BAYVIEW HOSPITALITY GROUP

6301 CAMPEAU DRIVE RESIDENTIAL DEVELOPMENT

ENVIRONMENTAL IMPACT STATEMENT & TREE CONSERVATION REPORT

Project No.: 201-03048-00

NOVEMBER 26, 2020

CONFIDENTIAL

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DRAFT
CONFIDENTIAL

PROJECT NO.: 201-03048-00
DATE: NOVEMBER 26, 2020

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November 26, 2020

Confidential

Bayview Hospitality Group
108 Chestnut Street
Toronto, Ontario M5G 1R3

Subject: 6301 Campeau Drive – Environmental Impact Statement and Tree Conservation Report (Draft)

Dear: Mr. Gulamani,

The following Environmental Impact Study (EIS) and Tree Conservation Report (TCR) for the proposed residential/commercial development at 6301 Campeau Drive, Kanata has been prepared in accordance with the City of Ottawa's EIS guidelines (2015a).

This report is intended to provide a comprehensive assessment of potential impacts and proposed mitigation measures based on the findings from ecological field investigations and desktop screenings.

Yours sincerely,

Andrea Orr
Terrestrial Ecologist

WSP ref.: 201-03048-00

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REVISION HISTORY

FIRST ISSUE

November 6, 2020	Draft prepared for senior review			
Prepared by	Reviewed by	Approved By		
Andrea Orr, Terrestrial Ecologist	Alex Zeller, Senior Ecologist	Alex Zeller, Senior Ecologist		
REVISION 1				
November 13, 2020	Update to report based on senior review comments and edits.			
Prepared by	Reviewed by	Approved By		
Andrea Orr, Terrestrial Ecologist	Alex Zeller, Senior Ecologist	Alex Zeller, Senior Ecologist		
REVISION 2				
November 20, 2020	Update to report based on administrative formatting and edits.			
Prepared by	Reviewed by	Approved By		
Katrina De Boer, Administrative Assistant	Andrea Orr, Terrestrial Ecologist	Andrea Orr, Terrestrial Ecologist		

SIGNATURES

PREPARED BY

Andrea Orr, B.Sc.
Terrestrial Ecologist

REVIEWED BY

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Senior Ecologist

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EXECUTIVE SUMMARY

WSP Canada Inc. (WSP) was retained by Bayview Hospitality Group to undertake an Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) for the proposed multi-residential development, located at 6301 Campeau Drive in Kanata (ON). The primary objective of this EIS and TCR is to evaluate the environmental impacts associated with the proposed development.

Natural heritage field investigations for the Project was conducted between April and July 2020 and consisted of Ecological Land Classification (ELC); tree inventory; significant woodland evaluation; amphibian breeding surveys; breeding bird surveys; bat maternity roost habitat assessment and acoustic monitoring; Species at Risk (SAR); and general wildlife habitat assessment. Results from the field investigations are summarized below:

1) No Provincially Significant Wetlands (PSW), Significant Valleylands, Areas of Natural and Scientific Interest (ANSI), or any other designated natural heritage system features occur within 120 m of the Study Area.
2) The vegetation communities recorded during field investigations are commonly found throughout Ottawa and eastern Ontario.
3) Deciduous and mixed forests occurred within the Study Area and contained large diameter mature trees. **Twenty-nine (29) trees were identified to be Distinctive** [i.e. ≥ 50 cm diameter at breast height (DBH)]. Overall, trees were in good health condition with few individuals showing evidence of decline.
4) **Thirty (30) Butternut trees** have been inventoried and assessed within the Study Area. Approximately **twenty-three (23) are proposed for removal** to accommodate construction works.
5) To offset the impacts associated with the removal of native vegetation, landscaping with native vegetation within the areas surrounding the development has been recommended.
6) Tree mitigation measures have been recommended to limit the number of Distinctive trees requiring removal and to provide suitable protection techniques for trees being retained.
7) Installation of bat boxes has been recommended to offset the impacts associated with the removal of potential bat maternity roost habitat.
8) Additional mitigation measures have been recommended to limit the development impacts on terrestrial environments and wildlife.

The compensation measures proposed herein should help offset the negative impacts associated with this development while helping enhance and retain valuable natural heritage features for future residential development. The majority of the negative impacts noted in this report, primarily associated with the construction of the development, can be alleviated with the recommended mitigation measures, as well as compensation requirements that may be outlined in a Butternut ESA authorization. As such, any residual impacts resulting from this development can be mitigated and compensated for and should not pose any impediments to development.

If the recommended compensation and/or mitigation measures are implemented accordingly, it is our opinion that the multi-residential development at 6301 Campeau Drive can be approved.

1 INTRODUCTION

1.1 PURPOSE

Bayview Hospitality Group retained WSP Canada Inc. (WSP) to complete an Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) for the proposed residential and commercial development at 6301 Campeau Drive (herein known as "the Project"). This property is located on a parcel of land with frontage on Campeau Drive, in the City of Ottawa (**Figure 1**).

This EIS has been prepared to describe the existing natural heritage features within the Study Area and to evaluate the potential environmental impacts associated with the proposed development based on ecological field investigations and desktop screening results. Mitigation measures will be provided to offset the anticipated environmental impacts.

For this report, the Study Area includes the area within 120 metres (m) of the Project footprint to account for policy requirements and setback distances outlined in the *Provincial Policy Statement* (PPS) (Ministry of Municipal Affairs and Housing, 2014) and the accompanying *Natural Heritage Reference Manual* (NHRM) (MNR, 2010).

The Study Area for this project includes the Project footprint, plus a 120 m buffer from this area (see **Figure 1).** In addition, specific species and features will be considered up to two kilometres (km) from the proposed development as it may relate to specific environmental policy or legislation.

1.2 BACKGROUND

Bayview Hospitality Group is submitting a Plan of Subdivision application for the development located at 6301 Campeau Drive in Kanata, Ontario. The Project will consist of a phased development of Parcel 1 and Parcel 2 with 184 back to back townhouse dwelling units and 614 apartment dwelling units for a total of 798 units. The townhouse units will be 3-storeys on a raised basement level, located along the north side of the site. The apartment buildings will be 10-storeys above the proposed grade, located along the south side of the site. The buildings will have a shared covered podium parking in the middle of the site that will have amenity space on top. Parking will consist of 202 surface parking spaces and 489 underground spaces, for a total of 691 spaces. Access will be provided off Campeau Drive and Cordillera Street.

Within the City of Ottawa, an EIS is required when development or site alteration, as defined in Section 4.7.8 of the Official Plan (OP) (City of Ottawa, 2003), is proposed adjacent to environmentally designated lands or other features of the City's natural heritage system (NHS). In this case, the woodlands identified within the property and occurrence records of an Endangered species triggered the need for an EIS and TCR.

This report has been prepared to consider federal, provincial, and municipal policies and regulations from relevant regulatory agencies to maintain compliance with the government legislation that pertains to the Project.

In addition, this report has been prepared to support the Project in the following ways: 1) to not contravene the *Endangered Species Act, 2007* (ESA); 2) to evaluate environmental impacts; and, 3) to develop a mitigation plan addressing potential impacts.

Study Area

Development Area

Client:

Bayview Hospitality Group

Title:

Study Area

Prepared By:

WSP

201-03048-00	1:4,500	Review: AO
Date: September 2020	**Figure: 1**	
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1.3 PROPERTY INFORMATION

Owner:	Bayview Hospitality Group
Address:	6301 Campeau Drive, Kanata, Ontario
Lot and concession:	Lot 3, Concession 2
Property Identification Number(s):	06143008100871500000
Zoning:	MC2 (H28) – Mixed Use Centre Subzone 2 Height Maximum 28 m MC5 (H35) – Mixed Use Centre Subzone 5 Height Maximum 35 m DR – Development Reserve
Official Plan designation (Schedule B):	Mixed-Use Centre and Kanata Town Centre Secondary Plan
Existing Land Uses:	Greenfield – Forested Land

1.4 STUDY APPROACH

The following approach has been developed to provide a clear methodological direction towards characterizing the natural environment and assessing the potential for significant species and habitats within the Study Area.

Policy Framework:	This section outlines the policies and legislation that apply to the protection of natural heritage features within the Study Area as it relates to the Project.
Natural Heritage Screening:	This section provides detailed background information collected from a variety of publicly accessible resource databases to describe the natural heritage features and significant features that may occur within the Study Area.
Methodology:	This section provides a summary of the specific protocols and methods used to evaluate potential natural heritage features and species identified within the natural heritage screening.
Survey Results:	This section provides the results from the field surveys. This also includes any incidental observations or notable observations made by the field biologists.
Description of the Proposed Project:	This section provides a summary of the Project, including the construction activities and other activities which may have an impact on the natural environment.
Impact Assessment and Mitigation:	This section provides the assessment of potential environmental impacts associated with the Project on the natural heritage system, including the natural heritage features and species surveyed in this study.

The mitigation measures proposed in this section are aimed at reducing or eliminating potential impacts on natural heritage features. Where mitigation may not be possible, compensation may be proposed.

This section will also identify any future permitting or agency authorizations that may be required before the Project may proceed.

Summary and Conclusions: This section provides a summary of the Study's findings, outlines ay notable provisions, and provides WSP's general recommendation on whether this project should proceed as planned.

TREE CONSERVATION REPORT REQUIREMENTS

For the purposes of this integrated report, the Tree Conservation Report (TCR) requirements will be addressed throughout this report. To aid in the review, sections that address specific **requirements under the TCR guidelines will be marked with the "tree" symbol** as illustrated to the left.

2 POLICY FRAMEWORK

This study references the regulatory agencies and legislative authorities mandated to protect different elements of the NHS, features, and functions within the City of Ottawa, Ontario, and Canada. **Table 1** provides a list of the applicable policies and legislation for the protection of natural heritage features and SAR either municipally, provincially, and/or federally. The scope of this report evaluates the natural heritage features and SAR governed by the policies outlined in the table below.

Table 1 Policies, Legislation and Background Sources

POLICY/REGULATIONS	REFERENCE MATERIALS AND SUPPORTING DOCUMENTS
Federal Government of Canada	
***Migratory Birds Convention Act* (MBCA, 1994) (S.C. 1994, c. 22)**	Environment and Climate Change Canada (ECCC) – online resources
***Species at Risk Act* (SARA, 2002) (S.C. 2002, c. 29)**	Federal Species at Risk Public Registry
***Fisheries Act* (1985) (R.S.C., 1985, c. F-14)**	Fisheries and Oceans Canada – online resources
Province of Ontario	
Provincial Policy Statement (PPS, 2014), under *Planning Act*, R.S.O. (1990) c. P.13 **AND** **Ontario *Endangered Species Act* (ESA, 2007) (S.O. 2007, c. 6)**	Ministry of Natural Resources and Forestry (MNRF) – Kemptville District
	MNRF Natural Heritage Information Centre (NHIC) – Online (Accessed: July 31, 2020): • *Species at Risk occurrence records* • *Species of Conservation Concern* • *Natural Heritage Features*
	NHRM (MNR, 2010)
	Significant Wildlife Habitat Technical Guide (MNR, 2000); Significant Wildlife Habitat Eco-region 6E Criterion Schedules (MNRF, 2015b)
	Ministry of the Environment, Conservation and Parks (MECP): • *Species at Risk in Ontario (SARO) List (O.Reg. 230/08)*
	Ecological Land Classification for Southern Ontario, First Approximation and its Application (Lee, et al., 1998)
	Ontario Breeding Bird Atlas (OBBA) – Online (Accessed: July 31, 2020)
	Ontario Reptile and Amphibian Atlas (ORAA) – Online (Accessed: July 31, 2020)
	Ontario Butterfly Atlas (OBA) – Online (Accessed: July 31, 2020)
	Atlas of the Mammals of Ontario (AMO) (Dobbyn, 1994)
City of Ottawa	
City of Ottawa Official Plan (2003)	Official Plan; Schedules B (Urban Policy Plan), K (Environmental Constraints), and L3 (Natural Heritage System Overlay (West) – Online (Accessed: July 31, 2020)
	Environmental Impact Statement Guidelines (2015a)
	City of Ottawa Tree Conservation Report Guidelines (2019a)
	Site Alteration By-Law (2018)

POLICY/REGULATIONS	REFERENCE MATERIALS AND SUPPORTING DOCUMENTS
	Protocol for Wildlife Protection During Construction (2015b)
Mississippi Valley Conservation Authority (MVCA)	
Mississippi Valley Conservation Authority: *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* (Ontario Regulation 174/06), under *Conservation Authorities Act*, (R.S.O. 1990, c. C.27)	MVCA Regulations Mapping – Online (Accessed: July 31, 2020)

2.1 ONTARIO ENDANGERED SPECIES ACT, 2007

The Ontario ESA (Government of Ontario, 2007) prohibits the killing or harming of species identified as Threatened and Endangered under the Act. Section 10 of the ESA prohibits the damage or destruction of a species' habitat that has been classified as Endangered or Threatened on the Species at Risk in Ontario (SARO) List in Ontario Regulation (O. Reg.) 230/08.

Under the ESA, "habitat" is defined as:

> "*with respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding.*"

General habitat protection is afforded to all species once they become listed as Threatened or Endangered and remains in place until regulated habitat is designated.

Regulated habitat is defined as:

> "*with respect to a species of animal, plant or any other organism for which a regulation made under Clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species.*"

Regulated habitat provides more precise details on the species-specific habitats, such as specific features, geographic boundaries, or unique requirements of a species.

To balance social and economic considerations with protection and recovery goals, the ESA also enables the Ministry of Environment, Conservation and Parks (MECP) to issue permits or enter into agreements with proponents to authorize activities that would otherwise be prohibited by subsections 9(1) or 10(1) of the Act provided the legal requirements of the Act are met.

If Ontario designated Endangered/Threatened species or their habitat are believed to be directly harmed on non-federally owned land, an ESA authorization and/or permit may be required.

3 BACKGROUND REVIEW

The following sections provide a desktop screening of natural heritage records and background information available within the Study Area. This information provides the background information upon which the EIS and TCR will be based.

A previous EIS and TCR report has been prepared for the greater property of 6301 Campeau Drive. The *Bill Teron Park Expansion and Development Lands Environmental Impact Assessment and Tree Conservation Report* (Stantec, 2020) was prepared for the City of Ottawa by Stantec Consulting. The Study Area and focused field investigations encompassed parcels of the existing Bill Teron Park, proposed park expansion areas, as well as future development lands. This multi-residential development project and the associated Study Area of 120 m includes the future development lands. The proposed Bill Teron Park expansion areas abut the Project footprint to the south, while the Bill Teron Park abuts the Study Area to the west. Due to the overlap of the two Study Areas and recent documentation, the Stantec Consulting report (Stantec, 2020) was consulted to aid in background review.

3.1 HISTORIC LAND USE

A desktop review of recent and historic aerial images highlights the land use within and adjacent to the Study Area (geoOttawa, 2020a) (**Figure 2**). From this review, it was observed that the broader landscape has been heavily influenced by the expansion of urban development over the past 44 years.

However, a natural environment feature west of the Project footprint was retained by the City of Ottawa for the creation of Bill Teron Park. This park was established in order to preserve the unique landscape, natural heritage, ecological integrity, and high social value for nearby residents to enjoy. The City has proposed for the park to expand eastward due to increased pressures to the natural feature from intensive urban development. Park expansion lands are, therefore, proposed south of the Project footprint within 120 m.

2017

2008

1991

1976

Figure 2 Land Use Change

3.2 LANDFORM, GEOLOGY AND SOILS

The Ottawa River valley has greatly influenced the regional physiography, which fluctuates from clay plains to sand plains with many drumlins to the south (Chapman and Putnam, 1984). The Study Area is located within the Kemptville Ecodistrict (6E-12), which has been described as a plain of limestone and sandstone bedrock covered with soils of sand, silt, lime clay, and/or loam (Henson and Brodribb, 2005). The northern boundary for which the Study Area resides includes portions of the Russell and Prescott Sand Plains and the Ottawa Valley Clay Flats along the Ottawa River (Henson and Brodribb, 2005).

Precambrian bedrock primarily comprises the surficial geology of the Study Area and is exposed in sections due to shallow soils on site. The Precambrian bedrock accounts for the irregular site topography, as when exposed, the elevation reaches a maximum of 105 metres above sea level (masl) (Ontario Geological Survey, 2019).

3.3 AQUATIC ENVIRONMENT

The Study Area is within the Mississippi Valley watershed jurisdiction, more specifically within the Ottawa River Tributaries sub-watershed. Surface water quality for this sub-watershed was rated poor as this is the most urbanized portion of the broader watershed (MVCA, 2018). No permanent or temporary tributaries and/or watercourses are known to occur within the Project Study Area (**Figure 3**). However, a small pond feature is located within the existing Bill Teron Park, just outside of the Study Area.

3.3.1 FLOODPLAIN AND REGULATED LIMIT

The MVCA is the governing body that regulates flood potential, protects natural heritage features, and enhances the ecosystems within the Mississippi Valley watershed. Development within regulated areas is governed by O. Reg. 174/06 *Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses.* MVCA also maintains, monitors, and collects information related to water quality/quantity, fisheries resources, forestry, land use, and wetlands.

The MVCA Regulated Limits and Floodplain areas are absent throughout the Study Area (**Figure 3**).

3.4 NATURAL HERITAGE FEATURES

Based on a records review of online sources and background material, several natural heritage features are **present** within the Study Area. These include (and shown in **Figure 3**):

- Unevaluated wetland (MNRF and City of Ottawa)
- Woodlands and forest communities (MNRF)
- Urban Natural Area (UNA) #14 – Kanata Town Centre (City of Ottawa)
- Major Open Space – Bill Teron Park (City of Ottawa OP, Schedule B)
- Natural habitats that may provide candidate Significant Wildlife Habitat (SWH) (e.g. woodlands, wetlands, thickets, meadow).
- Significant habitat for Endangered or Threatened species (Butternut) (Stantec, 2020)

Natural heritage features that are **absent** from the Study Area include;

- Provincially Significant Wetland (PSW) (MNRF);
- Areas of Natural and Scientific Interest (ANSI) (MNRF);

- Greenbelt lands (National Capital Commission) (NCC);
- Natural Heritage System (NHS) (City of Ottawa OP)
- Urban Natural Feature (UNF) (City of Ottawa OP)
- Natural Environment Area (NEA) (City of Ottawa OP)
- Linkage Features (City of Ottawa OP)

3.4.1 SIGNIFICANT WILDLIFE HABITAT

The MNRF has identified four categories of SWH within the *SWH Criteria Schedules for Ecoregion 6E* (MNRF, 2015b). They include:

- Seasonal Concentration Areas of Animals
- Rare Vegetation Communities or Specialized Habitat for Wildlife
- Habitat for Species of Conservation Concern (excluding Endangered or Threatened Species)
- Animal Movement Corridors

A preliminary assessment of candidate SWH categories to be found within the Study Area was conducted prior to field surveys in order to design an ecological field program for the Project. The potential for candidate SWH was reviewed using MNRF (2015), available background information, and air-photo interpretation. From the preliminary assessment, there is potential for candidate SWH of *Seasonal Concentration Areas of Animals*, *Specialized Habitat for Wildlife,* and *Habitat for Species of Conservation Concern*.

SEASONAL CONCENTRATION AREAS OF ANIMALS

Seasonal Concentration Areas are where a large abundance of a species gathers together at one time of year or where several species congregate (MNRF, 2015b). One wildlife habitat within this category has been identified as potentially occurring within the Study Area and includes candidate **Bat Maternity Colonies**. This is due to the presence of mature forested communities within the project Study Area.

SPECIALIZED HABITAT FOR WILDLIFE

Specialized Habitat for Wildlife are areas that provide suitable habitat for the species' long-term survival and require contiguous areas that are not fragmented (MNRF, 2015b). Based on the criteria for candidate SWH (MNRF, 2015b), the following Specialized Habitat for Wildlife have the potential to occur within the Study Area:

- Amphibian Breeding Habitat (woodland and wetland): The presence of a forest community associated with vernal pools may provide suitable conditions.

HABITAT FOR SPECIES OF CONSERVATION CONCERN

The SWH Technical Guide (MNRF, 2000) defines Species of Conservation Concern (SCC) as provincially, regionally, locally rare, and those listed as Special Concern under COSSARO. This does not include species designated as Threatened or Endangered under COSSARO and/or COSEWIC.

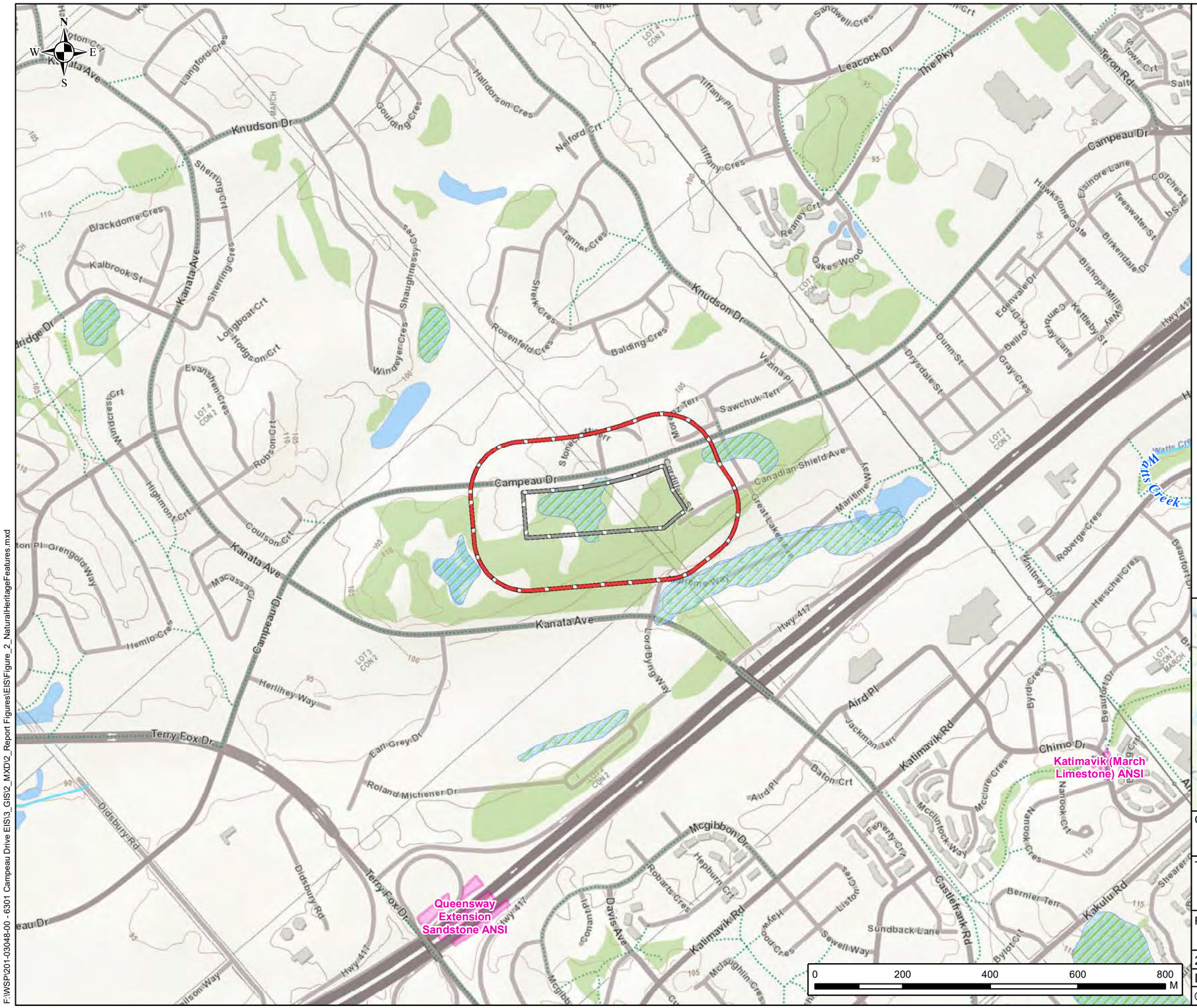
A review of background data suggests that candidate **SWH for insects, reptiles, and breeding birds** has the potential to occur. Such species will be evaluated as potentially occurring based on their habitat suitability within the Study Area. **Table 2** below provides a list of such species.

3.5 SPECIES AT RISK AND SPECIES OF CONSERVATION CONCERN

Background data was collected and reviewed to identify SAR and SCC with occurrence records within the Study Area. Publicly available databases (**Table 1**) were consulted to develop a list of SAR that have a record within a 1 km^2 or 10 km^2 grid (dependent on the database being consulted) encompassing the project Study Area. Due to natural changes and anthropogenic developments in the Study Area, the background review collected current records (i.e. ≤ 30 years) that occurred within the Study Area.

Table 2 provides a list of these species along with corresponding federal, provincial, SAR and/or SCC designations (i.e. S-Ranks). S-Ranks is a provincial status used by the NHIC to set protection priorities for rare species and is based on the number of occurrences in Ontario. The MNRF tracks species with S1 to S3 (vulnerable to critically imperilled) designations and is, therefore, considered provincially rare and/or SCC.

Furthermore, species listed within **Table 2** were further evaluated based on their habitat preferences and the likelihood of occurrence for the Study Area. The habitat screening was built on habitat requirements defined by the MNR (2000), background records, and air-photo interpretation in order to identify the presence of suitable habitat for SAR/SCC within the Study Area. The results of the screening are documented in **Appendix A – Species at Risk Screening** and discussed in **Section 5.2.3 and 5.2.4**


N
W
E
S
Study Area
Development Area
Watercourse (MNRF, 2011)
Unevaluated Wetland (MNRF, 2019)
Waterbody (MNRF, 2020)
Wooded Area (MNRF, 2019)
Area of Natural and Scientific Interest (MNRF, 2018)
Campeau Dr
Knudson Dr
Kanata Ave
Terry Fox Dr
Hwy 417
Katimavik Rd
Queensway Extension Sandstone ANSI
Katimavik (March Limestone) ANSI
Watts Creek
0
200
400
600
800
M
Amprior
ONTARIO
Carp River
Ottawa
Stittsville
Manotick
Carleton Place
Client:
Bayview Hospitality Group
Title:
Existing Natural Heritage Features
Prepared By:
WSP
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Review: AO
Date: October 2020
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Table 2 Species at Risk and Species of Conservation Concern Background Records

SCIENTIFIC NAME	COMMON NAME	S-RANK[1]	SARA (SCHEDULE 1)[2]	ESA[3]	INFO. SOURCE[4]
Vascular Plants					
Juglans cinerea	Butternut	S3?	END	END	City of Ottawa
Insects					
Danaus plexippus	Monarch	S2N, S4B	SC	SC	OBA
Reptiles					
Chelydra serpentina	Snapping Turtle	S4	SC	SC	ORAA
Emydoidea blandingii	Blanding's Turtle	S3	THR	THR	ORAA
Birds					
Antrostomus vociferus	Eastern Whip-poor-will	S5B	THR	THR	OBBA
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC	OBBA
Riparia riparia	Bank Swallow	S4B	THR	THR	OBBA
Hirundo rustica	Barn Swallow	S4B	THR	THR	OBBA
Hylocichla mustelina	Wood Thrush	S4B	THR	SC	OBBA
Dolichonyx oryzivorus	Bobolink	S4B	THR	THR	OBBA
Sturnella magna	Eastern Meadowlark	S4B	THR	THR	OBBA
Mammals					
Myotis lucifugus	Little Brown Myotis	S3	END	END	AMO
Myotis leibii	Eastern Small-footed Myotis	S2S3	END	END	AMO
Myotis septentrionalis	Northern Myotis	S3	END	END	AMO
Perimyotis subflavus	Tricolored Bat	S3?	END	END	AMO

[1]S-Rank is an indicator of commonness in the Province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common.
[2]SARA = Species at Risk Act Status (Government of Canada, 2002)
[3]ESA = Endangered Species Act Status (Government of Ontario, 2007)
END = Endangered
THR = Threatened
SC = Special Concern
NAR = Not at Risk
DD = Data Deficient
[3]Information sources include: NHIC = Natural Heritage Information Centre; OBBA = Ontario Breeding Bird Atlas; ORAA = Ontario Reptile and Amphibian Atlas; OBA = Toronto Entomologists' Association: Ontario Butterfly Atlas; AMO = Atlas of the Mammals of Ontario; City of Ottawa: MacPherson, 2018; --- denotes no information or not applicable.

4 METHODOLOGY

4.1 SCOPE OF WORK

Based on the background information of the Project's natural heritage features and wildlife occurrence records, ecological surveys outlined below were conducted to assess the impacts of the Project on the natural environment. These surveys followed industry-standard protocols and are intended to establish baseline conditions. Such baseline conditions were then used to evaluate the potential for negative impacts, which may occur as a result of the Project development. Surveys were undertaken within 120 m of the property parcel, thereby including the entire Study Area. The locations of field surveys are shown in **Figure 4**.

NATURAL HERITAGE FEATURES

- Ecological Land Classification (ELC), including:
  - Vegetation survey
  - Woodland and wetland delineation
- Identification of potential SWH including:
  - Breeding bird surveys
  - Amphibian breeding surveys
  - Bat maternity colony habitat assessment and acoustic monitoring
  - General habitat assessment for SCC

SPECIES AT RISK

- Breeding bird surveys
- SAR bat habitat assessment and acoustic monitoring (Eastern Small-footed Myotis, Little Brown Bat, Northern Myotis, Tricolored Bat)
- Butternut search and associated health assessment
- Incidental SAR and SAR habitat observations

TREES

- Inventory of trees within the Study Area:
  - Distinctive tree assessment

INCIDENTAL WILDLIFE

- Visual and auditory observations of wildlife during all field studies

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Study Area

Development Area

Wildlife Surveys

- Amphibian Survey Station
- Bat Acoustic Survey Station
- Breeding Bird Survey Station

Client:
Bayview Hospitality Group

Title:
Survey Locations

Prepared By:
WSP

201-03048-00	1:3,000	Review: AO
Date: September 2020	**Figure: 4**	
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4.2 NATURAL HERITAGE FEATURES

4.2.1 VEGETATION COMMUNITIES

Vegetation communities within the Study Area were characterized and mapped using the ELC system for southern Ontario (Lee, et al., 1998). Vegetation communities were first delineated by air-photo interpretation and then verified while on-site.

The ELC protocol recommends that a vegetation community be a minimum of 0.5 ha in size before they are defined as a discrete community. Unique communities less than 0.5 ha or disturbed/planted vegetation were described to the community level only. In some instances, where vegetation is less than 0.5 ha but appears relatively undisturbed and clearly fits within an ELC vegetation type, the more refined classification was used.

In 2008, the MNRF refined their original vegetation type codes to more fully encompass the vast range of natural and cultural communities across southern Ontario. Through this process, many new codes have been added, while some have changed slightly. These new ELC codes have been used for reporting purposes for the Project as they are more representative of the vegetation communities within the Study Area.

VEGETATION SURVEY

Vegetation was inventoried in conjunction with ELC surveys, and a list of vascular plant species was compiled (**Appendix B**). In addition, this inventory was also used to screen for any SAR and/or provincially rare species not previously identified within the Study Area.

Scientific nomenclature, English colloquial names, and scientific binomials of plant species generally followed Newmaster et. al. (2005), with updates taken from published volumes of the Flora of North America Editorial Committee (2000 + accessed 2015) and Michigan Flora Online (2015).

4.2.2 WETLAND IDENTIFICATION AND MAPPING

The delineation of wetland features within the Study Area was conducted by using ELC to map wetland attributes and vegetation if required.

4.2.3 WOODLANDS

The woodland features within the Study Area were assessed for significance following the *Significant Woodlands: Guidelines for Identification, Evaluation, and Impact Assessment* (2019b), as outlined in the City of Ottawa Official Plan Amendment No. 179 [Section 2.4.4 of the Official Plan (City of Ottawa, 2003)].

1. *Any treed area meeting the definition of woodlands in the Forestry Act, R.S.O 1990, c.F.26 or forest in Ecological Land Classification for southern Ontario*
2. *In the rural area, meeting any one of the criteria in the Natural Heritage Reference Manual (MNR, 2010), as assessed in a subwatershed planning context and applied in accordance with Council-approved guidelines, where such guidelines exist*
3. *In the urban area, any area 0.8 hectares in size or larger, supporting woodland 60 years of age and older at the time of evaluation*

However, as outlined in the City's *Significant Woodlands: Guidelines for Identification, Evaluation, and Impact Assessment* (2019b), new significant woodlands will not be identified in urban areas where the NHS was already identified through Secondary Plans such as the Kanata Town Centre.

4.2.4 SIGNIFICANT WILDLIFE HABITAT

Breeding bird and amphibian breeding surveys were conducted to identify candidate and/or confirmed SWH within the Study Area. Results of the surveys will also provide a baseline assessment of the relative abundance of birds and amphibians within the area.

BREEDING BIRD SURVEY

Diurnal breeding bird surveys were conducted within the Study Area and followed methods outlined in the *Ontario Breeding Bird Atlas Guide for Participants* (Bird Studies Canada, 2001). Two surveys were completed during the bird breeding season on June 10 and June 29, 2020.

Each survey consisted of visiting three-point count locations for five minutes to establish quantitative estimates of bird abundance in different habitat types within the Study Area (**Figure 4**). To supplement the surveys, area searches of the habitats were completed by meandering throughout the Study Area on foot and using binoculars to observe species presence and breeding activity. Area searches involved noting all individual bird species and their corresponding breeding evidence.

AMPHIBIAN BREEDING SURVEY

The SWH preliminary assessment identified the potential for candidate amphibian breeding habitat to occur within the Study Area. Therefore, amphibian breeding surveys were conducted and followed the *Marsh Monitoring Program - Participant's Handbook for Surveying Amphibians* (Bird Studies Canada, 2008). In accordance with the survey protocol, three different surveys were conducted on April 29, May 28, and June 29, with at least two weeks between each visit. Surveys began at least one-half hour after sunset during evenings with a minimum night temperature of 5^0C, 10^0C, and 17^0C for each of the three respective surveys. Four (4) survey locations were situated within the woodland and/or wetland features within the Study Area.

One (1) survey location (AM-2) was placed just outside the Study Area at the head of the Bill Teron Park pond in order to confirm significant amphibian breeding habitat, previously evaluated by Stantec (2020) in 2019 (**Figure 4**). If found significant in 2020, amphibian movement corridors from breeding habitat to summer habitat may be present within the Project footprint and/or the Study Area.

Each amphibian survey involved standing at a predetermined station for three (3) minutes and listening for amphibian calls. The calling activity of individuals estimated to be within 100 m of the observation point was documented. All individuals beyond 100 m were recorded as outside the count semi-circle. Calling activity was then ranked using one of the three abundance code categories:

Code 1: The number of individuals can be accurately counted

Code 2: Calls are distinguishable and some calls simultaneous, the number of individuals can be reliably estimated

Code 3: Full chorus; calls continuous and overlapping, the number of individuals cannot be estimated

BAT MATERNITY COLONIES

The SWH preliminary assessment identified the potential for candidate bat maternity colony habitat to occur within the Study Area. Therefore, a snag/cavity tree count was conducted within the forested habitats and followed the methodology outlined in the *Bat Survey Methodology – Hibernacula and Maternity Roosts* informal publication distributed by the MNRF (MNRF, 2015c).

The survey was intended to count snag/cavity trees to ascertain whether the habitat is candidate SWH for maternity colony habitat for several non-SAR and SAR bats, including; Little Brown Myotis (*Myotis lucifungus*), Eastern Small-footed Myotis (*Myotis leibii*), Northern Myotis (*Myotis septentrionalis*), and Tricolored Bat (*Perimyotis subflavus*). The four bat SAR are all listed as Endangered, federally and provincially.

A search for cavity trees was conducted during the leaf-off period in May. The maternity roosting period is throughout the months of June and July, and trees suitable for maternity colonies consist of larger snags or trees displaying cavities with a DBH ≥ 25 cm. Large cavity trees were noted when it met the following criteria (MNR, 2011):

- Tree exhibits cavities or crevices most often originating as cracks, scars, knot holes, or woodpecker cavities
- Tree contains a large DBH (≥ 25 cm)
- Tree contains large amounts of loose, peeling bark
- Cavity/crevice is high in cavity tree (≥ 10 m)
- Tree exhibits early stages of decay (decay class 1-3) (Watt, 1999)

BAT ACOUSTIC MONITORING

Bat acoustic monitoring followed methods outlined in *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNR, 2011).

One survey was conducted on June 17, 2020, during the bat maternity roosting period. The survey commenced 30 minutes before sunset and continued until 60 minutes after sunset during optimal weather conditions with low wind and no precipitation.

Two (2) acoustic monitoring locations were situated in woodland areas with the highest density of cavity trees. Monitoring locations are shown in **Figure 4**. Surveyors used both methods of visual observation concurrently with a hand-held bio-acoustic monitoring device to determine flight paths and bat species identification.

HABITAT FOR SPECIES OF CONSERVATION CONCERN

Summarized below are the SCC with a likelihood of occurrence based on current records and the presence of suitable habitat within the Project Study Area (**Appendix A**). They include **Eastern Wood-pewee, Wood Thrush, and Monarch.**

Wildlife surveys of breeding birds, vegetation communities, and incidental observations were used to identify the presence/absence of SCC within the Study Area. General habitat observations were also noted as it relates to SCC with potential to occur (**Table 2)** and their associated habitat requirements (**Appendix A**).

INCIDENTAL OBSERVATIONS OF SIGNIFICANT WILDLIFE HABITAT

Incidental observation of other candidate SWH was also undertaken during all site visits. Specifically, the presence of features that are not easily identifiable via aerial photography; this included the presence of candidate reptile hibernacula, seeps/springs, turtle nesting areas, and stick nests. If required, species-specific surveys will be conducted following consultation with the MNRF and the City of Ottawa.

4.2.5 SPECIES AT RISK AND SPECIES AT RISK HABITAT

Summarized below are the SAR with a likelihood of occurrence based on current records and the presence of suitable habitat within the Project Study Area (**Appendix A**). They include **Tricolored Bat, Little Brown Myotis, Northern Myotis, Western Chorus Frog, and Butternut**.

Such species and their habitat were evaluated during the wildlife field surveys. Methodologies to determine these species' presence and abundance are described below. Incidental observations of SAR and SAR habitats were also recorded.

SPECIES AT RISK BATS

The presence or absence of SAR bat habitat was evaluated by using methods described in **Section 4.2.4**. Subsequently, one round of acoustic monitoring was performed to determine the likelihood of SAR bats roosting within the Study

Area. Suitable bat maternity colony habitat is present in the Study Area in the form of woodlands with multiple large diameter cavity trees.

WESTERN CHORUS FROG

Western Chorus Frog is federally designated as Threatened under Schedule 1 of the SARA. It is not at risk under the Ontario provincial legislation. However, amphibian breeding surveys, along with daytime incidental observations, were conducted to determine the presence/absence of this species within the Study Area. Survey methods are outlined in **Section 4.2.4.**

BUTTERNUT

A search for Butternut (*Juglans cinerea*) was previously conducted by Stantec Consulting in 2019, under the title *Bill Teron Park Expansion and Future Development Lands – Environmental Impact Statement and Tree Conservation Report* (Stantec, 2020). WSP verified the locations of the Butternuts as well as conducted an additional search within the confines of 6301 Campeau Drive developable area, plus an additional 120 m. WSP also searched for Butternuts simultaneously during wildlife and vegetation surveys within the Project's Study Area during the 2020 natural heritage field program.

The survey consisted of walking throughout the Project's Study Area and verifying/identifying Butternut specimens. Once located, a Forest Gene Conservation Association (FGCA) and MECP certified Butternut Health Assessor for Ontario (i.e. BHA #735) performed a Butternut Health Assessment (BHA) and followed guidelines outlined in *Butternut Health Assessor's Field Guide* (MNRF, 2015) and *Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the Endangered Species Act, 2007* (MNRF, 2014).

The Butternut Health Assessor is responsible for identifying and classifying the health of each tree as well as determining the following:

- Class of which the Butternut tree belongs [i.e. Category 1 (non-retainable), Category 2 (retainable), and Category 3 (retainable and archivable)];
- Whether the tree is a putative hybrid;
- If the tree is naturally occurring or cultivated.

INCIDENTAL SPECIES AT RISK AND SPECIES AT RISK HABITAT OBSERVATIONS

In addition to those species surveys noted above, incidental SAR and SAR habitat observations were noted during all site visits.

Should any SAR or SAR habitat be identified within or adjacent to the site during field surveys, appropriate measures will be proposed to reduce or eliminate the impact of the proposed development on the observed species or habitat. This may include further consultation with the MECP and/or additional species-specific surveys.

4.2.6 TREES

Following the City of Ottawa's *Tree Conservation Report Guidelines* (City of Ottawa, 2019a), a tree inventory was completed in July 2020. As the entirety of the Study Area is dominated by either woodland or forest vegetation communities, a tree inventory was conducted by sampling nine 10 m x 10 m randomly selected plots (**Figure 6**).

Within each plot, any tree or shrub species that were 10 cm diameter at breast height (DBH) or greater were recorded and assessed. Each tree assessment recorded the following; species, DBH, health condition (trunk integrity, canopy structure, canopy vigour), UTM coordinate, and any other defects.

To identify Distinctive trees (≥50 cm DBH) on-site, the Study Area was scoped on foot by walking transects throughout and recording the location, species, DBH, and health conditions of all Distinctive trees. Such surveys were conducted by an approved professional as outlined in the City guidelines.

4.2.7 INCIDENTAL WILDLIFE

A wildlife assessment within the property was completed through incidental observations while on site. Any incidental observations of wildlife, as well as other wildlife evidence such as dens, tracks, and scat, were documented by means of observational notes, photos, and UTM coordinates. Such observations were used to substantiate baseline conditions and gather conclusions on the overall ecological function of the Study Area.

4.3 AQUATIC ENVIRONMENT

Available background information identified an unevaluated wetland within the western portion of the subject property. No watercourses and drainage systems are known to occur within the site. However, a small pond is present within the existing Bill Teron Park, immediately west of the Project Study Area, but outside of the area of impact.

In order to confirm the presence of the unevaluated wetland and/or to identify any other additional aquatic features, a survey was conducted in May 2020 by meandering the Study Area on foot. To allow for optimal views of wetland characteristics on-site, the survey was completed during leaf-off conditions where understorey and ground layer vegetation were still minimal. At the time of field investigations, spring thaw was still occurring, and therefore, any intermittent aquatic features could be readily observed.

5 RESULTS

The following sections outline the findings from the field surveys and characterize the existing conditions within the Study Area. Survey results are discussed below and illustrated in **Figure 5, Figure 6, and Figure 10,** depending on the survey context.

5.1 SITE INVESTIGATIONS

Field surveys conducted for the Project occurred between April and July 2020. Surveys were undertaken during suitable weather conditions, and timing was based on the survey protocols being implemented. As required, resumes of key staff involved in the Project have been included in **Appendix G**. A total of nine (9) site visits were made for the assessment of ecological features and functions identified in the background records review. The dates, times, surveyor names, and weather conditions for all surveys are listed in **Table 3.**

Table 3 Field Survey Details (2020)

SURVEY TYPE	DATE	START / END TIME	WEATHER CONDITIONS	WSP STAFF
-Site Reconnaissance **-Amphibian Breeding #1**	April 29	Start: 19:00 End: 21:30	15°C, 2 wind (beaufort scale), overcast, no precipitation	A.Orr and S. Wheller
-Bat Maternity Colony Habitat Assessment **-Aquatic Features Assessment**	May 14	Start: 10:00 End: 13:30	13°C, 1 wind (beaufort scale), 10% cloud cover, no precipitation	A.Orr
Amphibian Breeding #2	May 28	Start: 21:00 End: 22:30	21°C, 1 wind (beaufort scale), overcast, light drizzle	A.Orr and A. Zeller
-Butternut Health Assessment **-Breeding Birds #1** **-ELC Verification**	June 10	Start: 07:30 End: 16:00	21°C, 2 wind (beaufort scale), overcast, no precipitation	A.Orr and J. Trus
Butternut Health Assessment	June 11	Start: 09:00 End: 16:00	23°C, 1 wind (beaufort scale), overcast, no precipitation	A.Orr
-Bat Acoustic Monitoring **-Amphibian Breeding #3**	June 17	Start: 20:00 End: 22:00	28°C, 0 wind (beaufort scale), 0% cloud cover, no precipitation	A.Orr and J. Trus
Breeding Birds #2	June 29	Start: 07:00- End: 09:00	17°C, 0 wind (beaufort scale), 0% cloud cover, no precipitation	A.Orr
Tree Inventory	July 20	Start: 10:00 End: 17:00	28°C, 3 wind (beaufort scale), 50% cloud cover, no precipitation	J. Trus

SURVEY TYPE	DATE	START / END TIME	WEATHER CONDITIONS	WSP STAFF
Butternut Health Assessment	July 23	Start: 13:00 End: 14:00	26°C, 2 wind (beaufort scale), 20% cloud cover, no precipitation	A.Orr

5.2 NATURAL HERITAGE FEATURES

5.2.1 VEGETATION COMMUNITIES

The ELC survey identified a total of five (5) vegetation communities within the Study Area. Other communities included developed areas that consisted of either transportation, high to low-density residential and a golf course northwest of the Study Area. The natural areas were predominately treed and classified as either woodland or forest, depending on the percentage of canopy cover. Rock barren outcrops were prevalent throughout the centre of the Study Area and were classified as a treed rock barren vegetation community.

Table 4 outlines the communities documented during the ELC surveys and summarizes the abundant vegetation cover. The location, type, and boundaries of vegetation communities are delineated in **Figure 5**. Reference photos for the vegetation communities are included in **Appendix D**.

VEGETATION SURVEY

The vegetation survey identified ninety-eight (98) vegetation species within the Study Area and are listed in **Appendix B**. Majority of the vascular plants inventoried are considered common throughout Ontario. Approximately 64% are native, while 28% are exotic.

A Floristic Quality Assessment (FQA) was conducted to determine the site's level of ecological integrity based on plant species composition. A coefficient of conservatism (CC) value is assigned to each species, ranging from 0 to 10, with 10 having a lower tolerance to disturbance and restricted to undisturbed habitats. One (1) vascular plant species, Creeping Juniper, had a CC value of 10. However, the average CC value was one (1), thus indicating that majority of the vascular plants within the Study Area have a high tolerance to disturbance and can recover in adjacent suitable habitat.

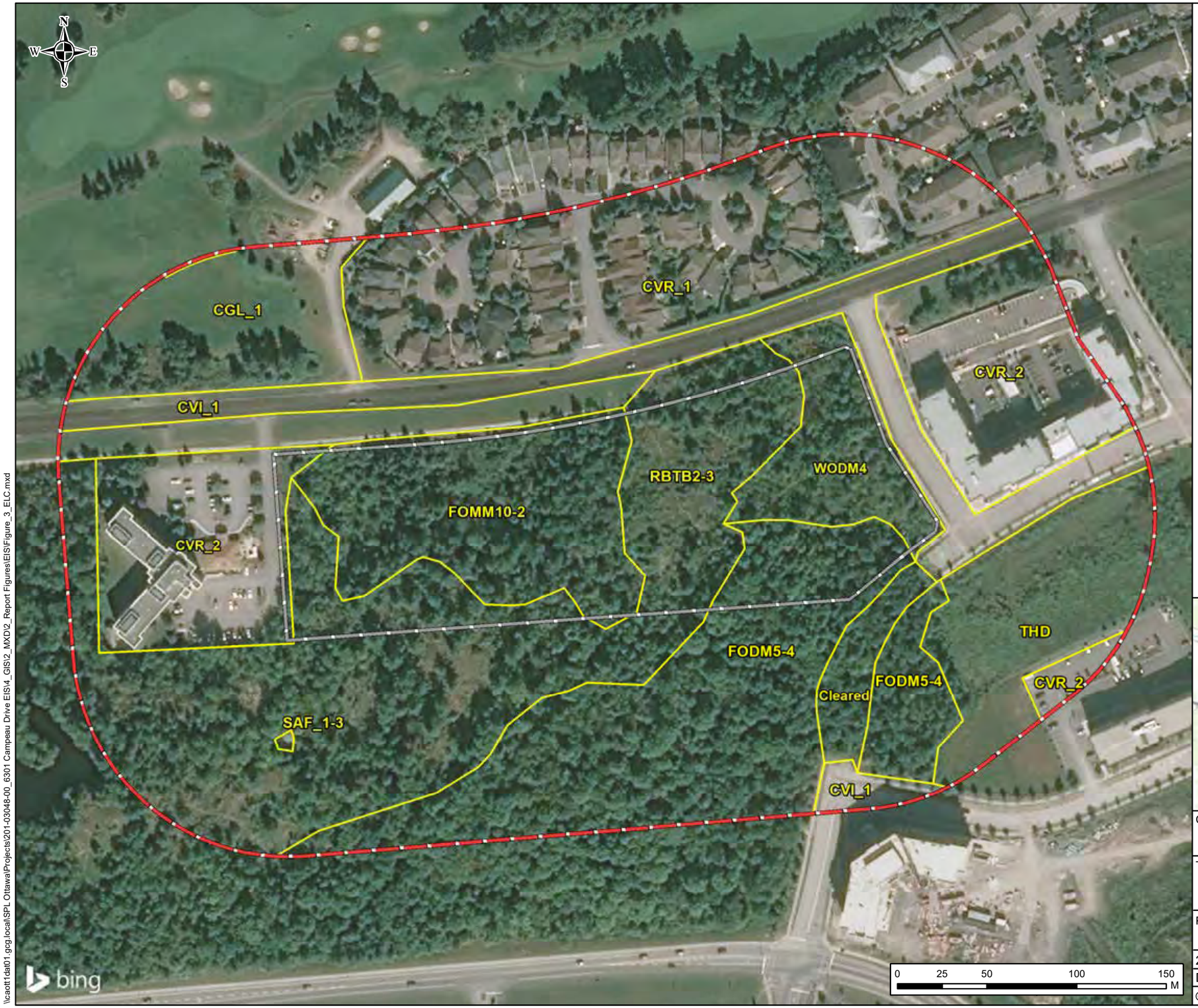
The Butternut tree, listed as Endangered both federally and provincially, was observed within the Study Area, with multiple individuals scattered throughout. A separate survey for a Butternut inventory and associated Health Assessment was conducted and discussed in **Section 5.2.4**. No other provincial or federal SAR were recorded during the vegetation inventory.

Table 4 Ecological Land Classification Results

ELC TYPE	TOTAL AREA (HA)	COMMUNITY DESCRIPTION
Deciduous Forest (FOD)		
FODM5-4 Dry-Fresh Sugar Maple-Ironwood Deciduous Forest Type	2.84	This community occurred south of the Study Area and has recently been intersected by a cleared section to accommodate a new road, connecting Canadian Shield Avenue to Maritime Way. It occurred on a south-facing slope with many rock outcrop features indicative of the unique topography and physiography of the site.

ELC TYPE	TOTAL AREA (HA)	COMMUNITY DESCRIPTION
		This community represented a mature forest with many super-canopy trees with large diameters (i.e. >50 cm dbh). The canopy and sub-canopy were abundant with sugar maple (*Acer saccharum*), ironwood (*Ostrya virginiana*), black cheery (*Prunus serotina*), and basswood (*Tilia americana*). Large diameter trees (>50 cm dbh) were present in the super-canopy and included species of sugar maple, eastern white pine (*Pinus strobus*), and basswood. **Butternut** (Juglans cinerea) was also a rare occurrence within the canopy. The understorey was sparse due to the full canopy of a mature forest but included occasional occurrences of choke cherry (*Prunus virginiana*), European buckthorn (*Rhamnus cathartica*), virginia creeper (*Parthenocissus quinquefolia*) and glossy buckthorn (*Rhamnus frangula*). The ground layer was also sparse but included occasional species of sugar maple seedlings, white trillium (*Trillium grandiflorum*), long-stalked sedge (*Carex pedunculata*), wild sarsasparilla (*Aralia nudicaulis*), and virginia waterleaf (*Hydrophyllum virginianum*), to name a few. Recreational biking trails and jumps occurred throughout the community.
Mixed Forest (FOM)		
FOMM10-2 Fresh-Moist White Spruce-Hardwood Mixed Forest Type	1.56	This community occurred within the western portion of the subject property and can be described as a low depression surrounded by the upland rock barren community. The canopy is abundant with large diameter trees of eastern white pine, white spruce (*Picea glauca*), and trembling aspen (*Populus tremuloides*). **Butternut** also occurred occasionally within the canopy layer. Eastern white cedar (*Thuja occidentalis*) was present in the sub-canopy. Invasive species of European buckthorn and glossy buckthorn were occasional throughout the understory, along with native species of riverbank grape (*Vitis riparia*) and virginia creeper. The ground layer was sparse due to the full canopy cover of the site but included that of sensitive fern (*Onoclea sensibilis*), marginal wood fern (*Dryopteris marginalis*), dwarf raspberry (*Rubus pubescens*), common jewelweed (*Impatiens capensis*), and various sedge species (*Carex spp.*).
Deciduous Woodland (WOD)		
WODM4 Dry-Fresh Deciduous Woodland Ecosite	0.74	This community occurred within the eastern portion of the subject property and was surrounded by the upland rock outcrop feature. The canopy was variable in abundance and composition and included the species of; sugar maple, black cherry, and bur oak (*Quercus macrocarpa*). **Butternut** also occurred occasionally within the canopy layer. The sub-canopy consisted of trembling aspen, green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), and ironwood. The understorey was dense with European and glossy buckthorn, Tartarian honeysuckle (*Lonicera tatarica*), and white sweetclover (*Melilotus albus*). The ground layer consisted of enchanter's nightshade (*Circaea lutetiana*), aster

ELC TYPE	TOTAL AREA (HA)	COMMUNITY DESCRIPTION
		species (A*ster spp.*), goldenrod species (*Solidago spp.*), and wild carrot (*Daucus carota*).
Treed Rock Barren (RBT)		
RBTB2-3 Oak-Red Maple-Pine Non-Calcareous Treed Rock Barren Type	4.32	This unique feature consisted of exposed granite bedrock that traverses through the centre of the subject property and is the highest point of land on site. Due to rock exposure, vegetation growth was sparse and often null. Rare to occasional occurrences of small diameter trees with stunted heights (i.e. <10 m) grew sporadically where soils were deeper. They consisted of eastern white pine, trembling aspen, red maple, green ash, and American elm. The understorey was observed to be well established and consisted of Tartarian honeysuckle, staghorn sumac (*Rhus typhina*), creeping juniper (*Juniperus horizontalis*), and virginia creeper. The ground layer was occasional with timothy (*Phleum pretense*), redtop (*Agrostis gigantean*), common dandelion (*Taraxacum officinale*), and field pussytoes (*Antennaria neglecta*). Unidentified moss and lichen species were abundant to occasional on the exposed bedrock surfaces. This moderately sized community extended southwest beyond the Study Area and is prevalent throughout the existing Bill Teron Park lands, acting as a contiguous feature.
Floating-leaved Shallow Aquatic (SAF)		
SAF1-3 Duckweed Floating-leaved Shallow Aquatic Type	.008 (82 m^2)	This small community occurred outside the subject property but inside the Study Area. It is considered an inclusion to RBTB2-3 as it is a shallow, isolated pond abundant with common duckweed (*Lemna minor*).



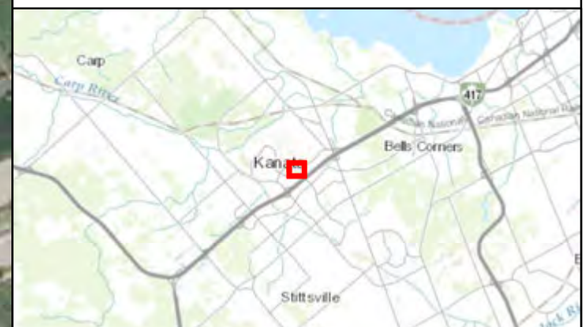
Study Area

Development Area

ELC Community Boundary

Ecological Land Classification

CGL_1- Golf Course
CVI_1- Transportation
CVR_1- Low Density Residential
CVR_2- High Density Residential
FODM5-4- Dry - Fresh Sugar Maple-Ironwood Deciduous Forest Type
FOMM10-2- Fresh - Moist White Spruce - Hardwood Mixed Forest Type
RBTB2-3- Oak - Red Maple - Pine Non-Calcareous Treed Rock Barren Type
SAF_1-3- Duckweed Floating-leaved Shallow Aquatic Type
THD- Deciduous Thicket
WODM4- Dry - Fresh Deciduous Woodland Ecosite



Client:
Bayview Hospitality Group

Title:
Ecological Land Classification

Prepared By:

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WETLANDS

The small community of SAF1-3 was identified and delineated within the Study Area but outside the developable area and occurred as an inclusion to the RBTB2-3 vegetation community (**Figure 5**). It was calculated as being 82 m^2 in size, as well as an isolated feature containing a shallow depth (< 2 m).

The unevaluated wetland identified during the background review was associated with the vegetation community of FOMM10-2 within an area of low topographic relief. It is located within the developable area, west of the property, along Campeau Drive.

To identify wetland characteristics on-site, principles were followed that are outlined in the *Ontario Wetland Evaluation System (OWES) Southern Manual 3rd. Edition* (MNRF, 2014). As such, wetland characteristics were not identified at the documented unevaluated wetland location. This includes the absence of; wetland obligate vegetation species, surface water, groundwater inputs, etc.

Provincially Significant Wetlands (PSW) are absent from the Study Area.

5.2.2 WOODLANDS

Partial forested areas of FODM5-4, FOMM10-2 and treed area of RBTB2-3 that occur within the Study Area all meet the woodland definition as per the Forestry Act, R.S.O 1990, c.F.26 and therefore, qualify as candidate significant woodlands.

A desktop evaluation of these woodlands suggests they would meet the criteria for significance. However, as the Study Area falls within the Kanata Town Centre Secondary Plan (Schedule B1 and B2, City of Ottawa, 2003), an **evaluation of significance is not required within this EIS as per the City's *Significant Woodlands: Guidelines for Identification, Evaluation, and Impact Assessment* (2019b).** For urban areas where the NHS has already been identified within Secondary Plans, any new significant woodlands will not be considered.

5.2.3 SIGNIFICANT WILDLIFE HABITAT

The MNRF outlines the criteria for areas to be considered SWH in the *Ecoregion 6E Criterion Schedule* (MNRF, 2015b). The results of the field surveys from the 2019 field program (Stantec, 2020) and the 2020 field program conducted by WSP are intended to identify candidate and/or confirmed SWH and are detailed below.

BREEDING BIRD SURVEYS

WSP conducted two (2) surveys to determine the presence and relative abundance of breeding birds within the Study Area. The survey results are shown below in **Table 5**. For Breeding Bird survey locations, please refer to **Figure 4**.

A total of seventeen (17) bird species were recorded during the surveys. Evidence of breeding birds occurred as either singing males being present within suitable nesting habitat (representing Possible breeders); pairs of a species were observed in suitable nesting habitat (representing Probable breeders); and/or territorial behaviours were observed between birds in suitable nesting habitat (representing Probable breeders). No Confirmed breeders were observed within the Study Area during the two survey events.

No SAR were identified to occur within the Study Area. However, one SCC, the Wood Thrush, was observed as a Probable breeder within the Study Area and is listed as Special Concern in Ontario.

Based on results, SWH for breeding bird species is absent for the Study Area.

Table 5 Breeding Bird Survey Results

COMMON NAME	SCIENTIFIC NAME	ESA[1]	S-RANK[2]	BREEDING STATUS	OBSERVATION
American Crow	*Corvus brachyrhynchos*		S5	Probable	Singing male in suitable breeding habitat
American Goldfinch	*Spinus tristis*		S5B	Probable	Singing male present in suitable nesting habitat
American Redstart	*Setophaga ruticilla*		S5B	Probable	Singing male present in suitable nesting habitat
American Robin	*Turdus migratorius*		S5B	Probable	Singing male in suitable breeding habitat
Black-capped Chickadee	*Poecile atricapillus*		S5	Probable	Singing male present in suitable nesting habitat
Chipping Sparrow	*Spizella passerina*		S5B	Probable	Singing male in suitable breeding habitat
Downy Woodpecker	*Picoides pubescens*		S5	Probable	Singing male present in suitable nesting habitat
Great-crested Flycatcher	*Myiarchus crinitus*		S5B	Probable	Singing male in suitable breeding habitat
Northern Cardinal	*Cardinalis cardinalis*		S5	Possible	Pair observed in suitable nesting habitat
Pine Warbler	*Dendroica pinus*		S5B	Probable	Singing male in suitable breeding habitat
Red-breasted Nuthatch	*Sitta canadensis*		S5	Probable	Singing male in suitable breeding habitat
Red-eyed Vireo	*Vireo olivaceus*		S5B	Possible	Pair observed in suitable nesting habitat
Ring-billed Gull	*Larus delawarensis*		S5	Observed	Flyover
Song Sparrow	*Melospiza melodia*		S5B	Probable	Singing male present in suitable nesting habitat
White-breasted Nuthatch	*Sitta carolinensis*		S5	Probable	Singing male in suitable breeding habitat
Wood Thrush	*Hylocichla mustelina*	SC	S5B	Probable	Singing male in suitable breeding habitat
Yellow Warbler	*Setophaga petechia*		S5B	Probable	Singing male in suitable breeding habitat

COMMON NAME	SCIENTIFIC NAME	ESA[1]	S-RANK[2]	BREEDING STATUS	OBSERVATION

[1]S-Rank is an indicator of commonness in the Province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common.
[2]SARA = Species at Risk Act Status (Government of Canada, 2020).
[3]ESA = Endangered Species Act Status (MECP, 2020)
END = Endangered
THR = Threatened
SC = Special Concern
NAR = Not at Risk
DD = Data Deficient

AMPHIBIAN BREEDING SURVEYS

In accordance with the *Ecoregion 6E Criterion Schedule* (MNRF, 2015b), amphibian breeding surveys were completed to determine the presence of Amphibian Breeding Habitat for woodlands and wetlands within the Study Area. Woodland and wetland Amphibian Breeding Surveys were conducted in forest features with lowland depressions, as well as adjacent to shallow aquatic features that occurred within or in proximity to the 120 m Study Area. Station AM-2 was situated just outside of the Study Area at the head of the Bill Teron Park pond. Results from the surveys could then be used to identify the potential for amphibian movement corridors and potential impacts from the proposed residential development.

A total of three amphibian species were observed within the Study Area during WSP's 2020 field program. A full chorus of Spring Peeper was heard during the first visit, while a full chorus of Gray Treefrog (*Hyla versicolor*) was heard during the third visit. One Western Chorus Frog (designated as federally Threatened) was heard at Station AM-2 during the first visit. The station with the highest abundance and species richness was AM-2, with all three species occurring throughout the survey period. No amphibians were heard within the developable area at Stations AM-3 or AM-4.

The Western Chorus Frog is federally designated as Threatened and protected under SARA (Schedule 1). This species was observed outside the Study Area in low abundance. No other SAR was observed in the Study Area.

Table 6 summarizes the amphibian survey results. For locations of Amphibian Survey Stations, please refer to **Figure 4.**

During Stantec's surveys in 2019, adult male American Bullfrogs (*Lithobates catesbeianus*) were visually observed within the Bill Teron Park pond, located just outside the Study Area (Stantec, 2020). The frogs were observed in May, where this species typically begins calling in June into July and is usually captured during the third round of amphibian surveys. Due to such sightings, the occurrence of American Bullfrogs may confirm that the wetland habitat is significant. However, during WSP's surveys in 2020, American Bullfrog's were not heard at survey station AM-2 (Bill Teron Park Pond) during the appropriate survey window. Therefore, the evaluation of significance for amphibian breeding habitat is inconclusive and has a moderate potential to be considered significant.

Based on results, significant habitat for amphibian breeding (woodland and wetland) is absent from the Study Area but has the potential to occur in adjacent lands.

Table 6 Amphibian Breeding Survey Results

NAME	S-RANK[1]	SARA[2]	ESA[3]	VISIT #	STATION #	RESULTS[4]
Gray Treefrog *Hyla versicolor*	S5	---	---	2	1	Code 1-4
				2	2	Code 2-8
				3	2	Code 3-full chorus

NAME	S-RANK[1]	SARA[2]	ESA[3]	VISIT #	STATION #	RESULTS[4]
Spring Peeper *Anaxyrus americanus*	S5	---	---	1	1	Code 3-full chorus
				1	2	Code 2-8
				2	1	Code 2-4
				2	2	Code 2-5
Western Chorus Frog *Pseudacris triseriata*	S5	THR	NAR	1	2	Code 1-1

[1]S-Rank is an indicator of commonness in the Province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common.
[2]SARA = Species at Risk Act Status (Government of Canada, 2002).
[3]ESA = Endangered Species Act Status (Government of Ontario, 2007)
END = Endangered
THR = Threatened
SC = Special Concern
NAR = Not at Risk
DD = Data Deficient
[4]Code 1: Calls not simultaneous, number of individuals can be accurately counted; Code 2: Some calls simultaneous, number of individuals can be reliably estimated; Code 3: Calls continuous and overlapping, number of individuals cannot be estimated.

BAT MATERNITY COLONY SURVEY

Twenty-six (26) suitable cavity trees were present throughout the Study Area and located in the woodlands of WODM4, RBTB2-3 and FODM5-4. Subsequently, acoustic monitoring was conducted at two (2) survey locations and placed within the vegetation communities of WODM4 and FODM5-4, where cavity tree density was the greatest (**Figure 4**).

The acoustic monitoring detected a total of two (2) species. They included Hoary Bat (*Lasiurus cinereus)* and Big Brown Bat *(Eptesicus fuscus).* Two (2) Hoary Bats and one (1) Big Brown Bat was recorded at Station: Bat-1. Where one (1) Hoary Bat was recorded at Station: Bat-2. No bats were visually observed to be entering tree cavities in order to confirm the presence of bat maternity colonies within the Study Area.

Due to these results, the low abundance of bat populations suggests that significant habitat for Bat Maternity Colonies and SAR bats are absent from the Study Area.

HABITAT FOR SPECIES OF CONSERVATION CONCERN

Potential habitat for three (3) SCC (**Appendix A**) was confirmed during the ELC assessment. Results of suitable habitat and the presence/absence of SCC within the Study Area include:

- Eastern Wood-pewee: Fragmented deciduous forests/woodlands are present in the Study Area. This species was not detected during the breeding bird surveys.
- Wood Thrush: Deciduous forests are present within the Study Area. This species was detected during the breeding bird surveys.
- Monarch: Milkweed plants were observed within the Study Area and Project footprint. However, there were no direct observations of Monarch caterpillars and/or butterflies at the time of field surveys.

Habitat and the presence of Wood Thrush (SCC) are present within the Study Area.

TURTLE VISUAL ENCOUNTER SURVEY

During the review of background records and documentation for the property of 6301 Campeau Drive, Stantec (2020) conducted a natural heritage field program in 2019. Within the 2019 field program, turtle visual encounter surveys were conducted at the location of Bill Teron Park pond in order to identify confirmed SWH of turtle wintering habitat. Five (5) surveys were conducted from May to June 2019 to observe turtles either emerging from overwintering habitats, basking within the pond, or nesting in proximity to the pond.

Five (5) Midland Painted Turtles (*Chrysemys picta*) were observed by Stantec (2020) on multiple days at several locations within the Bill Teron Park pond open aquatic feature. As such, this result meets the habitat criteria for **confirmed significance** as outlined within the MNRF's *SWH Criteria Schedules for Ecoregion 6E* (2015b) (Stantec, 2020).

No turtle SAR/SCC (i.e. Blanding's Turtle and Snapping Turtle) were observed during the Stantec field investigations in 2019. Although the Bill Teron Park pond is located just outside the Project's Study Area (approximately 13 m west), there is potential for transient movement of reptile species from the pond into the upland features that comprise the developable area. Such movement is necessary for reptile species to fulfill certain life cycles (such as nesting), as well as daily movement patterns, as they require both terrestrial and aquatic habitats. Therefore, a linkage/connectivity feature may be present throughout the greater landscape at 6301 Campeau Drive.

INCIDENTAL OBSERVATIONS OF SIGNIFICANT WILDLIFE HABITAT

No other observations of candidate SWH were identified to occur within the Study Area based on field survey results.

5.2.4 SPECIES AT RISK AND SPECIES AT RISK HABITAT

Potential habitat for three (3) SAR (**Appendix A**) and the presence of one (1) SAR were confirmed within the Study Area. Results of suitable habitat and the presence of SAR within the Study Area are as follows.

SAR BATS

Little Brown Myotis, Northern Myotis, and Tricolored Bat are all designated as Endangered both federally and provincially. Suitable habitat in the form of forest/woodlands with large diameter cavity trees is present within the Study Area. However, during the acoustic monitoring survey, no SAR bats were detected and therefore are considered absent from the Project's Study Area.

BUTTERNUT

A total of thirty (30) Butternut trees were identified and assessed within the Study Area during WSP's BHA report (i.e. 735-004). The following is a summary of the health categories for each tree assessed:

- Category 1 (non-retainable) = 20 trees
- Category 2 (retainable) = 5 trees
- Category 3 (retainable and archivable) = 5 trees

The complete BHA report (735-004) is provided in **Appendix E**. See **Figure 9** for Butternut categories, locations, and proposed removals based on the development site plan.

5.3 TREES

The tree inventory consisted of inventorying trees within nine 10 m x 10 m plots throughout the Study Area. The plots were placed within the treed vegetation communities of FOMM10-2, RBTB2-3, WODM4, and FODM5-4 in order to extract relative species abundance and richness, average size (DBH), and general health for each vegetation community. A total of seventeen (17) species of trees or shrubs were recorded throughout the Study Area, and the

majority were in overall good health. A summary of the results is displayed in **Table 7** below and is categorized by the four vegetation communities.

Table 7 Summary of tree inventory results per ELC community within 6301 Campeau Drive Study Area

ELC TYPE	SPECIES (% OF COMPOSITION)	AVERAGE DBH (CM)	SPECIES GENERAL HEALTH			COMMENTS
			GOOD (%)	FAIR (%)	POOR (%)	
FOMM10-2	Eastern White Pine (20%)	34	100	0	0	Occurred within the super-canopy layer
	White Spruce (32%)	33	86	14	0	Dominant species within the canopy layer
	Large-tooth Aspen (2%)	25	100	0	0	
	Butternut (2%)	18	100	0	0	One individual recorded in Plot 1
	Sugar Maple (2%)	14	100	0	0	
	American Elm (7%)	15	100	0	0	
	Trembling Aspen (9%)	25	100	0	0	
	Eastern Hemlock (11%)	12	80	20	0	
	White Birch (7%)	15	100	0	0	
	Ironwood (4%)	12	100	0	0	
	Black Cherry (2%)	17	100	0	0	
	Siberian Elm (2%)	29	100	0	0	
RBTB2-3	Hawthorn species (10%)	11	100	0	0	
	Bur Oak (20%)	19	100	0	0	Abundant in the canopy layer
	American Elm (5%)	16	100	0	0	
	Green Ash (10%)	14	50	0	50	
	Ironwood (30%)	12	100	0	0	Abundant in the sub-canopy layer
	Sugar Maple (5%)	20	100	0	0	

ELC TYPE	SPECIES (% OF COMPOSITION)	AVERAGE DBH (CM)	SPECIES GENERAL HEALTH			COMMENTS
			GOOD (%)	FAIR (%)	POOR (%)	
	European Buckthorn (5%)	10	100	0	0	
	Eastern White Pine (15%)	30	100	0	0	Occurred on edge of community
WODM4	Hawthorn species (11%)	11	100	0	0	
	Green Ash (11%)	14	100	0	0	
	Butternut (11%)	20	0	0	100	Dead specimen
	Ironwood (11%)	16	100	0	0	
	Eastern White Pine (11%)	51	100	0	0	
	Black Cherry (11%)	32	100	0	0	
	Bur Oak (33%)	23	100	0	0	Abundant in the canopy
FODM5-4	Sugar Maple (75%)	14	100	0	0	Dominant in the canopy and sub-canopy layers.
	Green Ash (5%)	11	0	100	0	
	Black Cherry (5%)	16	100	0	0	
	Bur Oak (5%)	15	0	100	0	
	American Basswood (10%)	15	50	50	0	

An inventory of Distinctive trees (i.e. ≥ 50 cm DBH) throughout the Survey Area recorded twenty-nine (29) trees, comprised of six (6) species. Eastern White Pine was the most abundant Distinctive tree, followed by Bur Oak and Sugar Maple. Twenty-five (25) of the trees assessed were in overall good health; four (4) were in fair health; while, none were in poor health.

The locations of the Distinctive trees are shown in **Figure 6.** A detailed tree inventory list, including tree species, DBH, health conditions, and UTM coordinates for each tree assessed, is included in **Appendix C**.

5.4 INCIDENTAL WILDLIFE

Incidental wildlife species and general wildlife observations were documented during the field survey program and included; Eastern Chipmunk (*Tamias striatus*), Eastern Gray Squirrel (*Sciurus carolinensis*), Eastern Cottontail (*Sylvilagus floridanus*), Striped Skunk (*Mephitis mephitis*), Eastern Gartersnake (*Thamnophis sirtalis*), Red-tailed Hawk (*Buteo jamaicensis*), Gray Catbird (*Dumetella carolinensis*), Common Grackle (*Quiscalus quiscula*), American

Robin (*Turdus migratorius*), Downy Woodpecker (*Picoides pubescens*), Common Raven (*Corvus corax*), and an inactive stick nest.

All species observed are common in Ontario and the City of Ottawa and appeared as residents of the Study Area.

5.5 AQUATIC ENVIRONMENT

Based on a review of background records and an on-site search for aquatic features, it was confirmed that watercourses and municipal drains are absent from the Study Area. Only the isolated pond identified as SAF1-3 vegetation community was noted to occur within the Study Area but outside the Project footprint.

Study Area

Development Area

Tree Plot

Distinctive Tree (>50 cm DBH)

Client:

Bayview Hospitality Group

Title:

Tree Inventory and Distinctive Tree Locations

Prepared By:

201-03048-00	1:2,200	Review: AO
Date: November 2020	**Figure: 6**	
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6 DESCRIPTION OF THE PROPOSED PROJECT

Figure 7 3D Rendering Drawing of 6301 Campeau Drive

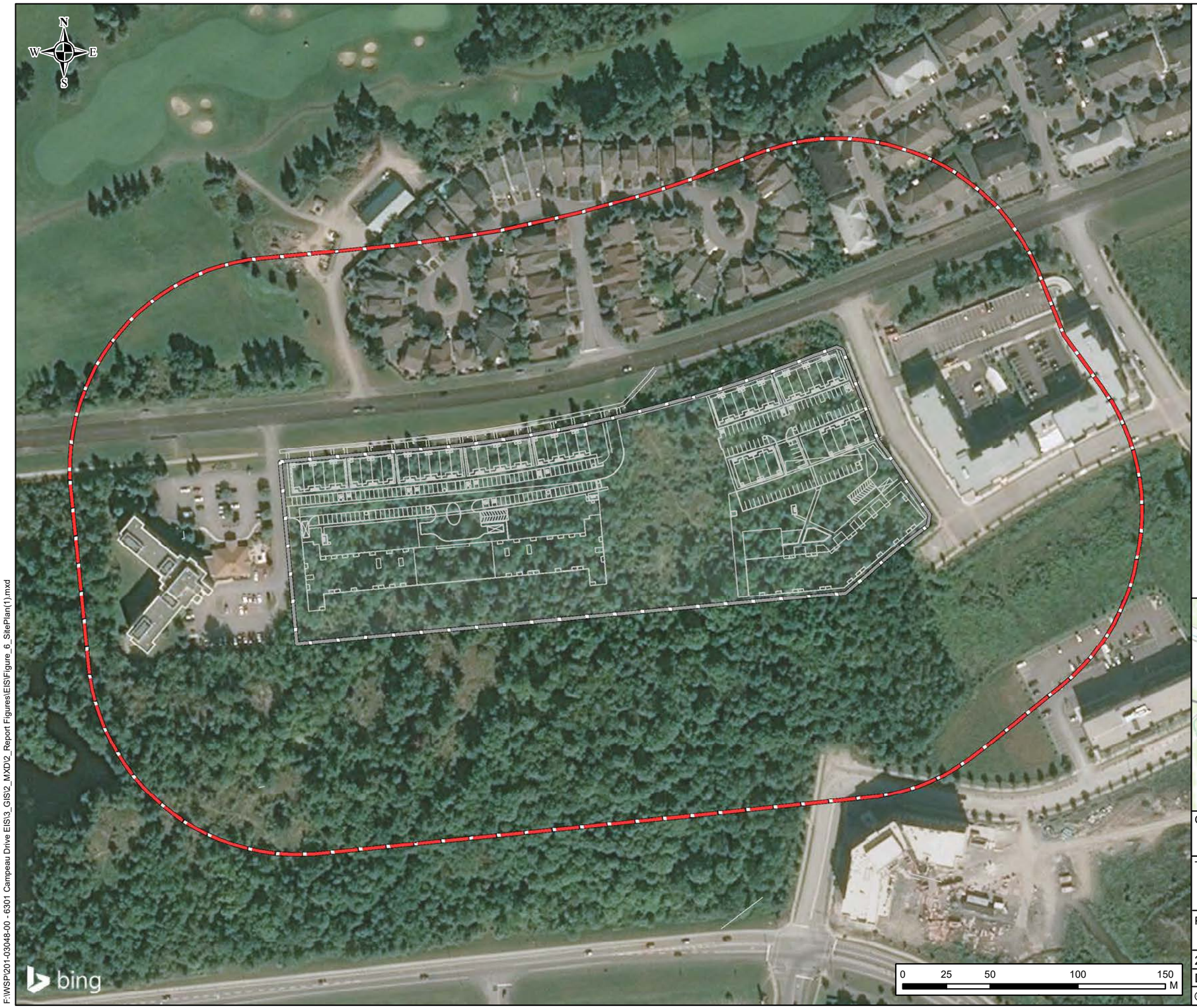
Bayview Hospitality Group is proposing to develop a phased residential development of Parcel 1 and Parcel 2 with 184 back to back townhouse dwelling units and 614 apartment dwelling units for a total of 798 units. The townhouse units will be 3-storeys on a raised basement level, located along the north side of the site. The apartment buildings will be 10-storeys above the proposed grade, located along the south side of the site. The buildings will have a shared covered podium parking in the middle of the site that will have a green-roof amenity space on top. Parking will consist of 202 surface parking spaces and 489 underground spaces, for a total of 691 spaces. Access will be provided off Campeau Drive and Cordillera Street. The proposed Site Plan has been developed to not only enhance the natural features on-site but to foster a social value to the surrounding natural environment for residents. To further incorporate greenery, a landscaped internal courtyard is proposed, along with green roofs and terraces. Connection to the future Bill Teron Park Expansion areas will also be established by retaining the exposed bedrock feature (RBTB2-3 vegetation community), which occurs between Parcel 1 and Parcel 2, to accommodate a pedestrian pathway; thereby, creating a link for residents to the City of Ottawa's parklands (**Figure 7**).

The draft site plan illustrating the proposed layout of the development is shown in **Figure 8**.

6.1 CONSTRUCTION ACTIVITIES

It is assumed the development of this property will include the following major project components:

- Surveying and staking out the development;
- Clearing, excavation, and grading property to accommodate construction;
- Installation of storm water drainage network and related infrastructure;
- Excavation to accommodate underground utilities including water, sewer, gas, and hydro;
- Construction of buildings, driveways, and access roads;
- Paving parking areas and access roads;
- Landscaping and fencing;
- On-going usage and maintenance.



Study Area

Development Area

Proposed site plan

Client:

Bayview Hospitality Group

Title:

Proposed Site Plan

Prepared By: WSP

201-03048-00	1:2,250	Review: AO
Date: October 2020	**Figure: 8**	
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7 IMPACT ASSESSMENT AND MITIGATION

The following sections describe the anticipated environmental impacts associated with the proposed development and the general measures that should be considered to mitigate the associated impacts. The impact assessment and associated mitigation considers both temporary (i.e. construction-related) impacts and permanent impacts associated with the occupation of the development. The anticipated impacts are illustrated in **Figure 9 and Figure 10.**

7.1 NATURAL HERITAGE FEATURES

7.1.1 VEGETATION COMMUNITIES

It is anticipated to accommodate the construction of the multi-residential apartment buildings and townhouses, including parking and access roads, portions of the Study Area and associated vegetation communities will be cleared and graded. The impacts associated with this clearing will include:

- The permanent loss of or disturbance to native vegetation is approximately 2.93 ha of native vegetation (see Figure 9). This disturbance is directly associated with the clearing required to accommodate the Project. The area of vegetation planned for removal is separated below per ELC community:
  - 0.37 ha of FODM5-4 (Dry-Fresh Sugar Maple-Ironwood Deciduous Forest)
  - 1.41 ha of FOMM10-2 (Fresh-Moist White Spruce-Hardwood Mixed Forest)
  - 0.48 ha of RBTB2-3 (Oak-Red Maple-Pine Non-Calcareous Treed Rock Barren)
  - 0.61 ha of WODM4 (Dry-Fresh Deciduous Woodland)
- Accidental damage or loss of trees and other vegetation features because of site alteration or construction activities;
- The permanent loss of habitat for wildlife-dependent upon the terrestrial communities;
- Changes in natural drainage;
- Decreased biodiversity, reduced number of species, or abundance of species;
- Erosion and sedimentation into adjacent vegetation communities;
- Permanent loss of native vegetation due to increased potential for non-native and invasive vegetation species after development;

It is anticipated that permanent, minor indirect impacts to the vegetation community of SAF1-3 (Duckweed Floating-leaved Shallow Aquatic) will occur due to an increased risk of sedimentation and pollutant run-off from the proposed development.

PROPOSED MITIGATION MEASURES – CONSTRUCTION IMPLEMENTATION

The following general mitigation measures are recommended to address impacts on the terrestrial environment adjacent to the development area:

- ✓ Orange snow fencing or other suitable security fencing should be used to delineate the construction limits from the adjacent habitat of the existing and future Bill Teron Park. This will prevent encroachment of

construction activities into the adjacent natural feature. This fencing should be monitored regularly to ensure it is functioning properly. Any deviancy in the fencing should be dealt with promptly;

- ✓ Erosion and sediment control plan (which should include erosion and sediment control fencing) should be implemented to prevent sedimentation outside of work areas;
- ✓ Landscaping plans should consider the use of appropriate native species to offset the loss of species and biodiversity from vegetation removals;
- ✓ Machinery will arrive on-site in a clean condition and will be free of fluid leaks, invasive species, and noxious weeds;
- ✓ All excess construction material will be removed from the site and the area restored with seeding of native species upon project completion as required.

PROPOSED MITIGATION MEASURES – POST-CONSTRUCTION

- ✓ Installation of garbage bins in public spaces is recommended to limit trash habitats adjacent to the development area;
- ✓ 'No Littering' signage is recommended around the property to discourage littering.

With the successful implementation of the mitigation measures outlined above, a low decrease in native terrestrial vegetation is anticipated due to a minor amount of vegetation proposed for removal.

Study Area

Development Area

Proposed site plan

Distinctive tree (Retainable)

Distinctive tree (Non-retainable)

Distinctive tree (Potential for retention)

Vegetation removals (approximately 2.93 ha)

Retained vegetation (approximately 1.03 ha)

Retained rock barren feature

Client:

Bayview Hospitality Group

Title:

Environmental Impacts

Prepared By:

201-03048-00	1:2 200	Review: AO
Date: novembre 2020	**Figure: 9**	
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Study Area

Development Area

Proposed site plan

Vegetation removals (approximately 2.93 ha)

Retained vegetation (approximately 1.03 ha)

Butternut

- Category 1 (Removed)
- Category 2 (Removed)
- Category 3 (Removed)
- Category 1 (Retainable)
- Category 2 (Retainable)
- Category 3 (Retainable)

Client:
Bayview Hospitality Group

Title:
Butternut Impacts

Prepared By:

201-03048-00	1:2,200	Review: AO
Date: November 2020	**Figure: 10**	
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7.1.2 WOODLANDS

The Study Area is predominately comprised of woodland features. Approximately 2.9 ha are proposed for removal and consist of the following vegetation communities: FOMM10-2, WODM4, RBTB2-3, and FODM5-4.

The Study Area is recognized in the City of Ottawa's Official Plan as a Mixed-use Town Centre (Schedule B – Urban Policy Plan) and falls within the Kanata Town Centre Secondary Plan. As per the City's S*ignificant Woodlands: Guidelines for Identification, Evaluation, and Impact Assessment* (2019b), new significant woodlands will not be identified in urban areas where the NHS was previously assessed within Secondary Plans like the Kanata Town Centre.

Therefore, potential impacts and mitigation measures described below only pertain to the general woodland habitats within the Study Area, and woodland significance for the Project no longer applies.

The anticipated direct and indirect impacts include:

- Direct impact and permanent loss of, or disturbance to, approximately 2.9 ha of Woodlands;
- Decreased biodiversity, reduced species abundance, and reduced urban canopy;
- Direct impact and permanent loss of habitat for wildlife-dependent upon these woodlands;
- Direct impact and permanent changes in natural drainage;
- Direct impact and permanent habitat fragmentation.

PROPOSED MITIGATION MEASURES – PLANNING AND DESIGN STAGE

The following general mitigation measures are recommended to address impacts on the woodlands within the proposed development area:

- ✓ Development of a landscaping plan to address invasive species removals and native vegetation plantings along the perimeter of the retained portion of the woodlands to reduce the impact of edge effects, limit the risk of invasive species spread, and to offset the loss of species biodiversity from vegetation removals.

PROPOSED MITIGATION MEASURES – CONSTRUCTION IMPLEMENTATION

- ✓ Retention of healthy, mature, and mid-aged trees should be prioritized where possible;
- ✓ Minimize clearing of woodlands to the least extent possible;
- ✓ Tree retention should be prioritized where possible along the work areas and Bill Teron Park expansion areas;
- ✓ High visibility snow fencing (or equivalent) should be installed along the perimeter of construction work limits and the edge of Bill Teron Park expansion areas to reduce encroachment to this designated natural feature, thereby reducing/eliminating further impacts to the woodlands that extend beyond the Project footprint limits;
- ✓ General vegetation mitigation, as described in **Section 7.1.1**.

With the successful implementation of the mitigation measures outlined above, it is anticipated that there will be a moderate permanent loss to Woodlands within the Study Area. Tree-specific mitigation measures are described below in Section 7.1.6.

7.1.3 SIGNIFICANT WILDLIFE HABITAT

No direct or indirect impacts to SWH are anticipated as a result of the proposed development as no confirmed SWH was identified to occur within the Study Area.

However, during the review of background records and documentation, Stantec (2020) identified two confirmed SWH features within approximately 13 m west of the Study Area boundary. This includes SWH for breeding amphibian wetland habitat, as well as turtle overwintering habitat in the aquatic feature of Bill Teron Park pond.

Although potential direct impacts are not anticipated at this feature, indirect impacts to migrating, transient individuals of amphibian or reptiles may occur as they move from wetland to terrestrial features. As such, general mitigation measures are recommended below to reduce or eliminate potential risks to reptile and amphibian species as a result of construction activities.

BREEDING BIRDS

It is expected that the removal and disturbance of woodland habitats within the proposed development area will result in permanent loss of potential nesting and foraging habitat for birds. As well, it is anticipated that fatal bird collisions associated with building glazing will occur post-construction, resulting in direct impacts to birds. Based on the City of Ottawa's *Bird-safe Design Guidelines* (2020b), the following criteria has been evaluated to determine the magnitude of collision impacts to birds:

- Consideration of the environmental context:
  - The proposed development is adjacent to the natural area of a mature forest. Therefore, it is anticipated that bird collisions will occur and result in a moderate, permanent direct impact on birds;
- Minimize the transparency and reflectivity of glazing:
  - The buildings at 6301 Campeau Drive have been designed to reduce solid undistinguishable expanses of glazing; thereby, reducing the risk of collisions from birds.
  - Bird-safe glass is recommended where glazing occurs to further reduce impacts to birds. Treatments should be applied to 90% of glass, 16 m high from grade level, or to the height of a tree canopy adjacent to the development, whichever is greater.
  - It is anticipated that green roofs and terraces will be considered in the design of the development. Any glazing adjacent to such features should also be treated with bird-safe glass to a height of 4 m from the surface of the roof or terrace, or to the height of adjacent vegetation, whichever is greater.
- Avoidance or mitigation of design traps:
  - The proposed development has been designed to reduce bird fly-throughs, mirror maze, or black hole effects. Therefore, it is anticipated that design traps will have a minimal direct impact on birds.
- Consideration of the structural feature:
  - The proposed development shall consider the placement and amount of antennas, grates, vertical pipes, flues and/or vents in order to reduce the impact on birds. Screened grates will further reduce impacts to birds.
- Creation of safe bird-friendly landscaping:
  - The proposed residential development has been designed to include landscaping around the building structures, terraces, parking, and courtyard. Bird-friendly landscaping guidelines shall be incorporated with the landscape plan to reduce the impact on birds.
- Designing exterior lighting to minimize light trespass at night:
  - The building exteriors shall reduce up-lighting, floodlights, use motion detection and automatic lighting between the hours of 11 pm and 6 am. This will reduce the collision impact on birds.
- Avoidance of nighttime light trespass from the building's interior:
  - The unoccupied spaces within the building's interior shall reduce lighting by installing automatic motion detection lights, utilize window shades/blinds, incorporate localized task lighting and dimmers in lobbies, atria, and perimeter. This will reduce the collision impact on birds.

Other impacts on birds include the following:

- The indirect impact of clearing vegetation within the construction area will result in the permanent loss of nesting and foraging habitat for birds;
- Clearing vegetation during construction activities has the potential to temporarily and directly impact breeding birds and their nests;
- Permanent and direct impact of predation by domestic cats during occupation.

PROPOSED MITIGATION MEASURES – PLANNING AND DESIGN STAGE

- ✓ Bird-friendly building design principles should be considered in the design of the development. The following specific mitigation is recommended, where applicable:
    - General building design should incorporate the *Bird-friendly Building Design* standards where possible (Canadian Standards Association, 2019);
    - General building design should also incorporate the City of Ottawa's draft *Bird-safe Design Guidelines* (City of Ottawa, 2020b).
- ✓ Retention of native vegetation where appropriate (i.e. the park block) should be considered to maintain available nesting and foraging habitat for breeding birds.

PROPOSED MITIGATION MEASURES – CONSTRUCTION IMPLEMENTATION

The following mitigation measures are intended to address potential impacts to breeding birds resulting from the proposed development:

- ✓ Clearing of vegetation should be avoided during the breeding bird season, between April 1 and August 31. Should any clearing be required during the breeding bird season, nest searches conducted by a qualified person must be completed 48 hours prior to clearing activities. If nests are found, an appropriate setback will be established by the qualified professional. No work will be permitted within this setback in accordance with the federal MBCA, 1994;
- ✓ A qualified bird rehabilitation centre should be contacted if any birds are injured or found injured during construction activity. Injured birds should be transported to a qualified care facility (i.e. *Ottawa Valley Wild Bird Care Centre*);
- ✓ The construction area should be pre-stressed prior to any vegetation clearing within the proposed development area and follow procedures outlined in the *Protocol for Wildlife Protection During Construction* (City of Ottawa, 2015b);
- ✓ Other mitigation measures outlined in the *Protocol for Wildlife Protection during Construction* (City of Ottawa, 2015b) should be considered prior to construction of the proposed development.

With the successful implementation of the mitigation measures outlined above, it is anticipated that there will be low impacts on breeding bird populations within the Study Area.

AMPHIBIAN BREEDING HABITAT (WETLANDS)

The proposed development is expected to have impacts on amphibians within the Study Area. The following impacts on amphibians is a possible result from the proposed development:

- It is anticipated that direct impacts on amphibians will be minor and temporary during the duration of construction activities required for site clearing and other construction activities;
- It is anticipated that indirect impacts to amphibians will be minor but permanent due to an increased risk from sediments and pollutants being transported into the adjacent wetland habitat associated with Bill Teron Park pond from the proposed development;

- It is anticipated that indirect impacts to amphibians will be minor but permanent due to an increased risk from sediments and pollutants being transported into the isolated wetland habitat of SAF1-3 (Duckweed Floating-leaved Shallow Aquatic) associated with the rock barren vegetation community (RBTB2-3) from the proposed development;
- Negligible loss of woodland and wetland amphibian habitat.

PROPOSED MITIGATION MEASURES – CONSTRUCTION IMPLEMENTATION

- ✓ Silt fencing should be installed around the perimeter of the project area prior to site activities as part of erosion and sediment control measures to prevent amphibians and other wildlife from entering the site. Fencing should be maintained throughout the life cycle (until the land is permanently stabilized) of the project and repaired if damaged by machinery;
    - Reptile and amphibian exclusion fencing should be installed according to *Reptile and Amphibian Exclusion Fencing: Best Practices* (MNR, 2013).
- ✓ If necessary, avoid the use of heavy equipment in wetlands and watercourses during the winter as amphibians and reptiles may be hibernating;
- ✓ Other mitigation measures outlined in the *Protocol for Wildlife Protection during Construction* should be considered prior to construction of the proposed development (City of Ottawa, 2015b).

With the successful implementation of the mitigation measures outlined above, the proposed development is not anticipated to negatively affect breeding amphibians within the Study Area.

TURTLE WINTERING AREAS

Due to the adjacency of confirmed significant turtle wintering habitat at the Bill Teron Park pond, Midland Painted Turtles have moderate potential to interact with Project activities. Thus, there is the potential of the following indirect impacts on turtles as a result of the proposed development:

- Potential physical harm to turtles during clearing and other constructions activities;
- Potential harm to turtles resulting from sediments and pollutants transported into the adjacent wetland habitat associated with the Bill Teron Park pond from the proposed development;
- Potential harm to turtle nesting features that may be present within the Study Area;
- Negligible loss of turtle wintering habitat.

PROPOSED MITIGATION MEASURES – CONSTRUCTION IMPLEMENTATION

- ✓ Wildlife exclusion fencing should be installed around the perimeter of the Project area prior to the commencement of construction activities and before April 1st in order to prevent turtles from entering the worksite. Fencing should be monitored regularly throughout the duration of the Project by an environmental inspector during sensitive time periods and repaired by the environmental inspector if deficiencies are noted. This fencing will act as a dual purpose in order to delineate the construction work areas from adjacent woodlands (Section 7.1.2).
    - Wildlife exclusion fencing should be installed according to *Reptile and Amphibian Exclusion Fencing: Best Practices* (MNR, 2013).
- ✓ Stockpiled soils and aggregate within or adjacent to turtle wintering habitat should be avoided if possible. If stockpiling is required, the materials should be covered during Turtle Nesting Season (May 15 to July 30) to prevent turtle nesting.
- ✓ Before work is to commence each day, a visual search for reptile species within the construction areas should be conducted by construction contractors. As well, machinery and equipment should be inspected for reptiles prior to starting. This is most important during the peak wildlife activity period from April 15 to November

1. If reptiles are encountered, they should only be handled by a qualified biologist or someone with similar qualifications and be permitted to move the site area on their own accord.

With the successful implementation of the mitigation measures outlined above, the proposed development is not anticipated to negatively affect turtles within the Study Area.

BAT MATERNITY ROOST HABITAT

It is anticipated that the proposed development will have negligible impacts to bat maternity roost habitat as the proposed development may remove candidate cavity trees. Additionally, light emitting from the residential dwellings and proposed streets will likely attract insects and provide foraging opportunities for bats. The following impacts on bat maternity roost habitat are anticipated as a result of the Project:

- There is potential for permanent loss and direct impact to candidate roost trees within woodland habitats due to vegetation removals;
- The increase in outdoor lighting may permanently and indirectly impact the foraging behaviour in bats;
- There is potential for permanent and direct impacts of accidental displacement, injury, or death of bats, which may be using woodlands as temporary roosting habitat during the roosting period.

PROPOSED MITIGATION MEASURES – CONSTRUCTION IMPLEMENTATION

- ✓ Clearing of vegetation should be avoided during the general active and maternity roosting periods for bats (May 1 to October 15);
- ✓ Installation of approximately four large bat boxes, placed on two poles; placed in appropriate open areas, adjacent to the forested areas in the northern and southern boundaries of the property to enhance potential roosting habitat for resident bats.

With the successful implementation of the mitigation measures outlined above, it is anticipated that the proposed development will result in a negligible impact on bats and bat habitat within the Study Area.

HABITAT FOR SPECIES OF CONSERVATION CONCERN

One SCC was observed within the Study Area during field surveys and includes Wood Thrush (listed as Special Concern in Ontario). Potential habitat has been identified for Eastern Wood-pewee and Monarch.

- Site clearing and construction activities have the potential to permanently remove habitat for Wood Thrush and Eastern Wood-pewee;
- Indirect impacts of site clearing and construction activities may permanently remove Monarch habitat to a minor extent. Rare occurrences of Milkweed plants have been identified within the Study Area, which is the sole food source of the larval (caterpillar) stage. If Milkweed is removed during site clearing, there is a potential loss of individual Monarch, eggs, larvae, or pupae. However, as meadow habitats are absent from the Study Area and only rare amounts of the Milkweed plant was observed, it is anticipated that the Project will result in a negligible impact to Monarchs.

PROPOSED MITIGATION MEASURES – CONSTRUCTION IMPLEMENTATION

- ✓ General mitigation for breeding birds, including Eastern Wood-pewee and Wood Thrush, is described in **Section 7.1.3;**
- ✓ General mitigation for Monarch should follow vegetation removal mitigation is described in **Section 7.1.1.**

With the successful implementation of the mitigation measures outlined above, it is anticipated that there will be negligible impacts to potential habitat of SCC.

7.1.4 SPECIES AT RISK

Thirty (30) Butternut trees (listed as Endangered both federally and provincially) were observed within the Study Area at the time of field investigations and, therefore, have a high potential to be impacted by the proposed construction activities. To accommodate the proposed multi-residential dwellings, approximately twenty-three (23) trees will require removal. **Figure 10** displays the impact on Butternuts and their associated health categories.

Butternut is protected under the ESA. Section 9 of the ESA includes prohibitions against activities, such as killing or harming a living Butternut specimen. Section 10 of the ESA includes prohibitions against damage or destruction of Butternut habitat. However, the ESA and Ontario Regulation (O. Reg.) 242/08 includes exemptions that would otherwise be prohibited by the Act. O. Reg. 242/08 provides conditional exemptions from prohibitions for certain activities that may affect Butternut.

For most activities that involve killing or harming a species, a proponent's eligibility for exemptions is dependant on the Category of a tree, which has been assigned by a Butternut Health Assessor. For example, Category 1 (non-retainable) trees are exempted from clause 9 (1) (a) of the ESA, and trees under this category can be killed, harmed, or taken without authorization if all the exemption provisions have been met (s. 23.7 of O. Reg. 242/08). This also applies to Category 2 (retainable) trees, where ≤ 10 trees are proposed to be killed, harmed, or taken. If greater than 10 trees are proposed for removal, an ESA authorization will be required, and exemption provisions under s. 23.7 of O. Reg 242/08 does not apply. Exemption provisions under s. 23.7 of O. Reg 242/08 does not apply to Category 3 (retainable and archivable) trees and proponents must seek an ESA authorization.

For the development at 6301 Campeau Drive, the following trees and their categories are proposed to be killed, harmed, or taken:

- Category 1 = 15 trees to be removed
- Category 2 = 3 trees to be removed
- Category 3 = 5 trees to be removed

The Category 1 and 2 trees are eligible for exemption under the Act, while the Category 3 trees will require an ESA authorization.

PROPOSED MITIGATION MEASURES – PLANNING AND DESIGN STAGE

- ✓ Butternut trees cannot be cleared until approval from MECP has been received, plus a 50 m buffer to preserve habitat;
- ✓ Submission of Butternut Health Assessment report to MECP and consultation to discuss the implementation of ESA registration for Category 1 and 2 trees proposed for removal;
- ✓ It is expected that an ESA Authorization will be required to remove Category 3 trees;
- ✓ Potentially retainable trees that are not anticipated to be directly impacted by the proposed development, but occur within 50 m of construction activities, will also require registration and/or authorization prior to the commencement of work.

PROPOSED MITIGATION MEASURES – CONSTRUCTION IMPLEMENTATION

- ✓ Construction awareness training package should be provided to contractors working on-site. The package will provide general information and mitigation for Butternut and other natural heritage features that may be encountered directly or indirectly on-site and standard procedures if encountered;
- ✓ Butternut clearing should occur when construction activities (e.g. grading, excavation) are imminent to reduce the potential for new seedlings to regenerate.

Based on the results of the Butternut Health Assessment, ESA Authorization (registration and permitting) will be required. Site alteration should be avoided until appropriate authorization is given.

No other SAR were observed at the time of field investigations, and no further impacts and mitigation measures are anticipated.

7.1.5 WILDLIFE

The proposed development is expected to have a negative impact on local wildlife due to the general loss of natural habitat and direct impacts related to construction activities. Potential impacts to wildlife resulting from the proposed development include the following:

- Temporary and minimal direct impacts of displacement, injury, or death resulting from contact with heavy equipment during clearing and grading activities;
- Permanent loss and minimal indirect impacts of general natural habitat suitable for the life processes of common urban and rural wildlife;
- Temporary and minimal indirect impacts of disturbance to wildlife resulting from noise associated with construction activities, particularly during breeding periods;
- Permanent outdoor lighting may result in minimal indirect impacts to wildlife within adjacent woodland habitats;
- It is anticipated that an increase in anthropogenic activities will result in permanent and minimal direct impacts on wildlife due to an increased risk of vehicle collisions and various other human/wildlife interactions.

PROPOSED MITIGATION MEASURES – CONSTRUCTION IMPLEMENTATION

The best practices outlined in the *Protocol for Wildlife Protection during Construction* (City of Ottawa, 2015b) should be followed during all construction activities associated with the development. The following measures are consistent with the protocol:

- ✓ Pre-stress the area leading up to construction to encourage wildlife to leave the area before construction starts. Other recommendations for pre-stressing are outlined in the *Protocol for Wildlife Protection During Construction* (City of Ottawa, 2015b);
- ✓ Orange snow fencing should be installed around the perimeter of the work area to clearly demarcate the development area and prevent wildlife from entering the construction zone. Fencing should be monitored regularly to ensure they are functioning properly, and if issues are identified should be dealt with promptly;
- ✓ Perimeter fencing should not prevent wildlife from leaving the site during clearing activities by clearing the area prior to installing the fence;
- ✓ Wildlife located within the construction area will be relocated to an area outside of the development into an area of appropriate habitat by a qualified professional, as necessary;
- ✓ Avoid vegetation clearing during sensitive times of the year for local wildlife (e.g. spring and early summer);
- ✓ Construction crews working on-site should be educated on local wildlife and take appropriate measures for avoiding wildlife;
- ✓ A qualified wildlife rehabilitation centre should be contacted if any animals are injured or found injured during construction. Injured animals should be transported to an appropriate wildlife rehabilitation, such as the Rideau Valley Wildlife Sanctuary.

With the mitigation measures outlined above, it is anticipated that the proposed development will result in a negligible impact to wildlife within the Study Area.

7.1.6 TREES

The proposed development of multi-residential dwellings, parking lots, and access roads will require tree clearing and grading within the Project footprint. It is anticipated that trees within the proposed Project footprint will require removals for site grading and construction activities.

The proposed development is expected to have an impact on overall tree cover within the Study Area. Twenty-nine (29) Distinctive trees were identified during field investigations and it is anticipated that nineteen (19) trees with species consisting of Eastern White Pine, Bur Oak, White Poplar, White Spruce, Sugar Maple and Black Cherry will be proposed for removal to accommodate construction activities (**Figure 9**).

Trees outside of the construction footprint and have sufficient setback from the development footprint are recommended to be preserved. However, such trees would require protection measures due to their proximity to construction activities. Efforts should be augmented to protect and retain City of Ottawa-owned trees that occur along the expansion areas of the Bill Teron Park property line, which are adjacent to the Project construction limits.

The Distinctive trees that will require removal or protection to accommodate the proposed development are shown in **Figure 9**. The Distinctive trees with a likelihood of removal are outlined in **Appendix C**. The following recommendations are based on standard best management practices.

PROPOSED MITIGATION MEASURES – PLANNING AND DESIGN STAGE

- ✓ The Official Plan (City of Ottawa, 2003) policies 2.4.5 (7) for Green Space and policies 2.7.2 for Protection of Vegetation Cover recommend reaching the City's target of 30% tree cover within the urban boundary. Trees will be planted to the greatest extent possible to help offset the loss of urban forest canopy.
- ✓ Tree planting and compensation plan should be developed in consultation with the City of Ottawa;
- ✓ Landscaping plans should consider the use of appropriate native species to offset the loss of species and biodiversity from vegetation removals;
- ✓ Identification of healthy Distinctive and/or specimen trees to be retained following development of a grading plan and detailed site design;
- ✓ Prior to construction activities, overhanging limbs and any exposed tree roots of trees to be retained should be pruned in a manner that minimizes physical damage and promotes quick wound closure and regeneration. Maintenance of roots or limbs should be carried out by an ISA Certified Arborist or a tree care specialist under the supervision of an ISA Certified Arborist.

PROPOSED MITIGATION MEASURES – CONSTRUCTION IMPLEMENTATION

- ✓ Tree retention should be prioritized where possible along the work areas, parking facilities and access roads;
- ✓ Barrier/protection fencing should be installed along the boundary of the Project footprint and the Bill Teron Park (expansion area) property line to reduce/eliminate harm to city-owned trees.
- ✓ Trees to be removed should be clearly marked, and work crews should be informed of the importance of only removed marked/approved trees;
- ✓ Tree protection fencing should be installed around all trees that will be retained within and around work areas;
- ✓ Protection fencing around trees shall be installed at the critical root zone (CRZ) to ensure no impacts to this area. The CRZ is calculated as the DBH x 10 cm:
    - Groups of trees can be fenced together if the fencing still meets the recommended placement described above;

- Fencing should be installed following the City of Ottawa's Tree Protection Specification (City of Ottawa, 2019c) (**Appendix F**).

- ✓ Tree protection fencing should be inspected as required to ensure no deviancy from the intended location and to record any deficiencies;
- ✓ Do not place any material or equipment within the CRZ of any trees to be preserved;
- ✓ Do not attach any signs, notices, or posters to any tree;
- ✓ Do not raise or lower the existing grade within the CRZ of trees without approval;
- ✓ Do not tunnel or bore when digging within the CRZ of a tree;
- ✓ Excavation activities around trees shall not damage the root system, trunk or branches of any tree to be preserved;
- ✓ Exhaust fumes from all heavy machinery, vehicles, generators, and other equipment shall not be directed towards any trees for prolonged periods of time;
- ✓ Tree removals should be avoided during the breeding bird season (April 1 to August 31) to limit disturbance to breeding birds, nests, or young and comply with the MBCA, 1994:
    - If trees are to be removed during the breeding bird season, it should be preceded by a nest survey by a qualified avian biologist. Surveys should be undertaken a maximum of 48 hours prior to the commencement of removals. If nests are found during a survey, or during construction, an appropriate buffer must be applied, and the nest must not be disturbed until the young have fledged.
- ✓ All green ash trees removed should be treated as infected by the Emerald Ash Borer beetle and appropriately disposed of as not to infect other areas of the city;
- ✓ If blasting is required along the property line to the south of the development area, a Blasting Plan is required, which outlines tree retention/protection mitigation measures.

PROPOSED MITIGATION MEASURES - AFTER CONSTRUCTION

- ✓ Post-construction tree maintenance methods should be used to repair any damage caused to trees by construction activities. These may include, but is not limited to: treating trunk and crown injuries, irrigation and drainage, mulching, and aeration of root zone;
- ✓ Within 12 months of completion of construction, an assessment of preserved trees should be conducted. Trees that are dead, in poor health, or hazardous should be removed or pruned, as determined by an ISA Certified Arborist. Tree removal, if necessary, should occur promptly to avoid foreseeable risk of trees falling and causing damage or harm to people and/or property.

With the successful implementation of the mitigation measures recommended above, it is anticipated that the proposed development will result in a moderate impact to trees within the Study Area.

7.2 CUMULATIVE IMPACTS

The proposed development is part of a rapidly growing urban community in Kanata, Ontario. It has been identified within the City's Official Plan as the *Kanata Town Centre Secondary Plan*. This plan has been developed to accommodate and support urban growth within these core sectors. As such, the parcel of 6301 Campeau Drive is surrounded by recently developed infrastructure, including large commercial sectors (Kanata Centrum Shopping Centre), single-family dwelling neighbourhoods, recreational facilities (golf course), long-term care homes, and transportation corridors. The existing Bill Teron Park is adjacently located just southwest of the proposed development. Such parkland has been preserved by the City of Ottawa, and future expansion areas are planned to the south of the Project footprint.

Cumulative impacts must be considered in the context of the local and regional environment in which the site is situated. The following outlines the anticipated cumulative impacts associated with the proposed development.

Corridors and Linkages: The Bill Teron Park (existing and future lands) and connection to 6301 Campeau Drive may provide a corridor or linkage to natural features within the parkland and development area itself. The surrounding urban infrastructure and transportation corridors highly influence the ecological integrity of the sites, thus reducing valuable ecological linkages outside the park boundaries. Also, no watercourse or municipal drains are present within the Study Area, thereby reducing corridor and linkage features.

Biodiversity: Based on the ecological field assessments and available information, the removal of natural habitats within the subject property will have a marginally negative impact on the biodiversity of the Mississippi Valley watershed and overall surrounding landscape due to ongoing/existing development activities.

Urban Forest Cover: The proposed development will negatively impact the general urban forest cover through the removal of woodlands noted above in addition to other incidental trees. This is mitigated to a large extent where Distinctive trees are recommended to be retained where feasible, tree protection fencing is recommended to be installed along the City of Ottawa boundary (adjacent to the Bill Teron Park property line) as city trees should be protected.

Hydrologic Function: Conversion of this property from forested/natural land cover to multi-residential dwellings will negatively impact the hydraulic functions within this portion of the watershed. The increase of impervious services associated with roads and driveways will reduce infiltration and increase runoff.

Landscape Context: Much of the land surrounding the proposed development has currently undergone recent development from forested land to residential communities, including other commercial and transportation infrastructure. The proposed development is consistent with the general change in land use in this region, and the cumulative impacts on the natural environment reflect this change.

7.2.1 PROPOSED MITIGATION MEASURES – PLANNING AND DESIGN STAGE

In addition to the mitigation measures listed above, the following mitigation should be considered to address the cumulative impacts resulting from the proposed development:

- ✓ The planting and retention of native trees should be prioritized in the landscape design. See mitigation recommendations in **Section 7.1.6** above.

8 SUMMARY AND CONCLUSIONS

This report provides an evaluation of the anticipated environmental impacts associated with the construction and long-term occupation of the multi-residential dwellings located at 6301 Campeau Drive (**Figure 1**). The anticipated environmental impacts are based on field investigation results completed from May to July 2020 and a desktop screening review.

The **vegetation communities** present within the subject property were comprised mainly of deciduous forests and woodlands, among a unique rock barren treed community. The communities were situated within areas of high and low topographic relief, where elevation influenced the plant communities. Invasive species were prevalent throughout the woodland features.

The **wetland inclusion of SAF1-3** occurred as a small isolated wetland pocket within the greater rock barren feature. It occurred within 120 m of the Project footprint. No other wetlands were identified to occur. This wetland provides important breeding habitat for amphibians as a full chorus of Spring Peepers and individuals of Gray Treefrogs were documented at this location at the time of field investigations. Direct impacts to the wetland feature are not anticipated. Indirect impacts will be managed by mitigation measures recommended in **Section 7.1.1** to maintain the ecological function.

Woodlands are present within the Study Area and Project footprint. As woodlands are proposed for removal to develop multi-storey buildings, it is anticipated that bird collisions will occur. To mitigate the adverse effects to birds, the City Ottawa's *Bird-safe Design Guidelines* (2020) should be incorporated accordingly.

The treed communities within the Study Area consisted of **seventeen (17) tree species**, mainly comprised of White Spruce, Eastern White Pine, Bur Oak, Ironwood, and Sugar Maple. Most trees were in moderate to good health conditions and were relatively large diameters and/or appeared as super-canopy specimens. **Twenty-nine (29) Distinctive trees** were recorded throughout the Study Area. Based on Distinctive tree locations in relation to the proposed site plan, **nineteen (19) are slated for removal.** Where possible, Distinctive trees will be retained. However, the feasibility of retention will be dependent on the size and design of lots, grading requirements, and soil conditions and compaction.

One (1) SAR was observed during the field investigations; **Butternut** listed as Endangered. Thirty (30) Butternut trees were inventoried and assessed throughout the Study Area. Approximately twenty-three (23) are proposed for removal to accommodate construction activities. A Butternut Health Assessment Report has been submitted to the MECP for review, and agency consultation is pending to determine ESA requirements and/or exemptions under s. 23.7 of O. Reg 242/08. Due to the presence of Category 3 trees on-site and the potential for them to be killed, harmed, or taken, an **ESA Authorization is anticipated.**

Confirmed habitat for one SCC was identified as a **Wood Thrush** individual was heard in suitable habitat during the breeding season. Suitable habitat for two other SCC (Eastern Wood-pewee and Monarch) was identified during ELC surveys, although none of the species were observed during summer field investigations.

It is expected that the proposed development will result in a moderate, permanent loss of terrestrial vegetation and wildlife habitat. The key ecological features identified within the Study Area is **Butternut**. Regarding Butternut, it is recommended that no project activities (i.e. vegetation removals, grading) should occur until consultation with MECP is completed, and appropriate approvals have been issued.

The mitigation measures described in this report and summarized in **Table 8,** have been developed to avoid and/or minimize the environmental impacts associated with the Project.

To conclude, the proposed residential community will be developed on and take the place of a mature mixed forest on a unique topographic feature of undulating exposed bedrock. Based on field survey results, it is WSP's technical opinion that the development will not impact the overall ecological function of the existing landscape and/or the adjacent Bill Teron Park due to other current stressors from the surrounding urban environment. As well, environmental considerations have been incorporated into the development and design of the site plan and buildings. For instance, the rock outcrop feature located within the centre of the property will be retained to provide a

connection/corridor link to adjacent parklands, as well as to reduce blasting and vibration adverse effects; buildings have been situated to align with existing south-facing slopes; and green roofs, terraces, and a courtyard have been adopted in order for structures to blend in with the natural landscape.

Based on the information available, it is our opinion that this proposed residential development can be accepted with the condition that all mitigation measures recommended herein are implemented and ESA Authorizations are carried out by the proponent. Development should not proceed until ESA Authorizations are approved by the MECP.

8.1 STANDARD OF CARE AND LIMITATIONS

In evaluating the Study Area, WSP has relied in good faith on information provided by others. WSP has assumed that the information provided is correct, and WSP assumes no responsibility for the accuracy, completeness or workmanship of any such information.

Field surveys have been carried out using investigation techniques and ecological methods consistent with those ordinarily exercised by WSP and other scientific practitioners, working under similar conditions and subject to the time, financial and physical constraints applicable to these investigations. Survey results presented in this report are based on work undertaken by trained professionals and technical staff and the reasonable and professional interpretation using acceptable scientific practices current at the time the work was performed.

The results and findings of this study have been reported without bias or prejudice. Thus, conclusions have been based on our own professional opinion, substantiated by the results of this study, and have not been influenced in any way.

Table 8 Summary of Anticipated Impacts and Mitigation Recommendations

NATURAL HERITAGE FEATURE/FUNCTION	SUMMARY OF POTENTIAL IMPACTS	CONSTRAINT TO DEVELOPMENT	SUMMARY OF PROPOSED MITIGATION	RESIDUAL EFFECT
Terrestrial Vegetation	Loss of natural vegetation	Low	None required	Permanent loss of native and non-native woodland vegetation
	Loss of habitat for wildlife	Low	None required	Permanent loss of foraging or nesting habitat
	Decreased biodiversity or species abundance	Low	Landscaping plans should consider the use of appropriate native species to offset the loss of species or general abundance	No residual effect anticipated
	Increased risk of invasive species	Low	Machinery should arrive on-site in a clean condition; the site should be restored with native species where appropriate following construction	No residual effect anticipated
	Changes to natural drainage	Low	None required	Altered drainage patterns within and around project areas
	Erosion and sedimentation	Low	Erosion and sediment control measures should be installed prior to construction. This typically involves the installation of silt fencing	No residual effect anticipated
Woodlands	Loss of forested habitat and vegetation	Low	Tree retention should be prioritized where possible	Permanent loss of trees within woodlands
	Decreased biodiversity or species abundance	Low	Landscaping plans should consider the use of appropriate native species	No residual effect anticipated
	Loss of habitat for wildlife	Low	Clearing of vegetation should be limited to a reasonable footprint to accommodate the proposed site plan; Clearing of vegetation should be avoided during the breeding bird period (April 1–August 31). The area should be pre-stressed prior to vegetation clearing;	Moderate loss of available habitat

NATURAL HERITAGE FEATURE/FUNCTION	SUMMARY OF POTENTIAL IMPACTS	CONSTRAINT TO DEVELOPMENT	SUMMARY OF PROPOSED MITIGATION	RESIDUAL EFFECT
	Habitat fragmentation	Low	None required	No residual effect anticipated
	Changes to natural drainage	Low	None required	Altered drainage patterns within and around project areas
	Erosion and sedimentation	Low	Erosion and sediment control plan as described above	No residual effect anticipated
Breeding Birds	Loss of nesting and foraging habitat	Low	Clearing of vegetation should be limited to a reasonable footprint to accommodate the proposed site plan	Minor loss of potential habitat
	Physical harm to birds or nests resulting from construction activities	Low	Clearing of vegetation should be avoided during the breeding bird period (April 1 – August 31). The area should be pre-stressed prior to vegetation clearing.	No residual effect anticipated
	Reduced diversity or species abundance	Low	None required	Minor reduction in bird abundance and diversity
	Physical harm or displacement resulting from construction activities	Low	Clearing of vegetation should be avoided during the breeding bird period (April 1 – August 31)	No residual effect anticipated
Amphibians	Loss of breeding and general habitat	Low	Clearing of vegetation should be limited to a reasonable footprint to accommodate the proposed site plan	No residual effect anticipated
	Physical harm or displacement resulting from construction activities	Low	Silt fencing should be installed around wetlands and watercourses. Avoid the use of heavy equipment in wetlands and watercourses	No residual effect anticipated
Bat Maternity Colonies	Physical harm or displacement resulting from construction activities	Low	Vegetation clearing should occur outside of the bat active season (May 1 to October 15)	No residual effect anticipated
	Loss of maternity roosting and foraging habitat	Low	Installation of four bat boxes (two per post) in appropriate areas near retained vegetation and habitat features	Minor loss of suitable maternity roost and foraging habitat (non-limiting)

NATURAL HERITAGE FEATURE/FUNCTION	SUMMARY OF POTENTIAL IMPACTS	CONSTRAINT TO DEVELOPMENT	SUMMARY OF PROPOSED MITIGATION	RESIDUAL EFFECT
Species of Conservation Concern **-Wood Thrush** **-Monarch**	Disturbance to or removal of SCC habitat	Low	Landscaping should consider the use of native wildflowers such as Milkweed to compensate for the loss of potential foraging habitat for Milkweed	Minor permanent loss of Monarch habitat
	Physical harm or displacement resulting from construction activities	Low	Vegetation clearing should be avoided during the breeding bird period (April 1 – August 31). The area should be pre-stressed prior to vegetation clearing	No residual effect anticipated
Species at Risk – Butternut	Removal of Butternut trees (approximately 23 trees)	Moderate	Consultation with MECP; may require ESA Authorization	Permanent loss of Butternut within Project footprint
Trees	Removal of approximately 19 Distinctive trees	Low	None required	Permanent loss of distinctive trees
	Injury or harm to retained trees	Low	Implementation of tree protection measures such as protective fencing and pruning	No residual effect anticipated
Wildlife (General)	Physical harm or displacement resulting from construction activities	Low	Perimeter fencing should be installed around the site to prevent wildlife from entering the work area. Work area should be pre-stressed to allow wildlife to safely flee the area. Avoid vegetation clearing during sensitive times of the year	No residual effect anticipated
	Loss of general natural habitat for wildlife	Low	None required	Minor loss of available habitat
	Disturbance to wildlife resulting from noise and construction activities	Low	Perimeter fencing should be installed around the site to prevent wildlife from entering the work area. The work area should be pre-stressed to allow wildlife to safely flee the area	No residual effect anticipated
	Conflict between wildlife and humans	Low	Safety and awareness training provided to the construction staff	No residual effect anticipated

NATURAL HERITAGE FEATURE/FUNCTION	SUMMARY OF POTENTIAL IMPACTS	CONSTRAINT TO DEVELOPMENT	SUMMARY OF PROPOSED MITIGATION	RESIDUAL EFFECT
Cumulative Impacts	General loss of biodiversity and available habitat	Low	Landscaping plans should consider the use of appropriate native species	No residual effect anticipated
	Increase in impervious surfaces	Low	Promote the use of permeable landscaping materials and rain capture systems	Net increase in impermeable surfaces

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APPENDIX

A SPECIES AT RISK SCREENING

Scientific Name	Common Name	General Habitat According to the MNRF Significant Wildlife Habitat Technical Guide (MNRF, 2000)	Conservation Status			Source[3]	Potential for habitat within Study Area (based on screening)	Rationale
			Federal (SARA, 2002)[1]	Provincial (ESA, 2007)[1]	S-Rank[2]			
Birds								
Contopus virens	Bank Swallow	Sand, clay, or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits.	THR	THR	S4B	OBBA	No	No cliffs or riverbanks are present within Study Area.
Hirundo rustica	Barn Swallow	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other manufactured structures for nesting; open country near body of water.	THR	THR	S4B	OBBA	No	Farmlands, buildings, or other suitable structures are absent from the Study Area.
Dolichonyx oryzivorus	Bobolink	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	THR	THR	S4B	OBBA	No	Large grasslands are absent from the Study Area.
Sturnella magna	Eastern Meadowlark	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	THR	THR	S4B	OBBA	No	Large grasslands, pastures, and farmland are all absent from the Study Area.
Caprimulgus vociferus	Eastern Whip-poor-will	Dry, open, deciduous woodlands with small to medium trees. Prefer oak or beech forests with an abundance of leaf-litter in clearings. Associated with large forests of >100 ha.	THR	THR	S5B	OBBA	No	Large, intact forests >100 ha is absent from the Study Area.
Contopus virens	Eastern Wood-pewee	Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks.	SC	SC	S4B	OBBA	**Yes**	Deciduous forest and hedgerow communities likely contain open understorey and clearing and provide suitable conditions for this species. **Species was absent during field surveys.**
Hylocichla mustelina	Wood Thrush	Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m.	THR	SC	S4B	OBBA	**Yes**	Large, mature deciduous forest present within the Study Area. **Species detected during field surveys.**
Pseudacris triseriata	Western Chorus Frog	Requires both terrestrial and aquatic habitat. Terrestrial consists of moist woods, prairie, or meadows. Aquatic features are temporary ponds or surface water features that are void of fish.	THR	-		OBBA	**Yes**	Terrestrial and aquatic habitats are present within the Study Area. **Species detected during field surveys.**
Herpetoza								
Emydoidea blandingii	Blanding's Turtle	Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks; surrounding natural habitat is important in summer as they frequently move from aquatic habitat to terrestrial habitats.	THR	THR	S3	ORAA	No	Suitable surface water features are absent from the Study Area.
Chelydra serpentina	Snapping Turtle	Permanent, semi-permanent freshwater; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites; may nest at some distance from water; often hibernate together in groups in mud under water; home range size ~28 ha.	SC	SC	S3	ORAA	No	Suitable surface water features are absent from the Study Area.
Lepidoptera								
Danaus plexippus	Monarch	The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest. Caterpillars eat exclusively milkweed and adults require the nectar of wildflowers to feed.	SC	SC	S2N, S4B	OBA	**Yes**	Open meadow habitat with the potential for Milkweed plants is present within the Study Area.
Mammals								
Myotis leibii	Eastern Small-footed Myotis	Roosts in caves, mine shafts, crevices or buildings that are in or near woodland; hibernates in cold dry caves or mines; maternity colonies in caves or buildings; hunts in forests.	---	END	S2S3	AMO	No	Caves and buildings are absent from the Study Area.

Scientific Name	Common Name	General Habitat According to the MNRF Significant Wildlife Habitat Technical Guide (MNRF, 2000)	Conservation Status			Source[3]	Potential for habitat within Study Area (based on screening)	Rationale
			Federal (SARA, 2002)[1]	Provincial (ESA, 2007)[1]	S-Rank[2]			
Myotis lucifugus	Little Brown Myotis	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges.	END	END	S3	AMO	**Yes**	Deciduous woodlands communities may provide foraging habitats; forest communities and residential homes may provide roosting habitat. **Species not observed during field surveys.**
Myotis septentrionalis	Northern Myotis	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, manufactured structures but prefers hollow trees or under loose bark; hunts within forests, below canopy.	END	END	S3	AMO	**Yes**	Deciduous woodlands with cavity trees may provide roosting and foraging habitats. **Species not observed during field surveys.**
Perimyotis subflavus	Tri-colored Bat	Found in a variety of forested habitats during summer, forms day roosts and maternity colonies in older forest and occasionally in barns or other structures; forage over water and along forested streams; hibernates in a cave or underground structure and roost individually.	END	END	S3?	AMO	**Yes**	Deciduous woodlands with cavity trees may provide roosting and foraging habitats. **Species not observed during field surveys.**
Vegetation								
Juglans cinerea	Butternut	Grows alone or in small groups in deciduous forests; prefers moist, well-drained soil and is often found along streams, also occurs on well-drained gravel sites and rarely on dry rocky soil; does not grow well in shade and will often grow in sunny openings and near forest edges.	END	END	S3	City of Ottawa	**Yes**	Hedgerows and deciduous forests may contain suitable conditions. **Species recorded during field surveys.**

[1]END = Endangered, THR = Threatened, SC = Special Concern, NAR = Not at Risk [2]S-Rank is an indicator of commonness in the Province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common. [3]Information sources include: NHIC = Natural Heritage Information Centre; OBBA = Ontario Breeding Bird Atlas; ORAA = Ontario Reptile and Amphibian Atlas; OBA = Ontario Butterfly Atlas; AMO = Atlas of the Mammals of Ontario; City of Ottawa: MacPherson, 2018; --- denotes no information or not applicable.

APPENDIX

B VASCULAR PLANT LIST

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	S RANK[2]	SARA[3]	SARO[4]	EXOTIC STATUS	CITY OF OTTAWA (Brunton 2005)[5]	NATIVE STATUS[6]
Acer rubrum	Red Maple	4	0	S5				C	N
Acer saccharum	Sugar Maple	4	3	S5				C	N
Achillea millefolium	Common Yarrow		3	SNA			SE5?	C	I
Actaea pachypoda	White Baneberry	6	5	S5				C	N
Actaea rubra	Red Baneberry	6	3	S5				C	N
Agrostis gigantea	Redtop		-3	SNA			SE5	C	I
Alnus incana	Speckled Alder	6	-3	S5				C	N
Alopecurus carolinianus	Tufted Foxtail		0	SNA			SE1		I
Antennaria neglecta	Field Pussytoes	3	5	S5				C	N
Apocynum androsaemifolium	Spreading Dogbane	3	5	S5				C	N
Aquilegia canadensis	Red Columbine	5	3	S5				C	N
Aralia nudicaulis	Wild Sarsaparilla	4	3	S5				C	N
Arctium minus	Common Burdock		3	SNA			SE5	C	I
Arisaema triphyllum	Jack-in-the-pulpit	5	-3	S5				C	N
Athyrium filix-femina	Common Lady Fern	4	0	S5					N
Betula papyrifera	Paper Birch	2	3	S5				C	N
Capnoides sempervirens	Pink Corydalis	7	5	S5				C	N
Carex blanda	Woodland Sedge	3	0	S5				C	N
Carex lacustris	Lake Sedge	5	-5	S5				UC	N

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	S RANK[2]	SARA[3]	SARO[4]	EXOTIC STATUS	CITY OF OTTAWA (Brunton 2005)[5]	NATIVE STATUS[6]
Carex pedunculata	Long-stalked Sedge	5	3	S5				C	N
Carex rosea	Rosy Sedge	2	5	S5				C	N
Carex scoparia	Pointed Broom Sedge	5	-3	S5				RS	N
Circaea x sterilis	Intermediate Enchanter's Nightshade		0	SNA					N
Cirsium arvense	Canada Thistle		3	SNA			SE5	C	I
Claytonia virginica	Eastern Spring Beauty	5	3	S5				RS	N
Crataegus sp.	Hawthorn sp.								
Danthonia spicata	Poverty Oatgrass	5	5	S5				C	N
Dasiphora fruticosa	Shrubby Cinquefoil	8	-3	S5				RS	N
Daucus carota	Wild Carrot		5	SNA			SE5	C	I
Dryopteris carthusiana	Spinulose Wood Fern	5	-3	S5				C	N
Echium vulgare	Common Viper's Bugloss		5	SNA			SE5	C	I
Eragrostis sp.	Lovegrass sp.								
Erythronium americanum	Yellow Trout Lily	5	5	S5				C	N
Fagus grandifolia	American Beech	6	3	S4				C	N
Fragaria virginiana	Wild Strawberry	2	3	S5					N
Frangula alnus	Glossy Buckthorn		0	SNA			SE5	C	I
Fraxinus pennsylvanica	Green Ash	3	-3	S4				C	N
Galium trifidum	Three-petalled Bedstraw	5	-3	S5					N

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	S RANK[2]	SARA[3]	SARO[4]	EXOTIC STATUS	CITY OF OTTAWA (Brunton 2005)[5]	NATIVE STATUS[6]
Geum canadense	Canada Avens	3	0	S5				C	N
Geum laciniatum	Rough Avens	4	-3	S4				UC	N
Glyceria striata	Fowl Mannagrass	3	-5	S5				C	N
Hepatica acutiloba	Sharp-lobed Hepatica	8	5	S5				C	N
Hieracium vulgatum	Common Hawkweed		5	SNA			SE2?	R	I
Hydrophyllum virginianum	Virginia Waterleaf	6	0	S5				R	N
Hypericum perforatum	Common St. John's-wort		5	SNA			SE5	C	I
Impatiens capensis	Spotted Jewelweed	4	-3	S5				C	N
Juglans cinerea	Butternut	6	3	S2?	END	END		C	N
Juniperus horizontalis	Creeping Juniper	10	3	S5					N
Leucanthemum vulgare	Oxeye Daisy		5	SNA			SE5	C	I
Lonicera tatarica	Tatarian Honeysuckle		3	SNA			SE5	C	I
Lotus corniculatus	Garden Bird's-foot Trefoil		3	SNA			SE5	C	I
Lythrum salicaria	Purple Loosestrife		-5	SNA			SE5	C	I
Maianthemum canadense	Wild Lily-of-the-valley	5	3	S5				C	N
Onoclea sensibilis	Sensitive Fern	4	-3	S5				C	N
Ostrya virginiana	Ironwood	4	3	S5				C	N
Parthenocissus quinquefolia	Virginia Creeper	6	3	S4?				UC	N
Phalaris arundinacea	Reed Canary Grass	0	-3	S5					

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	S RANK[2]	SARA[3]	SARO[4]	EXOTIC STATUS	CITY OF OTTAWA (Brunton 2005)[5]	NATIVE STATUS[6]
Phleum pratense	Common Timothy		3	SNA			SE5	C	I
Picea abies	Norway Spruce		5	SNA			SE3		I
Picea glauca	White Spruce	6	3	S5				C	N
Pilosella caespitosa	Meadow Hawkweed		5	SNA			SE5	UC	I
Pinus strobus	Eastern White Pine	4	3	S5				C	N
Polypodium virginianum	Rock Polypody	7	5	S5				C	N
Populus alba	White Poplar		5	SNA			SE5	C	I
Populus deltoides	Eastern Cottonwood	4	0	S5					N
Populus tremuloides	Trembling Aspen	2	0	S5				C	N
Populus x canadensis	Canada Poplar		0	SNA					I
Potentilla sp.	Cinquefoil sp.								
Prunella vulgaris	Common Self-heal		0	S5					
Prunus serotina	Black Cherry	3	3	S5				C	N
Prunus virginiana	Chokecherry	2	3	S5				C	N
Pteridium aquilinum	Bracken Fern	2	3	S5				C	N
Quercus macrocarpa	Bur Oak	5	3	S5				C	N
Ranunculus acris	Common Buttercup		0	SNA			SE5	C	I
Rhamnus cathartica	European Buckthorn		0	SNA			SE5	C	I
Rhus typhina	Staghorn Sumac	1	3	S5				C	N

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	S RANK[2]	SARA[3]	SARO[4]	EXOTIC STATUS	CITY OF OTTAWA (Brunton 2005)[5]	NATIVE STATUS[6]
Rubus idaeus	Red Raspberry	2	3	S5					
Rubus occidentalis	Black Raspberry	2	5	S5				UC	N
Rubus pubescens	Dwarf Raspberry	4	-3	S5				C	N
Salix discolor	Pussy Willow	3	-3	S5				C	N
Sambucus racemosa	Red Elderberry	5	3	S5				C	N
Sanguinaria canadensis	Bloodroot	5	3	S5				C	N
Silene vulgaris	Bladder Campion		5	SNA			SE5	C	I
Solidago canadensis	Canada Goldenrod	1	3	S5					N
Sonchus sp.	Sow-thistle sp.								I
Symphyotrichum sp.	Aster sp.								
Taraxacum officinale	Common Dandelion		3	SNA			SE5	C	I
Thuja occidentalis	Eastern White Cedar	4	-3	S5				C	N
Tilia americana	Basswood	4	3	S5				C	N
Toxicodendron radicans	Poison Ivy	2	0	S5					N
Trillium grandiflorum	White Trillium	5	3	S5				C	N
Ulmus americana	White Elm	3	-3	S5				C	N
Verbascum thapsus	Common Mullein		5	SNA			SE5	C	I
Veronica officinalis	Common Speedwell		5	SNA			SE5	C	I
Vicia americana	American Vetch	5	3	S5				RS	N

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	S RANK[2]	SARA[3]	SARO[4]	EXOTIC STATUS	CITY OF OTTAWA (Brunton 2005)[5]	NATIVE STATUS[6]
Vincetoxicum rossicum	European Swallowwort		5	SNA			SE5	UC	I
Viola sp.	Violet sp.								
Vitis riparia	Riverbank Grape	0	0	S5				C	N

Species Diversity	Totals
Total Species:	**98**
Total Genus Only:	**0**
Native Species:	**63**
% Native Species	**64%**
Exotic Species	**27**
% Exotic Species	**28%**
S1 Species	**0**
S1S2	**0**
S2 Species	**0**
S2S3	**0**
S3 Species	**0**
S3S4	**0**
S4 Species	**3**
S4S5	**0**
S5 Species	**60**
SU	**0**
SNR	**0**
SNA	**27**

Species Diversity	Totals
SH	**0**
SR	**0**
COSEWIC Designated Species (END, THR)	**1**
COSEWIC SC	**0**
ESA Listed Species (END, THR)	**1**
ESA SC	**0**
SARA Listed Species (END, THR)	**0**
SARA SC	**0**
Co-efficient of Conservatism (CC) and Floristic Quality Index (FQI)	
mean CC	**1.2**
CC 0 to 3	**22**
% species with CC 0 to 3	**1.1%**
CC 4 to 6	**37**
% species with CC 4 to 6	**58%**
CC 7 to 8	**4**
% species with CC 7 to 8	**6.2%**
CC 9 to 10	**1**
% species with CC 9 to 10	**2%**
FQI	**0**
Presence of Wetland (CW) Species	
average wetness value	**0.14**
CW of 5	**22**
% species with CW of 5	**24%**
CW of 4, 3 or 2	**35**

Species Diversity	Totals
% species with CW of 4, 3, or 2	**38%**
CW of 1, 0 or -1	**16**
% species with CW of 1, 0, or -1	**18%**
CW of -2, -3 or -4	**16**
% species with CW of -2, -3, or -4	**18%**
CW of -5	**3**
% species with CW of -5	**3%**

PLANT LIST LEGEND

Scientific Name, Common Name and Family

Based on Vascan (Dec. 2017) and NHIC (Dec. 16 2018)

Vascan: http://data.canadensys.net/vascan/search

NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

[1] Coefficient of Conservatism, Coefficient of Wetness, Weediness, and Physiology/Habit

Oldham, M. J., W. D. Bakowsky and D. A. Sutherland. 1995. Floristic Quality Assessment System for Southern Ontario. Natural Heritage Information Centre, Ministry of Natural Resources. Peterborough, Ontario.

NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

CC and CW values reflect updates by NHIC, current as of Dec. 16, 2018).

CC: Coefficient of Conservatism. Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters.

CW: Coefficient of Wetness. Value between 5 and –5. A value of –5 is assigned to Obligate Wetland (OBL) and 5 to Obligate Upland (UPL), with intermediate values assigned to the remaining categories.

Weediness:	Weediness Score, assigned to all non-native species and range from -1 (low impact of the species on natural areas) to -3 (high impact of the species on natural areas).
Habit:	Physiology/Habit. The growth form of the species (e.g. forb, shrub, tree).

[2] S-Ranks (Provincial)

Provincial Status from the NHIC (Dec. 16, 2018)

NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

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 – At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
S2:	Imperiled – At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3:	Vulnerable – At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4:	Apparently Secure – At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5:	Secure – At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.
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 ecosystem is believed to be extirpated from the jurisdiction (province). Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered. [equivalent to “Regionally Extinct” in IUCN Red List terminology]
SH:	Possibly Extirpated (Historical) – Known from only historical records but still some hope of rediscovery. There is evidence that the species or ecosystem may no longer be present in the jurisdiction, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been

documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.

SNR: Unranked – subnational 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 (e.g., long distance aerial and aquatic migrants, hybrids without conservation value, and non-native species.

?: Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

T#: Infraspecific Taxon (trinomial) - The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the subnational rank of a critically imperiled subspecies of an otherwise widespread and common species would be S5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species, for example, a S1T2 subrank should not occur. A vertebrate animal population may be tracked as an infraspecific taxon and given a T rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.

[3] SARA (Species at Risk Act) Status and Schedule

Federal status from the Government of Canada's Species at Risk Public Registry (Status as of Dec. 2018)

http://www.registrelep-sararegistry.gc.ca/

The Act establishes Schedule 1, as the official list of species at risk in Canada. 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. 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.

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 likely to become endangered if limiting factors are not reversed.

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

[4] SARO (Species At Risk in Ontario)

Provincial status from MNRF (Status as of Dec. 2018)

https://www.ontario.ca/environment-and-energy/species-risk-ontario-list

The provincial review process is implemented by the MNR's Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is an independent advisory panel to the Ontario Ministry of Natural Resources and Forestry that assesses the status of species at risk of extinction.

EXP:	Extirpated – Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
END:	Endangered – Lives in the wild in Ontario but is facing imminent extinction or extirpation.
THR:	Threatened – 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.
SC:	Special Concern – 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.

[5] Regional Status

City of Ottawa

Brunton, D.F. 2005. City of Ottawa - Urban Natural Areas Environmental Evaluation Study: Appendix A – Vascular Plant List of the City of Ottawa, with the Identification of Significant Species. A report prepared for the Environmental Management Division, Planning and Growth Management Department, City of Ottawa.

Codes are defined as follows:

RS:	Regionally Significant – known from 10 or fewer contemporary populations (post 1969) in the city of Ottawa. Pre 1970 records are annotated as Rare (Historic).
R:	Rare – known from a small number of contemporary records, typically 5 or fewer populations.
UC:	Uncommon – known from 11-20 populations. A bracketed numeral following the code indicates the number of sites the species is found. Seen infrequently in the City of Ottawa, occurring in small numbers but over a relatively large area of the municipality.
C:	Common – present in large numbers in a least a substantial portion of the City of Ottawa.

APPENDIX

C TREE INVENTORY LIST

Tree Condition Assessment Criteria:	**Tree Condition:**
Trunk Integrity (TI): assessment of the trunk for any defects or weaknesses	Good (G): tree displays less than 15% deficiency/defect within the given tree assessment criteria (TI,CS,CV)
Canopy Structure (CS): assessment of scaffold branches, unions and canopy	Fair (F): tree displays 15-40% deficiency/defect within the given tree assessment criteria (TI,CS,CV)
Canopy Vigour (CV): assessment of the health of the tree, based on the % of deadwood, disease, pests & live crown	Poor (P): tree displays greater than 40% deficiency/defect within the given tree assessment criteria (TI,CS,CV)
= Distinctive Tree	

Tree ID	Plot	*Scientific Name*	Common Name	DBH	Trunk Integrity	Canopy Structure	Canopy Vigour	Easting	Northing	Comments	Recommendation
T1	7	*Quercus macrocarpa*	Bur Oak	34, 13	Good	Good	Good	429056	5018341	Multi-stem	
T2	7	*Prunus serotina*	Black Cherry	32	Good	Fair	Good	429057	5018339		
T3	7	*Fraxinus pennsylvanica*	Green Ash	14	Good	Fair	Good	429057	5018340		
T4	7	*Crataegus species*	Hawthorn sp.	12, 11	Good	Good	Good	429057	5018338	Multi-stem	
T5	7	*Quercus macrocarpa*	Bur Oak	18	Good	Good	Good	429056	5018335		
T6	-	*Quercus macrocarpa*	Bur Oak	26	Good	Good	Good	429072	5018355		
T7	7	*Ostrya virginiana*	Ironwood	18, 15	Good	Good	Good	429050	5018333	Multi-stem	
T8	7	*Juglans cinerea*	Butternut	20	Poor	Poor	Poor	429054	5018333	Dead	
T9	-	*Acer saccharum*	Sugar Maple	62	Good	Good	Good	429067	5018348		Remove
T10	-	*Quercus macrocarpa*	Bur Oak	80	Good	Fair	Good	429047	5018351		Remove
T11	-	*Prunus serotina*	Black Cherry	50	Good	Good	Good	429068	5018371		Remove
T12	6	*Pinus strobus*	Eastern White Pine	32	Good	Good	Good	429018	5018351		
T13	6	*Fraxinus pennsylvanica*	Green Ash	15	Good	Poor	Poor	429020	5018351		
T14	6	*Quercus macrocarpa*	Bur Oak	19	Good	Good	Good	429018	5018353		
T15	6	*Pinus strobus*	Eastern White Pine	38	Good	Good	Good	429016	5018357		
T16	6	*Pinus strobus*	Eastern White Pine	21	Good	Good	Good	429020	5018357	splits 3m up stem	
T17	-	*Pinus strobus*	Eastern White Pine	55	Good	Good	Good	429016	5018330		Remove
T18	7	*Pinus strobus*	Eastern White Pine	51	Good	Good	Good	429044	5018333		Remove
T19	9	*Acer saccharum*	Sugar Maple	12	Good	Good	Good	429025	5018281		
T20	9	*Acer saccharum*	Sugar Maple	17	Good	Good	Good	429025	5018279		

Tree ID	Plot	*Scientific Name*	Common Name	DBH	Trunk Integrity	Canopy Structure	Canopy Vigour	Easting	Northing	Comments	Recommendation
T21	9	*Acer saccharum*	Sugar Maple	13	Good	Good	Good	429023	5018284		
T22	9	*Acer saccharum*	Sugar Maple	12	Good	Good	Good	429023	5018286		
T23	9	*Acer saccharum*	Sugar Maple	18	Good	Good	Good	429027	5018288		
T24	9	*Acer saccharum*	Sugar Maple	13	Good	Good	Good	429027	5018290		
T25	9	*Acer saccharum*	Sugar Maple	23	Good	Good	Good	429031	5018289		
T26	9	*Quercus macrocarpa*	Bur Oak	15	Good	Fair	Fair	429037	5018286		
T27	9	*Acer saccharum*	Sugar Maple	17	Good	Good	Good	429034	5018286		
T28	9	*Fraxinus pennsylvanica*	Green Ash	11	Good	Poor	Good	429040	5018279		
T29	9	*Tilia americana*	American Basswood	16	Good	Good	Good	429040	5018280		
T30	9	*Acer saccharum*	Sugar Maple	11	Good	Good	Good	429039	5018276		
T31	9	*Prunus serotina*	Black Cherry	16	Good	Good	Good	429039	5018275		
T32	9	*Acer saccharum*	Sugar Maple	13	Good	Good	Good	429033	5018275		
T33	9	*Acer saccharum*	Sugar Maple	11	Good	Good	Good	429035	5018274		
T34	9	*Tilia americana*	American Basswood	15	Good	Poor	Good	429035	5018275		
T35	9	*Acer saccharum*	Sugar Maple	17	Good	Good	Good	429031	5018274		
T36	9	*Acer saccharum*	Sugar Maple	14	Good	Good	Good	429027	5018275		
T37	9	*Acer saccharum*	Sugar Maple	10	Good	Good	Good	429027	5018278		
T38	9	*Acer saccharum*	Sugar Maple	13	Good	Good	Good	429026	5018281		
T39	-	*Acer saccharum*	Sugar Maple	82	Good	Good	Good	428996	5018254		Retain
T40	-	*Quercus macrocarpa*	Bur Oak	70	Good	Fair	Fair	428997	5018257		Retain
T41	4	*Crataegus species*	Hawthorn sp.	13, 11	Good	Good	Good	429004	5018341	Multi-stem	
T42	4	*Crataegus species*	Hawthorn sp.	10	Good	Good	Good	429005	5018341		
T43	4	*Quercus macrocarpa*	Bur Oak	24	Good	Good	Good	428995	5018343		
T44	4	*Ulmus americana*	American Elm	16	Good	Good	Good	429000	5018339		
T45	4	*Quercus macrocarpa*	Bur Oak	21	Good	Good	Good	428993	5018347		
T46	4	*Fraxinus pennsylvanica*	Green Ash	14	Good	Poor	Good	428996	5018348		
T47	4	*Quercus macrocarpa*	Bur Oak	13	Good	Fair	Good	429004	5018347		
T48	5	*Ostrya virginiana*	Ironwood	11, 12	Good	Good	Good	428951	5018246	Multi-stem	
T49	5	*Ostrya virginiana*	Ironwood	13	Good	Good	Good	428957	5018250		
T50	5	*Ostrya virginiana*	Ironwood	10	Good	Good	Good	428954	5018250		

Tree ID	Plot	*Scientific Name*	Common Name	DBH	Trunk Integrity	Canopy Structure	Canopy Vigour	Easting	Northing	Comments	Recommendation
T51	5	*Ostrya virginiana*	Ironwood	14	Good	Good	Good	428950	5018247		
T52	5	*Acer saccharum*	Sugar Maple	20	Good	Good	Good	428947	5018245		
T53	5	*Rhamnus cathartica*	Common Buckthorn	10	Good	Good	Good	428948	5018241		
T54	5	*Ostrya virginiana*	Ironwood	10	Good	Good	Good	428955	5018243		
T55	5	*Ostrya virginiana*	Ironwood	12	Good	Good	Good	428954	5018243		
T56	-	*Acer saccharum*	Sugar Maple	82	Good	Good	Good	428976	5018235		Retain
T57	-	*Pinus strobus*	Eastern White Pine	55	Good	Good	Good	428896	5018277		Remove
T58	-	*Quercus macrocarpa*	Bur Oak	135	Good	Good	Good	428936	5018324		Remove
T59	3	*Populus tremuloides*	Trembling Aspen	13	Good	Good	Good	428929	5018326		
T60	3	*Tsuga canadensis*	Eastern Hemlock	11	Good	Good	Good	428925	5018325		
T61	3	*Tsuga canadensis*	Eastern Hemlock	11	Good	Good	Good	428928	5018325		
T62	3	*Betula papyrifera*	White Birch	13	Good	Good	Good	428924	5018325		
T63	3	*Pinus strobus*	Eastern White Pine	11	Good	Good		428920	5018326		
T64	3	*Betula papyrifera*	White Birch	14	Good	Good	Good	428922	5018327		
T65	3	*Pinus strobus*	Eastern White Pine	34	Good	Good	Good	428921	5018326		
T66	3	*Pinus strobus*	Eastern White Pine	16	Good	Good	Good	428919	5018326		
T67	3	*Pinus strobus*	Eastern White Pine	21, 22	Good	Good	Good	428919	5018328	Multi-stem	
T68	3	*Populus tremuloides*	Trembling_Aspen	39	Good	Good	Good	428919	5018329		
T69	3	*Pinus strobus*	Eastern White Pine	30	Good	Good	Good	428920	5018331		
T70	3	*Pinus strobus*	Eastern White Pine	21	Good	Good	Good	428920	5018333		
T71	3	*Tsuga canadensis*	Eastern Hemlock	11	Good	Fair	Fair	428920	5018336		
T72	3	*Tsuga canadensis*	Eastern Hemlock	11	Good	Fair	Good	428920	5018334		
T73	3	*Ulmus americana*	American_Elm	16	Good	Good	Good	428923	5018328		
T74	3	*Tsuga canadensis*	Eastern Hemlock	14	Good	Fair	Good	428925	5018331		
T75	3	*Populus tremuloides*	Trembling Aspen	27	Good	Good	Good	428927	5018332		
T76	3	*Betula papyrifera*	White Birch	17	Good	Good	Good	428928	5018335		
T77	3	*Pinus strobus*	Eastern White Pine	30	Good	Good	Good	428927	5018335		
T78	3	*Ulmus americana*	American Elm	14	Good	Good	Good	428926	5018336		
T79	3	*Populus tremuloides*	Trembling Aspen	20	Good	Good	Good	428927	5018336		
T80	3	*Ostrya virginiana*	Ironwood	14	Good	Good	Good	428934	5018335		

Tree ID	Plot	*Scientific Name*	Common Name	DBH	Trunk Integrity	Canopy Structure	Canopy Vigour	Easting	Northing	Comments	Recommendation
T81	3	*Ostrya virginiana*	Ironwood	10	Good	Good	Good	428933	5018332		
T82	3	*Prunus serotina*	Black Cherry	17	Good	Good	Good	428933	5018328		
T83	-	*Pinus strobus*	Eastern White Pine	50	Fair	Poor	Good	428900	5018331	Broken stems	Remove
T84	-	*Pinus strobus*	Eastern White Pine	50	Good	Fair	Good	428877	5018311		Remove
T85	-	*Pinus strobus*	Eastern White Pine	62	Good	Good	Good	428871	5018277		Remove
T86	-	*Pinus strobus*	Eastern White Pine	61	Good	Good	Good	428868	5018282		Remove
T87	-	*Pinus strobus*	Eastern White Pine	60	Good	Good	Good	428869	5018288		Remove
T88	-	*Pinus strobus*	Eastern White Pine	57	Good	Good	Good	428859	5018261		Potential to retain
T89	-	*Picea glauca*	White Spruce	50	Good	Good	Good	428799	5018263		Remove
T90	-	*Pinus strobus*	Eastern White Pine	80	Good	Good	Good	428793	5018259		Remove
T91	1	*Pinus strobus*	Eastern White Pine	67	Good	Good	Good	428804	5018314		Remove
T92	-	*Pinus strobus*	Eastern White Pine	56	Good	Good	Good	428820	5018228		Retain
T93	-	*Pinus strobus*	Eastern White Pine	50	Good	Good	Good	428832	5018252	Multi-stem	Retain
T94	-	*Pinus strobus*	Eastern White Pine	52	Good	Good	Good	428850	5018234		Retain
T95	-	*Pinus strobus*	Eastern White Pine	56	Good	Good		428866	5018217		Retain
T96	-	*Pinus strobus*	Eastern White Pine	60	Good	Good	Good	428757	5018247		Remove
T97	-	*Populus alba*	White Poplar	50	Good	Good	Good	428753	5018255	Multi-stem	Potential to retain
T98	1	*Pinus strobus*	Eastern White Pine	75	Good	Good	Good	428801	5018321		Remove
T99	1	*Picea glauca*	White Spruce	37	Good	Good	Good	428798	5018316		
T100	1	*Picea glauca*	White Spruce	33	Good	Good	Good	428803	5018313		
T101	1	*Picea glauca*	White Spruce	26	Good	Good	Good	428804	5018317		
T102	1	*Populus grandidentata*	Large-toothed Aspen	25	Good	Good	Good	428805	5018315		
T103	1	*Juglans cinerea*	Butternut	18	Fair	Good	Good	428802	5018312		
T104	1	*Picea glauca*	White Spruce	34	Good	Good	Good	428806	5018311		
T105	1	*Picea glauca*	White Spruce	34	Good	Fair	Good	428807	5018311		
T106	-	*Picea glauca*	White Spruce	34	Good	Fair	Poor	428872	5018263	Multi-stem	
T107	2	*Picea glauca*	White Spruce	38	Good	Good	Good	428882	5018267		
T108	2	*Picea glauca*	White Spruce	37	Good	Good	Good	428884	5018267		
T109	2	*Picea glauca*	White Spruce	27	Good	Good	Good	428887	5018268		

Tree ID	Plot	*Scientific Name*	Common Name	DBH	Trunk Integrity	Canopy Structure	Canopy Vigour	Easting	Northing	Comments	Recommendation
T110	2	*Picea glauca*	White Spruce	37	Good	Poor	Good	428885	5018265		
T111	2	*Picea glauca*	White Spruce	40	Good	Good	Good	428883	5018271		
T112	2	*Picea glauca*	White Spruce	16	Good	Good	Good	428882	5018273		
T113	2	*Picea glauca*	White Spruce	36	Good	Good	Good	428883	5018276		
T114	2	*Picea glauca*	White Spruce	35	Good	Good	Good	428890	5018278		
T115	2	*Acer saccharum*	Sugar Maple	14	Good	Good	Good	428889	5018279		
T116	2	*Ulmus pumila*	Siberian Elm	29	Good	Good	Good	428888	5018281		
T117	-	*Juglans cinerea*	Butternut	34	Poor	Poor	Poor	428892	5018297		
T118	-	*Pinus strobus*	Eastern White Pine	50	Good	Good	Good	428901	5018296		Remove
T119	-	*Quercus macrocarpa*	Bur Oak	101	Fair	Poor	Fair	428989	5018341		Retain
T120	-	*Quercus macrocarpa*	Bur Oak	101	Fair	Poor	Good	429019	5018377		Remove

APPENDIX

D PHOTOGRAPHIC RECORD

Photo 1: May 14, 2020. Clearing of FODM5-4 to accommodate Canadian Shield Avenue extension.

Photo 2: May 14, 2020. White trillium and sharp-lobed hepatica growing in FODM5-4.

Photo 3: May 14, 2020. FODM5-4 community with recreational trails throughout.

Photo 4: June 11, 2020. FODM5-4 community.

Photo 5: June 29, 2020. Opening in WODM4 community.

Photo 6: June 29, 2020. RBTB2-3 community.

Photo 7: Large diameter cavity tree present in FODM5-4.

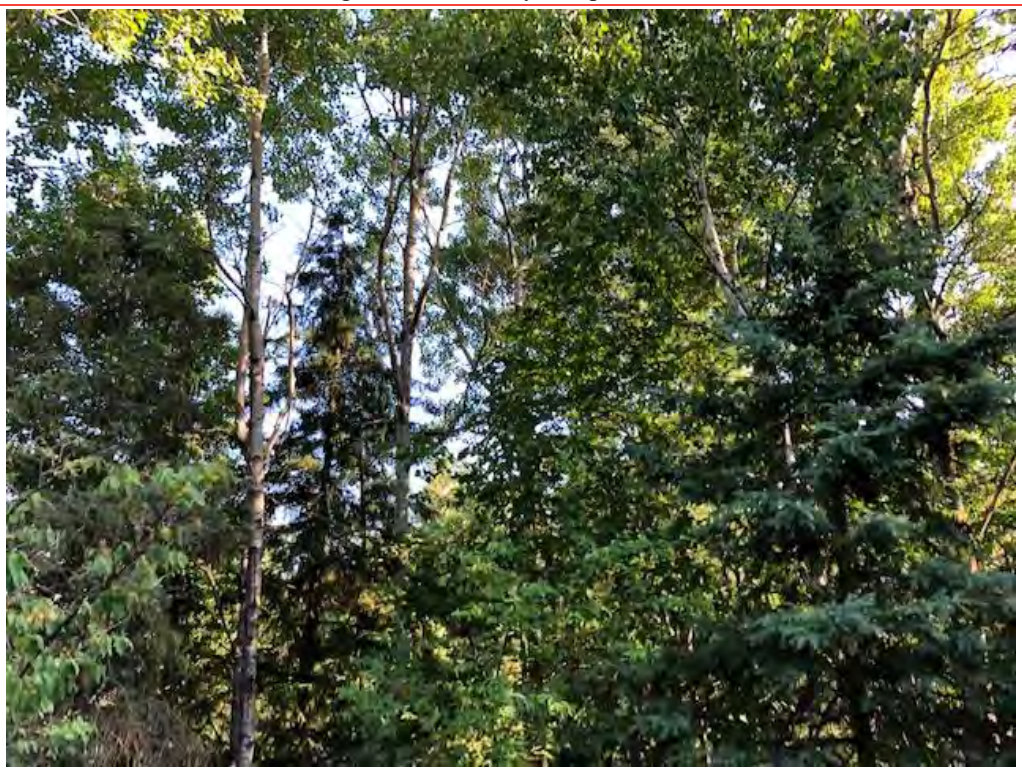

Photo 8: June 29, 2020. FOMM10-2 community.

Photo 9: June 29, 2020. FOMM10-2 community.

APPENDIX

E BUTTERNUT HEALTH ASSESSMENT REPORT

Andrea Orr
Terrestrial Ecologist
WSP Canada Inc.
2611 Queensview Drive, Suite 300
Ottawa, Ontario K2B 8K2

July 30, 2020

Sameer Gulamani
Vice-President and Council
Bayview Hospitality Group
108 Chestnut Street
Toronto, Ontario M5G 1R3

RE: 6301 Campeau Drive Residential Development - Butternut Health Assessment
BHA Report Number: 735-004

Dear Mr. Gulamani,

Thirty (30) Butternut trees have been identified at the 6301 Campeau Drive Residential Development project site as having the potential to be harmed. Butternut is an Endangered species protected under the provincial *Endangered Species Act* (ESA), 2007.

As there is potential for impact to the trees and/or habitat (25 m radius from the bole) resulting from proposed works (i.e. development construction), a Butternut Health Assessment was conducted on June 10, 11 and July 23, 2020. The assessment was completed according to the Butternut Health Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the Endangered Species Act, 2007, Version 2 (Ministry of Natural Resources and Forestry, 2014). The Butternut Health Assessment (BHA) Report is enclosed. This BHA Report follows a standard Ministry of Natural Resources and Forestry (MNRF) template and includes additional details on the implications for the trees that were assessed on the property. As of April 1, 2019, MNRF no longer manages ESA files, as the responsibility has been shifted to the Ministry of Environment, Conservation, and Parks (MECP). Documentation mandatory for the BHA process has not yet been updated to reflect the change in the ESA administration authority. The MECP may request a site visit to audit the trees.

Please read through the attached report carefully for full details; highlights are provided below.

Locations of the trees are shown on the attached figure.

Tree assessment results:

- Twenty (20) trees are Category 1: Category 1 trees are in an advanced state of disease and can be removed without ESA authorization/approval, following the 30-day MECP review period (provided the MECP agrees with the assessment).
- Five (5) trees are Category 2: Category 2 trees have few or no signs of disease and are eligible for an exemption from the ESA (i.e. can be harmed/killed) if the requirements of Section 23.7 of Ontario Regulation 242/08 are followed. These requirements include; registration, installation of compensation plantings, and tending, monitoring and reporting on the plantings for two years. Note that this exemption is only available if less than ten (10) Butternuts are to be harmed/killed by the same proponent in the same or nearby area.
- Five (5) trees are Category 3: Category 3 trees have no or little signs of disease and may be useful in determining sources of resistance to butternut canker. They are quality candidates for archiving and therefore not eligible for an exemption under Section 23.7 O.Reg. 242/08 of the ESA. If any Category 3 trees are proposed to be killed, harmed, or taken, the person must seek an ESA authorization.

It is recommended that the BHA Report be submitted to the MECP to confirm the status of the trees (i.e. Category). **Please confirm that you request WSP to submit the report on your behalf (as the landowner and proponent).** It is recommended that this letter be retained as proof that a Butternut Health Assessment has been completed for the thirty (30) Butternut trees on the above noted property, as well as any other documentation you may receive from the MECP should an audit of the assessment occur.

If you have any questions, please contact the undersigned Butternut Health Assessor by email at andrea.orr@wsp.com. Additional information can also be requested from a MECP Species at Risk Biologist at SAROntario@ontario.ca.

Yours sincerely,

Andrea Orr, B.Sc.
Terrestrial Ecologist, Environment

cc: Alex Zeller, Senior Ecologist (WSP)

Enclosures:

1. Information from the Ministry of Natural Resources and Forestry about Butternut and the *Endangered Species Act, 2007*
2. Butternut Health Assessor's Report
3. Butternut Data Collection Forms 1 and 2
4. Butternut Tree Analysis
5. Figure 1: 6301 Campeau Drive – Butternut Category and Locations
6. Photographic Record

Ministry of Natural Resources and Forestry

Species At Risk
P.O. Box 7000, 300 Water Street
Peterborough ON K9J 8M5

Ministère des Richesses naturelles et des Forêts

Espèces en péril
C.P. 7000, 300, rue Water
Peterborough ON K9J 8M5

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

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

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

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

Note regarding changes:

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

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

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

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

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

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

Links:

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

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

MNRF Office Locations:
https://www.ontario.ca/government/ministry-natural-resources-and-forestry-regional-and-district-offices

Butternut Health Assessor's Report Number: 735-004

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Toronto, Ontario
M5G 1R3
416-597-6340
Sameer.gulamani@bayviewhospitality.com

Site location: 6301 Campeau Drive, Kanata, Ontario

Date(s) of Butternut health assessment: June 10,11 and July 23, 2020
Date BHA Report prepared: July 30, 2020

Map datum used: ☒ NAD83 ☐ WGS84

Total number of trees assessed in this BHA Report: 30

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

This BHA Report includes the following tables:

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

Table 1: Butternut Trees Assessed

Tree #	UTM coordinates	Category[1] *(1, 2, or 3[2])*	dbh[3] (cm)	Cultivated? *(Y/N)*	Proposed to be: *(enter one: unknown[4], killed, harmed or taken)*	If tree is proposed to be killed, harmed, or taken, indicate reason tree is proposed to be killed, harmed or taken:

[1] The extent to which the tree is affected by Butternut Canker is presented in the Excel document titled, "BHA Tree Analysis" that accompanies this BHA Report.
[2] Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08.
[3] dbh: diameter at breast height, rounded to nearest cm (if tree is shorter than breast height, enter zero)
[4] In this column, "unknown" indicates that at the time of assessment, there are no proposals to kill, harm or take this tree that are known to the BHA.

Tree #	UTM coordinates	Category[1] *(1, 2, or 3[2])*	dbh[3] (cm)	Cultivated? *(Y/N)*	Proposed to be: *(enter one: unknown[4], killed, harmed or taken)*	If tree is proposed to be killed, harmed, or taken, indicate reason tree is proposed to be killed, harmed or taken:
046	18T 429074 / 5018367	1	22	N	Killed	Residential development
045	18T 429068 / 5018358	3	31	N	Harmed	Residential development
047	18T 429068 / 5018373	3	28	N	Harmed	Residential development
049	18T 429058 / 5018386	1	25	N	Killed	Residential development
048	18T 429065 / 5018379	1	12	N	Killed	Residential development
044	18T 429054 / 5018326	1	24	N	Killed	Residential development
043	18T 429048 / 5018323	1	28	N	Killed	Residential development
042	18T 429036 / 5018316	1	25	N	Killed	Residential development
041	18T 429039 / 5018306	1	29	N	Killed	Residential development
040	18T 429020 / 5018299	1	25	N	Killed	Residential development
039	18T 429017 / 5018300	1	12	N	Killed	Residential development
038	18T 429024 / 5018308	1	22	N	Killed	Residential development
050	18T 428994 / 5018280	2	15	N	Killed	Residential development
019	18T 429018 / 5018248	1	69	N	Harmed	Residential development
031	18T 428990 / 5018369	1	27	N	Killed	Residential development
032	18T 428994 / 5018348	3	48	N	Killed	Residential development
033	18T 429003 / 5018343	1	14	N	Killed	Residential development
034	18T 429002 / 5018325	3	24	N	Killed	Residential development
035	18T 429000 / 5018319	2	6	N	Killed	Residential development
036	18T 429005 / 5018313	1	18	N	Killed	Residential development
037	18T 429024 / 5018308	1	17	N	Killed	Residential development
020	18T 428938 / 5018303	2	41	N	Killed	Residential development
030	18T 428918 / 5018347	3	27	N	Harmed	Residential development
029	18T 428895 / 5018339	1	36	N	Killed	Residential development

Tree #	UTM coordinates	Category[1] *(1, 2, or 3[2])*	dbh[3] (cm)	Cultivated? *(Y/N)*	Proposed to be: *(enter one: unknown[4], killed, harmed or taken)*	If tree is proposed to be killed, harmed, or taken, indicate reason tree is proposed to be killed, harmed or taken:
028	18T 428756 / 5018241	1	17	N	Killed	Residential development
027	18T 428758 / 5018241	1	38	N	Harmed	Residential development
026	18T 428769 / 5018199	2	21	N	Harmed	Residential development
051	18T 428930 / 5018175	1	42	N	Unknown	Residential development
001	18T 428892 / 5018296	1	37	N	Killed	Residential development
002	18T 428802 / 5018311	2	18	N	Killed	Residential development

Table 2: Trees Determined by BHA to be Butternut Hybrids

Tree #	UTM coordinates	Method used (genetic testing or field identification):

Table 3: Summary of Assessment Results

Result:	**Total #:**	**Important information for persons planning activities that may affect Butternut:**
Category 1	20	• A Category 1 tree is one that is affected by butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of butternut in the area in which the tree is located; and is considered “non-retainable”. • During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. • Category 1 trees may be killed, harmed or taken **after** the 30 day period that follows submission of this BHA Report to the MNRF District Manager, unless the results of an MNRF examination indicate that the assessment has not been conducted in accordance with the document entitled “Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the *Endangered Species Act, 2007”*.
Category 2	5	• A Category 2 tree is one that is not affected by Butternut Canker, or is affected by Butternut Canker but the degree to which it is affected is not too advanced and retaining the tree could support the protection or recovery of butternut in the area in which the tree is located, and is considered “retainable”. • During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. • Activities that may kill, harm or take up to a **maximum of ten (10)** Category 2 trees may be eligible to follow the rules in section 23.7 of Ontario Regulation 242/08, in accordance with the conditions and requirements set out in the regulation.

Result:	Total #:	Important information for persons planning activities that may affect Butternut:
		• Refer to e-Laws for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm • Activities that may kill, harm or take more than ten (10) Category 2 trees are not eligible to follow the rules in section 23.7 of Ontario Regulation 242/08. Contact the local MNRF district office for information on how to seek an ESA authorization (e.g., a permit) or consider an alternative that would be eligible for the regulation.
Category 3	5	• A Category 3 tree is one that may be useful in determining sources of resistance to Butternut Canker, and is considered "archivable". • Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08. • Contact the local MNRF district office for information on how to seek an ESA authorization, or consider an alternative that will avoid killing, harming or taking any Category 3 trees.
Cultivated	0	• An activity that involves killing, harming, or taking a cultivated Butternut tree that was not required to be planted to fulfill a condition of an ESA permit or a condition of a regulation, may be eligible for the exemption provided by subsection 23.7 (11) of O. Reg. 242/08. • Prior to undertaking the activity, the owner or occupier of the land on which the Butternut is located (or person acting on their behalf) will need to determine whether the exemption for cultivated trees is applicable by determining whether or not the tree was cultivated as a result of the requirements for an exemption under O. Reg. 242/08 or a condition of a permit issued under the ESA. This information can be accessed by contacting the local MNRF district office. • The owner or occupier of the land on which the Butternut is located (or person acting on their behalf) is encouraged to append the details regarding whether the tree was planted to satisfy a requirement (e.g., the permit number or registration number) to this BHA Report for their records.
Hybrid	0	• Hybrid Butternut trees are not protected under the ESA, but their removal may be subject to municipal by-laws and other legislation.

Butternut Health Assessor's Comments:

In 2019, a butternut tree inventory was conducted for the City of Ottawa. This tree inventory was conducted for the entire property of 6301 Campeau Drive, which at that time included existing and expansion areas of Bill Teron Park and areas slated for future development lands.

This BHA report (735-004) includes only the Butternut trees that may be impacted by the proposed residential development, which are located within the future development lands portion of 6301 Campeau Drive, plus 120 m zone of investigation. Tree # identification (I.D) followed the naming convention used in the original 2019 Butternut tree inventory to avoid misidentification of trees on site, thereby appearing out of order.

There is potential for Category 3 Butternut Trees #30, 45, and 47 to be retained but with limited protection, and therefore have been identified to be 'Harmed'. It is anticipated that the proposed retained butternut trees may be harmed as a 25 meter protection buffer may not be feasible due to construction works, underground infrastructure, grading of site, and limited land available within the property.

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

1. All original (hard copy) data forms (i.e., all completed sets of Form 1 and Form 2), and

2. Electronic and printed copies of the Excel data analysis spreadsheet.

0cm 3cm 15cm

Butternut Data Collection Form 1 - 2010 Edition

(PLEASE USE BLOCK LETTERS)

Surveyor ID or BHA #: 0735

Date (dd/mm/yyyy): 10 - 06 - 2020

Shaded fields are mandatory for Butternut Health Assessments

Surveyor Contact

First: ANDREA Last: ORR

Email: andrea.orr@wsp.com

Telephone: (613) 690-4060 Telephone Other: (343) 996-3624 x

Property Owner (check if same as surveyor) ☐

First: SAMEER Last: GULAMANI

or Company: BAYVIEW HOSPITALITY GROUP

Email: sameer.gulamani@bayviewhospitality.com

Telephone: (416) 597-6340 Telephone Other: ( ) x

Property Owner's Mailing address

Address: 108 chestnut St. Postal Code: M5G 1R3 Prov.: ON

City: TORONTO

Tree Location (if different from mailing address)

Address/(911#): 6301 CAMPEAU DRIVE

Township: KANATA Lot: 03 Con: 02

City: KANATA

Directions

☑ Yes ☐ No Can Share Location Information with other Butternut Recovery Organizations?

☑ Yes ☐ No Site visits OK? (prior arrangments will always be made for a site vist)

> (Greater than)
< (Less than)

Butternut Trees Tally by Diameter Class

(Do a dot tally in blank space; write total# in box for each)

Tree Condition	< 3 cm	3-15 cm	16-30cm	>30 cm
Vigorous: > 50% Live Crown Minor or no cankers	00	05	10	05
Poor Vigor: <50% Live Crown or >50% Live Crown + heavily cankered stem	00	00	06	02
Dead			09	

Historically, do some trees produce seeds? ☐ Y ☐ N ☒ Unkown

Estimated area containing butternut for properties > 1 acre (0.4 hectares): 4.33 ☐ Acres ☒ Hectares

This is the area of the developable area. Adjacent natural areas/continuous forest areas are comprised of Bill Teron Park.

Overall Property Description (area(s) containing Butternut)

- ☒ Rolling Upland
- ☐ Bottomland
- ☐ Valley Slope
- ☐ Variable
- ☐ Tableland
- ☐ Unknown

Vegetation Community/ies

- ☐ Open
- ☐ Fencerow
- ☐ Shrubland
- ☐ Roadside
- ☑ DeciduousForest
- ☐ Quary
- ☐ ConiferForest
- ☐ UrbanYard
- ☑ MixedForest
- ☑ UrbanPark

Other:

Soil Drainage

- ☐ Well Drained
- ☐ Moderately Drained
- ☒ Poorly Drained
- ☐ Unknown

Soil Texture

- ☐ Clay
- ☐ Sand
- ☐ Clay Loam
- ☒ Variable
- ☐ Loam
- ☐ Unknown
- ☐ Loamy Sand

Soil Depth

- ☐ > 1metre
- ☐ 30 - 99cm
- ☒ < 30cm
- ☒ Variable
- ☐ Unknown

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Peterborough, ON, K9J 2V4
www.fgca.net

49731

Butternut Data Collection FORM 2 (2010 Edition)

(PLEASE USE BLOCK LETTERS)

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Shaded fields are mandatory for Butternut Health Assessments

Site Code(A,B,...Z, AA...): CAM

Surveyor ID or BHA #: 0735

Surveyor Last Name: ORR

Date (dd/mm/yyyy): 10-06-2020

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree # 046

Zone 18 | Easting 429074 | Northing 5018367

Crown Class | Live Crown %: 10 | Main Stem Length(m) Below crown: 5

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 1 | DBH(cm): 22

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 0

	#Open	#Sooty
Root	00	00
=<2m	01	04
>2m	00	00

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species

Along Cordelia St. in embankment

Tree # 045

Zone 18 | Easting 429068 | Northing 5018358

Crown Class | Live Crown %: 95 | Main Stem Length(m) Below crown: 8

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 1 | DBH(cm): 31

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 3

	#Open	#Sooty
Root	03	02
=<2m	02	03
>2m	00	00

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species

Tree # 047

Zone 18 | Easting 429068 | Northing 5018373

Crown Class | Live Crown %: 75 | Main Stem Length(m) Below crown: 6

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 2 | DBH(cm): 28

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 02

	#Open	#Sooty
Root	00	00
=<2m	00	03
>2m	00	00

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species

DBH #1 = 24.9 #2 = 15.2 - Forked at base of tree. Growing in embankment / Cordelia St.

Tree # 049

Zone 18 | Easting 429058 | Northing 5018386

Crown Class | Live Crown %: 95 | Main Stem Length(m) Below crown:

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 2 | DBH(cm): 25

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 61

	#Open	#Sooty
Root	04	07
=<2m	05	08
>2m	03	01

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species

19.1 / 18 Forked at base.

Tree # 048

Zone 18 | Easting 429065 | Northing 5018379

Crown Class | Live Crown %: 95 | Main Stem Length(m) Below crown: 4

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 2 | DBH(cm): 12

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 2

	#Open	#Sooty
Root	03	00
=<2m	03	03
>2m	11	03

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species

9.7 / 6.06. Forked at base / root flare.

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Butternut Data Collection FORM 2 (2010 Edition)

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Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Shaded fields are mandatory for Butternut Health Assessments

Site Code(A,B,...Z, AA...): C A M

Surveyor ID or BHA #: 0735

Surveyor Last Name:

Date (dd/mm/yyyy): 10 - 06 - 2020

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree 44

Tree #: 44 | Zone: 18 | Easting: 429054 | Northing: 5018326

Crown Class: | Live Crown %: 35 | Main Stem Length(m) Below crown: 07

Twig Dieback | Branch Dieback | Defoliation | Discolouration | #Stems: 1 | DBH(cm): 24

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds

	#Open	#Sooty
Root	05	01
=<2m	09	03
>2m	03	01

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species:

Tree 43

Tree #: 43 | Zone: 18 | Easting: 429048 | Northing: 5018323

Crown Class: | Live Crown %: 10 | Main Stem Length(m) Below crown: 07

Twig Dieback | Branch Dieback | Defoliation | Discolouration | #Stems: 1 | DBH(cm): 28

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 00

	#Open	#Sooty
Root	00	00
=<2m	04	01
>2m	03	00

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species:

Tree 42

Tree #: 42 | Zone: 18 | Easting: 429036 | Northing: 5018316

Crown Class: | Live Crown %: 95 | Main Stem Length(m) Below crown: 09

Twig Dieback | Branch Dieback | Defoliation | Discolouration | #Stems: 1 | DBH(cm): 25

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 00

	#Open	#Sooty
Root	00	00
=<2m	01	05
>2m	03	03

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species:

Tree 41

Tree #: 41 | Zone: 18 | Easting: 429039 | Northing: 5018306

Crown Class: | Live Crown %: 85 | Main Stem Length(m) Below crown: 12

Twig Dieback | Branch Dieback | Defoliation | Discolouration | #Stems: 1 | DBH(cm): 29

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 00

	#Open	#Sooty
Root	01	00
=<2m	08	09
>2m	03	01

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species:

Tree 40

Tree #: 40 | Zone: 18 | Easting: 429020 | Northing: 5018299

Crown Class: | Live Crown %: 95 | Main Stem Length(m) Below crown: 07

Twig Dieback | Branch Dieback | Defoliation | Discolouration | #Stems: 1 | DBH(cm): 25

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 0

	#Open	#Sooty
Root	02	03
=<2m	05	10
>2m	00	00

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species:

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Butternut Data Collection FORM 2 (2010 Edition)

(PLEASE USE BLOCK LETTERS)

Shaded fields are mandatory for Butternut Health Assessments

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Site Code(A,B,...Z, AA...): CAM

Surveyor ID or BHA #: 0735

Surveyor Last Name: ORR

Date (dd/mm/yyyy): 10-06-2020

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree # 39

Zone 18 | Easting 429017 | Northing 5018300

Crown Class | Live Crown %: 95 | Main Stem Length(m) Below crown: 5

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 1 | DBH(cm): 12

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 00

	#Open	#Sooty
Root	00	00
=<2m	05	04
>2m	02	01

Metres from badly cankered tree: ☒ < 40 ☐ > 40 ☐ None Found

Competing Species:

Tree # 38

Zone 18 | Easting 429024 | Northing 5018308

Crown Class | Live Crown %: 46 | Main Stem Length(m) Below crown: 05

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 2 | DBH(cm): 22

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 00

	#Open	#Sooty
Root	01	02
=<2m	04	05
>2m	02	00

Metres from badly cankered tree: ☒ < 40 ☐ > 40 ☐ None Found

Competing Species:

14=first stem / 17=second stem. JM BHA = #37

Tree # 50

Zone 18 | Easting 428994 | Northing 5018280

Crown Class | Live Crown %: 100 | Main Stem Length(m) Below crown: 04

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 1 | DBH(cm): 15

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 64

	#Open	#Sooty
Root	00	00
=<2m	01	01
>2m	00	03

Metres from badly cankered tree: ☒ < 40 ☐ > 40 ☐ None Found

Competing Species:

No evident RF

Tree # 19

Zone 18 | Easting 429018 | Northing 5018248

Crown Class | Live Crown %: 65 | Main Stem Length(m) Below crown: 12

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 2 | DBH(cm): 69

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 10

	#Open	#Sooty
Root	05	04
=<2m	06	16
>2m	09	03

Metres from badly cankered tree: ☐ < 40 ☒ > 40 ☐ None Found

Competing Species:

46.5/51.2 - RF completely deteriorated by fungus - all open cankered

Tree

Zone 1

Easting | Northing

Crown Class | Live Crown % | Main Stem Length(m) Below crown

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems | DBH(cm)

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds

	#Open	#Sooty
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

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Butternut Data Collection FORM 2 (2010 Edition)

(PLEASE USE BLOCK LETTERS)

Shaded fields are mandatory for Butternut Health Assessments

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Site Code(A,B,...Z, AA...): CAM

Surveyor ID or BHA #: 0735

Surveyor Last Name: ORR

Date (dd/mm/yyyy): 11 - 06 - 2020

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree # 031

Zone 18 | Easting 428940 | Northing 5018369

Crown Class | Live Crown % 75 | Main Stem Length(m) Below crown 06

Twig Dieback | Branch Dieback | Defoliation | Discolouration | #Stems 2 | DBH(cm) 27

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds 01

	#Open	#Sooty
Root	03	03
=<2m	06	08
>2m	02	02

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species

22/16.5 ft hollowed out from rot/cankers.

Tree # 032

Zone 18 | Easting 428944 | Northing 5018348

Crown Class | Live Crown % 75 | Main Stem Length(m) Below crown 04

Twig Dieback | Branch Dieback | Defoliation | Discolouration | #Stems 3 | DBH(cm) 48

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds 02

	#Open	#Sooty
Root	03	04
=<2m	02	07
>2m	00	00

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species

DBH#1=27, DBH#2=29, DBH#3=27 - 4 stems, but one dead/broken off

Tree # 033

Zone 18 | Easting 429003 | Northing 5018343

Crown Class | Live Crown % 85 | Main Stem Length(m) Below crown 05

Twig Dieback | Branch Dieback | Defoliation | Discolouration | #Stems 1 | DBH(cm) 14

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds

	#Open	#Sooty
Root	00	03
=<2m	03	05
>2m	00	00

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species

Tree # 034

Zone 18 | Easting 429002 | Northing 5018325

Crown Class | Live Crown % 95 | Main Stem Length(m) Below crown 02

Twig Dieback | Branch Dieback | Defoliation | Discolouration | #Stems 1 | DBH(cm) 24

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds 01

	#Open	#Sooty
Root	00	00
=<2m	01	02
>2m	00	00

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species

Tree # 035

Zone 18 | Easting 429000 | Northing 5018319

Crown Class | Live Crown % 100 | Main Stem Length(m) Below crown 03

Twig Dieback | Branch Dieback | Defoliation | Discolouration | #Stems 1 | DBH(cm) 06

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds 03

	#Open	#Sooty
Root	00	00
=<2m	00	00
>2m	00	06

Metres from badly cankered tree: < 40 | > 40 | None Found

Competing Species

Please enter matching page link code on forms 1 and 2

Page Link: 429074

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49731

Butternut Data Collection FORM 2 (2010 Edition)

(PLEASE USE BLOCK LETTERS)

Shaded fields are mandatory for Butternut Health Assessments

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Site Code(A,B,...Z, AA...): CAM

Surveyor ID or BHA #: 0735

Date (dd/mm/yyyy): 11-06-2020

Surveyor Last Name: ORR

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree # 36

Zone 18 | Easting 429005 | Northing 5018313

Crown Class | Live Crown %: 85 | Main Stem Length(m) Below crown: 02 | Seed Signs

- [ ] Twig Dieback
- [ ] Branch Dieback
- [ ] Defoliation
- [ ] Discolouration

#Stems: 1 | DBH(cm): 18

Butternut Origin: [ ] Natural [ ] Planted [ ] Unknown

Seed Signs: [ ] Male Flowers [ ] Female Flowers [ ] Seed Set [ ] None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 04

	#Open	#Sooty
Root	00	00
=<2m	07	03
>2m	01	00

Metres from badly cankered tree: [x] < 40 [ ] > 40 [ ] None Found

Competing Species:

No RF.

Tree # 37

Zone 18 | Easting 429024 | Northing 5018308

Crown Class | Live Crown %: 45 | Main Stem Length(m) Below crown: 05 | Seed Signs

- [ ] Twig Dieback
- [ ] Branch Dieback
- [ ] Defoliation
- [ ] Discolouration

#Stems: 1 | DBH(cm): 17

Butternut Origin: [ ] Natural [ ] Planted [ ] Unknown

Seed Signs: [ ] Male Flowers [ ] Female Flowers [ ] Seed Set [ ] None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds

	#Open	#Sooty
Root	03	00
=<2m	05	02
>2m	00	00

Metres from badly cankered tree: [x] < 40 [ ] > 40 [ ] None Found

Competing Species:

JM BHA # 38

Tree # 20

Zone 18 | Easting 428938 | Northing 5018303

Crown Class | Live Crown %: 100 | Main Stem Length(m) Below crown: 08 | Seed Signs

- [ ] Twig Dieback
- [ ] Branch Dieback
- [ ] Defoliation
- [ ] Discolouration

#Stems: 1 | DBH(cm): 41

Butternut Origin: [ ] Natural [ ] Planted [ ] Unknown

Seed Signs: [ ] Male Flowers [ ] Female Flowers [ ] Seed Set [ ] None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 05

	#Open	#Sooty
Root	01	01
=<2m	01	07
>2m	00	00

Metres from badly cankered tree: [ ] < 40 [x] > 40 [ ] None Found

Competing Species:

Lower branch broken off. - good healthy tree

Tree # 30

Zone 18 | Easting 428918 | Northing 5018347

Crown Class | Live Crown %: 95 | Main Stem Length(m) Below crown: 07 | Seed Signs

- [ ] Twig Dieback
- [ ] Branch Dieback
- [ ] Defoliation
- [ ] Discolouration

#Stems: 1 | DBH(cm): 27

Butternut Origin: [ ] Natural [ ] Planted [ ] Unknown

Seed Signs: [ ] Male Flowers [ ] Female Flowers [ ] Seed Set [ ] None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds

	#Open	#Sooty
Root	00	00
=<2m	02	00
>2m	00	00

Metres from badly cankered tree: [x] < 40 [ ] > 40 [ ] None Found

Competing Species:

large wound (not cancer) at base - good healthy tree

Tree # 29

Zone 18 | Easting 428875 | Northing 5018339

Crown Class | Live Crown %: 90 | Main Stem Length(m) Below crown: 03 | Seed Signs

- [ ] Twig Dieback
- [ ] Branch Dieback
- [ ] Defoliation
- [ ] Discolouration

#Stems: 1 | DBH(cm): 36

Butternut Origin: [ ] Natural [ ] Planted [ ] Unknown

Seed Signs: [ ] Male Flowers [ ] Female Flowers [ ] Seed Set [ ] None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds: 06

	#Open	#Sooty
Root	00	00
=<2m	03	04
>2m	05	03

Metres from badly cankered tree: [ ] < 40 [x] > 40 [ ] None Found

Competing Species:

NO evident root flare

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Butternut Data Collection FORM 2 (2010 Edition)

(PLEASE USE BLOCK LETTERS)

Shaded fields are mandatory for Butternut Health Assessments

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Site Code(A,B,...Z, AA...): CAM

Surveyor ID or BHA #: 0735

Surveyor Last Name: ORR

Date (dd/mm/yyyy): 11-06-2020

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree 28

Tree #: 28 | Zone: 18 | Easting: 428756 | Northing: 5018241

Crown Class: | Live Crown %: 25 | Main Stem Length(m) Below crown: 04

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 1 | DBH(cm): 17

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown:

	#Open	#Sooty
#Epic-Live		
#Epic-Dead		
Bark Type		
Root	00	00
=<2m	00	00
# Callused Wounds: 00	>2m	01	00

Metres from badly cankered tree: [x] < 40 | [ ] > 40 | [ ] None Found

Competing Species:

In bedrock, small healthy tree.

Tree 27

Tree #: 27 | Zone: 18 | Easting: 428758 | Northing: 5018241

Crown Class: | Live Crown %: 30 | Main Stem Length(m) Below crown: 04

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 1 | DBH(cm): 38

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown:

	#Open	#Sooty
#Epic-Live		
#Epic-Dead		
Bark Type		
Root	05	01
=<2m	05	04
# Callused Wounds: 01	>2m	01	00

Metres from badly cankered tree: [x] < 40 | [ ] > 40 | [ ] None Found

Competing Species:

Tree 26

Tree #: 26 | Zone: 18 | Easting: 428769 | Northing: 5018199

Crown Class: | Live Crown %: 100 | Main Stem Length(m) Below crown: 05

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 1 | DBH(cm): 21

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown:

	#Open	#Sooty
#Epic-Live		
#Epic-Dead		
Bark Type		
Root	02	02
=<2m	00	04
# Callused Wounds: 02	>2m	00	00

Metres from badly cankered tree: [ ] < 40 | [x] > 40 | [ ] None Found

Competing Species:

Tree 51

Tree #: 51 | Zone: 18 | Easting: 428930 | Northing: 5018175

Crown Class: | Live Crown %: 85 | Main Stem Length(m) Below crown: 12

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: 1 | DBH(cm): 42

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown:

	#Open	#Sooty
#Epic-Live		
#Epic-Dead		
Bark Type		
Root	02	06
=<2m	06	08
# Callused Wounds: 03	>2m	01	01

Metres from badly cankered tree: [ ] < 40 | [x] > 40 | [ ] None Found

Competing Species:

Tree 1

Tree #: 1 | Zone: | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

Twig Dieback | Branch Dieback | Defoliation | Discolouration

#Stems: | DBH(cm):

Butternut Origin: Natural | Planted | Unknown

Seed Signs: Male Flowers | Female Flowers | Seed Set | None

Assess below live crown:

	#Open	#Sooty
#Epic-Live		
#Epic-Dead		
Bark Type		
Root		
=<2m		
# Callused Wounds	>2m		

Metres from badly cankered tree: [ ] < 40 | [ ] > 40 | [ ] None Found

Competing Species:

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Butternut Data Collection FORM 2 (2010 Edition)

(PLEASE USE BLOCK LETTERS)

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Shaded fields are mandatory for Butternut Health Assessments

Site Code(A,B,...Z, AA...): CAM

Surveyor ID or BHA #: 0735

Surveyor Last Name: ORR

Date (dd/mm/yyyy): 23-07-2020

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree # 001 | Zone 18 | Easting 428892 | Northing 5018296

Crown Class: 2 | Live Crown %: 10 | Main Stem Length(m) Below crown: 07 | Seed Signs

☑ Twig Dieback ☐ Branch Dieback ☑ Defoliation ☐ Discolouration

#Stems: 1 | DBH(cm): 37

Butternut Origin: ☑ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☑ None

Assess below live crown:

	#Epic-Live	#Epic-Dead	Bark Type	# Callused Wounds
	0	0		04

	#Open	#Sooty
Root	04	04
=<2m	02	04
>2m	08	02

Metres from badly cankered tree: ☑ < 40 ☐ > 40 ☐ None Found

Competing Species: PINSTRO, FRAPENN, PICGLAU

Additional tree. Roots damaged. Overall Poor health.

Tree # 002 | Zone 18 | Easting 428802 | Northing 5018311

Crown Class: 2 | Live Crown %: 100 | Main Stem Length(m) Below crown: 05 | Seed Signs

☑ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: 1 | DBH(cm): 18

Butternut Origin: ☑ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☑ None

Assess below live crown:

	#Epic-Live	#Epic-Dead	Bark Type	# Callused Wounds
	00	00	3	01

	#Open	#Sooty
Root	00	06
=<2m	00	01
>2m	00	00

Metres from badly cankered tree: ☑ < 40 ☐ > 40 ☐ None Found

Competing Species: PICGLAU, POPTRE

Healthy tree, fungus prevalent in RF.

Tree # | Zone 1 | Easting | Northing

Crown Class | Live Crown % | Main Stem Length(m) Below crown | Seed Signs

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems | DBH(cm)

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

Assess below live crown:

	#Epic-Live	#Epic-Dead	Bark Type	# Callused Wounds

	#Open	#Sooty
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species

Tree # | Zone 1 | Easting | Northing

Crown Class | Live Crown % | Main Stem Length(m) Below crown | Seed Signs

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems | DBH(cm)

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

Assess below live crown:

	#Epic-Live	#Epic-Dead	Bark Type	# Callused Wounds

	#Open	#Sooty
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species

Tree # | Zone 1 | Easting | Northing

Crown Class | Live Crown % | Main Stem Length(m) Below crown | Seed Signs

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems | DBH(cm)

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

Assess below live crown:

	#Epic-Live	#Epic-Dead	Bark Type	# Callused Wounds

	#Open	#Sooty
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species

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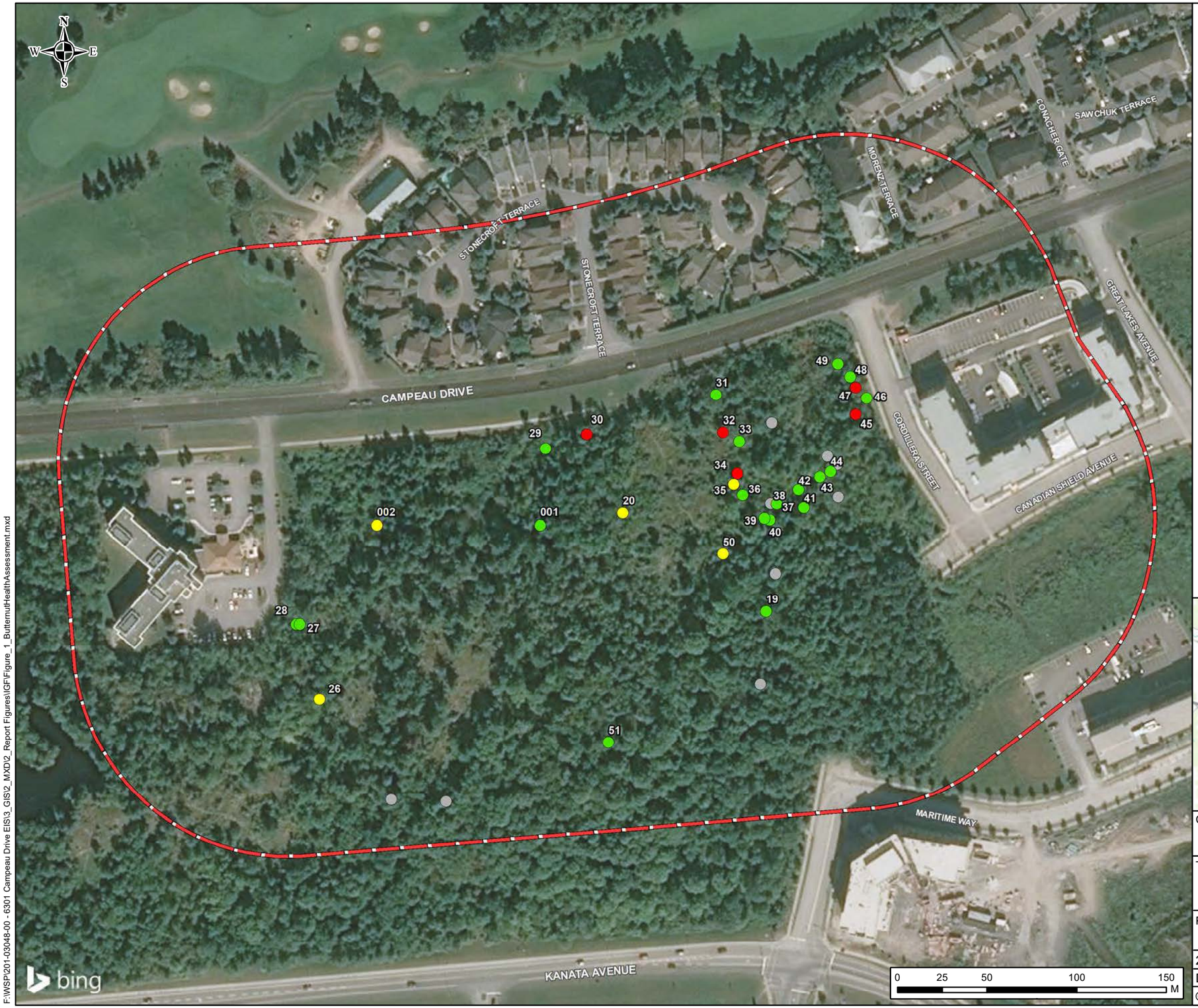
BHA Tree Analysis (version: December 2013)

This table is to be completed by a designated Butternut Health Assessor (BHA).

BHA Report #	735-004	Assessment Date(s)	June 10/11 and July 23, 2020	Total # Butternut Trees in BHA Report	30
BHA ID #	735	BHA Name	Andrea Orr		
Landowner / Client Name			Sameer Gulamani / Bayview Hospitality Group		
Property Location			6301 Campeau Drive, Kanata, Ontario		

input field data										automatic calculations from field data						Categories: 1: non-retainable, 2: retainable, 3: archivable				
Tree #	Live Crown %	Tree dbh (cm)	# bole cankers				# root flare (RF) cankers		<40 m from cankered tree? (Y or N)	Circ. (cm) = Pi x dbh	total bole canker width (sooty x 2.5 + open x 5)	total RF canker width (sooty x 2.5 + open x 5)	bole canker % of circ.	RF canker % of circ.	total bole & root canker % of 2xCirc	LC% >/= 50 & BC% = 0	LC% >70 & BRC% <20	LC% >70 & BC% <20	Preliminary tree call	FINAL TREE CALL a Cat 2, dbh>20cm <40m from a Cat 1
			sooty (S) (will be assigned 2.5 cm per canker)		open (O) (will be assigned 5 cm per canker)															
			S <2 m	S >2 m	O <2 m	O >2 m	RF S	RF O		Circ (cm)	BC (cm)	RC (cm)	BC%	RC%	BRC%					
46	10	22	4	0	1	0	0	0	y	69.08	15.0	0.0	**21.7**	**0.0**	**10.9**	1	1	1	**1**	**1**
45	95	31	3	0	2	0	2	3	y	97.34	17.5	20.0	**18.0**	**20.5**	**19.3**	1	2	2	**2**	**3**
47	75	28	3	0	0	0	0	0	y	87.92	7.5	0.0	**8.5**	**0.0**	**4.3**	1	2	2	**2**	**3**
49	95	25	8	1	5	3	7	4	y	78.5	62.5	37.5	**79.6**	**47.8**	**63.7**	1	1	1	**1**	**1**
48	95	12	3	3	3	11	0	3	y	37.68	85.0	15.0	**225.6**	**39.8**	**132.7**	1	1	1	**1**	**1**
44	35	24	3	1	9	3	1	5	y	75.36	70.0	27.5	**92.9**	**36.5**	**64.7**	1	1	1	**1**	**1**
43	10	28	1	0	4	3	0	0	y	87.92	37.5	0.0	**42.7**	**0.0**	**21.3**	1	1	1	**1**	**1**
42	95	25	5	3	1	3	0	0	y	78.5	40.0	0.0	**51.0**	**0.0**	**25.5**	1	1	1	**1**	**1**
41	85	29	9	1	8	3	0	1	y	91.06	80.0	5.0	**87.9**	**5.5**	**46.7**	1	1	1	**1**	**1**
40	95	25	10	0	5	0	3	2	y	78.5	50.0	17.5	**63.7**	**22.3**	**43.0**	1	1	1	**1**	**1**
39	95	12	4	1	5	2	0	0	y	37.68	47.5	0.0	**126.1**	**0.0**	**63.0**	1	1	1	**1**	**1**
38	45	22	5	0	4	2	2	1	y	69.08	42.5	10.0	**61.5**	**14.5**	**38.0**	1	1	1	**1**	**1**
50	100	15	1	3	1	0	0	0	y	47.1	15.0	0.0	**31.8**	**0.0**	**15.9**	1	2	1	**2**	**2**
19	65	69	16	3	6	9	4	5	n	216.7	122.5	35.0	**56.5**	**16.2**	**36.3**	1	1	1	**1**	**1**
31	75	27	8	2	6	2	3	3	y	84.78	65.0	22.5	**76.7**	**26.5**	**51.6**	1	1	1	**1**	**1**
32	75	48	7	0	2	0	4	3	y	150.7	27.5	25.0	**18.2**	**16.6**	**17.4**	1	2	2	**2**	**3**
33	85	14	5	0	3	0	3	0	y	43.96	27.5	7.5	**62.6**	**17.1**	**39.8**	1	1	1	**1**	**1**
34	95	24	2	0	1	0	0	0	y	75.36	10.0	0.0	**13.3**	**0.0**	**6.6**	1	2	2	**2**	**3**
35	100	6	0	0	0	0	0	0	y	18.84	0.0	0.0	**0.0**	**0.0**	**0.0**	2	2	2	**2**	**2**
36	85	18	3	0	7	1	0	0	y	56.52	47.5	0.0	**84.0**	**0.0**	**42.0**	1	1	1	**1**	**1**
37	45	17	2	0	5	0	0	3	y	53.38	30.0	15.0	**56.2**	**28.1**	**42.2**	1	1	1	**1**	**1**
20	100	41	7	0	1	0	1	1	n	128.7	22.5	7.5	**17.5**	**5.8**	**11.7**	1	2	2	**2**	**2**
30	95	27	0	0	2	0	0	0	y	84.78	10.0	0.0	**11.8**	**0.0**	**5.9**	1	2	2	**2**	**3**
29	90	36	4	3	3	5	0	0	n	113	57.5	0.0	**50.9**	**0.0**	**25.4**	1	1	1	**1**	**1**
28	25	17	0	0	0	1	0	0	y	53.38	5.0	0.0	**9.4**	**0.0**	**4.7**	1	1	1	**1**	**1**
27	30	38	4	0	5	1	1	5	y	119.3	40.0	27.5	**33.5**	**23.0**	**28.3**	1	1	1	**1**	**1**
26	100	21	4	0	0	0	2	2	n	65.94	10.0	15.0	**15.2**	**22.7**	**19.0**	1	2	2	**2**	**2**
51	85	42	8	1	6	1	6	2	n	131.9	57.5	25.0	**43.6**	**19.0**	**31.3**	1	1	1	**1**	**1**
1	10	37	4	2	2	8	4	4	n	116.2	65.0	30.0	**55.9**	**25.8**	**40.9**	1	1	1	**1**	**1**
2	100	18	1	0	0	0	6	0	n	56.52	2.5	15.0	**4.4**	**26.5**	**15.5**	1	2	2	**2**	**2**

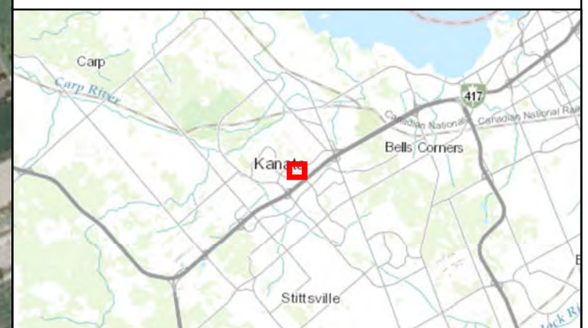


Study Area

Development Area

Butternut Health Assessment - Tree Category

- Category 1
- Category 2
- Category 3
- Dead



Client:

Bayview Hospitality Group

Title:

6301 Campeau Drive - Information Gathering Form
ButternutHealth Assessment

Prepared By:

201-03048-00	1:2,200	Review: AO
Date: November 2020	**Figure: 1**	
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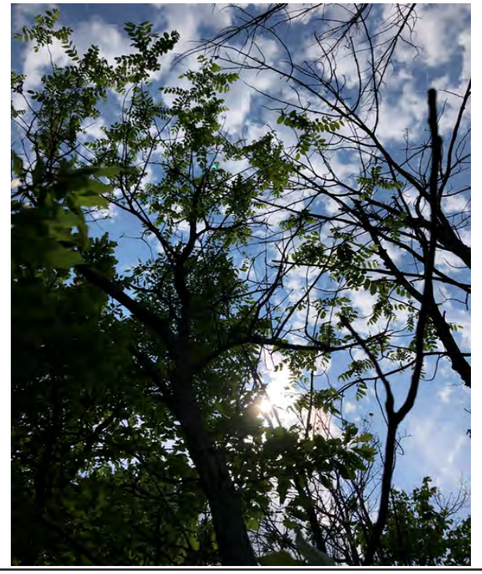
F:\WSP\201-03048-00 - 6301 Campeau Drive EIS\3_GIS\2_MXD\2_Report Figures\GF\Figure_1_ButternutHealthAssessment.mxd

Butternut #39. Bark at breast height: June 10, 2020

Butternut #39. Bole below 2m/root flare: June 10, 2020



Butternut #39. Canopy: June 10, 2020

Butternut #38. Bark at breast height: June 10, 2020

Butternut #38. Bole below 2m/root flare: June 10, 2020

Butternut #38. Canopy: June 10, 2020

Butternut #38. Open canker below 2m: June 10, 2020

Butternut #50. Bark at breast height: June 10, 2020

6301 Campeau Drive Development—EIS: Butternut Health Assessment

REPRESENTATIVE SITE PHOTOGRAPHS

Date: June 2020

Project No: 201-03048-00

BHA Report: 735 - 004

Butternut #50. Canopy: June 10, 2020

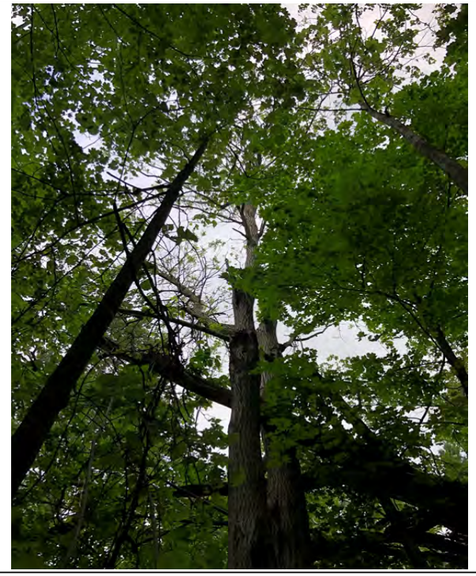
Butternut #50. Bole below 2m/root flare: June 10, 2020

Butternut #19. Bark at breast height: June 10, 2020

Butternut #19. Bole below 2m/root flare: June 10, 2020

Butternut #19. Open canker on bole below 2m: June 10, 2020

Butternut #19. Sooty canker on bole at breast height: June 10, 2020



Butternut #19: Canopy: June 10, 2020

Butternut #31. Bole at breast height: June 10, 2020

6301 Campeau Drive Development— EIS: Butternut Health Assessment

REPRESENTATIVE SITE PHOTOGRAPHS

Date: June 2020

Project No: 201-03048-00

BHA Report: 735 - 004

Butternut #31. Forked at root flare with opened wound: June 11, 2020

Butternut #31. Open wound and canker on root flare: June 11, 2020

Butternut #31. Open canker on bole below 2m: June 11, 2020

Butternut #31. Canopy: June 11, 2020

Butternut #32. Bole at breast height and broken limb: June 11, 2020

Butternut #32. 4 trunks forked at base, one open canker. One trunk broken and dead: June 11, 2020

Butternut #32. Open canker below 2m: June 11, 2020

Butternut #32. Canopy: June 11, 2020

Butternut #33. Bole at breast height: June 11, 2020

Butternut #33. Open canker in bark <2m: June 11, 2020

Butternut #33: Open canker in bark <2m: June 11, 2020

Butternut #33. Bole below 2m/root flare: June 11, 2020

Butternut #33. Canopy: June 11, 2020

Butternut #34. Bole at breast height: June 11, 2020

Butternut #34. Canopy: June 11, 2020

Butternut #34. Root flare and open wound: June 11, 2020

wsp	6301 Campeau Drive Development—EIS: Butternut Health Assessment REPRESENTATIVE SITE PHOTOGRAPHS	Date: June 2020 Project No: 201-03048-00 BHA Report: 735 - 004

Butternut #34. Canopy: June 11, 2020

Butternut #36. Bole at breast height: June 11, 2020

Butternut #36. Open canker below 2m: June 11, 2020

Butternut #36. Canopy: June 11, 2020

Butternut #36. Cankers on bole < 2m: June 11, 2020

Butternut #37. Bole at breast height and open canker present: June 11, 2020

Butternut #37. Open canker below 2m: June 11, 2020

Butternut #37. Bole at root flare/below 2m: June 11, 2020

6301 Campeau Drive Development—EIS: Butternut Health Assessment

REPRESENTATIVE SITE PHOTOGRAPHS

Date: June 2020

Project No: 201-03048-00

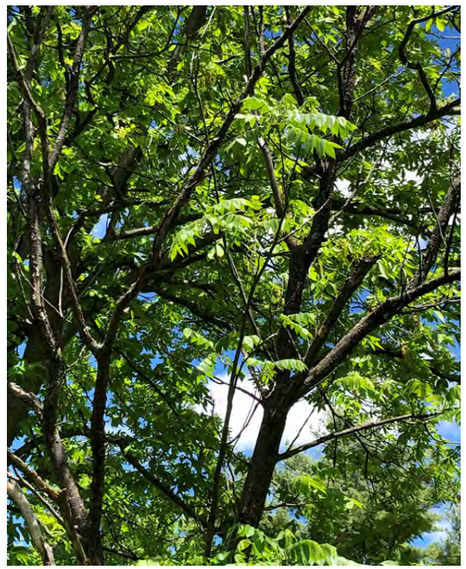
BHA Report: 735 - 004

Butternut #30. Main trunk: June 11, 2020

Butternut #30. Canopy: June 11, 2020

Butternut #28. Bole at breast height: June 11, 2020

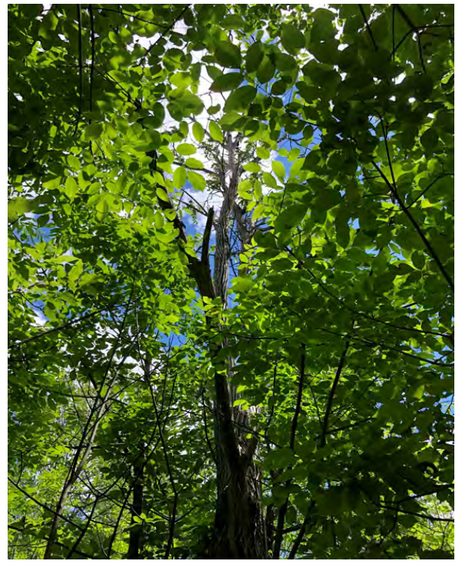
Butternut #28. Tree growing out of bedrock: June 11, 2020



Butternut #28. Canopy: June 11, 2020

Butternut #27. Bole at breast height: June 11, 2020

Butternut #27. Bole with open canker below 2m: June 11, 2020



Butternut #27. Canopy: June 11, 2020

6301 Campeau Drive Development - EIS: Butternut Health Assessment

REPRESENTATIVE SITE PHOTOGRAPHS

Date: June 2020

Project No: 201-03048-00

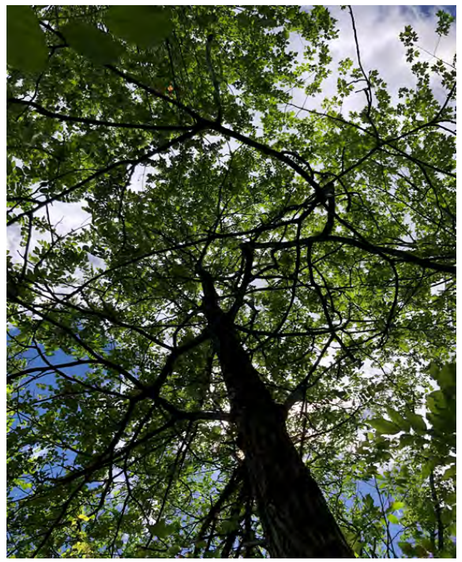
BHA Report: 735- 004

Butternut #27. Canopy: June 11, 2020

Butternut #26. Bole at breast height: June 11, 2020

Butternut #26. Callused wound < 2m: June 11, 2020

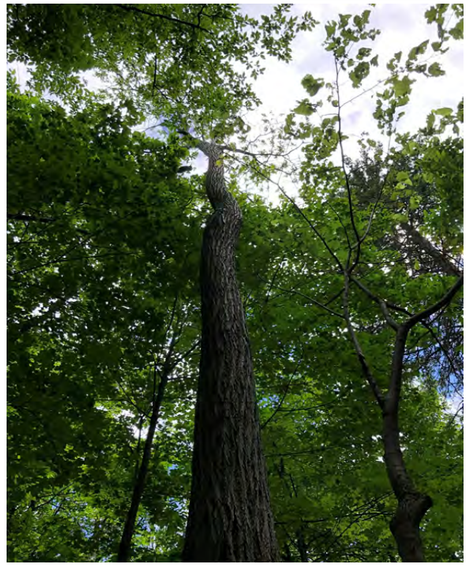
Butternut #26. Sooty canker on root flare: June 11, 2020



Butternut #26. Canopy: June 11, 2020

Butternut #51. Bole at breast height/< 2m: June 11, 2020

Butternut #51. Sooty canker on root flare: June 11, 2020



Butternut #51. Canopy and upper bole: June 11, 2020

6301 Campeau Drive Development — EIS: Butternut Health Assessment

REPRESENTATIVE SITE PHOTOGRAPHS

Date: June 2020

Project No: 201-03048-00

BHA Report: 735-004

Butternut #001. Root flare: July 23, 2020

Butternut #001. Sooty canker <2m: July 23, 2020

Butternut #001. Open canker < 2m: July 23, 2020

Butternut #001. Canopy: July 23, 2020

Butternut #002. Bole diameter: July 23, 2020

Butternut #002. Sooty canker on root flare: July 23, 2020

Butternut #002. Sooty canker on root flare: July 23, 2020

Butternut #002. Live crown/canopy: July 23, 2020

6301 Campeau Drive Development — EIS: Butternut Health Assessment

REPRESENTATIVE SITE PHOTOGRAPHS

Date: July 2020

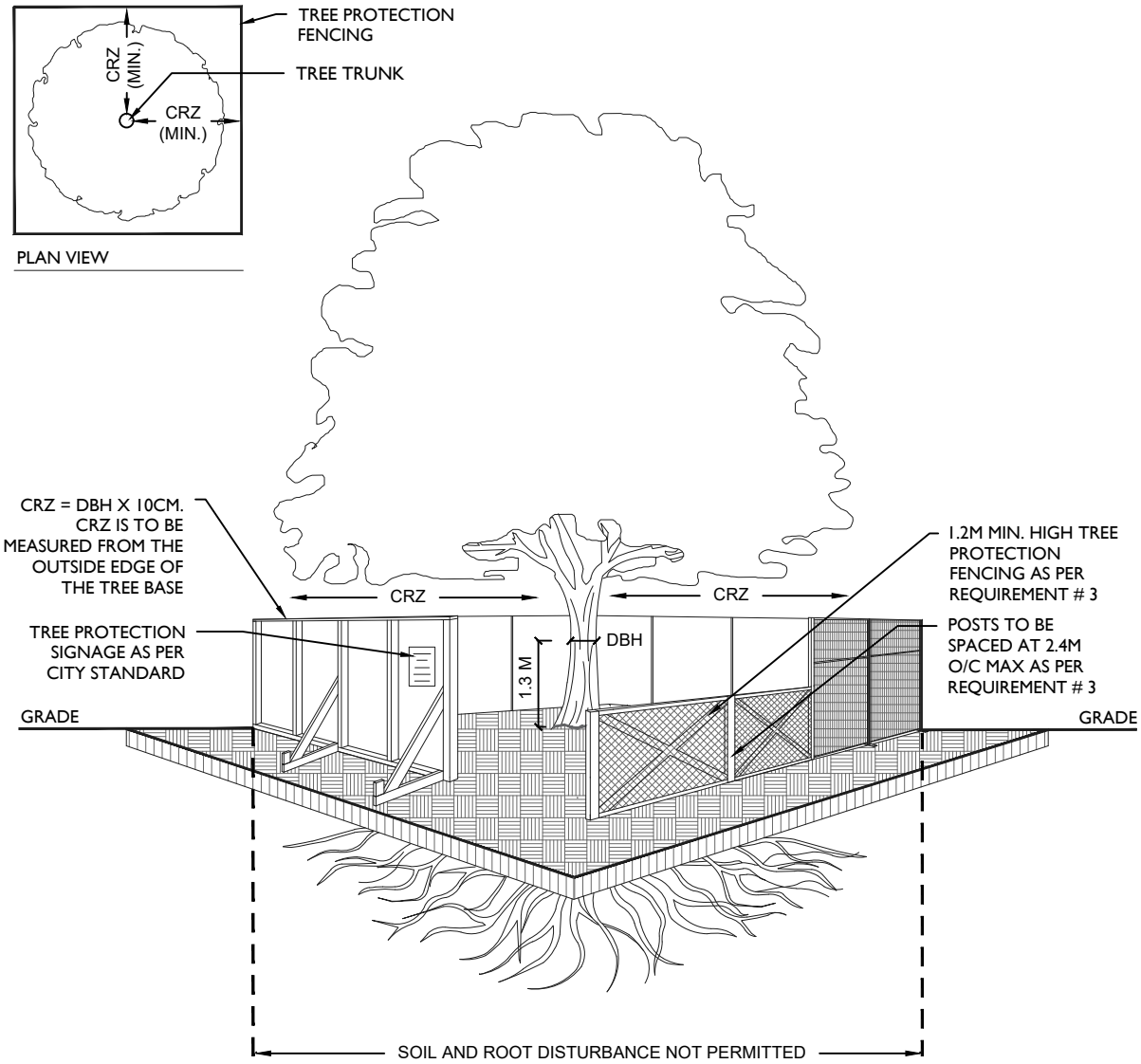
Project No: 201-03048-00

BHA Report: 735-004

APPENDIX

F

CITY OF OTTAWA TREE PROTECTION SPECIFICATIONS



TREE PROTECTION REQUIREMENTS:

1. PRIOR TO ANY WORK ACTIVITY WITHIN THE CRITICAL ROOT ZONE (CRZ = 10 X DIAMETER) OF A TREE, TREE PROTECTION FENCING MUST BE INSTALLED SURROUNDING THE CRITICAL ROOT ZONE, AND REMAIN IN PLACE UNTIL THE WORK IS COMPLETE.
2. UNLESS PLANS ARE APPROVED BY CITY FORESTRY STAFF, FOR WORK WITHIN THE CRZ:
   - DO NOT PLACE ANY MATERIAL OR EQUIPMENT - INCLUDING OUTHOUSES;
   - DO NOT ATTACH ANY SIGNS, NOTICES OR POSTERS TO ANY TREE;
   - DO NOT RAISE OR LOWER THE EXISTING GRADE;
   - TUNNEL OR BORE WHEN DIGGING;
   - DO NOT DAMAGE THE ROOT SYSTEM, TRUNK, OR BRANCHES OR ANY TREE;
   - ENSURE THAT EXHAUST FUMES FROM ALL EQUIPMENT ARE NOT DIRECTED TOWARD ANY TREE CANOPY.
   - DO NOT EXTEND HARD SURFACE OR SIGNIFICANTLY CHANGE LANDSCAPING
3. TREE PROTECTION FENCING MUST BE AT LEAST 1.2M IN HEIGHT, AND CONSTRUCTED OF RIGID OR FRAMED MATERIALS (E.G. MODULOC - STEEL, PLYWOOD HOARDING, OR SNOW FENCE ON A 2"X4" WOOD FRAME) WITH POSTS 2.4M APART, SUCH THAT THE FENCE LOCATION CANNOT BE ALTERED. ALL SUPPORTS AND BRACING MUST BE PLACED OUTSIDE OF THE CRZ, AND INSTALLATION MUST MINIMISE DAMAGE TO EXISTING ROOTS. (SEE DETAIL)
4. THE LOCATION OF THE TREE PROTECTION FENCING MUST BE DETERMINED BY AN ARBORIST AND DETAILED ON ANY ASSOCIATED PLANS FOR THE SITE (E.G. TREE CONSERVATION REPORT, TREE DISCLOSURE REPORT, ETC). THE PLAN AND CONSTRUCTED FENCING MUST BE APPROVED BY CITY FORESTRY STAFF PRIOR TO THE COMMENCEMENT OF WORK.
5. IF THE FENCED TREE PROTECTION AREA MUST BE REDUCED TO FACILITATE CONSTRUCTION, MITIGATION MEASURES MUST BE PRESCRIBED BY AN ARBORIST AND APPROVED BY CITY FORESTRY STAFF. THESE MAY INCLUDE THE PLACEMENT OF PLYWOOD, WOOD CHIPS, OR STEEL PLATING OVER THE ROOTS FOR PROTECTION OR THE PROPER PRUNING AND CARE OF ROOTS WHERE ENCOUNTERED.

BY-LAWS

ALL CITY-OWNED TREES ARE PROTECTED UNDER THE MUNICIPAL TREES AND NATURAL AREAS PROTECTION BY-LAW (2006-279). WITHIN THE URBAN AREA, PRIVATELY-OWNED TREES GREATER THAN 50CM DIAMETER ON LOTS 1HA IN SIZE OR LESS, AND TREES GREATER THAN 10CM DIAMETER ON LOTS >1HA, ARE PROTECTED UNDER THE URBAN TREE CONSERVATION BY-LAW (2009-200).

ACCESSIBLE FORMATS AND COMMUNICATION SUPPORTS ARE AVAILABLE, UPON REQUEST

Ottawa

TREE PROTECTION SPECIFICATION

TO BE IMPLEMENTED FOR RETAINED TREES, BOTH ON SITE AND ON ADJACENT SITES, PRIOR TO ANY TREE REMOVAL OR SITE WORKS AND MAINTAINED FOR THE DURATION OF WORK ACTIVITIES ON SITE.

SCALE:	NTS
DATE:	MAY 2019
DRAWING NO.:	1 of 1

APPENDIX

G CURRICULUM VITAE

ANDREA ORR, B.Sc.

Terrestrial Ecologist, Environment - Ecology

Areas of practice

Forest and Plant Ecology

Ornithology

Wetland Evaluation

Wildlife Habitat Assessment

Species at Risk legislation

PROFILE

Andrea Orr is a Terrestrial Ecologist who has gained experience and knowledge of ecosystem monitoring techniques and natural heritage field investigations for multiple projects across a variety of development sectors including; transportation, renewable energy, and oil/gas.

As Terrestrial Lead for many projects, Andrea is adept with the ecological components necessary to complete Class Environmental Assessments, Environmental Impact Statements, and Renewable Energy Approvals. She has demonstrated knowledge and experience of federal and provincial acts: *Species at Risk Act*, *Endangered Species Act*, and *Migratory Bird Convention Act*.

Andrea specializes in forest and plant ecology, ornithology, and wildlife habitat assessments. Andrea is certified in the Ontario Ministry of Natural Resources and Forestry (MNRF) Ecological Land Classification (ELC), Ontario Wetland Evaluation System (OWES) and is a certified Butternut Health Assessor (BHA). Her experience ranges from conducting various forestry practices; botanical inventories; soil analysis; entomological surveys; bat habitat assessments and acoustic monitoring; migratory and avian surveys; as well as various Species at Risk (SAR) target surveys and permitting applications.

EDUCATION

Biology and Environmental Studies, B.Sc., Trent University	2008
Forestry Technician, Diploma, Sir Sandford Fleming College	2003

PROFESSIONAL DEVELOPMENT

CPR and First Aid, St. John Ambulance	2019
Butternut Health Assessor, Ministry of the Environment, Conservation and Parks	2019
Ontario Wetland Evaluation System, Ministry of Natural Resources and Forestry	2018
Ecological Land Classification, Ministry of Natural Resources and Forestry	2012

PROFESSIONAL ASSOCIATIONS

Mississippi Valley Field Naturalists	MVFN
Field Botanists of Ontario	FBO
Ontario Field Ornithologists	OFO

CAREER

Terrestrial Ecologist, Environment - Ecology, WSP	2019 – Present
Senior Environmental Scientist, Planning, Parsons Corporation, Ottawa, Ontario, Canada	2017 – 2019

Terrestrial Ecologist, Ecology, Stantec Inc., Stoney Creek, Ontario, Canada	2012 - 2017
Natural Areas Inventory Assistant. Credit Valley Conservation, Mississauga, Ontario, Canada	2011 - 2012
Biologist, Renewable Energy, M.K. Ince and Associates Ltd., Dundas, Ontario, Canada	2008 - 2009

PROFESSIONAL EXPERIENCE

Renewable Energy

- Energy Services Modernization Project: Energy Services Acquisition Program, Ottawa, Ontario, Canada (2019): Terrestrial Ecology Lead. Coordinated and scheduled natural heritage field program, which included Ecological Land Classification (ELC), tree inventory, wildlife habitat assessment, breeding bird survey, amphibian breeding survey. Author to the Natural Environment Existing Conditions and Impact Assessment Report that included data analysis and interpretation. Liaised with government agencies on a municipal, provincial, and federal level. Also coordinated and executed permitting applications related to Species at Risk. Client: Public Services and Procurement Canada.
- Port Dover and Nanticoke Wind Project, Haldimand and Norfolk County, Ontario, Canada (2015): Terrestrial Ecologist. Conducted post-construction monitoring of tundra swan migration, amphibian call counts, Bald Eagle (SAR) nest monitoring, and mortality monitoring at turbines (i.e. searcher efficiency trials). Client: Capital Power Corporation.
- Amherst Island Wind Energy Project, Lennox and Addington County, Ontario, Canada (2014): Terrestrial Ecologist. Conducted pre-construction field investigations as part of the Natural Heritage Assessment process. Corresponding field surveys included; weekly winter raptor searches that consisted of driving surveys with point counts, walking surveys with transects to detect Short-eared Owl roosts, and dusk surveys to target active Short-eared Owls. Client: Algonquin Power/Windlectric.
- Boralex
  - Port Ryerse Wind Farm, Haldimand and Norfolk County, Ontario, Canada (2014): Terrestrial Ecologist. Conducted pre-construction field investigations as part of the Natural Heritage Assessment process. Corresponding field surveys included; Bald Eagle (SAR) nest monitoring throughout the breeding and brood rearing process.
  - Niagara Region Wind Corporation, Niagara Region and Haldimand County, Ontario, Canada (2013): Terrestrial Ecologist. Conducted pre-construction field investigations as part of the Natural Heritage Assessment process. Corresponding field surveys included, snake hibernacula observations and Species at Risk identification, bat maternity colony assessments, landbird fall migration surveys, and turtle overwintering habitat assessment for Species at Risk.
- Grand Valley Wind Project, Phase 3, Dufferin County, Ontario, Canada (2013): Terrestrial Ecologist. Conducted and coordinated various aspects of the Natural Heritage Assessment process. Including field program coordination, data analysis and contributing author to the Natural Heritage Assessment/Environmental Impact

Study report. Author to the Evaluation of Significance Addendum report. Field surveys included; ELC and mapping, significant wildlife habitat assessment, waterfowl migration and nesting, Species at Risk Butler's Gartersnake cover-board surveys, Species at Risk Bobolink and Eastern Meadowlark breeding bird surveys, and bat maternity colony surveys. Aboriginal consultation and relations with Saugeen-Ojibway Nation was also provided during site-walk visit. Client: Veresen Inc.

- Napier Wind Project, Middlesex County, Ontario, Canada (2012): Terrestrial Ecologist. Agency liaison with MNR included provision of comments regarding Species at Risk report, with focus on wildlife biology and habitat assessment. Client: wpd Canada Corporation.
- Grand Renewable Energy Park, Haldimand County, Ontario, Canada (2012): Terrestrial Ecologist. Managed and conducted terrestrial field surveys which included wetland delineation and mapping, and spring/fall landbird migration surveys. Author to the subsequent Pre-Construction Monitoring Bird Report, which included field data analysis and interpretation. In 2014, participated in environmental monitoring and bird nest sweeps during construction. Client: Samsung Renewable Energy.

Transportation

- Confederation Line Extension Light Rail Transit Project, Ottawa, Ontario, Canada (2019): Terrestrial Ecologist. This second phase is to extend the 26-km light rail service under construction from Tunney's Pasture Station to two terminal stations, Moodie and Baseline on two different branches in the West, and Blair Station to a new station, Trim Terminal in the East. Conducted tree inventory, bird nest searches and bat acoustic monitoring while provided subsequent memos of survey results and mitigation measures. Client: City of Ottawa in Public-Private Partnership.
- City of Ottawa
  - Barrhaven Light Rail Transit and Rail Grade-Separations Environmental Assessment, Ottawa, Ontario, Canada (2019): Senior Environmental Scientist. Coordinated and performed field investigations of ELC and breeding bird surveys. Author to the Natural Environment Existing Conditions Report. Analyzed and incorporated field data into the above report, while providing an assessment for potential impacts to Species at Risk and mitigation measures.
  - Leitrim Road Realignment and Widening Environmental Assessment, Ottawa, Ontario, Canada (2018): Senior Environmental Scientist. Contributing author to the Natural Sciences Existing Conditions Report. Provided an assessment of significant wildlife habitat based on previous field studies.
  - Kanata Light Rail Transit Environmental Assessment, Ottawa, Ontario, Canada (2018): Senior Environmental Scientist. Coordinated and performed field investigations of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification, analysis of habitat suitability and mitigation measures. Contributing author to the Natural Environment Existing Conditions Report. Analyzed and incorporated field data into the above report, while providing an assessment for potential impacts to Species at Risk and mitigation measures.
  - Baseline Road Bus Rapid Transit Corridor, Ottawa, Ontario, Canada (2017): Senior Environmental Scientist. Coordinated and performed field investigations

for Species at Risk screening, which included identification, analysis of habitat suitability and mitigation measures. Co-author to the Natural Environment Overview Report. Analyzed and incorporated field data into the above report, while providing an assessment for potential impacts to Species at Risk and mitigation measures.

  - Slater/Albert/Bronson Street Renewals, Ottawa, Ontario, Canada (2017): Senior Environmental Scientist. Performed field investigations of ELC and mapping, tree inventory, and Species at Risk identification, analysis of habitat suitability and mitigation measures. Author to the Natural Environment Existing Conditions Report. Analyzed and incorporated field data into the above report, while providing an assessment for potential impacts to Species at Risk and mitigation measures.
  - Earl Armstrong Road Extension Environmental Assessment, Ottawa, Ontario, Canada (2018): Senior Environmental Scientist. Coordinated and performed field investigations of ELC, soil analysis, and delineation mapping; amphibian call surveys; breeding bird and marsh bird call-back surveys to identify sensitive species; significant wildlife habitat assessment; and Species at Risk identification and habitat suitability assessment. Author to the Natural Environment Overview Report, with a subsequent technical memorandum summarizing field investigation methodologies and results.

- Metrolinx
  - Metrolinx Regional Express Rail – Lakeshore West Infrastructure Improvements, Greater Toronto Area, Ontario, Canada (2018): Coordinated and performed field investigations of ELC and delineation mapping; tree inventories; amphibian call surveys; breeding bird surveys; significant wildlife habitat assessment; and Species at Risk identification and habitat suitability analysis. Contributing author to numerous Natural Environment Screening Memorandums. Analyzed and incorporated field data into the above reports where Species at Risk impacts were also assessed, and mitigation measures developed if applicable.
  - GO Transit Hamilton Expansion – CN Yard Track Expansion, Hamilton, Ontario, Canada (2014): Terrestrial Ecologist. Contributing author to the Environmental Evaluation Report and performed the corresponding field investigations of ELC, mapping, and significant wildlife habitat assessments. Background information, identification, and mitigation for Species at Risk was also provided and incorporated into the above report.
- Dundas Street (Regional Road 5) Widening, Brant Street to Bronte Road, City of Burlington/Town of Oakville, Ontario, Canada (2017): Lead Terrestrial Ecologist. Coordinated and performed field investigations of bat habitat assessment for significant wildlife habitat and Species at Risk habitat using accepted MNRF protocols for cavity tree presence and acoustic monitoring. Client: City of Burlington.
- Ministry of Transportation Ontario (MTO)
  - Highway 401 Reconstruction Chatham-Kent Part B, Contract 2, Southwestern Ontario, Canada (2015): Lead Terrestrial Ecologist. Coordinated and performed field investigations of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification and mitigation for detailed design. Author to the corresponding report of Terrestrial Ecosystems Existing Conditions and

Impact Assessment. Author to the Species at Risk Mitigation Plan required by policy under the *Endangered Species Act*.

- Highway 400 North Canal Rehabilitation, Holland Marsh, Simcoe County, Ontario, Canada (2015): Terrestrial Ecologist. Coordinated and performed field investigations of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification and mitigation.
- Mega Culverts Rehabilitation/Replacement Contract 3, Southwestern Ontario, Canada (2014): Lead Terrestrial Ecologist. Coordinated and performed field investigations of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification and mitigation. Author to the Terrestrial Ecosystems Existing Conditions and Impact Assessment Report. Analyzed and incorporated field data into the above report, while providing an assessment for habitat suitability for species at risk occurring within the study area.
- Highway 17 and Highway 101 Rehabilitation, Wawa, Ontario, Canada (2014): Lead Terrestrial Ecologist. Author to the Terrestrial Ecosystems Existing Conditions and Impact Assessment Report – Detail Design. Coordinated the corresponding field program and performed field surveys of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification and mitigation. Field data was then analyzed and incorporated into the above report.
- Highway 3 from Carter Road to John Road, Elgin and Oxford County, Ontario, Canada (2014): Lead Terrestrial Ecologist. Author to the Terrestrial Ecosystems Existing Conditions and Impact Assessment Report – Detailed Design. Coordinated the corresponding field program and performed field surveys of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification and mitigation. Field data was then analyzed and incorporated into the above report.
- Highway 401 from Hespeler Road to Townline Road, Cambridge, Ontario, Canada (2014): Lead Terrestrial Ecologist. Coordinated and performed field investigations of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification and mitigation for detailed design.
- Highway 401 Reconstruction Chatham-Kent Part A, Contract 1, Southwestern Ontario, Canada (2014): Lead Terrestrial Ecologist. Coordinated and performed field investigations of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification and mitigation for detailed design. Author to the corresponding report of Terrestrial Ecosystems Existing Conditions and Impact Assessment. Author to the Species at Risk Mitigation Plan required by policy under the *Endangered Species Act.*
- Mega Culverts Rehabilitation/Replacement Contract 2, Southwestern Ontario, Canada (2013): Lead Terrestrial Ecologist. Author to the Terrestrial Ecosystems Existing Conditions and Impact Assessment Report. Analyzed and incorporated field data into the above report, while providing an assessment for habitat suitability for species at risk occurring within the study area.
- Highway 17B CNR Overhead Bridge and Highway 17B Resurfacing, North Bay, Ontario, Canada (2013): Terrestrial Ecologist. Author to the Terrestrial Ecosystems Existing Conditions and Impact Assessment Report. Performed the corresponding field surveys of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification and mitigation. Field data was then analyzed and incorporated into the above report. Consultation and

engagement to Nipissing First Nations was also provided at time of field investigations.

- Highway 11 Chippewa Creek Bridge and Duchesnay Creek Bridge Replacement/Rehabilitation, North Bay, Ontario, Canada (2013): Terrestrial Ecologist. Author to the Terrestrial Ecosystems Existing Conditions and Impact Assessment Report. Performed the corresponding field surveys of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification and mitigation. Field Data was then analyzed and incorporated into the above report.
- Holland Drain Canal Bridge Replacement on Highway 9, Ontario, Canada (2012): Terrestrial Ecologist. Contributing author to Existing Conditions and Impact Assessment reports. Performed ELC community classification and mapping, and Species at Risk identification and mitigation, as well as field data analysis and reporting.
- Highway 7 and 35 Structure Replacement/Rehabilitation, Ontario, Canada (2012): Terrestrial Ecologist. Contributing author to Existing Conditions and Impact Assessment reports. Performed ELC community classification and mapping, and Species at Risk identification and mitigation, as well as field data analysis and reporting.
- Highway 6/10 from Chatsworth to Owen Sound, Ontario, Canada (2012): Terrestrial Ecologist. Contributing author to Existing Conditions and Impact Assessment reports. Performed ELC community classification and mapping, and Species at Risk identification and mitigation, as well as field data analysis and reporting.

- New North Oakville Transportation Corridor, Halton Region, Ontario, Canada (2013). Terrestrial Ecologist. Assessed Species at Risk Bobolink and Eastern Meadowlark breeding habitat and created survey protocol based on findings. Bobolink and Eastern Meadowlark surveys were conducted with subsequent data analysis and mapping. Client: Town of Oakville.

Restoration, Remediation and Redevelopment

- Kizell Wetland Trail: Species at Risk Authorizations, Kanata, Ontario, Canada (2019): Terrestrial Ecologist. Conducted field work to identified Species at Risk (SAR) Butternut trees that may be impacted/avoided by a pedestrian trail network. Client: City of Ottawa.
- Georgia Pacific
  - Restoration and Vegetation Monitoring of Former Spill Pond, Thorold, Ontario, Canada (2016): Terrestrial Ecologist. Author to the 2016 Vegetation Monitoring and Adaptive Management report. Survivorship data of vegetation was analyzed and incorporated into the above report recommendations of a watering and tending program.
  - Annual Monitoring and Adaptive Management of Beaverdams Channel, Thorold, Ontario, Canada (2013): Terrestrial Ecologist. Author to the 2013 Annual Monitoring and Adaptive Management Report and performed the corresponding field investigations of spring and summer vegetation restoration monitoring. Survivorship data of vegetation was collected, analyzed, and incorporated into the above report with invasive species management recommendations.

Utilities, Oil and Gas Pipelines

- Utility Line Rebuilt: Boundary Road and Highway 401, Cornwall, Ontario, Canada (2019): Terrestrial Ecologist. Coordinated and conducted ecological wildlife habitat assessment to identify the potential for Species at Risk. Author to the subsequent Species at Risk Screening report. Client: Cornwall Electric.
- Energy East Pipeline, Ontario, Canada (2015): Terrestrial Ecologist. Coordinated and prepared field packages/itinerary for vegetation and wildlife surveys from Kenora to Cornwall, Ontario. Performed gap analysis of ELC using ArcGIS and aerial photography to determine survey locations, level of effort, and species at risk analysis. Client: TransCanada Corporation.
- Enbridge Inc.
  - Spencer Creek Pipeline Repair, Flamborough, Ontario, Canada (2014): Terrestrial Ecologist. Conducted field investigations of summer botanical inventory, with a subsequent technical memo. This involved data collected, mitigation measures for regionally rare species, and restoration.
  - Integrity Digs – Line 9 between Hilton and Westover, Mississauga, Pickering, Hamilton, Oakville, Ontario, Canada (2013): Terrestrial Ecologist. Conducted tree inventory surveys in various locations along the Line 9 Pipeline. Identified Species at Risk (SAR) Butternut trees and any mid-age to mature trees that may be impacted. Also conducted significant wildlife habitat and turtle habitat assessments. Complete botanical inventories were also conducted at some sites with emphasis on locating regionally rare plant species within the construction area. Technical memos were then created based on findings and mitigation measures were provided as needed. Mitigation measures performed involved transplanting rare plants and ensuring their survival.
- Woodbine and Cedar Ridge Road Exposure, Gormley, Ontario, Canada (2013): Terrestrial Ecologist. Conducted field investigations of ELC and mapping, significant wildlife habitat assessment, and Species at Risk identification and mitigation. A technical memo was then prepared. Client: Union Gas Limited.

Land Development

- Potter's Key Development, Stittsville, Ontario, Canada (2019): Terrestrial Ecologist. Conducted annual spring and summer vegetation restoration monitoring. Survivorship data of vegetation was collected by following a modified version of the Ecological Monitoring and Assessment Network (EMAN) protocol. Client: The Minto Group Inc.
- 760 River Road Residential Development Project, Ottawa, Ontario, Canada (2019): Terrestrial Ecologist. Coordinated and performed natural heritage field program, which consisted of ELC, tree inventory, breeding bird survey, amphibian breeding survey, bat acoustic monitoring, and wildlife habitat assessments. Author to the Environmental Impact Statement and Tree Conservation Report, which included data analysis and interpretation, significant wildlife habitat assessment, Species at Risk screening, impact assessment and mitigation measures. Client: Claridge Homes.
- 3596 Old Montreal Road: Orleans Spa Development Project, Ottawa, Ontario, Canada (2019): Terrestrial Ecologist. Conducted ELC and tree inventory. Senior reviewer of the Environmental Impact Statement and Tree Conservation Report. Client: Azur Resort and Spa.

- Kanata North Lands Development, Kanata, Ottawa, Ontario, Canada (2019): Terrestrial Ecologist. Terrestrial Ecologist. Conducted Least Bittern call back survey and Butternut Health Assessment (BHA). Author to the subsequent BHA report. Client: KNL Developments Inc.

CODY PYTLAK, B.A., PG(ER)

Junior Ecologist, Environment

Areas of practice

Environmental Impact Assessment

Avian Surveys and Monitoring

Species at Risk Surveys

Terrestrial and Aquatic Surveys

Environmental Restoration

Geographic Information Systems

Spatial Analysis

Research and Communications

Languages

English

PROFILE

Cody Pytlak, B.A., is a junior ecologist with four years of experience in the environmental sector and has developed a specialization in ornithology. Within the National Capital Region, Cody has performed wildlife surveys and habitat assessments for breeding birds, marsh birds, amphibians, reptiles, and mammals, as well as targeted Species at Risk surveys such as Bobolink, Eastern Meadowlark, Least Bittern, Barn Swallow, and Blanding's Turtle. He also has experience in evaluating Significant Wildlife Habitat and natural heritage features. Cody has led and contributed to tree inventories, aquatic habitat assessments and fish sampling, as well as construction monitoring. In addition to his field skills, Cody has experience producing Environmental Impact Statements and Tree Conservation Reports, habitat restoration plans as well as environmental management and monitoring plans.

He holds graduate certificates from Niagara College in Ecosystem Restoration and Geographic Information Systems: Geospatial Management, and a Bachelor of Arts degree in Journalism from Wilfrid Laurier University.

In addition to his experience with WSP, Cody has helped lead and participate in several provincial monitoring projects across Canada. This includes assessing wetland bird populations in Atlantic Canada and conducting biodiversity surveys in Alberta. He has used his GIS knowledge to perform suitability analysis for vegetation restoration opportunities and to develop interactive web applications for both data collection and presentation. He has also assisted in researching and delivering recommendations for environmental, agricultural, and land-use policies for the Ontario Greenbelt.

EDUCATION

Geographic Information Systems: Geospatial Management Graduate Certificate, Niagara College	2018
Ecosystem Restoration Graduate Certificate, Niagara College	2014
Bachelor of Arts - Journalism, Wilfrid Laurier University	2011

CAREER

Junior Ecologist, Environment, WSP	2018 – Present
Marsh Monitoring Technician, Bird Studies Canada	2016, 2017
Communications Assistant, The Friends of the Greenbelt Foundation	2015
Field Technologist, Alberta Biodiversity Monitoring Institute	2014

PROFESSIONAL EXPERIENCE

Land Development

- Claridge Homes
  - 3252 Navan Road, Navan, Ontario, Canada (2019 to present): Technical ecology lead for an Environmental Impact Statement and Tree Conservation Report for a proposed residential development. Reviewed background resources completed tree inventories and wildlife surveys, and evaluated potential constraints and impacts. Developed mitigation recommendations and produced associated reporting and GIS mapping.

  - 1054 Hunt Club Road Retirement Residence, Ottawa, Ontario, Canada (2019): Project lead for carrying out bird nesting surveys to ensure project construction compliance with Migratory Birds Convention Act (1994) and providing mitigation recommendations to limit disturbance to nearby wildlife.
- 530 Tremblay Road, Ottawa, Ontario, Canada (2019): Ecologist for an Environmental Impact Statement for a proposed residential development located in Ottawa. Organized and completed initial field surveys for vegetation communities, wetlands, and Significant Wildlife Habitat. Identified preliminary natural heritage impacts, developed mitigation measures, and produced GIS mapping. Client: CLC Canada Lands Company.
- Lioness Development - Kemptville, Ontario, Canada (2019): Ecologist supporting the development of a wetland compensation plan. Reviewed background studies, identified compensation requirements and suitable habitat features, and produced associated reporting. Client: Lioness Developments Inc.
- Azur Health Spa, Orleans, Ontario, Canada (2019): Ecologist for an Environmental Impact Statement and Tree Conservation Report for a development located in Cumberland. Organized and carried out surveys for breeding birds and Species at Risk birds, amphibian surveys, and acoustic bat monitoring and habitat assessments. Identified and evaluated natural heritage impacts and proposed mitigation. Reports were produced following the City of Ottawa guidelines. Client: Azur Resort & Spa.
- Riverside South Phase 12, Ottawa, Ontario, Canada (2019): Lead field ecologist for an Environmental Impact Statement addendum for a residential development property in southern Ottawa. Surveys for Species at Risk (Bobolink, Blanding's Turtle) were completed and impacts were evaluated. Mitigation measures and management recommendations were developed to address the identified environmental impacts with the proposed development. Client: Riverside South Development Corporation.
- Minto Communities
  - Minto Harmony Mion Parcel, Ottawa, Ontario, Canada (2019): Ecologist for the Environmental Impact Statement and Tree Conservation Report for a proposed residential development in Barrhaven. Completed terrestrial and aquatic field surveys and assessed impacts based on anticipated project design. Proposed recommendations and mitigation to limit adverse impacts. Prepared technical report and figures for submission to client. Reports were completed following the City of Ottawa guidelines.
  - SAR Permit Implementation and Monitoring, Potter's Key Development, Stittsville, Ontario, Canada (2018 to Present): Junior ecologist for environmental monitoring required under a Species at Risk Overall Benefits Permit for Blanding's Turtle. Daily responsibilities include monitoring of mitigation measures, habitat enhancement monitoring, species surveys, environmental awareness training, species relocations, and associated reporting.
- SAR Permit Implementation and Monitoring, Ottawa, Ontario, Canada (2018 to Present): Junior ecologist responsible for the environmental monitoring required under a Species at Risk Overall Benefits Permit for Blanding's Turtle, Least Bittern, and Butternut. Daily responsibilities include monitoring of mitigation measures, habitat enhancement monitoring, species surveys, environmental awareness training, species relocations, and associated reporting. Client: KNL Developments.

- Environmental Impact Statement, 800 Eagleson Road Development, Kanata, Ontario, Canada (2018): Junior ecologist for an Environmental Impact Statement for a proposed development in Kanata. Responsible for conducting avian and amphibian field surveys, GIS mapping, and contributing to reporting. Client: Ironclad Developments Inc.
- EIS Addendum, Carleton Place, Ontario, Canada (2018): Junior ecologist assisting primarily with development of field data mapping and producing required reporting for the natural heritage compliance requirements supporting a multi-phase residential/retirement complex located on McArthur Island within the Mississippi River. Client: McArthur Island Developments.
- SAR Habitat Assessment, Kingston Provincial Campus, Kingston, Ontario, Canada (2018): Junior ecologist for a SAR habitat assessment for SAR Bats and Barn Swallow for Kingston Provincial Campus buildings. Responsibilities include field survey coordination, conducting habitat assessments and surveys for SAR, field data mapping, and report writing. Client: Colliers Project Leaders Inc.

Infrastructure

- Ottawa Light Rail Transit Confederation Line Extension, Ontario, Canada (2019 to Present): Junior ecologist for City of Ottawa's LRT Confederation Line extension. Produced tree inventories, carried out migratory bird nest searches, assisted with tree protection implementation, and contributed to Environmental Impact Statements. Client: City of Ottawa in Public-Private Partnership.
- Public Services and Procurement Canada
  - Energy Services Acquisitions Program/Energy Services Modernization Project, Ottawa, Ontario, Canada (2018 to Present): Led background screening searches and reporting for Species at Risk and natural heritage features and produced natural heritage inventory mapping.
  - Centre Block Rehabilitation, Ottawa, Ontario, Canada (2018) Performed ecological surveys for wildlife and vegetation, and Species-at-Risk habitat assessments at Centre Block and surrounding area. Assisted with field survey coordination, report writing, environmental awareness training, construction monitoring, and mitigation implementation
- Hydro One HPFF Cable Replacement, Ottawa, Ontario, Canada (2019): Junior ecologist for existing conditions and arborist reports for the replacement of underground cables in the Lincoln Fields area. Field assessments include documenting vegetation communities, inventorying trees, and identifying Species at Risk habitat and other natural heritage feature constraints. Client: Hydro One Networks Inc.
- Sir John A. Macdonald Parkway Ramp-E Replacement, Ottawa, Ontario, Canada (2019): Junior ecologist for ecological assessment and environmental approvals required for the replacement of a bridge on the Sir John A. Macdonald Parkway. Responsible for coordinating field surveys, conducting field surveys for SAR (Butternut, Barn Swallow, Snapping Turtle, and Eastern Milksnake) and natural heritage features, organizing digital field data collection tools and methods, GIS mapping, and report writing. Client: National Capital Commission.
- West Transitway Extension – Phases I & II, Ottawa, Ontario, Canada (2018 to Present): Junior ecologist for post-construction monitoring of the Stillwater Creek realignment required for the West Transitway Extension project. Responsible for conducting avian and amphibian surveys, ELC and vegetation transect surveys,

aquatic habitat monitoring, field scheduling, producing annual monitoring reports, and associated mapping. Client: City of Ottawa.

Transportation

- National Road Ecology Guidelines, Ottawa, Ontario, Canada (2019 to Present): Junior ecologist for the development of national road ecology standards and guidelines. Responsible for literature review of case studies pertaining to wildlife passages, collision avoidance and mitigation, ice road maintenance, and roadside pollinator habitats. Client: Transportation Association of Canada.
- Highway 17 Culvert Replacements, Renfrew, Ontario, Canada (2019): Lead field biologist for terrestrial and aquatic habitat assessments surrounding 45 non-structural culverts along Highway 17. Assessments included documenting vegetation communities, identifying candidate Species at Risk habitat, and evaluating aquatic and fish habitat conditions. Client: Ontario Ministry of Transportation.

Natural Resources Studies

- Kizell Wetland Trail - SAR Authorizations, Ottawa, Ontario, Canada (2019): Junior ecologist for the Species at Risk authorizations required for the construction of a pedestrian trail network within the conservation forest around the Kizell wetland in Kanata. Responsibilities include spatial analysis of Species at Risk habitats and the proposed trail network. Client: City of Ottawa.
- Guelph Christmas Bird Count: Interactive Web Map, Niagara-on-the-Lake, Ontario, Canada (2018): Project manager for a professional development project with Niagara College and Environment Canada. The project was aimed at developing an interactive web application to allow users to access and view historical Christmas Bird Count data from the Guelph region. Responsibilities included proposal development, budget and schedule management, client meetings, data collection and management, the development of the web application, and report writing. Client: Canadian Wildlife Service.
- Maritimes Marsh Monitoring Program, Sackville, New Brunswick, Canada (2016, 2017): Served as a field technician for the Maritimes Marsh Monitoring Program. This program is used to track and monitor the status and health of wetland birds and wetland habitat in Atlantic Canada. Led avian field surveys in freshwater and saltwater wetlands, deployed automatic recording units, conducted habitat assessments, and reported data and findings to the program manager. Client: Bird Studies Canada.
- Alberta Biodiversity Monitoring Program, Grande Prairie, Alberta, Canada (2014): Served as a field technologist for completing biodiversity surveys in boreal and prairie ecosystems in northern and central Alberta. Client: Alberta Biodiversity Monitoring Institute.

JULIE TRUS, B.Sc. Envs., PG(ET)

Junior Ecologist, Environment

Areas of Practice

Forest and Plant Ecology

Benthic Invertebrate Monitoring

Soil Science

Languages

English

French (basic)

PROFILE

Julie Trus is a Junior Ecologist who has gained most of her experience conducting research in Canada's Boreal forest. She has recently gained environmental consulting experience by conducting vegetation surveys, wildlife monitoring, and construction monitoring.

With academic experience conducting and reporting on Environmental Assessments, Contaminated Site Assessments, Environmental Impact Assessments as well as scientific writing, Julie has excellent writing skills. As contributing author to various environmental assessments, she has become familiar with various pieces of legislature, such as the *Species at Risk Act*, the *Endangered Species Act*, the *Ontario Provincial Policy Statement*, and *By-Law No. 2009-200* which outlines tree protection requirements in the City of Ottawa.

Julie holds both a bachelor's degree in Environmental Science from the University of Guelph as well as an Environmental Technician diploma from Algonquin College, Pembroke. During these academic pursuits, she has gained significant skills in technical and scientific writing, data analysis, and proficiency in the statistical software R. She is certified in Ontario Benthic Biomonitoring Network (OBBN). Her experience is focused on boreal plant and soil analysis and identification, but also extends into plant and soil surveys in southern and central Ontario.

EDUCATION

Bachelor of Environmental Science, Major in Ecology, University of Guelph	2019
Diploma, Environmental Technician, Algonquin College	2014
Secondary School Bilingual Certificate, Nepean High School	2010

PROFESSIONAL DEVELOPMENT

Ontario Benthic Biomonitoring Network, St. Lawrence River Institute	2019
First Aid and CPR C, Canadian Red Cross	2018
Introduction to Professional Chainsaw Operation Certified, MTCU	2014
Pleasure Craft Operator, Government of Canada	2013
Boom and Scissor Lift Operator & Fall and Safety Arrest Certified, Battlefield & CAT Rental Store	2013

AWARDS

Dean's Honour List – University of Guelph Maintained above 80% average with full-time course load	2016-2019
Dean's Honour List – Algonquin College Maintained above 80% average with full-time course load	2013-2014

PROFESSIONAL ASSOCIATIONS

Ontario Benthic Biomonitoring Network (OBBN)	2019

JULIE TRUS, B.Sc. Envs., PG(ET)

Junior Ecologist, Environment

CAREER

Junior Ecologist, Environment – Ecology, WSP	December 2019 – Present
Ecology Technician, Environment – Ecology, WSP	June 2019 – December 2019
Undergraduate Research Assistant, Department of Integrative Biology, University of Guelph, Ontario, Canada	2016 – 2019

PROFESSIONAL EXPERIENCE

Restoration

- Potter's Key, Ottawa, Ontario, Canada (2019): Ecology Technician. Conducted weekly wildlife monitoring, and bi-monthly permanent fence monitoring. Reported results in weekly and bi-monthly memos. Conducted post-restoration vegetation surveys per protocols outlined in Ecological Monitoring and Assessment Network (EMAN). Client: Minto Communities
- Parliament Hill Slope Management, Ottawa, Ontario, Canada (2020): Junior Ecologist. Researched and supported restoration plan of Parliament Hill slope. Client: VLAN Paysages.

Development

- 1009 Trim Road, Ottawa, Ontario, Canada (2020): Junior Ecologist. Compiled and updated Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) proposal. Client: Internal, WSP Canada Inc.
- Confederation Line Extension Project, Ottawa, Ontario, Canada (2019-2020): Ecology Technician/Junior Ecologist. Researched and compiled draft of Invasive Species Management Plan, compiled EIS memos. Client: EWC Designers
- Limoges W-WW EA, Limoges, Ontario, Canada (2019): Ecology Technician. Provided technical support for Ecological Land Classification (ELC) surveys, and assessed wildlife habitat to inform ideal pipe alignment location for wastewater transportation. Client: City of Limoges
- Anderson Road Culvert Replacement, Ottawa, Ontario, Canada (2019): Ecology Technician. Provided biological assessment on turtle fencing being installed prior to culvert replacement. Client: W. H. MacSweyn Inc.
- River Road Culvert Replacement, Ottawa, Ontario, Canada (2019): Ecology Technician. Conducted weekly site visits, monitoring integrity of exclusion fencing and assessing incidental wildlife. Summarized monitoring results in weekly memos. Client: City of Ottawa
- Orleans Spa, Ottawa, Ontario, Canada (2019): Ecology Technician. Provided technical support for tree inventory prior to land development. Client: Inside Edge Properties
- Sir John A. Macdonald Parkway Project, Ottawa, Ontario, Canada (2019): Ecology Technician. Provided technical support for ELC surveys prior to realignment of the Parkway. Client: National Capital Commission (NCC)

- Kanata North Lands Development, Ottawa, Ontario, Canada (2019): Ecology Technician. Conducted weekly fence and wildlife monitoring to ensure compliance with legislation regarding wildlife protection during development. Summarized monitoring results in weekly memos. Client: Kanata North Lands Development Inc.
- 760 River Road EIS, Ottawa, Ontario, Canada (2019): Ecology Technician. Provided technical support for amphibian survey prior to residential site development. Client: Claridge Homes

Energy Services

- Energy Services Acquisition Program – Energy Service Modernization Project (ESAP), Ottawa, Ontario, Canada (2019-2020): Ecology Technician/Junior Ecologist. Conducted tree inventory monitoring including field work planning and tree identification, as well as wildlife habitat assessments. Developed TCR. Client: Public Works and Government Services Canada

Ecosystem Analysis

- Turetsky Lab, Guelph, Ontario, Canada (2016-2019): Undergraduate Research Assistant. Collected data regarding post-fire vascular and non-vascular plant community regeneration, soil structure and permafrost recovery, and carbon storage potential for areas of Canadian Boreal forest that experienced severe burning in the 2015 fires. Led the soil sampling component of the research for the 2016 and most of the 2018 field seasons. Processed soil samples for lab analysis. Developed and executed soil sampling procedures for wetlands associated with Alternative Land Use System (ALUS) in southern Ontario during summer 2017. Developed and executed data collection procedure for moss community research, analysed data, and wrote manuscript for undergraduate thesis

PUBLICATIONS AND PRESENTATIONS

Presentations

- Trus, Julie. “Biotic interactions of moss functional groups in post-fire sites of Canada’s Northwest Territories.” Ontario Ecology, Ethology and Evolution Conference, Hamilton, ON. May 2-4, 2019.

ALEXANDER ZELLER, M.Sc.

Senior Ecologist, Environment

Areas of practice

Environmental Impact Assessments

Environmental Policy and Approvals

Environmental Assessments

SAR Surveys and Permitting

Terrestrial and Aquatic Surveys

Spatial Ecology & GIS

Public Consultation

Indigenous Knowledge Consultation

Languages

English

PROFILE

Alexander is a Project Manager and Senior Ecologist with over seventeen years of professional experience in terrestrial and aquatic ecology, open space planning, and natural heritage authorizations. Alex has led and managed many challenging natural heritage projects throughout eastern Ontario and across Canada, including; land development projects, regional planning studies, environmental monitoring programs, environmental assessments, indigenous knowledge studies, and renewable energy authorizations. His broad knowledge of ecology, environmental policy, and agency consultation has proved a successful complement to multi-disciplined and large-scale environmental planning projects.

EDUCATION

Masters of Science in Biology, Lakehead University	2007
Honours Bachelor Environmental Science, Lakehead University	2003

PROFESSIONAL DEVELOPMENT

Supervisor/Management Training (University of Ottawa)	2019
Expert Witness Training (Gowlings, Toronto)	2015
Ecological Land Classification Certification (MNR)	2010

CAREER

Senior Ecologist, Environment, WSP (Ottawa, ON)	2018 – Present
Associate, Dillon Consulting Limited (Ottawa, ON)	2013 – 2018
Ecologist, Dillon Consulting Limited (Ottawa, ON)	2006 – 2013
Research Technician - Contract Positions, Ontario Ministry of Natural Resources and Forestry (Thunder Bay, ON)	2001 – 2006
Teaching Assistant – Geography and Biology Departments, Lakehead University (Thunder Bay, ON)	2003 – 2005

PROFESSIONAL EXPERIENCE

INFRASTRUCTURE

- Energy Services Acquisition Program, PSPC (2019 – Now): Lead Project Ecologist responsible for overseeing all ecological studies, reporting requirements, agency consultation, and associated permitting and authorizations required to facilitate the design and construction of 14 kilometers of district heating/cooling pipeline and associated plants.
- Centre Block Rehabilitation Project, PSPC (2018 - now): Lead Project Ecologist responsible for; all ecological studies, development and management mitigation and compensation measures, reporting requirements, and agency consultation required to facilitate the Centre Block Rehabilitation project, on Parliament Hill in Ottawa.

- Confederation Line Extension light rail, City of Ottawa (2019 – now): Lead Ecologist responsible for the implementing the established management recommendations and facilitating the outstanding permitting requirements to accommodate detail design phase of the project.
- West Transitway Extension, Phase 11 – Stillwater Creek, City of Ottawa (2018): Project manager and lead ecologist for the post-construction monitoring for the realignment of Stillwater Creek required to accommodate the West Transitway Extension. This project included; a species at risk screening, amphibian breeding surveys, breeding bird surveys, vegetation community inventories, fish community sampling, aquatic habitat assessment, water quality parameters, fluvial geomorphology studies.
- Riverview to Overbrook: transmission line upgrade, Hydro One (2016): Lead Ecologist for an Class Environmental Assessment in support of a transmission line upgrade between Overbrook and Riverview facilities in Ottawa. Alexander was responsible for coordinating and undertaking field surveys, participating in public consultation, reporting writing, impact assessment, and developing mitigation and avoidance measures.
- Innes Road Reinforcement Pipeline Project: Environmental Monitoring and Environmental Awareness Training, Enbridge Gas Distribution Inc. (2014-2016): Project manager and lead biologist for the Environmental monitoring and environmental awareness in support of the 2.8 km pipeline installation along Innes Road in Ottawa. This installation included 580m of horizontal directional drilling of NPS12 steel pipe under Highway 417. The project included the development and delivery of a bespoke environmental awareness training program and the on-going environmental monitoring during construction.
- Innes Road Reinforcement Pipeline Project: Environmental Assessment, Enbridge Gas Distribution Inc. (2014): Lead biologist for the class environmental assessment for the 2.8 km Enbridge Gas Distribution pipeline installation along Innes Road in Ottawa. Alexander was responsible for coordinating and undertaking biophysical field surveys, reporting writing, impact assessment, and developing mitigation and avoidance measures.
- Ottawa West Reinforcement Pipeline Environmental Assessment, Enbridge Gas Distribution Inc. (2011-2013): The local biologist for a multidisciplinary team of biologists, planners and engineers working on environmental and cumulative effects assessment for the installation of 20 km of 24-inch natural gas pipeline in Western Ottawa. Took over project management role for the construction phase of the project. This phase included the more detailed biophysical surveys to support environmental authorizations, pre- and post-construction water well monitoring, and development of a detailed mitigation strategy. These mitigation measures included; physical mitigation measures, environmental awareness training, daily on-site environmental monitoring, environmental compensation; and an assessment of agricultural crop loss and associated compensation.
- GTA Reinforcement Pipeline Environmental Assessment, Enbridge Gas Distribution Inc. (2011): Acting as both an ecologist and spatial analyst for a multidisciplinary team of biologists, planners, and engineers working on an environmental and cumulative effects assessment for the pipeline reinforcement in the Greater Toronto Area. Responsibilities include managing a majority of the GIS mapping pertaining to the three large study areas, conducting terrestrial biology surveys, and liaising with the client when required.

- Infrastructure Master Plan, Town of Perth (2009-2010): Completed the ecological assessment and natural heritage inventory for an infrastructure master plan in the Town of Perth. This study involved a full vegetation survey of the study area, identification of soils, observations of wildlife and detailed mapping of the existing ecosystems within the study area. Additional responsibilities included maintaining the GIS library, consulting with stakeholders and producing GIS figures for report.
- Truck Inspection Station Assessment, Ministry of Transportation, Ontario (2008): Completed the ecological assessment and resource inventories for nine different truck inspection stations throughout northern Ontario. This study involved a full vegetation survey of the study areas, identification of soils, observations of wildlife, detailed mapping of the existing ecosystems within the study areas and publishing all mapping for reports. Additional responsibilities included maintaining the GIS library, consulting with stakeholders and producing GIS figures for report.

LAND DEVELOPMENT

- 760 River Road, Claridge Homes Group of Companies (2019); Project manager and lead ecologist for the environmental impact statement and an Environmental Impact Statement and Tree Conservation Study for a development in south Ottawa. This study was completed in support of plan of subdivision for a residential development.
- 323 Jockvaile Road, Minto Communities (2018); Project manager and lead ecologist for the environmental impact statement and tree conservation report for a proposed residential development in the Barhaven Community. These reports were completed following the City of Ottawa guidelines.
- Riverview Lane, Urbandale Construction (2018 to mow): Project manager and lead ecologist for natural heritage approvals associated with a residential subdivision in Kemptville, Ontario. Scope of work included SAR authorizations, Fisheries authorizations, wetland design and restoration plans; watercourse and fish habitat design and plans, and general agency consultation.
- SAR Permit Implementation and Monitoring, KNL Developments (2017 to now): Project manager and lead biologist for the management and implementation of one of the most complex Species at Risk (SAR) permits issued in Ontario. Responsible for; establishing habitat creation plans, negotiating revisions to permit, coordination of environmental monitoring and species surveys, fisheries authorizations, design of habitat compensation features, consultation with relevant agencies and stakeholders, and all associated reporting and documentation.
- 800 Eagleson Road EIS and TCR, Ironclad Developments (2018): Project manager and lead ecologist responsible for completing an Environmental Impact Statement and Tree Conservation Study for a development in west Ottawa. The proposed project will consist of a six-story rental apartment building with approximately 150 units with access from Eagleson Road.
- Barrhaven South Community Design Plan, Minto (2015-2017): Project manager and lead biologist on the multi-disciplined consulting team undertaking the Barrhaven South Community Design Plan. Responsible for managing the natural heritage related studies, reports, and public consultation contributions. Also responsible for consulting with stakeholders to ensure the community design plan meets their expectations and requirements.
- Phase 12, 14, 15, and 16; Environmental Impact Statement, Riverside South Development Corporation (2014-2017): Project manager and lead biologist for a series of Environmental Impact Statements and Tree Conservation Studies for a

several primarily residential developments in southern Ottawa. Terrestrial and aquatic environments were evaluated and impacts assessed for each development. Mitigation measures and management recommendations were developed to address the identified environmental impacts associated with the proposed development.

- McArthur Island Developments, Carleton Place, ON (2015-now): Project manager and lead biologist for the natural heritage compliance requirements supporting a multi-phase residential/retirement complex located on McArthur Island within the Mississippi River. This project will include the redevelopment of an historic woollen mill and the construction of several other multi-story buildings. The scope of environmental services provided included Environmental Impact Studies and associated field surveys, arborist reports, specific wildlife surveys, and environmental compensation design.
- Clark Lands Development, Environmental Impact Statement, Minto (2013-2017): Project manager and lead biologist for an Environmental Impact Statement and Tree Conservation Study for a development in west Ottawa. This study was completed in support of plan of subdivision for a residential development.
- Potter's Key Development, Environmental Impact Statement, Minto (2013 to now): Project manager and lead biologist for an Environmental Impact Statement, Tree Conservation Report, Species at Risk Permitting, Fisheries approvals, and on-going environmental monitoring for a development in Stittsville, Ontario (City of Ottawa). The study was completed as part of an application for residential development.
- Fernbank Lands Development Environmental Impact Statement, Richcraft (2013 - 2017): Project manager and lead biologist for an Environmental Impact Statement, Tree conservation Report, and Species at Risk Permitting for a development in Stittsville, Ontario (City of Ottawa). The study was completed as part of an application for residential development.
- Environmental Screening Study, Walton Developments (2012-2014): Project manager and terrestrial ecologist for a natural heritage screening study for Walton Developments. The project is aimed at identifying any natural heritage constraints that may affect the ability to develop a number of properties in southwest Ottawa. Responsibilities include project management, reporting, terrestrial field surveys, avian surveys and GIS mapping.
- Scoped Environmental Impact Statement, City of Ottawa (2011): Project manager for a scoped environmental impact statement. The project was scoped to specifically address the concern for the impact of a rural residential development in south Ottawa on Species at Risk. Responsibilities include managing budget, invoicing, field survey, report writing and communicating with the client.
- Chapman Mills Environmental Impact Statement Addendum, Minto (2011): Project manager for an addendum to an environmental impact statement assessing the impact of a residential development on trees and local hydrology within a small woodlot south of Ottawa. Responsibilities included managing budget, invoicing, field survey, report writing and communicating with the client.

NATURAL RESOURCES STUDIES

- Kizell Wetland Trail - SAR Authorizations, City of Ottawa (2019): Project manager and lead ecologist for the Species at Risk authorizations required for the construction of a Pedestrian trail network within the conservation forest around the Kizell wetland in Kanata, ON.

- Goulbourn Wetland Re-delineation, City of Ottawa (2015-2016): Project manager for the re-delineation of the Goulbourn Provincially Significant Wetland, located in west Ottawa. The objective of this project was to undertake a boundary re-delineation of the provincially significant wetland (PSW) known as the Goulbourn Wetland Complex. Alexander was responsible for ensuring the quality of the re-delineation and associated report, consulting with land owners, and reviewing the approach and findings with the city and the Ontario Ministry of Natural resources.
- Feedmill Creek Species at Risk Screening, City of Ottawa (2017): Project manager and lead ecologist for a species at risk screening of Feedmill Creek in support of the proposed restoration efforts. Specific surveys included; bat habitat surveys, Blanding's turtle basking surveys, butternut Screening, and other incidental observations.
- Ecological Land Classification, National Capital Commission (NCC) (2015): Project manager and lead Biologist for project to map all the ecotypes within the NCC's urban and greenbelt lands. Ecological mapping was done using Ontario Ecological Land Classification and covers an area of approximately 62 km2. The mapping will be used to for various future ecological landscape management projects.
- Species at Risk Survey, Defence Construction Canada (DCC) – CFB Shilo Range Training Area (2014): GIS analyst and Biologist responsible for the species at risk habitat suitability modelling used in the Environmental Assessment Report. This modelling was used to establish the potential threats to SAR across the base and in turn recommend best management practices for training in SAR habitat.
- 2014 Species at Risk Screening, City of Ottawa (2014): Project manager and lead biologist for a Species at Risk screening study for the City of Ottawa's Infrastructure Branch. The objective of this study was to identify the potential threat various planned infrastructure projects had to Species at Risk. In total 489 projects were evaluated over the course of the project. A new risk assessment approach and a series of management tools were developed to aid City project managers. Many of these tools continue to be used by the city for subsequent SAR Screenings. These tools included; standardized risk categories, a suite of standardized mitigation recommendations, a GIS database of the screening results, a document summarizing and illustrating the Species at Risk that may be found within the city, and a SAR screening process flowchart to assist City project managers.
- Natural Heritage Study, County of Frontenac (2011-2012): Lead landscape ecologist for the County of Frontenac's Natural Heritage Study. This study will form the major piece of the county's Official Plan (OP) and will provide policy and zoning recommendations for future OP schedules. Marxan and corridor design modelling was done to assist in the development of ecologically sound natural heritage zoning. Responsibilities include public consultation, managing the GIS and spatial analysis, assisting with policy development, and managing GIS modelling.
- Rideau Canal Landscape Strategy, Parks Canada (2012): Lead ecologist for the Rideau Canal Landscape Strategy study being conducted to characterize the landscape and develop policy recommendations along the Rideau Canal in support on the UNESCO World Heritage Status. Personal responsibilities include public consultation, ecological characterization and recommendations, GIS mapping, field survey, report writing and communicating with the client.
- Birds Creek Secondary Plan, Municipality of Hastings Highlands (2011-2012): Working with the Municipality of Hastings Highlands to produce/develop a secondary plan for the community of Birds Creek, north of Bancroft. The plan will

promote a healthy living philosophy and promote sustainable development practices. Responsibilities include consultation with public and client, assessing the existing natural resources, assisting in incorporating natural heritage features into the plan and developing GIS mapping for study area.

- Solar Farm Site Assessment, SkyPower (2010): Assisting with the environmental impact evaluation of proposed solar farms as part of an environmental assessment for renewable energies. Duties included conducting and writing records review report, amphibian survey, Ecological Land Classification and general ecological field surveys.
- Regional Ecology Planning Framework, Regional Municipality of Wood Buffalo (RMWB) (2008): Working with RMWB to develop an ecological planning framework that will aid the municipality in balancing development pressures with municipal-specific environmental conservation goals. Responsible for developing the GIS-based ecological planning model and decision support tools created specifically for the municipality.
- Terry Fox Drive Environmental Construction Monitoring, City of Ottawa (2010-2012): Assisted with the on-going environmental monitoring of the Terry Fox Drive road construction project, to ensure compliance of environmental mitigation. Duties included water quality monitoring, sediment and erosion control recommendations, wildlife observations, species at risk monitoring and environmental awareness training.
- Terry Fox Drive Environmental Assessment, City of Ottawa (2007 – 2010): Completed the assessment of natural features along the future Terry Fox Drive corridor in west Ottawa. This included the electrofishing of aquatic habitat, salamander survey and general ecological observations. In addition to the field assessments, also coordinated the GIS analysis and map production for various environmental assessment reports.
- Yellowknife Smart Growth Plan: Ecological Preservation Study, City of Yellowknife (2007-2010): Working with a team of planners to advance Yellowknife's existing Ecological Resource Inventory which will allow for greater public engagement on the quality of life impacts of 40 natural sites. Personal duties include GPS data collection, GIS mapping, Remote Sensing Landcover Classification, and consultation with public and other stakeholders.
- Satellite Image Classification, Tsuu T'ina First Nation (2007): Conducted a satellite image classification to update outdated vegetation mapping. Landsat-7 TM data was classified using IDRISI Andes software. Training areas were delineated to represent the various vegetation communities in the image, and a maximum likelihood classification method was used to classify the image. The results of the image classification proved to be excellent and corresponded to ground-truth landcover classes very well.
- Tlicho Land Use Plan, Tlicho Government (2006-2009): Lead Ecologist for the Tlicho Land Use Plan in the Northwest Territories. Personal responsibilities include the development of the GIS database and spatial model within the GIS to aid in the production of the final land use plan. This model incorporates traditional indigenous knowledge and ecological features with economic and social influences to identify suitable land use zones. The emphasis of the Tlicho Land Use Plan is on mitigating the cumulative effects of development on the natural and social environment while still promoting sustainable economic development.

- Mathews Lake Habitat Restoration, Public Works Government Services Canada (2008): Assisted with the 2008 post-construction monitoring of the fish habitat enhancement in the Mathews Lake watershead in the Northwest Territories. This rehabilitation work was done to improve the fish habitat in the immediate vicinity of Salmita Mine and Tundra Mine. Duties included seine netting and fish identification, construction of new fish habitat structures, benthos and water quality assessments.
- Aquatic Habitat Assessment, Canadian Pacific Rail (2007): Assisting in aquatic habitat assessment for a water crossing along the CPR tracks in Peterborough, Ontario. The objective of the study is to improve habitat for native brook trout and other resident fish by providing in-stream habitat in the vicinity of the crossing.
- Westside Creek and Marsh Reconfiguration, St Mary's Cement (2006): Developed a GIS database to incorporate the annual environmental monitoring data for the reconfiguration of Westside Creek and Marsh. Produced a landcover classification from satellite imagery to assess the vegetation change within the marsh and the surrounding area.

OTHER RELEVANT EXPERIENCE

- Masters of Biology thesis examined understory forest regeneration after wildfire in the boreal forest of northwestern Ontario. The thesis utilized GIS and remote sensing to model landscape characteristics related to species regeneration in the boreal forest.
- Undergraduate thesis utilized GIS to examine the impact of intensive harvesting on littoral deposition rates. A soil erosion model of an intensively harvested watershed was produced in GIS. The results from this model were correlated to measure deposition around the small inland lakes within the watershed.

PUBLICATIONS

- Zeller,A., N.Stow, S.Young, S.Boudreau, B.Aird. 2019. Connectivity for Landscape (Re)Generation. Presentation and Panel discussion at the Canadian Institute of Planners (CIP) Annual Conference, July 2019. Ottawa, Ontario
- Gleeson, J., A.Zeller and J.W. McLaughlin. 2006. Peat as a Fuel Source in Ontario: A Preliminary Literature Review, Ontario Forest Research Institute, Forest Research Information Paper 161, Sault Ste. Marie, Ontario.
- Zeller, A.J. 2005. Using landscape indices to model environmental gradients within the Mixedwood Boreal Forests of northwestern Ontario, Canada. Poster Presentation at Ontario Ecology and Ethology Colloquium, 2005. Ottawa, Ontario