, we recognize following this protocol is likely not feasible. In these situations, we fully expect clients to apply some method of sampling/sub-sampling landscapes, where ELC plots, snag density calculations, and acoustic monitoring occur in randomly selected or representative locations. Information obtained from the sample may then be extrapolated to the entire project footprint to inform the evaluation of project alternatives and the final impact assessment. In cases where acoustic monitoring surveys are not performed, MECP will assume species at risk bat presence in all habitats containing potentially suitable roost trees.

* We encourage all proponents to submit any observations of species at risk bats to the Natural Heritage Information Centre: [Report rare species \(animals and plants\) | Ontario.ca](#)

Please let me know if you have any questions,

Sincerely

Brianne

Brianne Brothers

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From: Kevin Butt <Kevin.Butt@rjburnside.com>
Sent: June 21, 2021 1:55 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: Brothers, Brianne (MECP) <Brianne.Brothers@ontario.ca>
Subject: FW: Aqueduct Development (Welland) - Bats and SAR studies

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Just following up on this email (below) sent a few weeks ago. Can someone advise that this bat protocol is satisfactory? Also if there are any additional SAR that we need to be aware of?

Thank you,
Kevin



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From: Kevin Butt
Sent: Friday, May 28, 2021 1:59 PM
To: sarontario@ontario.ca
Subject: Aqueduct Development (Welland) - Bats and SAR studies

Greetings,

Burnside is preparing an EIS for a proposed development in Welland, where Niagara and Aqueduct streets meet (see attached airphoto that illustrates the 8 subject assembled properties). The site currently contains a wooded area at the northeast of the parcel grouping - it is Beech-dominated forest (culturally influenced) with areas of natural groundcover (spring ephemerals and woodland forbs and graminoids) as well as garden invasives (Periwinkle). The treed area at the south limit (rear yard of #418) is cool season grass-dominated with common introduced forbs. Lands in front (west portion) of the properties are ornamental trees growing in manicured turf. The proposed conceptual plan would look to retain as much of the woodland as possible but would likely require some removal and full removal of all trees throughout the manicured areas (i.e. front yards, around houses, most of rear yard of #418).

A) Can you confirm our study for SAR bats on the site is appropriate:

- 1) We completed the leaf-off investigation for the wooded area this spring collecting the following criteria:
 - Decay class
 - DBH
 - Species
 - Percent canopy cover
 - Presence of habitat characteristics
 - Peeling bark
 - Within 10 m of another tree and/or snag
 - Cavity height
- 2) We will carry out leaf-on investigation of the woodland collecting the following criteria:
 - Decay class
 - DBH
 - Species
 - Percent canopy cover
 - Dead and dying leaf clusters (or snapped branch)
- 3) We will carry out 5 nights monitoring with a minimum 5 hours each night in June using a single Wildlife Acoustics Echo Metre Touch 2 Pro in a stationary location within the woodland.

Our EIS will propose the standard tree removal windows to protect bats and birds, recommending that no removal occurs April 1 to September 30. Also, we will recommend bat boxes if bats are detected and it is appropriate for the species found. The confirmed presence of SAR species will determine if an IGF and permitting are required.

B) Other SAR:

- 1) We understand that Northern Bobwhite is identified in the area according to the NHIC records but assume this is a historical record (20+ years old) and the habitat is not supported onsite or in the adjacent area due to the urban context.
- 2) It is understood that White Wood Aster is also in the area. Our 3 season botanical investigations will determine if there is this species present on the site.

Can you advise if there are any additional SAR that we should be aware of?

Thanks in advance for your assistance.

Kevin



Kevin Butt, B.Sc. (Env.) Rest Cert, TRAQ

ISA Certified Arborist & Terrestrial Ecologist

Leader, Environmental Planning and Assessment

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Appendix B

Species at Risk Screening Table

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule	Habitat Description	Habitat Present in Study Area?	Species Observed?
Amphibians									
Western Chorus Frog (Great Lakes/St. Lawrence - Canadian Shield population)	<i>Pseudacris triseriata</i>	S3	No status	THR	THR	1	Inhabits forest openings around woodland ponds but can also be found in or near damp meadows, marshes, bottomland swamps, and temporary ponds in open country, or even urban areas. Breeds in almost any fishless pond with at least 10 cm of water, including quiet, shallow, temporary waterbodies with vegetation that is submerged or protrudes from the water, especially in rain-flooded meadows and ditches, and in temporary ponds on floodplains. ¹⁴	Moderate potential. Vernal pools present in numerous locations throughout subject lands.	Confirmed absent
Birds									
Acadian Flycatcher	<i>Empidonax virens</i>	S2S3B	END	END	END	1	Generally requires large areas of mature, undisturbed forest; avoids the forest edge; often found in well wooded swamps and ravines. ⁷	lands. Evidence of disturbance (dumping, grubbing/clearing, selective tree cutting) are evident throughout woodland. Wooded area is quite small	N/A
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S2N,S4B	SC	NAR	NAR	No schedule	Prefers deciduous and mixed deciduous forest and habitat close to water bodies such as lakes and rivers. They roost in "supercanopy" trees such as pine. ⁷	lands. No super canopy trees noted within woodlot, closest waterbody of sufficient size (Welland Canal) is approximately 600m away.	N/A
Bank Swallow	<i>Riparia riparia</i>	S4B	THR	THR	THR	1	Prefers open habitats including, farmland, lake/river shorelines, grasslands, and wetlands. Nests in exposed earthen banks along shorelines and in artificial sites such as gravel pits. ⁷	No potential I within subject lands. Suitable nesting habitat not present within property limits.	N/A
Barn Owl	<i>Tyto alba</i>	S1	END	END	THR	1	Generally prefer low-elevation, open country; often associated with agricultural lands, especially pasture. Nests are located in buildings, hollow trees and cavities in cliffs. ⁷	No potential I within subject lands. Suitable nesting habitat not present within property limits. Suitable foraging habitat within wetland adjacent to property.	N/A
Barn Swallow	<i>Hirundo rustica</i>	S4B	THR	THR	THR	1	Prefers farmland, lake/river shorelines, wooded clearings, urban populated areas, rocky cliffs, and wetlands. Nests inside or on exterior of buildings; under bridges and in road culverts; on rock faces, and in caves, etc. ⁸	Moderate potential. Existing buildings on subject lands could be used as nesting habitat. Suitable foraging habitat where clearing has occurred onsite, but cleared area is relatively small in extent.	Confirmed absent on Subject Lands
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	THR	THR	THR	1	Generally prefers open grasslands and hay fields for nesting, typically featuring relatively tall vegetation. Sometimes uses large fields of winter wheat and rye in southwestern Ontario. Sensitive to vegetation structure and composition. Positively associated with high grass-to-forb ratios; moderate litter depth; tolerate wetter portions of fields compared to Eastern Meadowlark (EAME) and more likely to nest closer to field centres rather than field margins. Lower tolerance to presence of patches of bare ground. Appear to prefer larger fields than EAME. ⁹	No potential. Suitable nesting habitat not present within subject lands.	N/A
Black Tern	<i>Chlidonias niger</i>	S3B	SC	NAR	NAR	No schedule	Generally prefers freshwater marshes and wetlands; nests either on floating material in a marsh or on the ground, very close to water. ⁷	No potential. Suitable nesting habitat not present within subject lands. Closest waterbody (Welland Canal) is approximately 600m away.	N/A
Canada Warbler	<i>Cardellina canadensis</i>	S4B	SC	THR	THR	1	Generally prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest. ⁷	No potential. Forested area within ecosite does not contain a dense shrub layer.	Confirmed absent
Cerulean Warbler	<i>Setophaga cerulea</i>	S3B	THR	END	END	1	Generally found in mature deciduous forests with an open understorey; also nests in older, second-growth deciduous forests. ⁷	No suitable habitat within subject lands. Forested area in subject lands is not sufficiently large.	N/A

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule	Habitat Description	Habitat Present in Study Area?	Species Observed?
Chimney Swift	<i>Chaetura pelagica</i>	S4B,S4N	THR	THR	THR	1	Historically nested in large hollow trees, other tree cavities and cracks in cliffs. Currently, most are found in developed areas in large, uncapped chimneys. Proximity to lakes is also a preferred habitat feature as they will forage for flying insects close to water. ⁷	Upon inspection of all chimneys, of those that were suitably large to support Chimney Swifts, none were found to be uncapped.	N/A
Common Nighthawk	<i>Chordeiles minor</i>	S4B	SC	SC	THR	1	Nests in open habitats, in forests and in urban areas. It prefers rock outcrops, alvars, sand barrens, bogs, fens, and in forests, openings created by clearcuts and burns. In southern Ontario, grasslands, agricultural fields, gravel pits, prairies, and alvars and at airports. In cities, it nests mostly on flat, graveled roofs but occasionally on railways and footpaths. ⁷	No suitable habitat is present within subject lands.	N/A
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	S4B	THR	THR	THR	1	Generally prefer semi-open deciduous forests or patchy forests with clearings; areas with little ground cover are also preferred. In Ontario, its preferred habitats include rock or sand barrens with scattered trees, savannahs, old burns in a state of early forest succession, and open conifer plantations. ⁷	Unlikely to be supported. Clearing have created patches within the woodlands but area is quite small in extent and groundcover has regenerated	No
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	THR	THR	THR	1	Generally prefers grassy pastures, meadows and hay fields. Prefers moderately tall grass with abundant litter cover, a high proportion of grass cover, moderate forb density, low proportions of shrub and woody vegetation cover, and low percent of bare ground. Prefers to nest in drier sites and frequently nests around field margins. ⁹	No potential. Suitable habitat absent within subject lands.	N/A
Eastern Wood-Pewee	<i>Contopus virens</i>	S4B	SC	SC	SC	1	Prefers open space near the nest in the form of forest edges, clearings, roadways, and water. Does not require large areas of woods but occurs less frequently in woodlots surrounded by development than in those without. ⁷	Moderate potential within the study area within forested area along the eastern margin of the subject lands. Several areas within the remnant woodlot have been cleared.	Confirmed absent
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	S4B	SC	THR	THR	1	Generally prefer areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas. ⁷	Low potential. Recently cleared wetlands area in the center of the subject lands contain early successional vegetation, but area is quite small in extent.	Confirmed absent
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4B	SC	SC	SC	1	Prefers drier, sparsely vegetated grasslands, particularly rough or unimproved pastures with scattered forb and shrub growth, at least 30 ha in size. It will occasionally also use cultivated hayfields and cereal crops. ⁷	No potential. Suitable habitat absent within subject lands.	N/A
Louisiana Waterthrush	<i>Parkesia motacilla</i>	S3B	THR	THR	SC	1	Generally inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps. ⁷	No potential. Suitable habitat absent within subject lands.	N/A
Least Bittern	<i>Ixobrychus exilis</i>	S4B	THR	THR	THR	1	Most frequently found in marshes of at least 5 ha, although much smaller marshes, including sites such as cattail stands along creeks and farm ponds partially filled with cattail, may be used occasionally. Breeding sites typically dominated by cattail, but also sometimes bulrush, grasses, horsetail, and willow. Nests usually close to edge of a stand of vegetation or near openings such as muskrat trails, although may be as far as 45 m from open water. ⁷	No potential. Suitable habitat absent within subject lands.	N/A
Northern Bobwhite	<i>Colinus virginianus</i>	S1	END	END	END	1	Generally inhabits a variety of edge and grassland type - habitats including non-intensively farmed agricultural lands. ⁷	No potential. Suitable habitat absent within subject lands.	N/A
Peregrine Falcon	<i>Falco peregrinus</i>	S3B	SC	NAR	SC	1	Nests on cliffs near water bodies, or at urban sites such as tall buildings, bridges, and smokestacks. ⁷	No potential. Suitable nesting habitat is not present on subject lands.	N/A
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S4B	SC	END	THR	1	Breeds in open woodland and woodland edges, especially oak savannah and riparian forest. These habitats can occur in parks, golf courses, cemeteries and private woodlands. Existence of large, dead, weathered trees or live trees with large dead branches are an important characteristic of habitat. ⁷	Moderate potential. Woodlands present on-site	Confirmed absent
Short-eared Owl	<i>Asio flammeus</i>	S2N,S4B	SC	SC	SC	1	Generally prefers a wide variety of open habitats, including grasslands, peat bogs, marshes, sand-sage concentrations, old pastures and agricultural fields. ⁷	No potential. Suitable habitat absent within subject lands.	N/A

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule	Habitat Description	Habitat Present in Study Area?	Species Observed?
Wood Thrush	Hylocichla mustelina	S4B	SC	THR	THR	1	Inhabits and breeds in woodlands ranging from small (3 ha) and isolated to large and contiguous. The presence of tall trees and a thick understorey are usually prerequisites for site occupancy. ⁷	Low potential within the study area within forested area along the eastern margin of the subject lands but area is limited in extent (< 3 ha) and lacks a thick understorey throughout the majority of the site	Confirmed absent
Yellow-breasted Chat	Icteria virens	S2B	END	END	END	1	Prefers scrubby, early successional habitats. In Ontario, the Yellow-breasted Chat uses regenerating old fields, forest edges, railway and hydro rights-of-way, young coniferous reforestations and occasionally wet willow-ash-elm thickets bordering wetlands. Tangles of grape and raspberry are also a habitat feature of most breeding sites. ⁷	No potential. Suitable ecotones not present in study area.	No
Mammals									
Eastern Small-footed Myotis	Myotis leibii	S2S3	END	END	No status	No schedule	Overwintering habitat: Caves and abandoned mines. According to the Recovery Strategy for the Eastern Small-footed Myotis in Ontario, summer / roosting habitats used by the species in Ontario are poorly understood, but elsewhere in its range it primarily roosts in open, sunny rocky habitats, and, occasionally, in buildings. Summer roosts for this species are believed to be located in close proximity to their hibernacula (i.e., less than 100 m). The species' preference for rocky habitats in summer may limit an individual's home range to those rocky areas which also contain hibernacula (i.e., karst areas and Canadian Shield areas containing abandoned mines with adits). ¹⁶	Moderate Potential. Existing buildings on property could be used as roosting habitat. Wooded areas onsite contain suitable trees for maternal roosting habitat.	Confirmed absent. Species not detected during bat surveys.
Little brown Myotis	Myotis lucifugus	S4	END	END	END	1	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm dbh). ¹⁵	Moderate Potential. Existing buildings on property could be used as roosting habitat. Wooded areas onsite contain suitable trees for maternal roosting habitat.	Confirmed absent. Species not detected during bat surveys.
Tri-colored Bat	Perimyotis subflavus	S3?	END	END	END	1	Overwintering habitat: Deepest parts of caves and mines where temperature is the least variable. Maternal Roosts: Less is known about roosts of Tri-colored Bats. Most roost sites found within forested habitats. May roost in clumps of dead foliage and lichens. In more anthropogenically modified landscapes, maternity roosts may be barns or similar human-made structures. ¹⁵	Moderate Potential. Wooded areas onsite contain suitable trees for maternal roosting habitat.	Confirmed absent. Species not detected during bat surveys.
Northern Myotis	Myotis septentrionalis	S3	END	END	END	1	Overwintering habitat: Caves and mines that remain above 0 Maternal Roosts: Often associated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.) ¹⁵	Moderate Potential. Existing buildings on property could be used as roosting habitat. Wooded areas onsite contain suitable trees for maternal roosting habitat.	Confirmed absent. Species not detected during bat surveys.

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule ⁴	Habitat Description	Habitat Present in Study Area?	Species Observed?
Reptiles									
Eastern Milksnake	Lampropeltis triangulum	S4	NAR	SC	SC	1	Habitat generalist. Found in wide variety of habitats, from open woodlands, bogs, swamps, woodland edges, marshes, lakeshores, old fields, pastures, farmyards, parks, gardens. Often in or near farm outbuildings, barns, and sheds, and are attracted to piles of rocks, logs, firewood, or building materials, or any place that offers shelter to snakes and their prey (rodents). ¹⁴	Woodlands/woodland edges, and cleared areas will provide suitable foraging habitat and cover for milksnakes. Debris (wood, garbage) is	No.
Eastern Hog-nosed Snake	Heterodon platirhinos	S3	THR	THR	0	0	Well-drained soils (loose or sandy soils) with open vegetation cover including woodlands and meadow habitat. Hog-nosed snakes may also utilize wetland habitats/	No potential. Soils on-site are clay loam.	N/A
Midland Painted Turtle	Chrysemys picta marginata	S4	NAR	SC	NAR	No schedule	Generally prefers waterbodies such as ponds, marshes, lakes and slow-moving creeks that have a soft bottom and provide abundant basking sites and aquatic vegetation. ¹⁴	No potential. Wetland features present on site are restricted to vernal pools and an ephemeral watercourse (vegetated swale).	N/A
Snapping Turtle	Chelydra serpentina	S3	SC	SC	SC	1	Generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits. ¹⁰	No potential. Wetland features present on site are restricted to vernal pools and an ephemeral watercourse (vegetated swale).	N/A
Vegetation									
American Chestnut	Castanea dentata	S1S2	END	END	END	1	Found in deciduous forest communities; this tree prefers arid forests with acid and sandy soils. ²⁰	No potential. Soils are unsuitable to support this species.	N/A
American Columbo	Frasera carolinensis	S2	END	END	END	1	Occurs on dry mesic to mesic clay and clay-loam as well as mesic silty clay soils in open deciduous woodlands, forests, dense thickets, and meadows. ²⁵	Moderate potential. Suitable habitat present in association with the northernmost woodland	Confirmed absent
American Ginseng	Panax quinquefolius	S2	END	END	END	1	Grows in rich, moist, undisturbed and relatively mature deciduous woods in areas of neutral soil (such as over limestone or marble bedrock). ²⁰	No potential. Canopy cover insufficient to support this species. Edge effects are prevalent within the woodland communities.	N/A
American Water-willow	Justicia americana	S2	THR	THR	THR	1	Generally grows along shorelines and sometimes in nearby wetlands, as well as along streams where the bottom is composed of gravel, sand or organic matter. ²⁰	No potential. Suitable habitat absent to support this species	N/A
Butternut	Juglans cinerea	S1	END	END	END	1	Butternut grows best in rich, moist and well-drained soils or limestone gravel sites. They are less commonly found in dry, rocky and sterile soils. They generally grow alone or in small groups in deciduous forests that are commonly comprised of Basswood, Black Cherry, Beed, Black Walnut, Elm, Hemlock, Hickory, Oak, Red Maple, Sugar Maple, Poplar, White Ash and Yellow Birch. In Ontario, they can be found throughout the southern Ontario, south of the Canadian Shield. ¹⁰	Moderate potential. Suitable habitat present in association with the northernmost woodland	Confirmed absent

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule	Habitat Description	Habitat Present in Study Area?	Species Observed?
Cherry Birch	Betula lenta	S1	END	END	END		1 Restricted to a select number of locations within Niagara Region. Occurs on moist, well drained soils but is also found on coarse textured or rocky shallow soils within deciduous or mixed wood communities. This species is shade intolerant. 25	Unlikely. Inventories conducted since the 1950s have not documented any populations along the Niagara River.	Confirmed absent
Cucumber Tree	Magnolia acuminata	S2	END	END	END		1 Generally grows in rich, well-drained, medium to coarse-textured soils, often near standing water or on slopes or rises above saturated soils. 25	Unlikely. Inventories conducted since the 1950s have not documented any populations along the Niagara River.	Confirmed absent
Deerberry	Vaccinium stamineum	S1	THR	THR	THR		1 Generally occurs on sandy and well-drained soil, often in dry open woodlands (Niagara Gorge).20	No potential. Soils are unsuitable to support this species.	N/A
Downy Yellow False Foxglove	Aureolaria virginica	S1	END	END	0		0 Well drained soils in dry, open to semi-open, upland oak forests, woodlands and savanna. Known to grow on sand dunes, sand plains, clay ridges, slopes, stony loams on moraines, and shallow soils over carbonate bedrock. This species is shade intolerant and will normally occur in areas adjacent to open water, south- or west-facing slopes, on ridge backs, valley rims, or escarpment rims. 25	No potential. Suitable habitat is not present. Niagara populations are thought to be extirpated.	N/A
Drooping Trillium	Trillium flexipes	S1	END	END	END		1 Generally grows in dry, sandy loam, non-acidic soils of mature, deciduous woodlands that are usually associated with watercourses.20	Unlikely. Species was documented within the Niagara Glen in the 1950s but it is thought that the Niagara populations are thought to be extirpated.	Confirmed absent
Eastern Flowering Dogwood	Cornus florida	S2?	END	END	END		1 Generally grows in deciduous and mixed forests, in the drier areas of its habitat, although it is occasionally found in slightly moist environments; Also grows around forest edges and hedgerows.20	Unlikely. Eastern Flowering Dogwood most commonly occurs in association with the Niagara Escarpment.	Confirmed absent
Four-leaved Milkweed	Asclepias quadrifolia	S1	END	END	0		0 Occurs within open, dry to slightly moist woodlands or treed alvars. Typically found on shallower soils along the plateau, rim, or slopes of steep limestone escarpments.25	No potential. Species was last documented within the Niagara Glen in the 1950s. Despite significant survey, this species effort has not been documented within the area. It is thought that the Niagara populations are thought to be extirpated.	N/A
Golden-eye Lichen (Great Lakes population)	Teloschistes chrysophthalmus pop. 1	S1	END	END	END		1 Well-lit, humid environmental typically near shorelines and coastal areas. Extant populations are present within Niagara Region within remnant old-growth coastal deciduous forest of Sugar Maple, Eastern Hop-hornbeam and Red Oak along Lake Ontario growing over limestone bedrock. Only one population is known in Southern Ontario at Sandbanks provincial Park.26	No potential. Historical records for this species within Niagara Region but no recent records have been reported. Suitable habitat absent.	N/A
Pink Milkwort	Polygala incarnata	S1	END	END	0		0 Open wet-mesic to mesic prairies with soils that are sandy loams with moderate to imperfect drainage.10	No potential. Suitable habitat is not present within the Study Area.	N/A
Red Mulberry	Morus rubra	S2	END	END	END		1 Generally grows in moist forest habitats. In Ontario, these include slopes and ravines of the Niagara Escarpment, and sand spits and bottom lands; Can grow in open areas such as hydro corridors.20	No potential. Suitable habitat is not present within the Study Area.	N/A
Smooth Yellow False Foxglove	Aureolaria flava	S2?	THR	THR	0		0 Occurs in dry, sandy, open woodlands and savannas with well-drained soils. Typically associated with White Oak. Also found in association with Hickory and Pine. 25	No potential. Suitable habitat is not present.	N/A
Spotted Wintergreen	Chimaphila maculata	S2	END	THR	END		1 Generally grow in sandy habitats in dry-mesic oak-pine woods.20	No potential. Suitable habitat not present. Soils are clay loam.	N/A
White Wood Aster	Eurybia divaricata	S2S3	THR	THR	THR		1 Generally grows in open, dry, deciduous forests. It has been suggested that it may benefit from some disturbance, as it often grows along trails.20	Moderate Potential. Suitable habitat present in association with the northernmost woodland	Confirmed present.

S-Ranks (provincial)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

(Provincial Status from MNR Biodiversity Explorer September 2012)

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule ⁴	Habitat Description	Habitat Present in Study Area?	Species Observed?
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S1 Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2 Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3 Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

²SARO *Endangered Species Act, 2007*
(provincial status from MNR December 2014)
The provincial review process is implemented by the MNR's Committee on the Status of Species at Risk in Ontario (COSSARO).

EXT Extinct - A species that no longer exists anywhere.

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule ⁴	Habitat Description	Habitat Present in Study Area?	Species Observed?
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EXP Extirpated - A species that no longer exists in the wild in Ontario but still occurs elsewhere.

END Endangered - A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act (ESA) (END-R designations are no longer relevant as species are covered under new ESA April 2009)

THR Threatened - A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SC Special Concern (formerly Vulnerable) - A species with characteristics that make it sensitive to human activities or natural events.

NAR Not at Risk - A species that has been evaluated and found to be not at risk.

DD Data Deficient (formerly Indeterminate) - A species for which there is insufficient information for a provincial status recommendation.

⁵**SARA (Federal Species at Risk Act) Status and Schedule (includes COSEWIC Status)**

The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

EXT Extinct - A wildlife species that no longer exists.

EXP Extirpated - A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.

END Endangered - A wildlife species that is facing imminent extirpation or extinction.

THR Threatened - A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

SC Special Concern - A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

⁶**SARA Schedule**

Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.

Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

⁷**Habitat Present on Site**

Determination of suitability of the site to be support each species based on 'Key Habitats Used By Species'.

Yes - Specific habitat present and species and / or evidence observed;

Likely – The whole study area or portions of it contain conditions that could support the species;

Unlikely – Few similarities between study area conditions and preferred habitat exist;

No - Specific habitat not present and species and / or evidence not observed

⁸**Species Observed**

Reported sighting of species during fall field investigations by RJB biologists

Additional Sources:

Sources:

⁹ Cadman, M.D., et al. (eds). 2007. *Atlas of the Breeding Birds of Ontario, 2001-2005*. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto. xxii + 706 pp

¹⁰ Species at Risk Public Registry <http://www.sararegistry.gc.ca>

¹¹ McCracken, J.D. et al. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. viii + 88 pp.

¹² MNR SARO List Species Descriptions (http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_CSSR_SARO_LST_EN.html)

¹³ COSEWIC Species Assessment Report

¹⁴ Naughton, Donna. 2012. *The Natural History of Canadian Mammals*. Canadian Museum of Nature and University of Toronto Press, Toronto. + 784 pp

¹⁵ Farrar, John Laird, 2017. *Trees in Canada*. Natural Resources Canada | Canada Forest Services, and, Fitcherry & Whiteside Limited, pp.238 - 239

¹⁶ Ontario Nature Reptile and Amphibian Atlas (<https://ontariounature.org/programs/citizen-science/reptile-amphibian-atlas/species/>)

¹⁷ Environment Canada, 2015. Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. lx + 110 pp.

¹⁸ Humphrey, C. 2017. Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 76 pp.

¹⁹ Department of Fisheries and Oceans (DFO) Aquatic Species at Risk found online at: <http://www.dfo-mpo.gc.ca/species-especies/sara-lep/identify-eng.html>.

²⁰ Paulson, D. 2011. *Dragonflies and Damselflies of the East*. Princeton University Press, Princeton, NJ.

²¹ Harding, J.H., 1997. *Amphibians and Reptiles of the Great Lakes Region*. The University of Michigan Press. Ann Arbor, Michigan

²² MNRF. 2018. *City of Niagara Falls Species at Risk Table*. Guelph District.

²³ Michigan Flora found online at <https://michiganflora.net/search.aspx>

²⁴ Natural Heritage Information Centre (<https://www.ontario.ca/page/get-natural-heritage-information>)

²⁵ McKnight, K.B. et al. 2013. *Common Mosses of the Northeast and Appalachians*. Princeton University Press, Princeton, New Jersey.

²⁶ Leslie, J. 2018. Vascular Plants at Risk in Ontario. https://static1.squarespace.com/static/5a6531d312abd9ae318d7cbf/v5bf60278985836d7a274a0d/1543331903837/2018.11.22_Vascular+Plants+At+Risk+In+Ontario_Low+Resolution.pdf

²⁷ Knight, T. 2019. Recovery Strategy for the Golden-eye Lichen (*Teloschistes chrysophthalmus*) – Great Lakes population in Ontario. Ontario Recovery Strategy Series. Prepared for the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. v + 40 pp.



BURNSIDE

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Appendix C

Significant Wildlife Habitat Screening Table

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
Table 1.1: Seasonal Concentration Areas of Animals						
Waterfowl Stopover & Staging Areas (Terrestrial) Rationale: Habitat important to migrating waterfowl.	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these ecosites. Fields with seasonal flooding and waste grains in the Long Point, Rondeau, Lake St. Clair, Grand Bend and Point Pelee areas may be important to Tundra Swans.	Fields with sheet water during Spring (mid-March to May). - Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. - Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available.	Not present. No seasonally flooded fields are present on subject lands.	American Black Duck Northern Pintail Gadwall Blue-winged Teal Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects. - Any mixed species aggregations of 100 or more individuals required. - The flooded field ecosite habitat plus a 100-300 m radius area, dependent on local site conditions and adjacent land use is the SWH. - Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). SWHMiST Index #7 provides development effects and mitigation measures.	N/A
Waterfowl Stopover & Staging Areas (Aquatic) Rationale:	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 SWM ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. - These habitats have an abundant food supply (mostly aquatic invertebrates and	Not present: Suitable ecosites are not present	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter	Studies carried out & verified presence of: - Aggregations of 100 or more of listed species for 7 days, results in >700 waterfowl use days. - Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH. - The combined area of the Ecological Land Classification (ELC) ecosites and a 100 m radius area is the SWH. - Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are SWH.	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.		vegetation in shallow water).		White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck	- Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). SWHMiST Index #7 provides development effects and mitigation measures.	
Shorebird Migratory Stopover Area <u>Rationale:</u> High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	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, are extremely important for migratory shorebirds in May to mid-June and early July to October. - Sewage treatment ponds and storm water ponds do not qualify as a SWH.	Not present: Suitable ecosites are not present	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird’s Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel RuddyTurnstone Sanderling Dunlin	Studies confirming: - Presence of 3 or more of listed species and >1000 shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period). - Whimbrel stop briefly (<24 hrs.) 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 100 m radius area. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #8 provides development effects and mitigation measures.	N/A
Raptor Wintering Area <u>Rationale:</u> Sites used by multiple species, a high number of individuals and used	<u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class; <u>Forest:</u> FOD,	- The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. - Raptor wintering sites (hawk/owl) need to be >	No present Sufficiently sized forest and upland areas are not present.	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl <u>Special Concern:</u> Short-eared Owl Bald Eagle	Studies confirm the use of these habitats by: One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species.	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Name: 418-430 Aqueduct and 650-678 Niagara Street, Welland

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
annually are most significant.	FOM, FOC. <u>Upland:</u> CUM; CUT; CUS; CUW. <u>Bald Eagle:</u> Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	20 ha, with a combination of forest and upland. - 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, large trees and snags available for roosting.			- 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 area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects.” SWHMiST Index #10 and #11 provides development effects and mitigation measures.	
Bat Hibernacula <u>Rationale:</u> Bat hibernacula are rare habitats in all Ontario landscapes.	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	- Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. - Active mine sites should not be considered as SWH. - The locations of bat hibernacula are relatively poorly known.	Not present. No caves or mines on-site.	Big Brown Bat Tri-coloured Bat	- All sites with confirmed hibernating bats are SWH. - The habitat area includes a 200 m radius around the entrance of the hibernaculum for most development types and 1000 m for wind farms. - Studies are to be conducted during the peak swarming period (August to September). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #1 provides development effects and mitigation measures.	N/A
Bat Maternity Colonies <u>Rationale:</u> Known locations of forested bat	Maternity colonies considered SWH are found in forested ecosites.	Maternity colonies can be found in tree cavities, vegetation and often in buildings are not considered to be SWH).	Moderate potential: Suitable ecosites (FOD) with standing snags are present within the subject lands, snag density is approximately 21 snags/ha	Big Brown Bat Silver-haired Bat	- Maternity Colonies with confirmed use by: >10 Big Brown Bats >5 Adult Female Silver- haired Bats	Confirmed absent Based on the results of the acoustic surveys carried out by Terrastory and Burnside, it is the opinion of both Burnside and Terrastory staff that the subject lands contain any bat maternity

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
maternity colonies are extremely rare in all Ontario landscapes.	All ELC ecosites in ELC Community Series: FOD FOM SWD SWM	• Maternity roosts are not found in caves and mines in Ontario. • Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25 cm dbh) wildlife trees. • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred.	• Individual trees may provide habitat protected under the ESA for SAR bat species. Potential SAR species/habitat are discussed in grater detail within the EIS.		• The area of the habitat includes the entire woodland, or a forest stand ELC ecosite or an ecoelement containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. • SWHMiST Index #12 provides development effects and mitigation measures.	colonies. A relatively low number of passes were recorded over the course of a fourteen (14) day period during heterodyne and handheld bat meter surveys.
Turtle Wintering Areas <u>Rationale:</u> Generally, sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Snapping and Midland Painted Turtles. ELC Community Classes: SW, MA, OA and SA ELC Community Series: FEO and BOO For Northern Map Turtle: Open Water areas such as deeper rivers or streams and	• For most turtles, 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.	Not present. • Sufficient standing water not present on subject lands.	Midland Painted Turtle <u>Special Concern:</u> Northern Map Turtle Snapping Turtle	• 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 deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (September–October) or spring (March–May). • Congregation of turtles is more commonwhere wintering areas are limited and therefore significant.	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
	lakes with current can also be used as over-wintering habitat.				• SWHMiST Index #28 provides development effects and mitigation measures for turtle wintering habitat.	
Reptile Hibernaculum <u>Rationale:</u> Generally, sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator.	- For snakes, hibernation takes place in 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 groundcover.	Unlikely - Small mammal burrows occasionally observed within woodland area may be used as hibernacula but are not likely to be able to accommodate a large number of individuals. - No distinct hibernacula features such rock piles or slopes, old stone fences, and abandoned crumbling foundations were identified during the course of field investigations.	<u>Snakes:</u> Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake <u>Special Concern:</u> Milksnake Eastern Ribbonsnake	Studies confirming: - 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 (e.g., foundation or rocky slope) on sunny warm days in Spring (April/May) and Fall (September/October). Note: If there are Special Concern Species present, then site is SWH. Note: Sites for hibernation possess specific habitat parameters (e.g., temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e., strong hibernation site fidelity). Other critical life processes (e.g., mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWH. SWHMiST Index #13 provides development effects and mitigation measures for snake hibernacula.	Unlikely - Although small animal burrows are present throughout the subject lands, no individual snakes were observed during the course of numerous site visits. - No dedicated surveys (e.g. emergence surveys) were carried out as a part of the project scope.
Colonially - Nesting Bird Breeding Habitat (Bank & Cliff) <u>Rationale:</u>	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 potential. Exposed soils banks are not found within the subject lands.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Studies confirming: Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season.	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	- Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. - Does not include a licensed/permitted Mineral Aggregate Operation.			- A colony identified as SWH will include a 50 m radius habitat area from the peripheral nests. - Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #4 provides development effects and mitigation measures.	
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs) Rationale: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	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 15 m from ground, near the top of the tree.	No potential: Suitable ecosite is not present on subject lands.	Great Blue Heron Black-crowned Nigh-Heron Great Egret Green Heron	Studies confirming: - Presence of 2 or more active nests of Great Blue Heron or other listed species. - The habitat extends from the edge of the colony and a minimum 300 m radius or extent of the Forest ecosite containing the colony or any island <15.0 ha 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. SWHMiST Index #5 provides development effects and mitigation measures.	N/A
Colonially - Nesting Bird Breeding Habitat (Ground) Rationale: Colonies are important to local bird population, typically sites are only known colony	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).	- Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. - Brewers Blackbird colonies are found loosely on the ground in low bushes in close proximity to streams	No potential. Rocky islands or peninsulas are not oresent on subject lands.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer’s Blackbird	Studies confirming: - 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.	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
in area and are used annually.	MAM1 – 6 MAS1 – 3 CUM CUT CUS	and irrigation ditches within farmlands.			- The edge of the colony and a minimum 150 m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0 ha with a colony is the SWH. - Studies would be done during May/June when actively nesting. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #6 provides development effects and mitigation measures.	
Migratory Butterfly Stopover Areas <u>Rationale:</u> Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Combination of ELC Community Series; need to have present one Community Series from each land class. <u>Field:</u> CUM CUT CUS <u>Forest:</u> FOC FOD FOM CUP Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	- A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present and will be located within 5 km of Lake Erie or Ontario. - The habitat is typically a combination of field and forest and provides the butterflies with a location to rest prior to their long migration south. - The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. - Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest	No potential. Subject lands are no located within 5km of Lake Ontario or Lake Erie.	Painted Lady Red Admiral <u>Special Concern</u> Monarch	Studies confirm: - The presence of Monarch Use Days (MUD) during fall migration (August/October). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. - Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. - MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral’s is to be considered significant. SWHMiST Index #16 provides development effects and mitigation measures.	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
		distance to cross the Great Lakes.				
Landbird Migratory Stopover Areas Rationale: Sites with a high diversity of species as well as high numbers are most significant.	All ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	- Woodlots >5 ha in size and within 5 km of Lake Erie and Ontario. - If woodlands are rare in an area of shoreline, woodland fragments 2-5 ha can be considered for this habitat. - If multiple woodlands are located along the shoreline those Woodlands <2 km from Lake Ontario 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 5 km of Lake Erie and Ontario are Candidate SWH.	No potential. Subject lands are no located within 5k mof Lake Ontario or Lake Erie.	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 All migrant raptors species: <i>Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997.</i> Schedule 7: Specially Protected Birds (Raptors)	Studies confirm: - Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. - Studies should be completed during spring (April/May) and fall (August/October) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #9 provides development effects and mitigation measures.	N/A
Deer Winter Congregation Areas Rationale: Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate	All Forested ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD	- Woodlots >100 ha in size or if large woodlots are rare in planning area woodlots >50 ha. - Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands.	No potential. Area has not been identified by MNRF to be a deer winter congregation area.	White-tailed Deer	Studies confirm: - Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. - Use of the woodlot by white- tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF. - Studies should be completed during winter (January/February) when >20 cm	N/A

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions.	Conifer plantations much smaller than 50 ha may also be used.	- Large woodlots > 100 ha 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.			of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. SWHMiST Index #2 provides development effects and mitigation measures.	
Table 1.2.1: Rare Vegetation Communities						
Cliffs and Talus Slopes <u>Rationale:</u> Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC ecosite within Community Series: TAO CLO TAS CLS TAT CLT	- Most cliff and talus slopes occur along the Niagara Escarpment. - A Cliff is vertical to near vertical bedrock >3 m in height. - A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Not present on subject lands.		- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes. SWHMiST Index #21 provides development effects and mitigation measures.	N/A
Sand Barren <u>Rationale:</u> Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC ecosites: 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 ≤60%.	A sand barren area >0.5 ha 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%.	Not present on subject lands.		- Confirm any ELC Vegetation Type for Sand Barrens - Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). SWHMiST Index #20 provides development effects and mitigation measures.	N/A
Alvar	ALO1 ALS1	An alvar is typically a level, mostly unfractured	Not present on subject lands.		Field studies that identify:	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Name: 418-430 Aqueduct and 650-678 Niagara Street, Welland

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
Rationale: Alvars are extremely rare habitats in Ecoregion 7E.	ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Indicator Species: <i>Carex crawei</i> <i>Panicum philadelphicum</i> <i>Eleocharis compressa</i> <i>Scutellaria parvula</i> <i>Trichostema brachiatum</i> These indicator species are very specific to Alvars within Ecoregion 7E.	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. • An Alvar site > 0.5 ha in size. • Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie.			• 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. • SWHMiST Index #17 provides development effects and mitigation measures.	
Old Growth Forest Rationale: Due to historic logging practices and land clearance for agriculture, old	Forest Community Series: FOD FOC FOM SWD SWC	• Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an	Not present on subject lands.		Field Studies will determine: • If dominant trees species of the are >140 years old, then the area containing these trees is SWH. • The forested area containing the old growth characteristics will have experienced no recognizable forestry	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Name: 418-430 Aqueduct and 650-678 Niagara Street, Welland

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
growth forest is rare in the Ecoregion 7E.	SWM	abundance of snags and downed woody debris.			activities (cut stumps will not be present). - The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. - Determine ELC vegetation types for the forest forest area containing the old growth characteristics. SWHMiST Index #23 provides development effects and mitigation measures.	
Savannah <u>Rationale:</u> Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	- 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. - A Savannah is a tallgrass prairie habitat that has tree cover between 25–60%. - In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in Torontoarea (north of Lake Ontario).	Not present on subject lands.		Field studies confirm: - one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 7E should be used. - Area of the ELC ecosite is the SWH. - Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). SWHMiST Index #18 provides development effects and mitigation measures.	N/A
Tallgrass Prairie <u>Rationale:</u> Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	- No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway Right of Ways (ROW) are not considered to be SWH. - A Tallgrass Prairie has ground cover dominated	Not present on subject lands.		Field studies confirm: - One or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 7E should be used. - Area of the ELC ecosite is the SWH.	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
		by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in Toronto area (north of Lake Ontario).			- Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). SWHMiST Index #19 provides development effects and mitigation measures.	
Other Rare Vegetation Communities Rationale: Plant communities that often contain rare species which depend on the habitat for survival.	- Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. - Any ELC ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	- ELC ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M. - The MNR/Natural Heritage Information Centre (NHIC) will have up to date listing for rare vegetation communities. - Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	Not present on subject lands.		Field studies should confirm: - If an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. - Area of the ELC Vegetation Type polygon is the SWH. SWHMiST Index #37 provides development effects and mitigation measures.	N/A
Table 1.2.2: Specialized Habitat for Wildlife considered Significant Wildlife Habitat						
Waterfowl Nesting Area Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number	All upland habitats located adjacent to these wetland ELC ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120 m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where	Not present on subject lands. Wooded areas contain areas of lowland forest and vernal pools but are not located adjacent to any wetland ecosites.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	Studies confirmed: - Presence of 3 or more nesting pairs for listed species excluding Mallards, or; - Presence of 10 or more nesting pairs for listed species including Mallards. - Any active nesting site of an American Black Duck is considered significant. - Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Name: 418-430 Aqueduct and 650-678 Niagara Street, Welland

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
of individuals are significant.	MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands (PSW).	waterfowl nesting is known to occur. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40 cm dbh) in woodlands for cavity nest sites.			“Bird and Bird Habitats: Guidelines for Wind Power Projects”. • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST Index #25 provides development effects and mitigation measures.	
Bald Eagle & Osprey Nesting, Foraging & Perching Habitat <u>Rationale:</u> Nest sites are fairly uncommon in Eco-region 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of 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. • 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. • Nests located on man-made objects are not to be included as SWH (e.g., telephone poles and constructed nesting platforms).	Not present. • No nests observed. Site is not located adjacent to a suitably large waterbody.	Osprey Special Concern Bald Eagle	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important. • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800 m is dependent on-site lines from the nest to the development and inclusion of perching and foraging habitat. • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant. • Observational studies to determine nest site use, perching sites and foraging	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Name: 418-430 Aqueduct and 650-678 Niagara Street, Welland

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
					areas need to be done from mid-March to mid-August. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #26 provides development effects and mitigation measures.	
Woodland Raptor Nesting Habitat Rationale: Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	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 >30 ha with >4ha of interior habitat. Interior habitat determined with a 200 m 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.	Not present. Woodland with sufficient interior habitat is not present.	Northern Goshawk Cooper’s Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	Studies confirm: - Presence of 1 or more active nests from species list is considered significant. - Red-shouldered Hawk and Northern Goshawk – A 400 m radius around the nest or 28 ha area of habitat is the SWH (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest). - Barred Owl – A 200 m radius around the nest is the SWH. - Broad-winged Hawk and Coopers Hawk– A 100 m radius around the nest is the SWH. - Sharp-Shinned Hawk – A 50 m 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. SWHMiST Index #27 provides development effects and mitigation measures.	N/A
Turtle Nesting Areas Rationale: These habitats are rare and when identified will often be the only breeding site for local	Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC ecosites: MAS1 MAS2 MAS3	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.	Not present:. Suitable ecosistes are not present within subject lands.	Midland Painted Turtle <u>Special Concern Species:</u> Northern Map Turtle Snapping Turtle	Studies confirm: - Presence of 5 or more nesting Midland Painted Turtles. - One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. - The area or collection of sites within an area of exposed mineral soils where the	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Name: 418-430 Aqueduct and 650-678 Niagara Street, Welland

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
populations of turtles.	SAS1 SAM1 SAF1 BOO1 FEO1	- 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. - Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.			turtles nest, plus a radius of 30-100 m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. - Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100 m area of habitat. - Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	
Seeps and Springs Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Seeps/Springs are areas 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. - Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species.	Not present. Seeps and springs are not present within subject lands.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Field Studies confirm: - Presence of a site with 2 or more seeps/springs should be considered SWH. - The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. SWHMiST Index #30 provides development effects and mitigation measures.	N/A
Amphibian Breeding Habitat (Woodland) Rationale: These habitats are extremely important to amphibian biodiversity within a	All ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM	Presence of a wetland, pond or woodland pool (including vernal pools) >500 m² (about 25 m diameter) within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not	Moderate potential. Several vernal pools present within woodland (FOD) ecosite. Swales/temporary watercourses are also present along margins of site within 120m that may be used as amphibian breeding habitat/	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	Studies confirm: Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3.	Confirmed absent. One species of frog overheard calling at call leve1 within he vernal pools identified within the subject lands. The combination of the number of species overheard calling and the call level are not considered to be significant.

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
landscape and often represent the only breeding habitat for local amphibian populations.	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.	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.			- A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. - The habitat is the wetland area plus a 230 m 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. SWHMiST Index #14 provides development effects and mitigation measures.	
Amphibian Breeding Habitat (Wetlands) <u>Rationale:</u> Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	ELC Community Classes: SW MA FE BO OA and SA. Typically, these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g., Bull Frog) may be adjacent to woodlands.	- Wetlands >500 m2 (about 25 m 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 species because of available structure for calling, foraging, escape and concealment from predators. - Bullfrogs require permanent water bodies with abundant emergent vegetation.	Not present. Amphibian breeding habitat is either located within the forested ecosite or are located within 120m of the forested areas. Thus, any breeding habitat is considered to be “Woodland Breeding Habiata”. See above.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Studies confirm: - Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3 or; Wetland with confirmed breeding Bullfrogs are significant. - The ELC ecosite wetland area and the shoreline are the SWH. - A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. - If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. SWHMiST Index #15 provides development effects and mitigation measures.	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
Woodland Area-Sensitive Bird Breeding Habitat <u>Rationale:</u> Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	All ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	- Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs. old) forest stands or woodlots >30 ha. - Interior forest habitat is at least 200 m from forest edge habitat.	Not present - Woodland with sufficient interior habitat is not present. - One woodlands area-sensitive bird species, yellow-bellied sapsucker, was observed within the woodland foraging (no breeding evidence).	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Pileated Woodpecker Special Concern: Cerulean Warbler Canada Warbler	Studies confirm: - Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. - Conduct field investigations in spring and early summer when birds are singing and defending their territories. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #34 provides development effects and mitigation measures.	N/A
Table 1.3: Habitat for Species of Conservation Concern considered Significant Wildlife Habitat						
Marsh Breeding Bird Habitat <u>Rationale:</u> Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	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.	Not present. Suitable ecosite(s) not present within the subject lands.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	Studies confirm: - Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species. Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. - Area of the ELC ecosite is the SWH. - Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #35 provides development effects and mitigation measures.	N/A
Open Country Bird Breeding Habitat <u>Rationale:</u>	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha.	Not present. Suitable ecosite(s) not present within the subject lands.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier	Field Studies confirm: Presence of nesting or breeding of 2 or more of the listed species.	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.		- 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). - 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.		Savannah Sparrow Special Concern Short-eared Owl	- A field with 1 or more breeding Short-eared Owls is to be considered SWH. - The area of SWH is the contiguous ELC ecosite field areas. - Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #32 provides development effects and mitigation measures.	
Shrub/Early Successional Bird Breeding Habitat Rationale: This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	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 >10 ha in size. - Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e., no row-cropping, haying or live-stock pasturing in the last 5 years). - Shrub thicket habitats (>10 ha) 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,	Not present. Suitable ecosiste(s) of sufficient size not present within the subject lands.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	Field Studies confirm: - Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. - A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered 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. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST cxlix Index #33 provides development effects and mitigation measures.	N/A

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
		either abandoned fields or pasturelands.				
Terrestrial Crayfish <u>Rationale:</u> Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	- Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for Terrestrial Crayfish. - Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. - Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed.	Moderate potential. Lowland forest and wetland areas present on site may constitute suitable habitat.	Chimney or Digger Crayfish (<i>Fallicambarus fodiens</i>) Devil Crayfish or Meadow Crayfish (<i>Cambarus Diogenes</i>)	Studies Confirm: - Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites. - Area of ELC ecosite or an 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. SWHMiST Index #36 provides development effects and mitigation measures.	No potential. - No crayfish burrows were not observed on-site during all site visits. - Meadow marsh ecosite within subject lands contains suitable habitat conditions for terrestrial crayfish to be present.
Special Concern and Rare Wildlife Species <u>Rationale:</u> These species are quite rare or have experienced significant population declines in Ontario.	All plant and animal Element Occurrences (EO) within a 1 or 10 km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC ecosites.	Candidate habitat present for the following species: - Canada Warbler - Golden-winged Warbler - Red-headed Woodpecker - Wood Thrush - Eastern Wood-Pewee	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the NHIC.	Studies Confirm: - Assessment/inventory of the site for the identified Special Concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. - The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g., specific nesting habitat or foraging habitat. SWHMiST Index #37 provides development effects and mitigation measures.	Not significant. Species were not recorded during breeding bird surveys on the subject lands.

Table 1.4.1: Animal Movement Corridors

Significant Wildlife Habitat Screening in the Study Area– Ecoregion 7E Criteria (2015)

Project Number: 300052233

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
Amphibian Movement Corridors Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Corridors may be found in all ecosites associated with water. Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	• Movement corridors between breeding habitat and summer habitat. • Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat–Wetland) of this Schedule.	Not present. • Amphibian Breeding Habitat–Wetland is not present within the study area. See above.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	• 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 15 m of vegetation on both sides of waterway or be up to 200 m wide of woodland habitat and with gaps <20 m. • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. • SWHMiST Index #40 provides development effects and mitigation measures.	N/A
Table 1.5.1: Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 7E						
7E-2 - Bat Migratory Stopover Area Rationale: Stopover areas for long distance migrant bats are important during fall migration.	No specific ELC types	• Long distance migratory bags typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas. • This is the only known bat migratory stopover habitats based on current information.	Not present. • Subject lands are not found near Long Point.	Hoary Bat Eastern Red Bat Silver-haired Bat	• Long Point (42°35'N, 80° 30'E, to 42°33'N, 80°03'E) has been identified as a significant stop-over habitat for fall migrating Silver-haired Bats, due to significant increases in abundance, activity and feeding that was documented during fall migration. • The confirmation criteria and habitat areas for this SWH are still being determined. • SWH MIST Index #38 provides development effects and mitigation measures.	N/A



BURNSIDE

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Appendix D

Plant List for 418 – 430 Aqueduct and 650 – 678 Niagara Street

Botanical Inventory

Scientific Name	Common Name	ESA	COSEWIC	SARA	G-Rank	S-Rank	Native/ Introduced	Niagara Region (Oldham 2010)	Cultural Woodland (CUW) - south	Cultural Woodland (CUW) - north	Residential (CVR) inc. Swamp (SW) inclusion
<i>Acer negundo</i>	Manitoba maple				G5	S5	N	C			X
<i>Acer platanoides</i>	Norway Maple				GNR	SNA	I	IC	X		X
<i>Acer saccharinum</i>	Silver Maple				G5	S5	N	C		X	X
<i>Acer saccharum</i>	Sugar Maple				G5	S5	N	C	X	X	X
<i>Aesculus hippocastanum</i>	Horsechestnut				GNR	SNA	I	IU			X
<i>Alliaria petiolata</i>	Garlic Mustard				GNR	SNA	I	IC		X	
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit				G5	S5	N	C		X	
<i>Bidens frondosa</i>	Devil's Beggarticks				G5	S5	N	C			X
<i>Carex gracillima</i>	Graceful Sedge				G5	S5	N	C		X	
<i>Carex grayi</i>	Gray's Sedge				G4G5	S4	N	R			X
<i>Carex lupulina</i>	Hop Sedge				G5	S5	N	C			X
<i>Carex cf. pennsylvanica</i>	Pennsylvania Sedge				G5	S5	N	C		X	
<i>Carex cf. scoparia</i>	Pointed Broom Sedge				G5	S5	N	U		X	
<i>Catalpa speciosa</i>	Northern Catalpa				G4?	SNA	I	IR	X		
<i>Carya ovata</i>	Shagbark Hickory				G5	S5	N	C	X	X	X
<i>Circaea canadensis</i>	Broad-leaved Enchanter's Nightshade				G5	S5	N	C		X	
<i>Convallaria majalis</i>	European Lily-of-the-valley				G5	SNA	I	IU		X	
<i>Cornus obliqua</i>	Silky Dogwood				G5	S5	N	C		X	
<i>Cornus sericea</i>	Red-osier Dogwood				G5	S5	N	U			X
<i>Elaeagnus umbellata</i>	Autumn Olive				GNR	SNA	I	IU			
<i>Epifagus virginiana</i>	Beechdrops				G5	S5	N	C		X	
<i>Erythronium americanum</i>	Yellow Trout-lily				G5	S5	N	C		X	
<i>Eurybia divaricata</i>	White Wood Aster	THR	THR	THR	G5	S3	N	U		X	
<i>Fagus grandifolia</i>	American Beech				G5	S4	N	C	X	X	X
<i>Frangula alnus</i>	Glossy Buckthorn				GNR	SNA	I	IC	X		X
<i>Fraxinus americana</i>	White Ash				G5	S4	N	C		X	
<i>Fraxinus nigra</i>	Black Ash		THR		G5	S4	N	U			X
<i>Fraxinus pennsylvanica</i>	Red Ash				G5	S4	N	C	X		X
<i>Geum aleppicum</i>	Yellow Avens				G5	S5	N	C			X
<i>Gleditsia triacanthos var. inermis</i>	Thornless Honeylocust										X
<i>Glyceria sp.</i>	Manna Grass									X	
<i>Hedera helix</i>	English Ivy				GNR	SNA	I	IR			X
<i>Hemerocallis fulva</i>	Orange Daylily				GNA	SNA	I	IC			X
<i>Hepatica acutiloba</i>	Sharp-lobed Hepatica				G5T5	S5	N	U		X	

Scientific Name	Common Name	ESA	COSEWIC	SARA	G-Rank	S-Rank	Native/ Introduced	Niagara Region (Oldham 2010)	Cultural Woodland (CUW) - south	Cultural Woodland (CUW) - north	Residential (CVR) inc. Swamp (SW) inclusion
<i>Impatiens capensis</i>	Spotted Jewelweed				G5	S5	N	C		X	X
<i>Iris versicolor</i>	Harlequin Blue Flag				G5	S5	N	C		X	
<i>Juglans nigra</i>	Black Walnut				G5	S4?	N	C			X
<i>Lactuca canadensis</i>	Canada Lettuce				G5	S5	N	U		x	
<i>Lonicera tatarica</i>	Tatarian Honeysuckle				GNR	SNA	I	IC	X	X	
<i>Lysimachia nummularia</i>	Creeping Yellow Loosestrife				GNR	SNA	I	IC			X
<i>Lythrum salicaria</i>	Purple Loosestrife				G5	SNA	I	IC			X
<i>Maianthemum racemosum</i>	Large False Solomon's Seal				G5T5	S5	N	C		X	X
<i>Malus pumila</i>	Apple				G5	SNA	I	IC			X
<i>Monotropa uniflora</i>	Ghost Pipe				G5	S5	N	C		X	
<i>Morus alba</i>	White mulberry				GNR	SNA	I	IC			X
<i>Myosotis scorpioides</i>	True Forget-me-not				G5	SNA	I	IU		x	
<i>Onoclea sensibilis</i>	Sensitive Fern				G5	S5	N	C		X	
<i>Ostrya virginiana</i>	Eastern Hop-hornbeam				G5	S5	N	C		X	
<i>Parthenocissus quinquefolia</i>	Virginia Creeper				G5	S4?	N	U		X	
<i>Picea glauca</i>	White Spruce				G5	S3	N	IC	X		X
<i>Picea pungens</i> 'Glauca'	Colorado Blue Spruce				G5	SNA	I				X
<i>Pinus sylvestris</i>	Scots Pine				GNR	SNA	I	IC	X		
<i>Podophyllum peltatum</i>	May-apple				G5	S5	N	C		X	
<i>Prunus serotina</i>	Black Cherry				G5	S5	N	C		X	
<i>Prunus virginiana</i>	Chokecherry				G5	S5	N	C		X	X
<i>Quercus alba</i>	White Oak				G5	S5	N	C		X	
<i>Quercus rubra</i>	Red Oak				G5	S5	N	C	X	X	X
<i>Robinia pseudoacacia</i>	Black Locust				G5	SNA	I	IC			X
<i>Rosa sp.</i>	Rose									X	
<i>Rumex crispus</i>	Curled Dock				GNR	SNA	I	IC			X
<i>Salix bebbiana</i>	Bebb's Willow				G5	S5	N	C			X
<i>Sambucus canadensis</i>	Common Elderberry				G5T5	S5	N	C		X	
<i>Schoenoplectus tabernaemontani</i>	Soft-stemmed Bulrush				G5	S5	N	C			X
<i>Solanum dulcamara</i>	Bittersweet Nightshade				GNR	SNA	I	IC		X	
<i>Solidago caesia</i>	Blue-stemmed Goldenrod				G5	S5	N	C		X	
<i>Solidago rugosa</i>	Rough-stemmed Goldenrod				G5	S5	N	C		X	
<i>Symphyotrichum ericoides</i>	White Heath Aster				G5	S5	N	C			X
<i>Symphyotrichum lanceolatum</i>	Panicked Aster				G5	S5	N	C		X	
<i>Toxicodendron radicans</i>	Poison Ivy				G5	S5	N	C	X	X	X

<i>Scientific Name</i>	Common Name	ESA	COSEWIC	SARA	G-Rank	S-Rank	Native/ Introduced	Niagara Region (Oldham 2010)	Cultural Woodland (CUW) - south	Cultural Woodland (CUW) - north	Residential (CVR) inc. Swamp (SW) inclusion
<i>Ulmus americana</i>	White Elm				G4	S5	N	C		X	X
<i>Vinca minor</i>	Lesser Periwinkle				GNR	SNA	I	IU		X	X
<i>Vitis riparia</i>	Riverbank Grape				G5	S5	N	C	X	X	X

Natural Heritage Information Centre. 2018. Vascular Plant Species List (18 March 2021). Downloaded on October 31, 2023.

Oldham, M.J. 2010. Natural Areas Inventory: Checklist of the Vascular Plants of Niagara Regional Municipality, Ontario. Produced for the Niagara Peninsula Conservation Authority

ESA Status

Species at Risk in Ontario list: The list of species that are classified as species at risk under the Endangered Species Act (2007).

- EXT:Extinct – A species that no longer exists anywhere.
- EXP:Extirpated – A species that no longer exists in the wild in Ontario but still occurs elsewhere.
- END:Endangered – A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act (ESA).
- THR:Threatened – A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
- SC:Special Concern (formerly Vulnerable) – A species with characteristics that make it sensitive to human activities or natural events.
- NAR:Not at Risk – A species that has been evaluated and found to be not at risk.
- DD:Data Deficient (formerly Indeterminate) – A species for which there is insufficient information for a provincial status recommendation.

COSEWIC Status

Committee on the Status of Endangered Wildlife in Canada status: Species has been assessed by COSEWIC as having status, but status is not necessarily adopted on the official Schedule 1 to SARA.

- EXT:Extinct – A species that no longer exists.
- EXP:Extirpated – A species no longer existing in the wild in Canada, but occurring elsewhere.
- END:Endangered – A species facing imminent extirpation or extinction.
- THR:Threatened – A species likely to become endangered if limiting factors are not reversed.
- SC:Special Concern (formerly vulnerable) – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
- NAR:Not At Risk – A species that has been evaluated and found to be not at risk of extinction given the current circumstances.
- DD:Data Deficient (formerly Indeterminate) – Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.

SARA Schedule 1 Status

Species at Risk Act Schedule 1 Status: Schedule 1 is the official list of species that are classified as extirpated, endangered, threatened, and of special concern. The Act establishes Schedule 1, as the official list of species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed species are implemented.

- EXT:Extinct – A species that no longer exists.

EXP:	Extirpated – A species that no longer exists in the wild in Canada but exists elsewhere in the wild.
END:	Endangered – A species that is facing imminent extirpation or extinction.
THR:	Threatened – A species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC:	Special Concern – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Global Rank	
GX	Presumed Extinct (species)/Eliminated (ecological communities and systems) — Species not located despite intensive searches and virtually no likelihood of rediscovery. Ecological community or system eliminated throughout its range, with no restoration potential.
GH	Possibly Extinct (species)/ Eliminated (ecological communities and systems) — Known from only historical occurrences but still some hope of rediscovery. There is evidence that the species may be extinct or the ecosystem may be eliminated throughout its range, but not enough to state this with certainty.
G1	Critically Imperiled—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2	Imperiled—At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors.
G3	Vulnerable—At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors.
G4	Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5	Secure—Common; widespread and abundant.

Variant Ranks	
G#G#:	Range Rank – A numeric range rank (e.g., G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).
GU:	Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible (when the range of uncertainty is three consecutive ranks or less), a range rank (e.g., G2G3) should be used to delineate the limits (range) of uncertainty.
GNR:	Unranked – Global rank not yet assessed
GNA:	Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Rank Qualifiers	
?:	Inexact Numeric Rank – Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status Ranks or GX or GH.
Q:	Questionable taxonomy that may reduce conservation priority – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower priority (numerically higher) conservation status rank. The “Q” modifier is only used at a global level and not at a national or subnational level.
C:	Captive or Cultivated Only – Taxon or ecosystem at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population or ecosystem restoration, not yet established. The “C” modifier is only used at a global level and not at a national or subnational level. Possible ranks are GXC or GHC. This is equivalent to “Extinct” in the Wild (EW) in IUCN’s Red List terminology (IUCN 2001).

Subnational Rank	
S-Rank: Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks but consider only those factors within the political boundaries of Ontario.	
S1:	Critically Imperiled – Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2:	Imperiled – Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3:	Vulnerable – Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4:	Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5:	Secure – Common, widespread, and abundant in the nation or state/province.
S#S#:	Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SX:	Presumed Extirpated – Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH:	Possibly Extirpated (Historical) – Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
SE:	Species is considered exotic in Ontario
SNR:	Unranked – Nation of state/province conservation status not yet assessed.
SU:	Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA:	Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Native?:
N: Native to Ontario. Species does not have exotic status under NHIC database.
I: Introduced to Ontario. Species has exotic status rank under NHIC database.

Niagara Region (Oldham)

- C Common (native)
- U Uncommon (native)
- R Rare (native)
- RH Rare historic (native)
- IC Introduced (common)
- IU Introduced (uncommon)
- IR Introduced (rare)
- IH Introduced (historic)
- I Introduced
- DD Data deficient
- HYB Hybrid



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Appendix E

Breeding Bird Data

Breeding Bird Survey Summary Table

Common Name	Scientific Name	Provincial SRANK ¹	Provincial SARO (Endangered Species Act, 2007) ²	Federal COSEWIC ³	Federal SARA (Species At Risk Act) ³	Federal SARA Schedule ⁴	Provincial MNRF Area Sensitive Species ⁵	Habitat Unit Reference Where Breeding Evidence Recorded						Highest Number Recorded (All Habitat Units Combined)	Highest Recorded Breeding Evidence ⁶
								BB1	BB2	BB3	BB4	BB5	BB6		
American Crow	<i>Corvus brachyrhynchos</i>	S5						3	2	5				10	OBSERVED, X
American Robin	<i>Turdus migratorius</i>	S5						2		3	2			7	CONFIRMED, FY
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5							4	1				5	POSSIBLE, S
Blue Jay	<i>Corvus cristata</i>	S5						1	1	3	2			7	PROBABLE, T
Common Grackle	<i>Quiscalus quiscula</i>	S5						4	4	6				14	PROBABLE, T
Downy Woodpecker	<i>Picoides pubescens</i>	S5						1	1	2				4	POSSIBLE, S / H
European Starling	<i>Sturnus vulgaris</i>	SNA									2			2	POSSIBLE, H
Grey Catbird	<i>Dumetella carolinensis</i>	S5B,S3N						2			1			3	POSSIBLE, S
House Sparrow	<i>Passer domesticus</i>	SNA						2	1	1	2			6	POSSIBLE, S
Mourning Dove	<i>Zenaida macroura</i>	S5							1					1	POSSIBLE, S
Northern Cardinal	<i>Cardinalis cardinalis</i>	S5						4	2	2				8	POSSIBLE, S
Northern Flicker	<i>Colaptes auratus</i>	S5						2		2				4	PROBABLE, T
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S5							2					2	POSSIBLE, S
Ring-billed Gull	<i>Larus delawarensis</i>	S5								1				1	OBSERVED, X
Song Sparrow	<i>Melospiza melodia</i>	S5						1	2	2	2			7	PROBABLE, T
Turkey Vulture	<i>Cathartes aura</i>	S5B,S3N							1					1	OBSERVED, X
White-breasted Nuthatch	<i>Sitta carolinensis</i>	S5								2				2	PROBABLE, T
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	S5B,S3N							1					1	OBSERVED, X
TOTAL SPECIES															

¹S-Ranks (provincial)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: [Conservation Status Categories | NatureServe Explorer](#))

SX — Presumed Extirpated - Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

SH — Possibly Extirpated (Historical) - Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20–40 years. A species or community could become SH without such a 20–40-year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

S1 — Critically Imperiled - Critically imperiled in the province or state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.

S2 — Imperiled - Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.

S3 — Vulnerable - Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 — Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 — Secure - Common, widespread, and abundant in the province.

SNR — Unranked - Province conservation status not yet assessed.

SU — Unrankable - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA — Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# — Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
S#? – Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

Breeding Status Qualifiers

B – Breeding Conservation status refers to the breeding population of the species in the nation or state/province.
N – Nonbreeding Conservation status refers to the non-breeding population of the species in the province.
M – Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

²**SARO *Endangered Species Act, 2007***
(provincial status from <http://www.ontario.ca/environment-and-energy/how-species-risk-are-listed#section-3>)
The provincial review process is implemented by the MNRF's Committee on the Status of Species at Risk in Ontario (COSSARO).

Extinct - A species that no longer exists anywhere.
Extirpated (EXT) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
Endangered (END) - Lives in the wild in Ontario but is facing imminent extinction or extirpation.
Threatened (THR) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
Special concern (SC) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.
Not at Risk (NAR) - A species that has been evaluated and found to be not at risk.
Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation.

³**SARA (Federal *Species at Risk Act*) Status and Schedule (includes COSEWIC Status)**
The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

Extinct - A wildlife species that no longer exists.
Extirpated (EXT) - A wildlife species that no longer exists in the wild in Canada but exists elsewhere.
Endangered (END) - A wildlife species facing imminent extirpation or extinction.
Threatened (THR) - A wildlife species that is likely to become an endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
Special Concern (SC) - A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
Data Deficient (DD) - A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.
Not At Risk (NAR) - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

⁴**SARA Schedule**
Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

⁵Source: Ontario Ministry of Natural Resources. 2000. *Significant Wildlife Habitat Technical Guide* & Appendices.

6Ontario Breeding Bird Atlas - Breeding Evidence Codes

Observed	
X	Species observed during its breeding season, but NOT in suitable nesting habitat (no breeding evidence found). Note that this code is rarely used as birds tend to occupy nesting habitat during the breeding season. Do not use for species known to be migrants.

Possible	
H	Species observed in suitable nesting Habitat during its breeding season.
S	Singing male or adult producing other sounds associated with breeding (e.g., calls or drumming) in suitable nesting habitat during the species' breeding season.

Probable	
M	Multiple singing/calling/drumming individuals (7 or more) heard during one visit to a single square and in suitable nesting habitat during the species' breeding season. Use with caution to avoid counting migrants.
P	Pair observed in suitable nesting habitat during the species' breeding season.
T	Presumed Territory based on the presence of an adult bird (usually singing, but not necessarily so), in the same suitable nesting habitat patch on at least two visits, one week or more apart, during the species' breeding season. Use discretion when using this code. "T" is not to be used for colonial birds, or species that might forage or loaf a long distance from their nesting site (e.g., Turkey Vulture, and male waterfowl).
D	Courtship or displays involving a male and female (e.g., courtship feeding, copulation) or antagonistic behavior between two or more individuals (e.g., territorial disputes or chases), in suitable nesting habitat during the species' breeding season.
V	Bird Visiting a probable nest site in suitable nesting habitat during the species' breeding season.
A	Agitated behavior or alarm calls of an adult in suitable nesting habitat during the species' breeding season.
B	Brood patch or cloacal protuberance on an adult in suitable nesting habitat during the species' breeding season.
N	Nest-building by wrens or nest hole excavation by woodpeckers (both may build dummy or roosting nests, so nest-building alone is not enough to confirm breeding).

Confirmed	
NB	Nest building, including the carrying of nesting material, by all species except wrens and woodpeckers.
DD	Distraction Display, injury-feigning, or other displays attempting to draw attention away from a nest or young.
NU	Empty Nest Used or identifiable eggshells from earlier in the same nesting season.
FY	Recently Fledged Young (nidicolous species – whose young are raised in a nest) or downy young (nidifugous species – whose young leave the nest soon after hatching) incapable of sustained flight.
AE	Adult Entering, occupying, or leaving a nest site (visible or not) or whose behavior suggests the presence of an occupied nest.
FS	Adult carrying a Faecal Sac.
CF	Adult carrying food for young.
NE	Nest containing eggs.
NY	Nest with young (seen or heard).



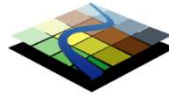
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Appendix F

Bat Acoustic Monitoring Report

August 20, 2021
Project No.: 21141



TERRASTORY
environmental consulting inc.

Kevin Butt, B.Sc. (Env.) Rest Cert, TRAQ
Leader, Environmental Planning and Assessment
R.J. Burnside & Associates Limited
292 Speedvale Avenue West
Guelph, ON N1H 1C4
kevin.butt@rjburnside.com

SUBJECT: Bat Acoustic Monitoring
664/670/678 Niagara Street
City of Welland

Dear Kevin,

Please find enclosed the results of Terrastory's Bat Acoustic Monitoring survey at the above-captioned location in Welland.

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

Regards,

Terrastory Environmental Consulting Inc.

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

METHODOLOGY

Ultrasonic acoustic monitoring to characterize the assemblage of bat species that may be occupying a wooded area in the rear yards of 664/670/678 Niagara Street was undertaken at one (1) station between 23 June (pm) and 6 July 2021 (am). The device was deployed in a canopy opening (offering suitable foraging habitat) with snags and declining trees situated along the edges (offering potentially suitable roosting habitat). Photographs of the bat acoustic monitoring station are provided in **Appendix 1**, while the location of the station is indicated on **Figure 1**.

Acoustic monitoring was completed between sunset and sunrise each day using a SM4BAT full spectrum digital song meter (Wildlife Acoustics Inc.) and an ultrasonic microphone (SMM-U1). All recordings were analyzed manually by Terrastory staff with the assistance of Kaleidoscope Pro Analysis Software (Wildlife Acoustics Inc.).

RESULTS

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

The acoustic monitoring results are provided below in **Table 1**. A total of 93 detections were made over the 14 evening survey period. Big Brown Bat (*Eptesicus fuscus*) and Silver-haired Bat (*Lasionycteris noctivagans*) generated the greatest number of recordings with 50 detections collectively. There is overlap in the amplitude and peak frequencies of Big Brown Bat and Silver-haired Bat calls such that many recordings cannot be reliably attributed to one species or the other. Only recordings with an amplitude ≥ 65 kHz can be attributed to Big Brown Bat, while mostly flat recordings with a peak frequency around 26-30 kHz are diagnostic for Silver-haired Bat (Humboldt State University Bat Lab 2011; Thorne 2017). Some of the Big Brown Bat recordings were high quality (i.e., clear high frequency element, ≥ 65 kHz high amplitude, presence of harmonics) which likely indicates such individuals were recorded in close proximity to the device microphone. Hoary Bat (*Lasiurus cinereus*) was detected 42 times while Eastern Red Bat (*Lasiurus borealis*) was recorded once. No species at risk bats were detected.

Table 1. Bats documented via Ultrasonic Acoustic Monitoring within the Study Area.

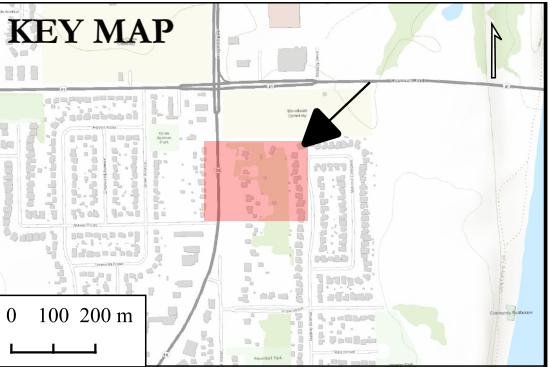
Survey Station	Start Date	End Date	Species Detected (No. of Passes)
BA-1	23 June 2021 (PM)	6 July 2021 (AM)	Big Brown_Bat (7)
			Silver-haired_Bat (8)
			Big Brown_Bat / Silver-haired_Bat (35)
			Hoary Bat (42)
			Eastern_Red Bat (1)
			TOTAL PASSES (93)

The number of bat detections over the 14 evening survey period is considered relatively low, with the greatest number of detections (20) occurring on July 5 (evening) / July 6 (morning). Notwithstanding this, light to moderate rain occurred on several evenings during the monitoring period which likely reduced bat activity. Overall, the results are not suggestive of significant bat foraging activity or the presence of a maternity roost within the trigger distance (~30 m) of the device.

REFERENCES

Humboldt State University Bat Lab. 2011. “Echolocation Call Characteristics of Eastern US Bats,” no. March.

Thorne, T. J. 2017. *Bats of Ontario*. 1st ed. Newcastle, Ontario: Hawk Owl Publishing.



Legend

Survey Stations

 Bat Acoustic Monitoring Stations

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



TERRASTORY
environmental consulting inc.
info@terrastoryenviro.com 905.745.5398



1:750

0 5 10 15 20 25 m



Location:
664/670/678 Niagara Street,
City of Welland

Project No.: 21141		Figure 1: Bat Acoustic Monitoring Station
Date: 2021-08-19		
By: TK	Checked:	
Orthophotograph Date: 2015 (SWOOP).		

Appendix 1. Representative Photographs



Photo 1. Ultrasonic Acoustic Monitoring Station (23 June 2021).



Photo 2. Ultrasonic Acoustic Monitoring Station (23 June 2021).



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Appendix G

Headwater Drainage Feature Assessment



Technical Memorandum – Headwater Drainage Feature Assessment

Date: August 31, 2021

Project No.: 300052233.0000

Project Name: Aqueduct Street

Client Name: 2786966 Ontario Inc.

Submitted To: Niagara Peninsula Conservation Authority

Submitted By: Matthew Moote, H.B.Sc., C.Tech., CAN-CISEC-IT, Aquatic Ecologist

Reviewed By: Chris Pfohl, CET, EP, CAN-CISEC, Sr. Aquatic Ecologist

The following report characterizes the headwater drainage feature (HDF) associated with the channel that flows from south to north through the subject property (The Bryant). The subject site is located east of Niagara Street between Aqueduct Street and the Woodlawn Road Cemetery in Welland, Ontario. The details outlined herein have been provided to document the ecological function and form of the HDF feature within the residential properties.

1.0 Background

Extensive environmental investigations have been conducted at The Bryant location in anticipation of the proposed re-development of the site. An existing surface water feature is located on the western portion of the property, and it conveys flows off-site from south to north. Downstream (west) of Niagara Street this feature is enclosed for approximately 435 m, discharging to the Welland Canal. For the purposes of this report the feature is referred to as H1 with subsequent reach delineation based on this naming convention (H1-R1, H1-R2 etc.)

A series of field investigations have been completed by R.J. Burnside & Associates Limited (Burnside) within the project site throughout 2021, including Amphibian Call Surveys.

2.0 Introduction

Headwater Drainage Features (HDFs) are small zero-order and first order intermittent and ephemeral streams, swales and connected headwater wetlands (CVC & TRCA, 2014). HDF's

can have many hydrological and ecological functions which help to maintain watershed health, such as water quality, flow attenuation, season habitat for fish, insects and amphibians, sediment influences, and allochthonous input from organic material. In many cases, these features may qualify as “watercourses” under the Conservation Authorities Act, which are described as “identifiable depressions in the ground in which flow of water regularly or continuously occurs”.

Land use activities associated with urbanization and agriculture, such as the drainage, piping and channelization, may result in impacts to HDF that reduce their ability to perform their natural functions. This can have detrimental effects on the watershed, particularly when many HDFs in the watershed are altered, because of the cumulative effects that may occur. Individually, their importance is often overlooked due to their small size and intermittent flow regimes, particularly in the summer when monitoring of streams typically occurs. Because of this, they are often not part of typically watershed monitoring programs.

In 2014, the Toronto Region Conservation Authority (TRCA) and Credit Valley Conservation (CVC) finalized and adopted the Evaluation, Classification, and Management of Headwater Drainage Features (HDF Guidelines). The HDF Guidelines, in conjunction with supporting modules from the Ontario Stream Assessment Protocol (OSAP, 2017), outlines a process for assessing and classifying natural drainage features. This procedure identifies the contribution of these drainage systems to the watershed and enables the development of mitigation and management procedures if disruption of their function is proposed.

3.0 Historical Imagery and Land Use of The Bryant

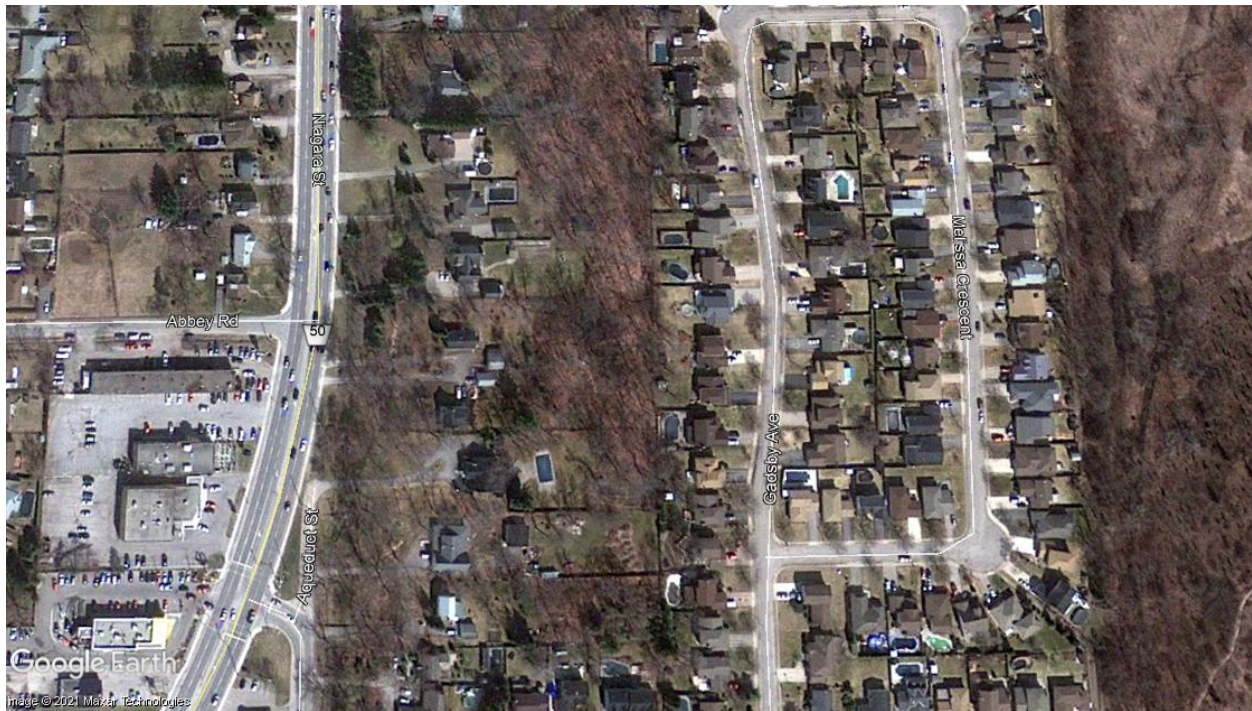
The Bryant site is made up of 8 large single family home lots for a total area of 3.9 ha in size. The site consists of grassed area generally sloping from the west to the east with single family homes, associated driveways, garages and other structures.

Historical imagery of the Bryant is available as far back as 1934, when land use was primarily agricultural.



Photograph 1 - 1934

Historically, the property was vacant rural land. In 1934 the HDF is visible running through the site, with woody vegetation present to the east and agricultural land present on the west side of Niagara Street.



Photograph 2 - 2010

Historical image is next available in 2010. The feature in 2010 appears to be very similar to the conditions observed in 2021.

4.0 2021 Field Investigations

4.1 Amphibian Breeding Call Surveys

On April 27, May 14, and June 7 Amphibian Breeding Call Surveys were undertaken to determine potential amphibian utilization of the HDF and other wetted features on the site.

5.0 Headwater Drainage Feature

Field investigations were conducted based on procedures outlined in the TRCA (2014) guidance document, as well as supporting OSAP Section 4: Module 10 (S4:M10) and Section 4: Module 11 (OSAP, 2017). Accessibility to sites within the subject lands enabled a reach-based approach primarily utilizing S4:M11. A background review of existing hydrolayer mapping, and satellite imagery were utilized prior to the investigation to help guide fieldwork.

Since HDF's can vary significantly on a seasonal basis, multiple site visits are needed to correctly assess their hydrology and riparian conditions. Headwater drainage features were evaluated through a series of three site visits in 2021.

The HDF Guide (TRCA, 2014) which were timed to coincide with spring freshet, late spring and late summer conditions as outlined the HDF Guide (TRCA, 2014). The full extent of the potential alteration of the HDF network was not known during the spring freshet. As such a proxy site visit was undertaken on July 9, 2021. On July 7-8 approximately 62.6 mm of rain fell in Welland, thus the proxy for the initial site visit was undertaken as flows from the large rain event may represent flows generated during the freshet. Other site visits were completed on April 27 and August 7, 2021. These field investigations are summarized in Table 1.

Table 1: Recommended Timing and Field Investigation Dates

Site Visit	Guidelines Assessment Period	Field Investigation Date
1	Spring Freshet (Early April to mid-April)	July 9, 2021
2	Late April to May	April 27, 2021
3	July to August	August 7 th , 2021

The evaluation methods outlined in the HDF Guidelines utilize flow conditions, riparian vegetation, fish and fish habitat and terrestrial assessments as components in the determination of HDF classification.

6.0 Existing Conditions

6.1 Amphibian Breeding Call Surveys

Amphibian calls were not heard in the vicinity of the HDF during the site visit. During the first breeding call survey on April 27 a single Western chorus frog (*Pseudacris triseriata*) was heard at survey Station #3 which is not located near the HDF.

6.2 Headwater Drainage Feature

The entirety of the feature is characteristic of a swale as vegetation grows in the base of the channel and sorted substrate is not present, as is common in channelized or natural channel features. The entire feature flows through riparian lands vegetated with manicured grasses and some riparian trees. There are two sections of the feature that are enclosed (R8 and R6). Amphibians were not heard in the vicinity of the feature during the three site amphibian calls.

During the proxy site visit (July 9, 2021) and during the late April site visit the feature was dry with pockets of standing water surrounding driveway culverts. The entirety of the feature was dry after several days without rain in August 2021. There are several sump pump discharge locations located sporadically throughout the feature.

6.3 Classification and Management Recommendations

Classification of the HDF feature was completed and outlined in Figure 1. Classification was based on hydrological characteristics, riparian vegetation, potential fish habitat, and terrestrial habitat value as outlined in the management decision matrix provided in Figure 2 of the HDF Guideline (TRCA/CVC, 2014). It should be noted that these recommendations were based primarily on existing conditions at the time of assessments, with reference to modifiers that may influence classifications. Refinement of these classifications may be required through consultation with NPCA or pending additional studies (e.g., groundwater investigations). A summary of reach-based classification and overall management recommendations are provided in Table 2 and Figure 1.

Table 2: Reach Based Classification and Management Recommendations

Drainage	Reach	Hydrology	Modifiers	Riparian Classification	Fish and Fish Habitat	Terrestrial Habitat³	Management Recommendation
H1	R1	Limited	Property Access	Contributing	Contributing	Limited	No Management Concern
	R2	Limited	Culvert	Contributing	Contributing	Limited	No Management Concern
	R3	Limited	Culvert	Contributing	Contributing	Limited	No Management Concern
	R4	Limited	Culvert	Contributing	Contributing	Limited	No Management Concern

<i>Drainage</i>	<i>Reach</i>	<i>Hydrology</i>	<i>Modifiers</i>	<i>Riparian Classification</i>	<i>Fish and Fish Habitat</i>	<i>Terrestrial Habitat³</i>	<i>Management Recommendation</i>
	R5	Limited	Culvert	Contributing	Contributing	Limited	No Management Concern
	R6	Limited	Culvert	Contributing	Contributing	Limited	No Management Concern
	R7	Limited	Culvert	Contributing	Contributing	Limited	No Management Concern
	R8	Limited	Property Access	Contributing	Contributing	Limited	No Management Concern

7.0 Summary

Through the analysis of historical imagery and corroborated during subsequent field investigations in 2021, the HDF feature on The Bryant site is characterized as having with a general lack of a defined bed with substrate sorting not visible. Terrestrial grasses and shrubs are also growing in the base of the feature which is indicative of a swale feature as per the HDF Guidelines (TRCA-CVC, 2014). Reaches 6 and 8 are enclosed through the residential properties and the other 6 reaches are characteristic of swales with limited flow characteristics. The natural flow regime is ephemeral / intermittent, with surface conveyance typically limited to freshet and early spring. Under baseflow (i.e., summer) conditions, the feature is dry and does not provide surface flow or thermal buffering to habitat downstream. The feature upstream of where it is enclosed at Niagara Road is not considered to be direct fish habitat or seasonally occupied, however, flow within the feature contributes indirectly (i.e., water balance and allochthonous inputs) to downstream fish habitat and the aquatic network under spring conditions. Under flow conditions observed in April and during the freshet proxy site visit completed in July 2021 standing water was observed at the location of the driveway culverts with the rest of the channel being dry. The entire feature was dry during the August 2021 site visit. Although the reach within The Bryant does not provide direct fish habitat potential, consideration should be made to ensuring water balance and indirect influences on the aquatic environment are maintained.

The riparian vegetation surrounding the feature is comprised of manicured lawns with trace shrubs and trees present. Historical imagery shows that the area was previously agricultural and rural in nature prior to the existing development. Amphibians were not heard during the surveys completed in 2021 and the feature is swale and thus the terrestrial habitat in the vicinity of the feature is Limited as the feature does not provide

Under existing conditions, the feature is impacted from the residential properties, and it is enclosed through 2 reaches for a total length of approximately 67 m. It does not provide direct fish or terrestrial habitat and downstream of The Bryant the feature is enclosed for over 400 m.

It is Burnside's opinion that the potential exists to improve this area and increase contribution of water quantity downstream through enclosing the feature. The 8 reaches are classified as 'No

Management Concern", meaning they do not require any specific management considerations. 4As per the functional servicing and stormwater Management Report the feature will be enclosed and piped. Piping the feature will potentially allow for conveyance of an increased volume of stormwater as water ponds at the existing driveway culvert and is lost to evaporation.

R.J. Burnside & Associates Limited



Matthew Moote, H.B.Sc., C.Tech., CAN-CISEC-IT
Aquatic Ecologist

MM:js

Enclosure(s) Figure 1. HDF Management Classification
Photo Pages

cc: Steve Roorda, P.Eng., Project Manager
 Spencer Brown, P.Eng., Project Engineer

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52233_The Bryant Site_HDF Assessment Report
8/31/2021 1:54 PM



- Reach Break
- No Management Concern
- ▨ Enclosed Feature
- ▭ Study Area

Sources:

1. Ministry of Northern Development, Mines, Natural Resources and Forestry, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Region of Niagara

Disclaimer:

R.J. Burnside & Associates Limited and the above mentioned sources and agencies are not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983 CSRS		
Coord. System: NAD 1983 CSRS UTM Zone 17N		
Projection: Transverse Mercator		
Central Meridian: 81°0'0.00"W		
False Easting: 500,000m	False Northing: 0m	
Page Orientation: -1°		Scale Factor: 0.99960

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Metres



Client

2786966 ONTARIO INC.

Figure Title

THE BRYANT

HEADWATER DRAINAGE FEATURES

Drawn	Checked	Date	Figure No.
MD	MM	2021/08/31	1
Scale		Project No.	
H 1:1,200		300052233	



Photo 1: Facing south, H1-R8 (07-09-2021).



Photo 2: Facing south, H1-R7 (07-09-2021).



Photo 3: Facing south, H1-R6 (07-09-2021).



Photo 4: Facing south, H1-R5 (07-09-2021).



Photo 5: Facing south, H1-R4 (07-09-2021).



Photo 6: Facing south, H1-R3 (07-9-2021).



Photo 7: Facing south, H1-R2 (07-09-2021).



Photo 8: Facing south, H1-R1 (07-09-2021).

