IRONCLAD DEVELOPMENTS INC.

800 EAGLESON ROAD DEVELOPMENT

ENVIRONMENTAL IMPACT STATEMENT & TREE CONSERVATION REPORT

Project No.: 181-02513-00

NOVEMBER 05, 2018

wsp

800 EAGLESON ROAD DEVELOPMENT

PRELIMINARY ENVIRONMENTAL IMPACT STATEMENT & TREE CONSERVATION REPORT

IRONCLAD DEVELOPMENTS INC.

FINAL

PROJECT NO.: 181-02513-00
DATE: NOVEMBER 05, 2018

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November 05, 2018

IRONCLAD DEVELOPMENTS INC.
101-57158 Symington Road 20E
Springfield, MB R2J 4L6

Subject: 800 Eagleson Road – Environmental Impact Statement and Tree Conservation Report (Final)

Dear: Pascal

The following Environmental Impact Study (EIS) and Tree Conservation Report (TCR) for the proposed development at 800 Eagleson Road, Ottawa has been prepared in accordance with the City of Ottawa's EIS guidelines (2015).

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,

Alex Zeller
Sr Ecologist

WSP ref.: 181-02513-00

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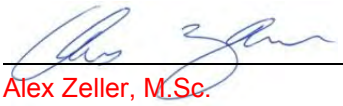

Alex Zeller, M.Sc.
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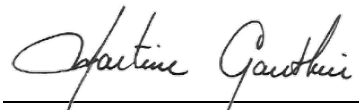

Martine Gauthier, biol., M.Sc.Env
Project Coordinator Environment

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1 INTRODUCTION

1.1 PURPOSE

WSP Canada Inc. (WSP) was retained by Ironclad Development Inc. (Ironclad) to complete an Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) for the proposed 800 Eagleson Road development located on a contiguous parcel of land with frontage on both Eagleson Road and Fernbank Road, in the City of Ottawa, South Kanata. (**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 field investigations and desktop screening results. Mitigation measures will be provided to offset the anticipated environmental impacts.

1.2 BACKGROUND

Ironclad wishes to develop a site located at 800 Eagleson Road in South Kanata, Ottawa. The proposed project will consist of a six-story rental apartment building with approximately 150 units and 200+ surface and underground parking spaces with access from Eagleson Road.

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 (City of Ottawa, 2003), is proposed or 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 the proximity to the aquatic habitat features associated with the Monahan Drain triggered the need for a full Environmental Impact Statement and Tree Conservation Report.

A pre-consultation meeting was held with the City of Ottawa on December 12, 2017, where several specific comments were provided by City staff with respect to this study. These comments included, but are not limited to:

- The requirement Full Environmental Impact Statement (EIS) be completed;
- The requirement for a Tree Conservation Report (TCR) completed with the EIS;
- Species at Risk potential identified - specifically, Barn Swallow and Butternut Trees;
- Tree retention is encouraged where possible;
- Potential for Significant Wildlife Habitat – specifically Amphibian Breeding Habitat (woodland);
- Tree clearing must not occur during the breeding season for migratory birds; and
- A preliminary/desktop EIS can be submitted with the site plan application.

All comments provided at the pre-consultation have been considered in the preparation of this EIS and TCR. This report has been prepared to consider relevant policies and regulations from all relevant regulatory agencies to ensure the proposed development is undertaken in accordance with these policies and regulations.

In addition, this report has been prepared to ensure the proposed development: 1) does not contravene the *Endangered Species Act, 2007* (ESA); 2) to evaluate environmental impacts; and, 3) to develop mitigation plan addressing potential impacts.

Legend

- EIS Study Area (120 metres)
- Proposed Development Area
- Constructed Drain (MNRF)
- Unevaluated Wetland (MNRF)

0 25 50 100 m

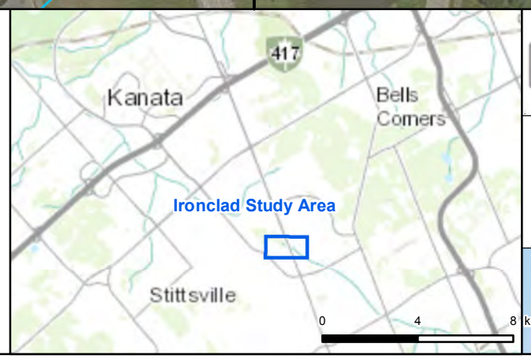
1 : 3,000

Projection : NAD83, MTM 9

N W E S

Sources :

Satellite imagery: Bing Maps Aerial
Data: ESRI World Topographic Map
MNRF LIO (Accessed April 2018)
City of Ottawa Open Data (Accessed April 2018)
Municipal Limits: SDA20K, 2010-01



IRONCLAD DEVELOPMENTS INC.

800 EAGLESON DRIVE

Ottawa, On

Figure 1

Study Area (July 2018)

Mapping by: A. Zeller
Verification by: M. Gauthier

181-02513-00

26 July 2018

Files : Figure1 Study Area - May2018.mxd

1.3 PROPERTY INFORMATION

Owner:	Ironclad Development Inc.
Address:	800 Eagleson Road, Ottawa, Ontario
Lot and concession:	Lot 31, Concession 9
Property Identification Number(s):	044491214
Zoning:	AM - Arterial Mainstreet Zone (Sec. 185-186)
OP designation:	General Urban Area
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 the proposed development.

Natural Heritage Screening: This section provides the 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 proposed 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 proposed 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 to 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 this 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 which address specific **requirements under the TCR guidelines will be marked with the "conifer 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 natural heritage system, features, and functions within the City of Ottawa. **Table 1** provides a list of the policies and legislation that apply to the protection of natural heritage features within the City of Ottawa. The scope of this report evaluates the natural heritage features governed by the policies outlined in this table.

Table 1 Policies, Legislation and Background Sources

Policy/Regulations	Reference Materials and Supporting Documents
Federal Government of Canada	
Migratory Birds Convention Act (1994) (S.C. 1994, c. 22)	Environment and Climate Change Canada – online resources
Species at Risk Act (2002) (S.C. 2002, c. 29)	Federal Species at Risk Public Registry • *Distribution of Aquatic Species at Risk mapping [Accessed: 06/03/18]*
Fisheries Act (1985) (R.S.C., 1985, c. F-14)	Fisheries and Oceans Canada – online resources
Province of Ontario	
Provincial Policy Statement (2014), under Planning Act, R.S.O. (1990) c. P.13	Ministry of Natural Resources and Forestry (MNRF) – Kemptville District Main Contact: • *Information requested was sent to the MNRF Kemptville District office on February 23, 2018. MNRF Response: October 25th, 2018.*
	MNRF Natural Heritage Information Centre (NHIC) – Online [Accessed: 06/03/18] • *Species of Conservation Concern* • *Natural Heritage Features*
	Ecological Land Classification for Southern Ontario, First Approximation and its Application (Lee, et al., 1998)
	Natural Heritage Reference Manual (MNRF, 2010)
	MNRF Significant Wildlife Habitat Technical Guide (MNRF, 2000) • *Significant Wildlife Habitat Eco-region 6E Criterion Schedules* (MNRF, 2016)
	Ontario Reptile and Amphibian Atlas – Online [Accessed: 06/03/18]
	Ontario Butterfly Atlas – Online [Accessed: 06/03/18]
	Atlas of the Mammals of Ontario
Ontario Endangered Species Act (2007) (S.O. 2007, c. 6)	MNRF Species at Risk in Ontario (SARO) List (O.Reg. 230/08)
	MNRF – Kemptville District • *Species at Risk occurrence records requested from MNRF. Response: October 25th, 2018.*
	MNRF NHIC – Online [Accessed: 06/03/18] • *Species at Risk occurrence records*
	Ontario Breeding Bird Atlas (OBBA) – Online [Accessed: 06/03/18]
	Ontario Reptile and Amphibian Atlas – Online [Accessed: 06/03/18]

Policy/Regulations	Reference Materials and Supporting Documents
	City of Ottawa
City of Ottawa Official Plan (2014)	Official Plan; Schedules B (Urban Policy Plan), K (Environmental Constraints), and L3 (Natural Heritage System Overlay (West)) – Online [Accessed: 06/03/18]
	Environmental Impact Statement Guidelines (2015)
	City of Ottawa Tree Conservation Report Guidelines – Online [Accessed: 06/03/18]
	Draft Site Alteration By-Law (2018) – Online [Accessed: 06/03/18]
	Protocol for Wildlife Protection During Construction (2015)
	Rideau Valley Conservation Authority (RVCA)
Rideau 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)	RVCA Regulations Mapping – Online [Accessed: 06/03/18]

3 DESCRIPTION OF THE NATURAL ENVIRONMENT

The following sections provide a summary of the existing natural environment features identified within the study area. This information provides the background information upon which this EIS and TCR is based.

The "Study Area" for this project includes the development area, plus a buffer of 120 metres from this area (see **Figure 1**)**.** In addition, specific species and features will be considered up to two (2) kilometres from the proposed development as it may relate to specific environmental policy or legislation.

3.1 HISTORIC LAND USE

A desktop review of recent and historic aerial images highlights the existing and historic land use within and adjacent to the Study Area (**Figure 2**). From this review the landscape was largely dominated by agricultural land use until the mid 1990s. In the middle and early 2000's construction began on the Bridlewood-Emerald Meadows and Glen Cairn communities. This development around the Study Area was largely completed by 2015.

Also, visible in these aerials is the creation of the constructed wetland features along the Monahan Drain. Construction of these features occurred in the Mid-90's.

2017

2007

1991

1976

Figure 2 Land Use Change

3.2 LANDFORM, GEOLOGY AND SOILS

The Study Area resides over a physiographic region known as the Ottawa Valley Clay Plain. These glaciomarine and marine deposits have their origins as deposits in the Champlain Sea after the last glaciation. This feature overlay's Upper Devonian bedrock consisting of limestone, dolostone, shale, arkose, and sandstone (Ministry of Northern Development and Mines, 2018)

Surficial geology on the Study Area is comprised of organic deposits consisting of mainly muck and peat in bogs, fens, swamps and poorly drained areas (Ministry of Northern Development and Mines, 2018). This is consistent with the soils on the site which are also described as Organic (Ministry of Agriculture, Food and Rural Affairs, 2018).

3.3 AQUATIC ENVIRONMENT

The Study Area is located within the Monahan Drain catchment of the Jock River sub-watershed which flows north into the Lower Rideau River (Rideau Valley Conservation Authority, 2016). The sub-watershed and catchment has been widely studied by the City of Ottawa and the Conservation Authority (RVCA) due to the development pressure within the sub-watershed. The Monahan Drain Catchment Report (Rideau Valley Conservation Authority, 2016) identifies the dominant agriculture as occupying 60% of the land cover within the catchment. As a result, many of the historic headwater drainage features have been removed which has contributed to an overall surface water quality within the Monahan Drain as "Poor" (Rideau Valley Conservation Authority, 2016).

No other surface water features, including intermittent/ephemeral features, were identified within the study area during the review of background mapping and available aerial photos.

3.4 NATURAL HERITAGE FEATURES

Several specific natural heritage features require consideration for protection under the Ontario Provincial Policy Statement (Ministry of Municipal Affairs and Housing, 2014). Protection of these features are generally administered by the City of Ottawa, consistent with relevant provincial and federal legislation. These features are:

- Provincially Significant Wetlands (PSW);
- Significant Woodlands;
- Significant Valleylands;
- Areas of Natural and Scientific Interest (ANSI);
- Significant Wildlife Habitat (SWH);
- Species at Risk habitat; and,
- Fish habitat.

The section below provides a review of available background materials to determine the potential presence of these natural heritage features within the Study Area.

3.4.1 WETLANDS

A review of the City of Ottawa online mapping service (City of Ottawa, 2018) and provincial natural heritage mapping accessed through the NHIC (MNRF, 2015) indicate that there are no PSW present within the Study Area. However, an unevaluated treed wetland within the northern portion of the Study Area was identified (**Figure 1**).

3.4.2 WOODLANDS

A review of aerial photos indicates that a mature forest community occupies a majority of the property. However, the City of Ottawa's Official Plan, Natural Heritage System Features Overlay (Schedule L3) does not identify the woodlands within the Study Area as part of the City's natural heritage system (City of Ottawa, 2003).

3.4.3 VALLEYLANDS

No Significant Valleylands were identified within or adjacent to the Study Area.

3.4.4 AREAS OF NATURAL AND SCIENTIFIC INTEREST

No ANSI's were identified within or adjacent to the Study Area.

3.4.5 SIGNIFICANT WILDLIFE HABITAT

The MNRF has identified four categories of SWH within the eastern Ontario ecoregion (6E) (MNRF, 2016). These include;

- Seasonal Concentration Areas of Animals;
- Rare Vegetation Communities or Specialized Habitat for Wildlife;
- Habitat for Species of Conservation Concern (not included Endangered or Threatened Species); and,
- Animal Movement Corridors.

The potential for these SWH categories to be found within the Study Area was reviewed using available background information, specifically NHIC online mapping (MNRF, 2015) and available aerial photos. From this desktop screening, 'Specialized Habitat for Wildlife' and 'Habitat for Species of Conservation Concern' may be present within the Study Area.

SPECIALIZED HABITAT FOR WILDLIFE

Based on the criteria for Candidate Significant Wildlife Habitat (MNRF, 2016) the following specialized habitat for wildlife may be found within the Study Area:

- Amphibian Breeding Habitat (woodland): The presence of a mature forest community associated with an unevaluated wetland may provide suitable conditions.
- Amphibian Breeding Habitat (Wetlands): A cattail marsh associated with the Monahan Drain may provide suitable conditions.

HABITAT FOR SPECIES OF CONSERVATION CONCERN

The Significant Wildlife Habitat Technical Guide (MNRF, 2000) defines Species of Conservation Concern as globally, nationally, provincially, regionally, or locally rare (S-Rank of S2 or S3) but does not include Species at Risk (listed as endangered or threatened under the ESA, 2007). A review of background data suggests that significant wildlife habitat for breeding birds, reptiles, fish and butterflies may occur within the Study Site in association with the woodland within the Study Area and within the adjacent wetland communities. **Table 2** provides a list of these species.

Table 2 Species of Conservation Concern and Rare Species potentially occurring within the Study Area.

Scientific Name	Common Name	ESA	S-Rank[1]	Info. Source[2]
Birds				
Contopus virens	Eastern Wood-Pewee	SC	S4B	OBBA
Progne subis	Purple Martin	---	S3S4B	OBBA
Hylocichla mustelina	Wood Thrush	SC	S4B	OBBA
Ammodramus savannarum	Grasshopper Sparrow	SC	S4B	OBBA
Haliaeetus leucocephalus	Bald Eagle	SC	S2NS4B	MNRF
Coccothraustes vespertinus	Evening Grosbeak	SC	S4B	MNRF
Falco peregrinus	Peregrine Falcon	SC	S3B	MNRF
Phalaropus lobatus	Red-necked Phalarope	SC	S3S4B	MNRF
Euphagus carolinus	Rusty Blackbird	SC	S4B	MNRF
Herpetozoa				
Pseudacris maculata pop. 1	Western Chorus Frog	---	S3	ON
Chelydra serpentina	Snapping Turtle	SC	S3	ON
Chrysemys picta marginata	Midland Painted Turtle	SC	S4	NHIC
Insects				
Danaus plexippus	Monarch	SC	S2N, S4B	BUT
Bombus terricola	Yellow-banded Bumblebee	SC	S3S5	MNRF
Lichens				
Leptogium rivulare	Flooded Jellyskin	NAR	S3	MNRF
Fish				
Moxostoma valenciennesi	Greater Redhorse	---	S3	DFO
Ichthyomyzon fossor	Northern Brook Lamprey	SC	S3	DFO
Moxostoma carinatum	River Redhorse	SC	S2	DFO

[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]Information sources include: MNRF = Ministry of Natural Resources and Forestry Response to Information Request; NHIC = Natural Heritage Information Centre; OBBA = Ontario Breeding Bird Atlas; ON = Ontario Nature: Ontario Reptile and Amphibian Atlas; BUT = Toronto Entomologists' Association: Butterfly Atlas; DFO = Fisheries and Oceans Canada --- denotes no information or not applicable.

3.4.6 SPECIES AT RISK

A desktop review of available information identified several SAR listed as endangered and threatened under the provincial ESA with potential to occur within the vicinity of the Study Area. **Table 3** provides a list of these species.

Table 3 Species at Risk potentially occurring within the Study Area.

Scientific Name	Common Name	ESA	S-Rank[1]	Info. Source[2]
Birds				
Riparia riparia	Bank Swallow	THR	S4B	OBBA
Hirundo rustica	Barn Swallow	THR	S4B	OBBA
Dolichonyx oryzivorus	Bobolink	THR	S4B	OBBA
Sturnella magna	Eastern Meadowlark	THR	S4B	OBBA
Lanius ludovicianus	Loggerhead Shrike	END	S2B	MNRF
Calidris canutus rufa	Red Knot (rufa subspecies)	END	S1N	MNRF
Antrostomus vociferus	Eastern Whip-poor-will	THR	S4B	MNRF
Chaetura pelagica	Chimney Swift	THR	S4BS4N	MNRF
Herpetozoa				
Emydoidea blandingii	Blanding's Turtle	THR	S3	ON
Ambystoma jeffersonianum	Jefferson Complex (Undetermined)	END	S2	ON
Insects				
Bombus affinis	Rusty-patched Bumble Bee	END	S1	MNRF
Coccinella transversoguttata	Transverse Lady Beetle	END	SH	MNRF
Bombus bohemicus	Gypsy Cuckoo Bumble Bee	END	S1S2	MNRF
Plants				
Juglans cinerea	Butternut	END	S3?	MNRF
Mammals				
Perimyotis subflavus	Tri-coloured Bat	END	S3?	MNRF
Myotis lucifugus	Little Brown Myotis	END	S4	MNRF
Myotis leibii	Eastern Small-footed Myotis	END	S2S3	MNRF
Myotis septentrionalis	Northern Myotis	END	S3	MNRF

[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]Information sources include: MNRF = Ministry of Natural Resources and Forestry Response to Information Request; NHIC = Natural Heritage Information Centre; OBBA = Ontario Breeding Bird Atlas; ON = Ontario Nature: Ontario Reptile and Amphibian Atlas; BUT = Toronto Entomologists' Association: Butterfly Atlas; DFO = Fisheries and Oceans Canada --- denotes no information or not applicable.

SPECIES AT RISK HABITAT

Under the ESA, all species listed as endangered or threatened in Ontario receive immediate 'general habitat protection'. This includes places that are used by the species as dens, nests, hibernacula or other residences. For some species (e.g. Blanding's Turtles), the OMNRF has defined a general habitat description which provides science-based criteria for the habitat protected for the species.

A review of current and historic aerial photos was used to identify candidate General Habitat for SAR based on the habitat requirements defined by the MNRF. Of the potential SAR identified in **Table 3,** a desktop review of the Study Area indicated:

- No vertical faces in silt/sand were observed within or adjacent to the Study Area that could provide suitable **Bank Swallow** habitat.
- A culvert crossing of the Monahan Drain at Fernbank Road may provide marginal **Barn Swallow** nesting habitat. No other suitable nesting structures (e.g. open barns, bridges, chimneys, culverts, or water towers) were identified within the Study Area or within 200 metres of the property.
- The woodlands within the Study Area may provide hollow trees as habitat for **Chimney Swift**, but no other suitable habitat (chimneys, rock crevices) were identified within or nearby the Study Area.
- No suitable grasslands or hayfields were observed within 240 metres of the Study Area which could provide habitat to **Bobolink**, **Eastern Meadowlark,** or **Loggerhead Shrike**.
- No mudflats, coastal lagoons, or beaches that could provide habitat for **Red Knot rufa subspecies**.
- The limited size of the woodland, and the surrounding residential areas are not suitable for **Eastern Whip-poor-will**.
- While wetlands habitats associated with the Monahan Drain may provide suitable habitat for **Blanding's Turtle,** the MNRF has confirmed there has been no recorded observations of Blanding's Turtle within 2 km of this site.
- The ESA does not consider eastern Ontario as an area of prescribed habitat for the **Jefferson salamander**.
- **Butternut** may be found within the woodlands found within the Study Area.
- The woodlands within the Study Area may provide maternity roost habitat for **Little Brown Myotis**, **Tri-coloured Bat**, and **Eastern Small-footed Myotis**.
- **Northern Myotis** will roost under the bark of trees and within tree cavities, but this species is generally associated with the boreal forest and unlikely to be found in Ottawa.
- The **Cuckoo Bumble Bee** and **Rusty-patched Bumble Bee** have not been observed within eastern Ontario within recent years.

Based on the habitat requirements noted above, the following species will be evaluated in this report: **Barn Swallow**, **Chimney Swift**, **Butternut**, **Little Brown Myotis, Tri-coloured Bat, and Eastern Small-footed Myotis**. Incidental observations of SAR and SAR habitat will also be recorded.

3.4.7 FISH HABITAT

The Monahan Drain is located south of the proposed development and provides the only fish habitat within the Study Area. This catchment is classified as a mixed community of warm and cool water recreational and bait fish. The following fish species are known to live within the reach of the Monahan Drain adjacent to the Study Area (RVCA 2016). All of these fish species are tolerant of poor water quality and common in agricultural drains within the region.

- Bluntnose Minnow (*Pimephales notatus*)
- Brook Stickleback (*Culaea inconstans*)
- Common Carp (*Cyprinus carpio*)
- Creek Chub (*Semotilus atromaculatus*)
- Fathead Minnow (*Pimephales promelas*)
- Sunfish (*Lepomis Sp.*)
- White Sucker (*Catostomus commersonii*)

3.5 TREES

Aerial photos of the Study Area indicate that much of the property contains a mature forest community with mature deciduous trees. This observation is confirmed by a tree inventory completed by Fotenn in 2013 to identify the trees (or groups of trees) greater than 10 cm in diameter at breast height (DBH) within the property and evaluate their overall health. A total of 86 individual trees or groups of trees were identified in this survey. The tree species identified during this survey included;

- Manitoba Mable (*Acer negundo*) [Dominant species]
- White Elm (*Ulmus americana*)
- Trembling Aspen (*Populus tremuloides*)
- Crabapple (*Malus sp.*)
- Siberian Elm (*Ulmus pumila*)

3.6 WILDLIFE HABITAT

In addition to the SAR noted above, a review of current and historic aerial photos of the Study Area was used to identify potential wildlife habitat. Several species of fauna common to the City of Ottawa rural and urban areas are known to live in the habitats present within the Study Area. These species may include, but are not limited to:

- **Mammals:** raccoons, squirrels, rabbits, groundhogs, foxes, coyotes, among others.
- **Reptiles & Amphibians:** garter snakes, green frog, gray tree frogs, among others.
- **Birds:** American crow, American robin, house sparrow, black-capped chickadee, among others.

3.7 ECOLOGICAL LINKAGES

The natural features associated with the Monahan Drain, located adjacent to the Study Area, provides a weak localized ecological linkage to the Jock River. This linkage does not directly connect to any Core Natural Areas or Natural Heritage System feature as defined by the City of Ottawa (City of Ottawa, 2003).

3.8 OTHER DEVELOPMENT CONSTRAINTS

No other development constraints were identified during the desktop review of natural heritage features within or near the Study Area.

4 METHODOLOGY

4.1 SCOPE OF WORK

Based on the description of the natural environment outlined above, several ecological surveys outlined below are required to assess the impacts of the proposed development on the natural environment. These surveys follow industry standard protocols and are intended to establish a baseline condition upon which potential negative impacts from the proposed development can be evaluated within the Study Area. Due to property access restrictions, the surveys will only be undertaken within the subject property and from public access points as required.

NATURAL HERITAGE FEATURES

- Ecological Land Classification (ELC), including;
  - Vegetation survey
  - Wetland identification and mapping
  - Woodland delineation
- Identification of potential SWH including:
  - Breeding bird surveys
  - Amphibian breeding surveys
  - General habitat assessment for Species of Conservation Concern

SPECIES AT RISK

- Barn swallow nest search
- Butternut tree search
- SAR bat maternity roost snag density survey
- Incidental Species at Risk and Species at Risk habitat observations

TREES

- Confirmation of the Tree Inventory

INCIDENTAL WILDLIFE

- Visual and auditory observations of wildlife during all field studies

4.2 NATURAL HERITAGE FEATURES

4.2.1 VEGETATION COMMUNITIES

Vegetation communities within the Study Area will be characterized and mapped using the ELC system for Southern Ontario (Lee, et al., 1998). The ecological community boundaries will be determined through the review of aerial photography and then further refined through on-site vegetation surveys as specified by the protocol. The soil moisture class within the ecological community will be assessed using a hand auger.

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 will be 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 will be used.

In 2007, 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 in this study as they are more representative of the vegetation communities within the Study Area.

VEGETATION SURVEY

Vegetation will be surveyed in tandem with ELC surveys, a list of plant species was compiled and all plant information compiled as part of other surveys was included in the list. This will provide a botanical inventory of the Study Area. In addition, this inventory will be used to screen for any rare or endangered species not previously identified within the Study Area.

WETLAND IDENTIFICATION AND MAPPING

The delineation of wetland features within the Study Area will be done using ELC to map wetland attributes and vegetation.

4.2.2 WETLANDS

A small area of unevaluated wetland was identified within the Study Area. This wetland is considered southern wetlands based on their location south of the northern limit of Ecoregions 5E, 6E, and 7E as shown on Figure 1 of the Provincial Policy Statement, 2014. Wetlands within the Study Area will be delineated using the ELC system for Southern Ontario (Lee, et al., 1998).

4.2.3 WOODLANDS

The woodland within the Study Area will be assessed for significance following the updated guidelines outlined in the City of Ottawa Official Plan Amendment No. 179 (Section 2.4.4 of the Official Plan (City of Ottawa, 2003)). If the following criteria is met, the woodland is considered significant.

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; and*
2. *In the rural area, meeting any one of the criteria in the Natural Heritage Reference Manual, as assessed in a subwatershed planning context and applied in accordance with Council-approved guidelines, where such guidelines exist; or*
3. *In the urban area, any area 0.8 hectares in size or larger, supporting woodland 40 years of age and older at the time of evaluation.*

For the woodland within this Study Area, criteria #1 and #3 will be used to determine significance. The ELC delineation will be used to determine the size of the woodland and historic aerials will be used to estimate the age.

4.2.4 SIGNIFICANT WILDLIFE HABITAT

Breeding Bird and Amphibian Breeding surveys are required to identify potential Significant Wildlife Habitat within the Study Area and to provide a baseline assessment of the relative abundance of birds and amphibians.

BREEDING BIRD SURVEY

Diurnal breeding bird surveys will be conducted within the Study Area followed the methods outlined in the Ontario Breeding Bird Atlas Guide for Participants (Cadman & Kopysh, 2001). These surveys were completed in June of 2018 (two surveys).

Each survey consists of five-minute point counts to establish quantitative estimates of bird abundance in habitat types within the Study Area (**Figure 3**). To supplement the surveys, area searches of the habitat were completed using binoculars to observe species presence and breeding activity. Area searches involved noting all individual bird species and their corresponding breeding evidence while traversing the habitat on foot.

AMPHIBIAN BREEDING SURVEY

Amphibian monitoring will follow the Marsh Monitoring Program protocol (Bird Studies Canada, 2018). In accordance with the survey protocol, three different surveys will be conducted between April 1st and June 30th, with at least two weeks between each visit. Surveys will begin at least one-half hour after sunset during evenings with a minimum night temperature of 5^{0}C, 10^{0}C, and 17^{0}C for each of the three respective surveys. Survey points aligned with the wetland features and vernal pools within the Study Area (**Figure 3**).

Each amphibian survey generally involved standing at a predetermined station for three (3) minutes and listening for frog calls. The calling activity of individuals estimated to be within 100 m of the observation point were documented. All individuals beyond 100 m were recorded as outside the count circle and calling activity was not recorded. Calling activity was then ranked using one of the three abundance code categories:

Code 1: Calls not simultaneous, number of individuals can be accurately counted;

Code 2: Some calls simultaneous, number of individuals can be reliably estimated; and,

Code 3: Calls continuous and overlapping, number of individuals cannot be estimated.

In areas where candidate amphibian habitat exists, vernal pools will be visually examined for egg masses and amphibian larvae in conjunction with other field surveys. These searches will occur between April and June when amphibians were concentrated around suitable breeding habitat.

HABITAT FOR SPECIES OF CONSERVATION CONCERN

In addition to the Breeding Bird Survey and Ecological Land Classification noted above, general habitat observations will be noted as it relates to the habitat requirements for species of conservation concern identified in **Table 2**.

INCIDENTAL OBSERVATIONS OF SIGNFICANT WILDLIFE HABITAT

Incidental observation of other significant wildlife habitats will also be undertaking during all site visits. Specifically, observations associated with Seasonal Concentrations of Wildlife Habitat (e.g. Reptile Hibernaculum) will be done during all site visits. Species-specific surveys will be conducted as required following consultation with the MNRF and the City of Ottawa.

Legend

- Constructed Drain (MNRF)
- Development Area
- EIS Study Area (120 metres)

Survey Locations

- Amphibian Survey Location
- Barn Swallow Nest Search
- Bat Roost Survey Location
- Breeding Bird Survey Location
- Snag Density Survey Area

0 12.5 25 50 m

1 : 1,200

Projection : NAD83, MTM 9

N W E S

Sources :

Satellite imagery: Bing Maps Aerial
Data: ESRI World Topographic Map
MNRF LIO (Accessed April 2018)
City of Ottawa Open Data (Accessed April 2018)
Municipal Limits: SDA20K, 2010-01

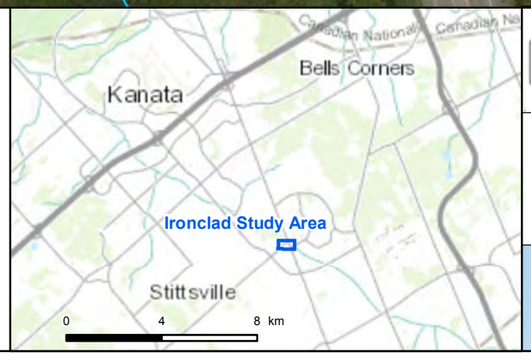


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Figure 3

Survey Locations

wsp

Mapping by: A. Zeller/C. Pytlak
Verification by: A. Zeller

181-02513-00

31 October 2018

Files : Figure3 Survey Locations - October2018.mxd

4.2.5 SPECIES AT RISK

Several SAR have been identified with potential to occur within the general vicinity of the Study Area. Surveys were conducted for those species at risk found to possess suitable habitat within the Study Area.

BARN SWALLOW NEST SEARCH

A visual check into both sides of the corrugated steel culverts along Fernbank Road and inside the concrete storm water drains south of the Monahan Drain was done determine if barn swallows were using these structures for nesting (**Figure 3**). These observations were supported with photo documentation of these features.

CHIMNEY SWIFT TREE CAVITY SEARCH

To determine the habitat suitability for Chimney Swift, a search for open tree cavities and snags was completed during the ELC survey. This consisted of observing and recording cavities in large trees that may provide roosting habitat for Chimney Swifts. Based on the results of these observations, targeted Chimney Swift surveys may be required.

BUTTERNUT TREE SEARCH

A search for Butternut trees was included in the survey to validate the previous tree inventory and was also included in the vegetation inventory completed for the ELC survey. Both surveys utilized a wandering transect to cover the relatively small study area. The general health, DBH, photograph(s), and a GPS coordinate of all Butternut trees observed will be recorded.

BAT MATERNITY ROOST SURVEY

To assess the potential presence of bat roosting habitat, a snag/cavity tree count following the methodology outlined in the 'Bats and Bat Habitats: Guidelines for Wind Power Projects' protocol (Ontario Ministry of Natural Resources, 2011) was completed. This protocol is also consistent with Step 1 and Step 2 of the alternate "Bat Survey Methodology – hibernacula and maternity roosts" informal publication also distributed by the MNRF.

The survey completed is intended to count snag/cavity trees to ascertain whether the habitat is suitable for maternity roosts for several SAR bats, including; Little Brown Myotis, Eastern Small Footed Myotis, and Northern Myotis.

This survey was conducted in forested areas using a fixed area circular plot of a 12.6 metre radius, this equates to 0.05 ha (**Figure 3**). The presence of each snags/cavity trees equal to or greater than 25 cm diameter at breast height (DBH) is noted within each circular plot. The formula 'πr^2 is applied to determine the number of snags/cavities per hectare.

INCIDENTAL SAR AND SAR HABITAT OBSERVATIONS

In addition to those species surveys noted above, incidental SAR and SAR habitat observations was noted during all site visits. Specifically, incidental observations of Blanding's Turtles and associated habitat will be included in site visits.

Should any SAR or SAR habitat be identified within or adjacent to the site during field surveys appropriate measures would be taken to ensure the impact of the proposed development on the observed species or habitat is appropriately assessed. This may include further consultation with the MNRF and/or additional species-specific surveys.

4.3 TREES

Trees within the development area were originally inventoried and assessed by Fotenn Consultants Inc. in 2013. This survey was conducted on all trees within the property greater than 10 cm in DBH as required by the City of Ottawa's TCR guidelines. While most trees within the development area were assessed individually, a few stands of similar-sized and aged trees were assessed as a group.

Each tree and group of trees previously inventoried by Fotenn (2013) was reassessed in the spring of 2018 by a qualified professional to confirm the relevance of the previous inventory. The species, DBH, and general condition of each tree was confirmed in the field and GIS mapping was updated to reflect the existing condition within the site.

4.4 INCIDENTAL WILDLIFE

A wildlife assessment within the property was completed through incidental observations while on site. Any incidental observations of wildlife were, as well as other wildlife evidence such as dens, tracks, and scat. For each observation notes, and when possible, photos were taken. These observations also helped validate our conclusions on the ecological function of the Study Area.

5 RESULTS

The following sections outline the findings from the field surveys and characterize the existing conditions within the Study Area.

5.1 SITE INVESTIGATIONS

Field surveys conducted for this EIS and TCR occurred from March 2018 to July 2018. Surveys were undertaken during suitable weather conditions and the timing was based on the survey protocols being implemented **(Table 4)**. As required, curricula vitae of key staff involved in the project have been included in **Appendix A**.

A total of eight site visits were required to assess for all ecological features and functions as specified in the project proposal. The dates and times, names of surveyors, and weather conditions for all surveys are listed in **Table 4**.

Table 4 Dates and Times of Field Surveys

Date	Surveyor	Start Time	End Time	Weather Conditions	Air Temp. (°C)	Purpose
March 8, 2018	M. Gauthier	11:30am	3:15pm	Mostly cloudy, light breeze.	-1°C	Tree validation survey, Woodland delineation, Bar swallow nest search, and Butternut tree search.
April 24, 2018	M. Gauthier	9:00pm	9:45pm	Cloudy, slight breeze	15°C	Amphibian survey #1
May 14, 2018	A. Zeller	12:30pm	2:30pm	Sunny, light breeze	23°C	SAR bat roost survey, Barn swallow nest search
June 7, 2018	C. Pytlak	8:30am	9:00am	Sunny, gentle breeze	14°C	Breeding Bird Survey #1
June 7, 2018	M. Goudreau	9:20pm	9:45pm	Light to moderate rain, slight breeze	17°C	Amphibian Survey #2
June 21, 2018	M. Goudreau	9:15pm	9:45pm	Partly cloudy, calm winds	16°C	Amphibian Survey #3
June 26, 2018	C. Pytlak	9:45am	10:10am	Sunny, slight breeze	17°C	Breeding Bird Survey #2, Barn swallow nest search
July 11, 2018	A. Zeller & M. Gauthier	12:30 pm	2:30 pm	Sunny, calm winds	27°C	ELC & Vegetation Survey, Chimney Swift tree cavity search

5.2 NATURAL HERITAGE FEATURES

5.2.1 VEGETATION COMMUNITIES

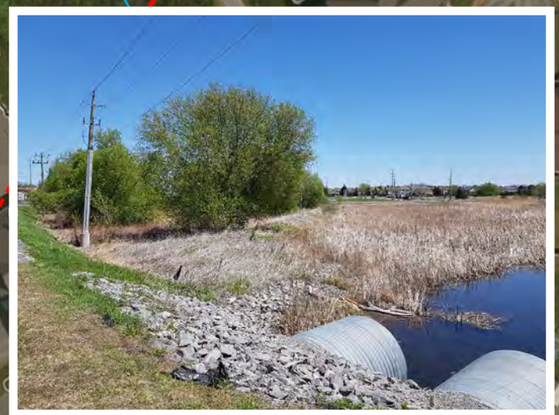
The Ecological Land Classification survey identified three natural terrestrial vegetation communities within the proposed development area. The location, type, and boundaries of these vegetation communities have been delineated in **Figure 4** and described in **Table 5.**

The forest community identified in the middle of the development area is situated approximately two metres below the existing grade of the adjacent roadways (Eagleson Road and Fernbank Road). In addition, a 1-2 metres high berm is located along the southern border of the development area and is likely intended to contain the storm water facility associated with the Monahan Drain (Cattail Marsh). Portions of the forest community was recently cleared of trees, under permit from the City of Ottawa, to facilitate geotechnical investigations. The cleared area has since been re-vegetated by non-woody shrubs and wildflowers. The extent of the previously cleared area is shown in **Figure 4**.

During the Ecological Land Classification visit, a 20-30-centimetre layer of well drained, dry, organic peaty material over clay substrate was observed within the forest community. This observation relates to the background mapping which suggests that the site occupied by a portion of a wetland complex (i.e. Swamp) and soils in the area were primarily organic consisting of peat and muck. However, given very soil dry conditions observed on the site, it is likely that the alteration the surrounding grades significant altered the local hydrology creating a much drier condition that what may have existed historically.

The meadow habitat observed within the development area was primarily associated with the cleared/disturbed land adjacent to the roadways and along the constructed berm.

A summary of other natural vegetation communities located outside the development area but within the Study Area are described in **Table 5** and identified on **Figure 4**.



354,700

5,015,575

Pepperville Cres

Eagleson Road

Fernbank Road

Graminoid Meadow
(Mowed Annually)

MEM

MEFM1

FODM4-5

MEM

Monahan Drain

Cattail Marsh Habitat
MASO1-1

Eagleson Road

bing

354,700

5,015,575

Legend

- Constructed Drain (MNRF)
- Development Area
- EIS Study Area (120 metres)
- Tree Snag (>25 cm DBH)

Ecological Land Classification

- Dry-Fresh Forb Meadow
- Dry-Fresh Manitoba Maple Deciduous Forest
- Mixed Meadow

0 12.5 25 50 m

1 : 1,000

Projection : NAD83, MTM 9

N W E S

Sources :

Satellite imagery: Bing Maps Aerial
Data: ESRI World Topographic Map
MNRF LIO (Accessed April 2018)
City of Ottawa Open Data (Accessed April 2018)
Municipal Limits: SDA20K, 2010-01

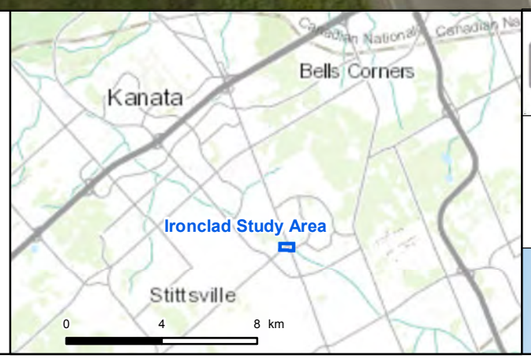


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Figure 4

Ecological Land Classification and Natural Features Inventory

wsp

Mapping by: A. Zeller & C. Pytlak
Verification by: A. Zeller

181-02513-00 **05 November 2018**

Files : Figure4 Results - Nov2018.mxd

Table 5 Ecological Land Classification Results

ELC CODE	CLASSIFICATION	SOILS	TOTAL AREA (HA)	VEGETATION	COMMENTS
Vegetation Communities within Development Area					
FODM4-5	Dry-Fresh Manitoba Maple Deciduous Forest Type	Silt Clay Loam	0.56 ha	Manitoba Maple (*Acer negundo*) is the dominant overstory species within the forest. White Elm (*Ulmus Americana*) is also found in the overstory. Dominant understory vegetation includes; Wood Nettle (*Laportea canadensis*), and Spotted Jewelweed (*Impatiens capensis*). Associated species include Red Raspberry (*Rubus idaeus spp. idaeus*), and Virginia Creeper (*Parthenocissus quinquefolia*)	Vegetation species found in this polygon are found abundantly within the Ottawa area.
MEFM1 *(Inclusion)*		*Silt Clay Loam*	*0.18 ha*	*Dominant vegetation within this inclusion includes; Tall Goldenrod (Solidago altissima var. altissima), Wood Nettle (Laportea canadensis), and Spotted Jewelweed (Impatiens capensis). Associated species include Red Raspberry (Rubus idaeus spp. idaeus), and Virginia Creeper (Parthenocissus quinquefolia)*	*This meadow inclusion represents the recently cleared area.*
MEM	Mixed Meadow	*Fill (associated with adjacent roadway)*	0.5 ha	Dominated by common grasses and weedy plants associated with disturbed land, such as Red Raspberry, Wood Nettle, Wild Parsnip (*Pastinaca sativa),* and Common Valerian (*Valeriana officinalis*).	The Mixed Meadow community is common to roadsides, and often contain non-woody herbaceous shrubs and invasive species.
Vegetation Communities within the Study Area					
MASO1-1	Cattail Organic Shallow Marsh Type	---	---	Observations suggest that this habitat is dominated by cattails (*Typha latifolia*).	This determination is based on preliminary observations only.
MEG	Graminoid Meadow	---	---	This habitat is located across Eagleson Road from the subject property and appears to be dominated by grasses. Available aerial photos suggest that this habitat is mowed annually.	This determination is based on preliminary observations only.

5.2.2 WETLANDS

As noted above, the existing condition no longer reflects a swamp community that may have historically existed in this area. The area delineated as 'Swamp' in the MNRF background data (illustrated in **Figure 1**) is a Fresh-Moist Deciduous Forest based on observation of vegetation type and soil moisture conditions recorded during site visits for Ecological Land Classification and vegetation inventories.

A cattail marsh associated with the Monahan Drain is located immediately south of the development area, but within the 120 metres study area. This feature was created sometime between 2006 and 2009 during construction activities on the municipal drain constructed.

There are no significant wetlands present within the Study Area.

5.2.3 WOODLANDS

The Manitoba Maple Deciduous Forest that covers most of the development area meets the prerequisite designation as set out in the Forestry Act, R.S.O 1990, c.F.26. However, at 0.56 hectares in size, woodland does not meet the minimum size requirement to be considered 'significant' as outlined in the City of Ottawa Official Plan Amendment No. 179 (Section 2.4.4 of the Official Plan (City of Ottawa, 2003)).

There are no significant woodlands present within the Study Area.

5.2.4 SIGNIFICANT WILDLIFE HABITAT

The MNRF outlines the criteria for areas to be considered Significant Wildlife Habitat in the Ecoregion 6E Criterion Schedule (MNRF, 2016). The results of the field surveys intended to identify Significant Wildlife Habitat are detailed below.

BREEDING BIRD SURVEYS

Two surveys were completed during the southern Ontario breeding bird season, from May 24th to July 10th. The surveys were conducted in accordance with the protocol methodology in the Ontario Breeding Bird Atlas. This requires surveying only during appropriate weather (clear to overcast skies, calm to moderate wind, and no precipitation) and from dawn to five hours after dawn.

The surveys were performed on the mornings of June 7th and June 26th, 2018. Survey results are shown in **Table 6.**

Table 6 Results of Breeding Bird Surveys

Scientific Name	Common Name	ESA 2007	S-Rank	Survey #1	Survey #2	Breeding Code[3]
Zenaida macroura	Mourning Dove	---	S5	✓	---	X
Dumetella carolinensis	Gray Catbird	---	S4B	✓	---	H
Setophaga petechia	Yellow Warbler	---	S5B	✓	✓	D
Spinus tristis	American Goldfinch	---	S5B	✓	---	H
Haemorhous mexicanus	House Finch	---	SNA	✓	✓	P

Scientific Name	Common Name	ESA 2007	S-Rank	Survey #1	Survey #2	Breeding Code[3]
Geothlypis trichas	Common Yellowthroat	---	S5B	✓	✓	S
Melospiza melodia	Song Sparrow	---	S5B	✓	✓	T
Agelaius phoeniceus	Red-winged Blackbird	---	S4	✓	✓	A
Quiscalus quiscula	Common Grackle	---	S5B	✓	---	S

[3]Breeding Codes: X = Species observed in its breeding season (no breeding evidence); H = Species observed in its breeding season in suitable nesting habitat; S =Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season; P = Pair observed in suitable nesting habitat in nesting season; T = Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place; A = Agitated behaviour or anxiety calls of an adult; D = Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation;

In addition to the birds observed during the surveys, two Great Egret (*Ardea alba*) were observed fishing in the wetland south of the Study Area before and after the second survey on June 26th, 2018.

Based on the observations from the breeding bird surveys and search of the site, there is **no evidence of confirmed breeding within the survey area**. Several species are likely breeding within the vicinity of the survey area, as evidenced by noting the registration of territorial songs, courtship displays between males and females, and agitated behaviour by adult birds, but no distinct signs and evidence of breeding was recorded.

All the species detected during the surveys are found abundantly within the Ottawa area and are not listed as species-at-risk. Great Egrets occur less commonly in eastern Ontario; however, the habitat required for colonial nesting is not present in the general vicinity.

AMPHIBIAN BREEDING SURVEYS

In accordance with the Ecoregion 6E Criterion Schedule (MNRF, 2016), amphibian breeding surveys were completed to determine the presence of Amphibian Breeding Habitat for Woodlands and Wetlands within the Study Area. **Table 7** lists the results of the point counts during the 2018 surveys.

Table 7 Results of Amphibian Field Surveys

Scientific Name	Common Name	Number of Observations*	ESA 2007	S-Rank	Survey #1	Survey #2	Survey #3
---	---	None Observed	---	---	---	---	---

There were **no amphibians recorded** during three amphibian breeding surveys. It should be noted that road traffic caused difficulties in listening for amphibian calls during all three surveys.

HABITAT FOR SPECIES OF CONSERVATION CONCERN

Table 8 provides a detailed screening to assist in the determination of habitat potential for the Species of Conservation Concern identified in **Table 2**.

Table 8 Species of Conservation Concern with the Potential to Occur in the Development Area

Scientific Name	Common Name	General Habitat According to the MNRF Significant Wildlife Habitat Technical Guide (MNRF, 2000)	Conservation Status			Source	Potential Habitat Based on Desktop Review	Rational	Development Impacts
			Federal (SARA)	Provincial (ESA, 2007)	S-Rank				
Birds									
Contopus virens	Eastern Wood-pewee	Open, deciduous, mixed or coniferous forest; dominated by oak with little understory; forest clearings, edges; farm woodlots, parks.	---	SC	S4B	OBBA	No	Although there are woodlands located within the Study Area, they are dominated by Manitoba Maple, not oak. The woodland habitat would not be large enough to support significant wildlife habitat for forest breeding birds which prefer significantly larger tracts of forest (>100 ha) and interior habitat.	No Impact
Progne subis	Purple Martin	Open, trees areas such as farmland, parks, yards, marshes; usually near large bodies of water; colonial; nests in tree cavities, cliff ledges; most common in nest boxes; requires open space for foraging; prefers trees >15 cm DBH.	---	---	S3, S4B	OBBA	**Yes**	There is suitable habitat within the Study Area for this species. However, this species was not observed during Breeding Bird Surveys in 2018.	No impact
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.	---	SC	S4B	OBBA	No	This species requires large undisturbed tracts of forest. Woodlands of size to support significant wildlife habitat for forest breeding birds (>100 ha) is not present within the Study Area.	No Impact
Ammodramus savannarum	Grasshopper Sparrow	Well-drained grassland or prairie with low cover of grasses, taller weeds on sandy soil; hayfields or weedy fallow fields; uplands with ground vegetation of various densities; perches for singing; requires tracts of grassland > 10 ha.	---	SC	S4B	MNRF, OBBA	No	There are no tracts of grassland >10 ha in size present within the Study Area, no Grasshopper Sparrows were observed during field surveys within the Study Area.	No Impact
Haliaeetus leucocephalus	Bald Eagle	Require large continuous area of deciduous or mixed woods around large lakes, rivers; require area of 255 ha for nesting, shelter, feeding, roosting; prefer open woods with 30 to 50% canopy cover; nest in tall trees 50 to 200m from shore; require tall, dead, partially dead trees within 400 m of nest for perching	---	SC	S2N, S4B	MNRF	No	No large continuous forests, or large lakes or rivers located within proximity to the Study Area. Woodlands within the Study Area do not contain large enough trees for nesting. No Bald Eagles observed during field season within the Study Area.	No Impact
Coccothraustes vespertinus	Evening Grosbeak	Open, mature mixed-wood forests dominated by fir species, white spruce, or trembling aspen. Abundance is linked to the cycle of the Spruce Budworm. Generally found in boreal ecosystems.	SC	SC	S4B	MNRF	No	There are no mature mixed-wood forests within the Study Area and the surrounding vegetation communities are not suitable habitat for Evening Grosbeak. No Evening Grosbeak were observed during field season.	No Impact
Falco peregrinus	Peregrine Falcon	Rock cliffs, crags, especially situated near water; tall buildings in urban centres.	NAR	SC	S3B	MNRF	No	There are no open cliffs or tall buildings located within or around the Study Area and no Peregrine Falcons were observed during the field season.	No Impact
Phalaropus lobatus	Red-necked Phalarope	Coastal and inland marshes with shallow ponds and grassy edges. Avoids mud and dense shrubs. Breeding range is northern Ontario, around Hudson's Bay.	SC	SC	S3, S4B	MNRF	No	Although there is a shallow pond south of the Study Area, the edges of the pond are muddy and lined with cattails, making the pond generally unsuitable for the Red-necked Phalarope. There were no observations of this species during the field season.	No Impact
Euphagus carolinus	Rusty Blackbird	Breeds in habitats dominated by coniferous forest with nearby wetlands, including bogs, marshes, swamps, and beaver ponds.	SC	SC	S4B	MNRF	No	The woodlands within the Study Area are dominated by Manitoba Maple and do not provide suitable habitat conditions for Rusty Blackbird. None were observed during Breed Bird Surveys in 2018.	No Impact
Herpetozoa									
Pseudacris maculata pop. 1	Western Chorus Frog	Roadside ditches or temporary ponds in fields; swamps or wet meadows; woodland or open country with cover and moisture; small ponds and temporary pools.	THR	---	S3	ON	**Yes**	There is suitable habitat within the Study Area for this species. However, this species was not observed during Amphibian Surveys in 2018.	No Impact

Scientific Name	Common Name	General Habitat According to the MNRF Significant Wildlife Habitat Technical Guide (MNRF, 2000)	Conservation Status			Source	Potential Habitat Based on Desktop Review	Rational	Development Impacts
			Federal (SARA)	Provincial (ESA, 2007)	S-Rank				
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	MNRF, ON	**Yes**	The Monahan Drain may provide suitable habitat for Snapping Turtles. However, no suitable habitat was identified within the Development Area (including nesting habitat).	No Impact
Chrysemys picta marginata	Midland Painted Turtle	Quiet, warm, shallow water with abundant aquatic vegetation such as ponds, large pools, streams, ditches, swamps, marshy meadows; eggs are laid in sandy places, usually in a bank or hillside, or in fields; basks in groups; not territorial.	---	SC	S4	ON	**Yes**	The Monahan Drain may provide suitable habitat for Midland Painted Turtle. However, no suitable habitat was identified within the Development Area (including nesting habitat).	No Impact
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	BUT	No	The development area does not contain undisturbed fields with abundant meadows and milkweed, suitable habitat for this species is not present. Further, since this site is not within 5 km of Lake Ontario, it cannot be considered as significant wildlife habitat for migratory butterflies.	No Impact
Bombus terricola	Yellow-banded Bumble Bee	Mainly found in mixed woodlands, particularly for nesting and overwintering, and a variety of open habitat such as native grasslands, farmlands, and urban areas.	SC	SC	S3S5	MNRF	No	The woodlands within the Study Area are primarily deciduous and dominated by Manitoba Maple, and there are no open grasslands or farmlands located within the vicinity of the development area.	No Impact
Lichens									
Leptogium rivulare	Flooded Jellyskin	Mainly found growing on the bark at the base of trees that are periodically flooded, typically during the spring. Trees species include Black Ash, Red Maple, American Elm, and Balsam Poplar.	THR	NAR	S3	MNRF	No	Periodic flooding of the woodlot does not occur within the development area.	No Impact
Fish									
Moxostoma valenciennesi	Greater Redhorse	Moderate to swift current riffles, run and pools of medium to large rivers with clear water and gravel substrate.	---	---	S3	NHIC	No	The Monahan drain is slow flowing with an organic substrate. Suitable habitat is not present.	No Impact
Ichthyomyzon fossor	Northern Brook Lamprey	Clear, cool water streams. The larval stage requires soft substrates such as silt and sand for burrowing which are often found in the slow-moving portions of a stream. Adults are found in areas associated with spawning, including fast-flowing riffles comprised of rock or gravel.	SC	SC	S3	MNRF	No	The Monahan drain is slow flowing with an organic substrate. Suitable habitat is not present.	No Impact
Moxostoma carinatum	River Redhorse	Medium to large-size rivers that have substantial flows with clear water and gravel substrate.	SC	SC	S3	MNRF	No	The Monahan drain is slow flowing with an organic substrate. Suitable habitat is not present.	No Impact

[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]Information sources include: MNRF = Ministry of Natural Resources and Forestry Response to Information; NHIC = Natural Heritage Information Centre; OBBA = Ontario Breeding Bird Atlas; ON = Ontario Nature: Ontario Reptile and Amphibian Atlas; BUT = Toronto Entomologists' Association: Butterfly Atlas; DFO = Fisheries and Oceans Canada --- denotes no information or not applicable.

The results of this screening refer to observations made during field investigations undertaken in the spring and summer of 2018. The results of this screening suggested that there may be habitat within the Study Area for the following species;

- **Purple Martin** (*Progne subis*) may be found within the natural habitats found within the development area. There were no observations of Purple Martin during either breeding bird survey.
- **Western Chorus Frog** (*Pseudacris maculata Pop.1*) may be found within the Cattail Marsh associated with the Monahan Drain located south of the development area. No visual or auditory observations of Western Chorus Frog were made during site investigations.
- **Snapping Turtle** (*Chelydra serpentina*) may be found within the Monahan Drain located south of the development area. No suitable nesting habitat was observed within the development area.
- **Midland Painted Turtle** (*Chrysemys picta marginata*) may be found within the cattail marsh and Monahan Drain located south of the development area. No suitable nesting habitat was observed within the development area.

There is a habitat for Species of Conservation Concern within the Study Area. However, site investigations did not yield any observations for Species of Conservation Concern.

5.2.5 SPECIES AT RISK

BARN SWALLOW NEST SEARCH

Site investigations found a lack of ideal habitat for Barn Swallow (*Hirundo rustica*) within the Study Area. A nest search of the marginal habitat within the twin corrugated steel culverts under Fernbank Road and in the storm water outflows opposite the Monahan Drain was conducted on March 8, 2018, May 14, 2018, and again on June 26, 2018. These investigations confirmed that there were no signs of past nesting activities and the smooth galvanized surface of the steel culverts do not provide a suitable surface for the birds to construct a nest on. And no Barn Swallows were observed during breeding bird surveys or other investigations on site.

There is no significant habitat for Barn Swallows within the Study Area.

CHIMNEY SWIFT TREE CAVITY SEARCH

Site investigations during the ELC survey found no suitable Chimney Swift roosting habitat (large hollow trees) within the woodlot. Additionally, there were no Chimney Swifts observed during Breeding Bird Surveys or at dusk during the Amphibian surveys.

There is no Chimney Swift roosting habitat within the Study Area and no Chimney Swifts were observed within the Study Area.

BUTTERNUT TREE SEARCH

No Butternut trees were identified within the Development Area during the 2013 Tree Inventory, the 2018 tree validation survey, the 2018 ELC survey, or any other site investigations completed in 2018.

Butternut Trees have not been observed within the Study Area.

BAT MATERNITY ROOST SURVEY

Three circular bat maternity roost survey plots were completed within the Manitoba Maple Deciduous Forest at the random locations illustrated in **Figure 3** during suitable leaf-off period as required. These locations were selected to capture the portions of the treed habitat that remained intact.

No suitable bat maternity roost habitat (snags or cavity trees in older forest stands) were observed within the three circular plots surveyed. However, given the small size of the woodlot, it was practical to survey the entire area for cavity trees or snags which may provide a suitable maternity roost habitat. Two snag trees were identified with a

DBH of greater than 25 cm (Figure 4), both these trees were located adjacent to roadway and were only marginally larger than the 25 cm threshold. Nether tree contained cavities or appeared to contain voids suitable for maternity roosting.

Given the lack of available habitat, the highly disturbed state of the woodlot, and the lack of SAR bat occurrences in the background review, it was determined that acoustic monitoring for SAR bats was not warranted. However, the site and surrounding lands may provide some general foraging habitat for Bat in proximity to the small woodlot and the constructed marsh.

There is very limited opportunities for maternity roost habitat within the Study Area. However, the area may provide some general foraging and roosting opportunities for SAR and Non-SAR bats.

INCIDENTAL SAR AND SAR HABITAT OBSERVATIONS

The Monahan Drain may provide suitable habitat for Blanding's Turtles. However, no incidental observations of Blanding's Turtles were observed during preliminary site visits, no suitable habitat was identified within the development area (including nesting habitat), and there have been no recorded occurrences of Blanding's Turtles within two kilometres of the development area.

No additional SAR or SAR Habitat was observed during field investigations.

5.3 TREES

In March 2018, the tree inventory was completed by a qualified biologist to validate the results of the inventory originally completed by Fotenn (2013) in to confirm the relevance of the previous inventory. The results from this 2018 inventory are outlined in **Appendix B** and illustrated in **Figure 5**. A total of 65 individual and groups of trees were inventoried within the development area of the property. The dominant species of tree within the woodland are Manitoba Maple (*Acer negrundo*), although White Elm (*Ulmus americana*), Siberian Elm (Ulmus pumpila), Trembling Aspen (*Populus tremuloides*), and Crab Apple (*Malus sp.*) were also observed.

The overall condition of the trees within the woodland varied from 'Poor' to 'Good', with most described as being in 'moderate' condition. In general, the mature Manitoba Maple trees observed within the development are in a declining condition, with many of the mature specimens in poor condition. This is common with this species as Manitoba Maples have relatively soft wood and are inherently susceptible to physical damage. This makes them among the least desirable trees in the urban environment. Never-the-less, they do contribute to the urban tree canopy and provide ecological and social benefits.

In addition, 21 trees were removed under permit issued by the City of Ottawa the winter of 2017/2018 to facilitate geotechnical investigations on the site. The trees removed are illustrated in **Figure 5**.

Legend

- Development Area
- Dry-Fresh Manitoba Maple Deciduous Forest (FODM4-5)
- Cleared Trees (2018)

Tree Inventory

- Removed Tree (2018)
- Existing Tree (Private)
- Existing Tree (Public)

0 5 10 20 m

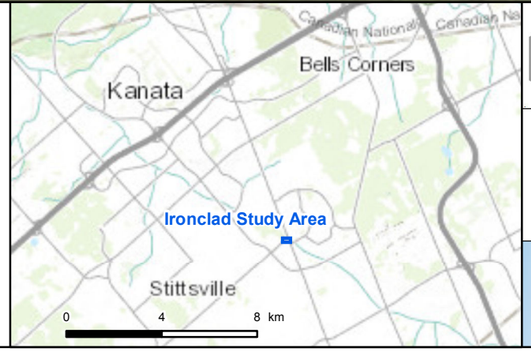
1 : 600

Projection : NAD83, MTM 9

N W E S

Sources :

Satellite imagery: Bing Maps Aerial
Data: ESRI World Topographic Map
MNRF LIO (Accessed April 2018)
City of Ottawa Open Data (Accessed April 2018)
Municipal Limits: SDA20K, 2010-01



IRONCLAD DEVELOPMENTS INC.

800 EAGLESON DRIVE

Ottawa, On

Figure 5

Tree Inventory

Mapping by: A. Zeller/C. Pytlak
Verification by: A. Zeller

181-02513-00 **05 November 2018**

Files : Figure5 Tree Inventory - Nov2018.mxd

5.4 INCIDENTAL WILDLIFE

Incidental wildlife species observed in the property are listed in **Table 9** below. All species observed are common to the Ottawa area and have an S-Rank of S4 or S5, with the exception of the Great Egret (S-Rank: S2B.)

Table 9 Incidental Wildlife Species Observed

Scientific Name	Common Name	Resident/ Visitor	Evidence
Birds			
Poecile atricapillus	Black-capped Chickadee	Resident	Visual Observation
Branta canadensis	Canada Goose	Resident	Visual Observation
Turdus migratorius	American Robin	Resident	Visual Observation
Agelaius phoeniceus	Red-winged Blackbird	Resident	Visual Observation
Tyrannus tyrannus	Eastern Kingbird	Resident	Visual Observation
Cardinalis cardinalis	Northern Cardinal	Resident	Visual Observation
Haemorhous mexicanus	House Finch	Resident	Visual Observation
Setophaga petechia	Yellow Warbler	Resident	Visual Observation
Ardea alba	Great Egret	Resident	Visual Observation
Herpetozoa			
Hyla versicolor	Grey Tree Frog	Resident	Heard Calling
Mammals			
Marmota monax	Groundhog	Resident	Den observed on berm near Fernbank Road.

6 DESCRIPTION OF THE PROPOSED PROJECT

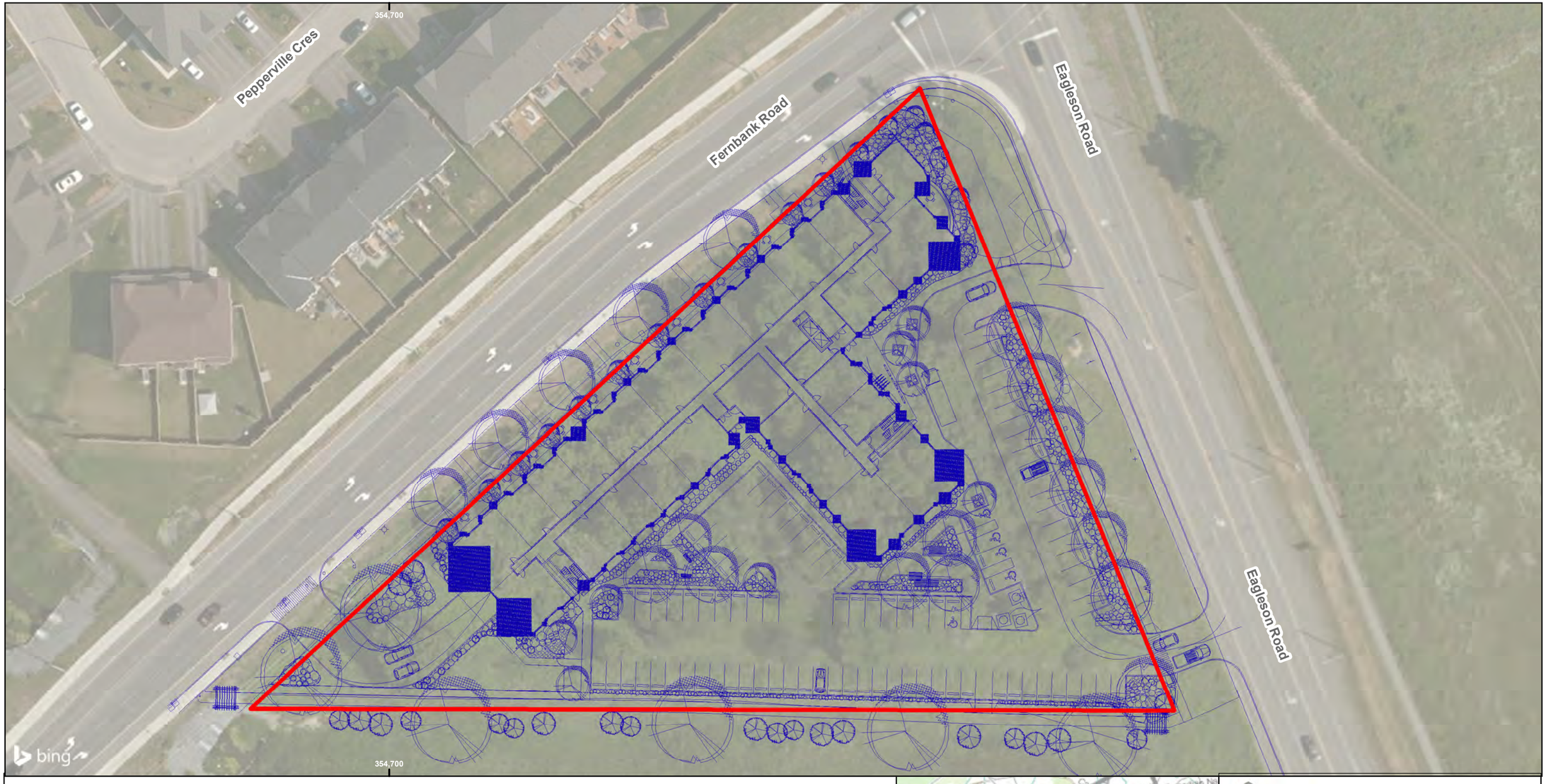
Ironclad Developments Inc. is proposing to construct a six-storey apartment development within the subject property at 800 Eagleson Road. The total site area is 0.73 ha, of which 0.25 ha will be covered by the proposed apartment building. The remainder of the site will be largely covered by at grade parking (72 spaces). The draft site plan illustrating the proposed layout of the development is on **Figure 6**.

The proposed "T-shaped" apartment building will be approximately 20 metres high and contain 143 total suites. These include; 44 single-bedroom suites, 71 two-bedroom suites, and 28 three-bedroom suites. In addition, the apartment will also include underground parking with 89 spaces accessed through the west side of the building off Fernbank Road.

6.1 CONSTRUCTION ACTIVITIES

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;
- Excavation and construction of apartment building and underground parking;
- Paving Parking Areas;
- Landscaping and fencing; and,
- On-going usage and maintenance.



Legend

- Development Area
- Proposed Site Plan

0 5 10 20 m

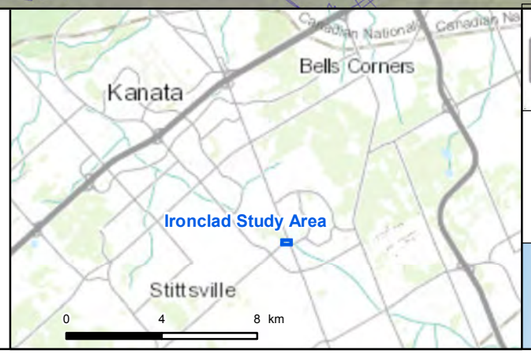
1 : 650

Projection : NAD83, MTM 9

N
W E
S

Sources :

Satellite imagery: Bing Maps Aerial
Data: ESRI World Topographic Map
MNRF LIO (Accessed April 2018)
City of Ottawa Open Data (Accessed April 2018)
Municipal Limits: SDA20K, 2010-01



IRONCLAD DEVELOPMENTS INC.

800 EAGLESON DRIVE

Ottawa, On

Figure 6

Proposed Site Plan

Mapping by: C. Pytlak
Verification by: A. Zeller

181-02513-00 **02 November 2018**

Files : Figure6 Site Plan - October2018.mxd

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 (**Figure 7**). The impact assessment and associated mitigation considers both construction-related impacts and impacts associated with the occupation of the development.

7.1 AQUATIC ENVIRONMENT AND FISH HABITAT

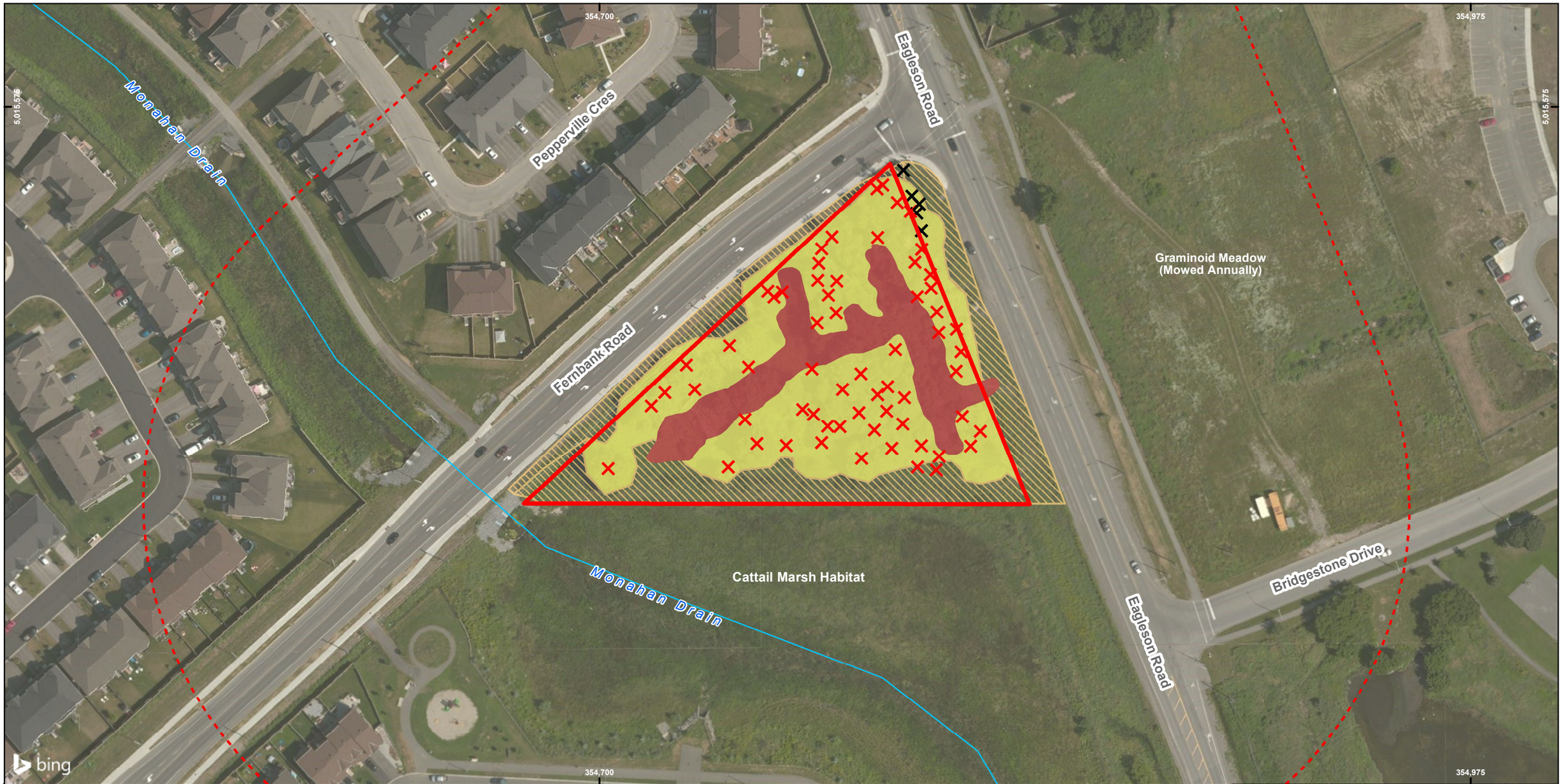
The proposed development will have no direct physical impact on the aquatic environment or fish habitat associated with the Monahan Drain south of the proposed development area. However, the following indirect impacts associated with the proposed development and associated construction activities may have the following indirect impacts:

- Overland transport of sediment into the Monahan Drain and associated habitats resulting from construction activities;
- Potential impacts on the Monahan Drain and other adjacent habitats resulting from spills and other contaminants,
- Sedimentation and erosion impacts resulting from potential dewatering activates that may be required during construction;
- Transport of sediment and other pollutants into the Monahan Drain from the proposed development, and
- Increased amount and rate of storm water runoff from the impermeable surfaces of the proposed development.

RECOMMENDED MITIGATION

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

- ✓ Light-duty silt fencing (OPSD 219.110) and / or other equivalent erosion and sediment control measures should be installed round the perimeter of the work area to clearly demarcate the development area and prevent erosion and sedimentation into adjacent habitats. Erosion and sediment control measures should be monitored regularly to ensure they are functioning properly and if issues are identified should be dealt with promptly;
- ✓ Heavy duty silt fencing (OPSD 219.130) and/ or other equivalent erosion and sediment control measures should be installed adjacent to the Monahan Drain and associated wetland habitats to clearly demarcate the development area and prevent erosion and sedimentation into adjacent habitats. Erosion and sediment control measures should be monitored regularly to ensure they are functioning properly and if issues are identified should be dealt with promptly;
- ✓ Stockpiling of excavated material should not occur outside the delineated work area. If stockpiling is to occur outside of this area, silt fencing should be used to contain any spoil piles to prevent sedimentation into adjacent areas;
- ✓ A spill response plan should be developed and implemented as required;
- ✓ Avoid the use of heavy equipment in the wetland and watercourse during the winter when fish, amphibians and reptiles maybe hibernating;



Legend

- Constructed Drain (MNRF)
- Development Area
- EIS Study Area (120 metres)
- Removed Tree (Private Property)
- Removed Tree (Public)

Terrestrial Impact

- Removed Forb Meadow Habitat (0.18 ha)
- Removed Woodland Habitat (0.56 ha)
- Removed Mixed Meadow Habitat (0.48 ha)

0 12.5 25 50 m

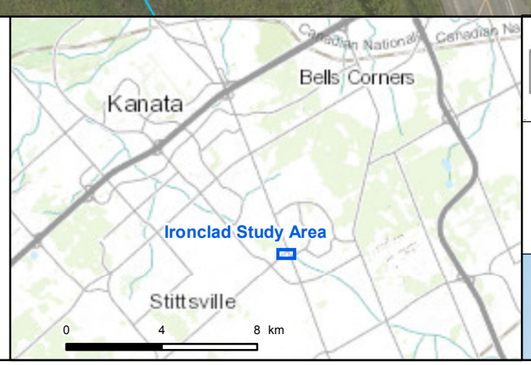
1 : 1,200

Projection : NAD83, MTM 9

N W E S

Sources :

Satellite imagery: Bing Maps Aerial
Data: ESRI World Topographic Map
MNRF LIO (Accessed April 2018)
City of Ottawa Open Data (Accessed April 2018)
Municipal Limits: SDA20K, 2010-01



IRONCLAD DEVELOPMENTS INC.

800 EAGLESON DRIVE

Ottawa, On

Figure 7

Environmental Impacts

Mapping by: A. Zeller/C. Pytlak
Verification by: A. Zeller

181-02513-00 **05 November 2018**

Files : Figure7 Impacts - October2018.mxd

- ✓ It is recommended that dewatering ponds (OPSD219.240) or similar standards should be implemented to avoid sedimentation and erosion in adjacent areas. If dewatering requires more than 50,000 L of water to be pumped per day, appropriate permits must be obtained from the Ministry of Environment and Climate Change prior to the dewatering; and,
- ✓ A storm water management plan should consider limiting normal flows, following normal storm events, from discharging directly into the adjacent Monahan Drain and associated wetland habitat. Onsite, storm water retention and quality control measures should be considered for this property.

With the successful implementation of the mitigation measures outlined above, impacts from the proposed development on the Aquatic Environment and Fish Habitat are expected to be negligible.

7.2 NATURAL HERITAGE FEATURES

7.2.1 VEGETATION COMMUNITIES

Given the difference in elevation between the adjacent roadway and the development area, the entire development area and associated vegetation communities will be cleared and filled to match the existing grade of surrounding lands. The impacts associated with this clearing will include:

- The permanent loss of 1.24 ha of native vegetation directly associated with the clearing required to accommodate the proposed development (see **Figure 7**). This includes;
  - 0.56 ha of Manitoba Maple Deciduous Forest
  - 0.18 ha of Forb Meadow Habitat, and
  - 0.5 ha of Mixed Meadow Habitat.
- 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; and,
- Permanent loss of native vegetation due to increased potential for of non-native and invasive vegetation species after development.

MITIGATION DURING CONSTRUCTION

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. This will prevent encroachment of construction activities into the adjacent natural features. This fencing should be monitored regularly to ensure it is functioning properly. Any deviancy in the fencing should be dealt with promptly;
- ✓ Restoration of the vegetation buffer between the proposed development and the Monahan Drain using locally appropriate native species (trees, shrubs, and seed mix) should be undertaken to offset loss of vegetation and biodiversity;
- ✓ Machinery will arrive on site in a clean condition and will be free of fluid leaks, invasive species, and noxious weeds; and,
- ✓ All excess construction material will be removed from site and the area restored with seeding of native species upon project completion as required.

MITIGATION AFTER OCCUPATION

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

With the successful implementation of the mitigation measures outlined above, a moderate decrease in low-quality native terrestrial vegetation is anticipated.

7.2.2 SIGNIFICANT WILDLIFE HABITAT

No direct impacts to SWH are anticipated resulting from the proposed development.

7.2.3 BREEDING BIRDS

From the draft site plan provided and considering the existing grades of the site, the woodland and meadow communities within and adjacent to the development area will be permanently removed to accommodate the proposed development. This will result in a loss of potential nesting and foraging habitat for birds. The following direct and indirect impacts on breeding birds are a possible result of the proposed development:

- The permanent loss of nesting and foraging habitat will likely result from the clearing of vegetation within the property;
- Potential physical harm to birds or birds' nests during clearing and construction activities;
- Reduced diversity and abundance of a bird species in the area;
- Predation by household cats during occupation; and,
- The increased potential for bird window strikes following construction.

MITIGATION BEFORE CONSTRUCTION

- ✓ "Bird-friendly" building design principals should be considered in the design of the development. Potential measures may include the following:
  - A building design with a total window area of up-to 40 percent relative to the entire façade to help reduce fatal bird collisions (Carley, et al., 2016); and,
  - A building design which includes recessed windows, balconies and awnings can add visual cues for birds to avoid (Carley, et al., 2016).

MITIGATION DURING CONSTRUCTION

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 1st and August 31st. 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 Migratory Birds Convention Act (Government of Canada, 1994);
- ✓ The replanting of native trees and shrubs adjacent to the Monahan Drain, south of the proposed development perimeter should be considered. This will provide habitat to breeding birds;
- ✓ 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 for care with a small donation of money to help pay for the care (a local facility is the "Ottawa Valley Wild Bird Care Centre");

- ✓ The construction area should be pre-stressed prior to any vegetation clearing within the proposed development area; and,
- ✓ 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, 2015).

With the successful implementation of the mitigation measures outlined above, the impact to breeding bird populations within the Study Area is minor.

7.2.4 AMPHIBIANS

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

- Potential physical harm to amphibians during clearing and construction activities;
- Potential harm to amphibians resulting from sediments and pollutants transported into the adjacent wetland habitat associated with the Monahan Drain from the proposed development; and,
- Negligible loss of woodland amphibian habitat.

MITIGATION DURING CONSTRUCTION

- ✓ 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 land is permanently stabilized) of the project and repaired if damaged by machinery;
- ✓ Avoid the use of heavy equipment in wetlands and watercourses during the winter amphibians and reptiles may be hibernating; and,
- ✓ 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, 2015).

With the successful implementation of the mitigation measures outlined above, the proposed development will result in a negligible impact to amphibians within the Study Area.

7.2.5 SPECIES AT RISK

The clearing of the forested habitat within the development area may result in the displacement, injury, or death of SAR Bats or Chimney Swift which may be using the trees as temporary roosting habitat in the trees during the daytime.

MITIGATION DURING CONSTRUCTION

- ✓ Clearing of vegetation should be avoided during the active foraging and breeding bird seasons, between April 1st and August 31st, to avoid potential physical harm to roosting SAR bats, and
- ✓ The construction and installation of 2-3 'bat box's' is recommended adjacent to the Monahan Drain to provide foraging bats with incidental roosting habitat in the area.

With the successful implementation of the mitigation measures outlined above, there will be no impacts to Species at Risk or associated habitats resulting from the proposed development.

7.3 TREES

The proposed development is expected to have a negligible impact on tree cover within the Study Area. The retention of trees within the proposed development area will not be possible given the proposed footprint of the development and the grade difference between the existing grade of the forest community relative to the adjacent roadways.

The location of the trees that require removal to accommodate the proposed development is illustrated in **Figure 7**. The number associated with each tree correspond to the inventory table in **Appendix B**. There will be no tree retention possible on this site.

MITIGATION BEFORE CONSTRUCTION

The mitigation measures outlined below should be considered to reduce the potential impacts on trees within the Study Area. These include:

- ✓ The City of Ottawa's 2015-2018 Strategic Plan (City of Ottawa, 2015) recommends that a 2:1 ratio (or greater) between trees planted and trees removed annually should be followed where possible. Furthermore, 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 for the entire City.
- ✓ The landscape plan should include tree planting recommendations consistent with the City of Ottawa's target for increased canopy cover to the extent possible within the property; and,
- ✓ Additional tree planting should be considered adjacent to the Monahan Drain and associated wetlands to help achieve the increased canopy cover noted above.

MITIGATION DURING CONSTRUCTION

Tree protection mitigation measures are not required for this development since tree retention is not anticipated.

However, the following measures should apply to all trees that will be cut down:

- ✓ Planted trees should be limited to those approved by the City of Ottawa for the urban environment; and,
- ✓ All Green Ash trees removed should be treated as infected by the Emerald Ash Borer beetle and appropriately disposed of so not to infect other areas of the city.

Given the declining health and limited value of the existing trees within the development area; the proposed development will have a negligible impact on the overall canopy cover in the City assuming the successful implementation of the mitigation measures outlined above.

7.4 WILDLIFE

The proposed development is expected to have 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:

- Displacement, injury, or death resulting from contact with heavy equipment during clearing and grading activities;
- Loss of general natural habitat suitable for the life processes of common urban wildlife;
- Disturbance to wildlife resulting from noise associated with construction activities, particularly during breeding periods; and,
- Conflict between wildlife and humans or domestic pets following development, including predation, mortality from vehicles, and poisoning.

Mitigation During Construction

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

- ✓ Pre-stress the area on a regular basis 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, 2015);
- ✓ 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 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; and,
- ✓ 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 centre for care with a small donation of money to help pay for the care (a local facility is the Rideau Valley Wildlife Sanctuary).

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

7.5 CUMULATIVE IMPACTS

This proposed development is a part of a rapidly expanding south Kanata community. Cumulative impacts must therefore be considered in the context of the local and regional environment in which the site is situated. Much of the land surrounding the Study Area has been developed into single-family residential homes over the past ten years. This development activity coincided with the construction of online storm water management measures along the Monahan Drain. At the landscape scale, most of the impacts to the natural heritage system were realized during the urban development of the surrounding lands. The subject property is now only connected to the broader natural heritage system via a tenuous ecological linage associated with the Monahan Drain and associated constructed wetlands.

Based on field assessments and available information, the removal of the natural heritage features within the subject property will have a negligible negative impact on the natural heritage system. Potential cumulative impacts to the natural heritage system resulting from the proposed development include the following:

- General loss of biodiversity and available habitat; and
- Increase in impervious surfaces increasing runoff potential.

RECOMMENDED MITIGATION

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

- ✓ Restoration of the vegetation buffer between the proposed development and the Monahan Drain; and,
- ✓ Promote the use of permeable landscaping materials and rain capture systems like rain barrels.

8 SUMMARY AND CONCLUSIONS

This report provides an evaluation of the anticipated environmental impacts associated with the construction and long-term occupation of the residential apartment development, located at 800 Eagleson Road (**Figure 1**) based on field investigations completed in the spring and summer of 2018 and previous desktop screening review.

The compensation measures described in this report have been developed to avoid negative environmental impacts associated with the proposed development. Based on the information available, it is our opinion that this proposed high-density apartment development, on what is functionally an infill lot on disturbed land, makes sound use of land which provides only marginal ecological value.

- ✓ **Based on the review of field investigation surveys, it is our recommendation that the proposed development at 800 Eagleson Road be permitted as planned.**

This study was completed by Alex Zeller, M.Sc. (Biology) with technical and field assistance provided by; Martine Gauthier, biol., M.Sc. (Environmental Sciences). Resumés of key staff are included in **Appendix A**. The results and findings of this study have been reported without bias or prejudice. The conclusions of this study are based on our own professional opinion substantiated by the findings of this study and have not been influenced in any way.

9 REFERENCES

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APPENDIX

A RESUMES

ALEXANDER ZELLER, M.Sc.

Senior Ecologist, Environment

Areas of practice

Environmental Impact Assessments

Environmental Policy and Approvals

Terrestrial and Aquatic Surveys

Environmental Assessments

Spatial Ecology & GIS

Aboriginal Consultation

Languages

English

PROFILE

Alexander completed a research-based Masters of Biology degree in the field of Landscape Ecology. Alexander has led and managed a number of challenging natural heritage projects throughout Canada. These include; urban development projects, regional planning studies, environmental monitoring programs, environmental assessments, and renewable energy studies. His broad knowledge of ecology, environmental policy, and consultation has proved a successful complement to large scale environmental planning projects.

EDUCATION

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

PROFESSIONAL DEVELOPMENT

Expert Witness Training (Gowlings, Toronto)	2015
Ecological Land Classification Certification (MNR)	2010

CAREER

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

PROFESSIONAL EXPERIENCE

LAND DEVELOPMENT

- KNL Environmental Monitoring, KNL Developments (2017 to now): Project manager and lead biologist for the required environmental monitoring required under a Species at Risk, overall benefits permit for three different species. Responsible for coordination of wildlife salvages, monitoring of mitigation measures, species surveys, consultation with agencies and stakeholders, advising on mitigation measures, and associated reporting. Project value: $60,000 annually.
- 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. Project value: $120,000

- 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 series of 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. Project Value: $150,000
- 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. Project value: $40,000
- 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. Project value $150,000
- 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. Project value $40,000
- 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. Project value: $80,000
- 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. Project value: $20,000
- 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. Project value: $4000

NATURAL RESOURCES STUDIES

- 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. Project value: $50,000

- 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. Project value: $60,000
- 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. Project value: $50,000
- 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 initial 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. In addition, a number of tools were developed to aid the City in the management and implementation of this data. These tools included; a suite of mitigation recommendations, a GIS database of the screening results, Google Earth files of all the results to ease accessibility of the spatial data, 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. Project value: $100,000
- Innes Road Natural Gas Pipeline – Environmental Monitoring and Environmental Awareness Training, Enbridge Gas Distribution Inc. (2014-2015): Project manager and lead Biologist for the Environmental monitoring and environmental awareness training for the Enbridge Gas Distribution pipeline installation along Innes Road in Ottawa. The project included the development of a bespoke environmental awareness training program to ensure the on staff contractors were aware of the environmental constraints and mitigation measures expected on site. The project also included on-going construction environmental monitoring to ensure construction complied with mitigation requirements and all potential impacts were minimized. Project value: $50,000
- 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. Project value: $60,000
- 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. Project value: $60,000

- 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. Project value: $150,000
- 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. Project value: $200,000
- 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. Project value: $50,000
- 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. Project value: $20,000
- 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. Project value: $100,000
- 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. Project value: $250,000

- 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. Project value: $20,000
- 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. Project value: $200,000
- 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. Project value: $150,000
- 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. Project value: $60,000
- 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. Project value: $4,000
- 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. Project value: $200,000.
- 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. Project value; $40,000

- 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. Project value: $20,000
- 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. Project value: $150,000

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

- 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

MARTINE GAUTHIER, BIOLOGIST, M.SC.ENV.

PROJECT COORDINATOR, ENVIRONMENT

AREAS OF PRACTICE

Ecological surveys

Environmental Assessments

Project Management

Natural Resources Management

Impact Studies

Wildlife & Plant Inventory

Botany

Physico-Chemical Characterization of Natural Waters (Limnology)

Federal Environmental Effects Evaluation

PROFILE

Martine Gauthier is a biologist and a project manager at WSP. She holds a bachelor's degree in Biology with a major in ecology, research profile, from the University of Ottawa and an applied Masters in environment, obtained from the University of Quebec in Montreal in partnership with the University of Sherbrooke. In addition, she holds a graduate certificate in project management from the Université du Québec en Outaouais. Her studies allowed her to acquire expertise in the management of natural environments especially in the field of water and forest. She completed several courses in botany given by expert botanists from Quebec, amongst other, rare plants in Quebec. Her master's thesis was on the effects of fragmentation by former logging roads in national parks in collaboration with SÉPAQ.

Employed by WSP since 2015, Ms. Gauthier has over 8 years' experience in both public and private sectors. She has among other things worked for municipal, provincial and federal governments. She is familiar with the various regulatory and licensing processes within these organizations. She often had to deal with various stakeholders as part of her projects, which have provided her communication skills and a distinct professionalism.

Over the years, Ms. Gauthier has specialized in environmental characterization (wildlife and plants), environmental assessments subject to provincial and federal procedures as well as management of water areas (lakes, rivers, streams and wetlands). The main activities related to her projects include roads, residential and commercial developments and several municipal and private projects. Her experience in municipal affairs has allowed her to develop and manage multiple projects including a unique project of acquisition of data on the quality of groundwater and surface water. Her training and experience have thus given her the defining skills in limnology.

Ms. Gauthier has developed an excellent ability to work in various field conditions. She has among others spent several months in northern Quebec with Aboriginal communities to develop a database for a national park.

Rigorous, she produces reports adapted to customer's needs while ensuring compliance with all applicable regulatory requirements.

EDUCATION

Short master's program in project management, Université du Québec en Outaouais, QC	2015
Master's degree in Environmental Science, test profile « Élaboration de critères de fragmentation des chemins forestiers abandonnés », Université du Québec à Montréal and SÉPAQ, QC	2011
Bachelor's degree in biology with a major in ecology/evolution/behavior, Ottawa University, ON	2008

PROFESSIONAL DEVELOPMENT

Workplace First Aid, CNESST	2018
Safety in water proximity work, SIFA	2017
Road work signage, APSAM	2014
Confined space training, APSAM	2013

Pleasure Craft Operator Card, ExamenBateau.com	2007
Maps, compasses and GPS training, Fédération québécoise des chasseurs et pêcheurs	2007

PROFESSIONAL ASSOCIATIONS

Association des biologistes du Québec member #2978	ABQ

CAREER

Project Coordinator, Environment, WSP	2015 – Present
Environment and Sustainable Development Advisor, Municipality of Chelsea	2013–2015
Biologist-botanist, CIMA+	2011–2013
Trainee Assistant-Evaluator, Environment Canada	2010
Trainee project manager in protection of natural environments, City of Granby	2010
Education and conservation biologist, National Park Pingualuit, Kativik regional government	2009
Junior Biologist, Gatineau park, National Capital Commission	2007–2008

PROFESSIONAL EXPERIENCE

Environmental surveys, Environmental Site Assessments, Environmental effects analysis and Applications for Regulatory Approvals

Project on federal lands

- Replacement of small and remote ports of entry across Canada (2017). Species of special concern and general fauna description for six (6) of Quebec's ports of entry as part of the federal Environmental Effects Evaluation (EEE). Client: Canada Border Crossing Service. Environmental fees: $42K
- Study of multiple scenarios for the relocation of the municipal pumping station St-Étienne, Jacques-Cartier park, Gatineau, Quebec (2017). In charge of ecological study and Comparative environmental effects analysis for municipal, provincial and federal regulations. Client: City of Gatineau. Environmental fees: $10K
- Replacement of exterior lighting of the Canadian Museum of History, Gatineau, Quebec (2017). In charge of Environmental Effects Evaluation (EEE) including ecological survey, analysis of impacts and identification of mitigation measures based on Non-Basic Project Mitigation Measures Form (CEPA. 2012). Client: Canadian Museum of History. Environmental fees: $5K
- Stabilization of a segment of Voyageurs pathway, Gatineau, Quebec (2017). In charge of the ecological survey, analysis of impacts and identification of mitigation measures based on Non-Basic Project Mitigation Measures Form as part of the Environmental Effects Evaluation (EEE) under the CEPA 2012, request for provincial C.A. 22 permit applications. Client: National Capital Commission. Environmental fees: $12K

- Construction of a bicycle path on Mine, Notch and Kingsmere roads, Gatineau park, Chelsea, Chelsea, Quebec (2017). In charge of the environmental characterization. Client: Municipality of Chelsea. Environmental fees: $8K
- Extension of four guy anchors in the Gatineau Park, Chelsea, Quebec (2016). In charge of environmental impact analysis including environmental characterization, analysis of impacts and identification of mitigation measures based on Basic Project Mitigation Measures Form (CEPA. 2012). Client: Canadian Broadcasting Corporation. Environmental Fees: $5K
- Replacement of two culverts on Meech and Notch Road in Chelsea, Quebec (2016). Environmental impact analysis including environmental characterization, analysis of impacts and compensation plan. Client: NCC. Environmental Fees: $5K
- Construction of a snowmobile garage, Camp Fortune, Chelsea, Quebec (2015): Environmental Site Characterization, identification of impacts, proposed mitigations measures and environmental monitoring. Client: Télé-Québec. Environmental Fees: $5K
- Proposed access to the banks on the Richmond Landing site, Ottawa, Ontario (2015-2016). In charge of Environmental impact analysis including ecological characterization, identification of project impacts on the environment, cumulative and residual impacts and identification of mitigation measures, based on CEPA methodology (2012). Client: NCC. Environmental Fees: $16K
- Ecological survey and characterization of the banks of the Ottawa River, Gatineau and Ottawa (2015). Field surveys. Client: NCC. Environmental fees: $20K

Municipal

- Establishment of a starting stadium for cross-country skiing, Val-des-Monts, Quebec (2017-2018). In charge of ecological surveys, authority's negotiations, wetlands compensation plan. Client: Municipality of Val-des-Monts. Environmental fees: $10K
- Construction of an asphalt crushing, storage of branches and concrete residues plant, Gatineau, Quebec (2017). In charge of ecological survey. Client: City of Gatineau. Environmental fees: $4K
- Construction of a new fire station, Val-des-Monts, Quebec (2017). In charge of ecological survey. Client: Municipality of Val-des-Monts. Environmental fees: $7K
- Culvert replacement, Litchfield, Quebec (2017). Ecological study and fish habitat study for provincial and federal authorizations. Client: Municipality of Litchfield. Environmental fees: $5K
- Pink Road extension project, Gatineau, Quebec (2017). Ecological study, environmental effects, mitigation measures and request for provincial C.A. 22 permit applications. Client: City of Gatineau. Environmental fees: $20K.
- Tree maintenance work on municipal land, Gatineau, Quebec (2016). In charge of wetland surveys. Client: City of Gatineau. Environmental fees: $8K
- Development of an industrial park, Thurso, Quebec (2016). In charge of ecological study and authorities negotiations. Client: City of Thurso. Environmental fees: $6K
- Study of multiple scenarios for the widening of the Alonzo Bridge, Gatineau, Cantley and Chelsea, Quebec (2016). Comparative analysis of environmental effects. Development of a multi-criterion analysis method. Client: City of Gatineau. Environmental fees: $10K

- Stabilization of a collapsed portion of Montée Paiement, Val-des-Monts, Quebec (2015): Environmental site characterization, delimitation of the high water mark, identification of impacts and proposed mitigations measures as part of an application for a certificate of authorization under article 22 of the EQA. Client: Municipality of Val-des-Monts. Environmental fees: $5K
- Refection of Burnside road, Wakefield, La Pêche, Quebec (2015). In charge of Phase I Environmental Site Assessment. Client: Municipality of La Pêche. Environmental fees: $2K
- Development of a hiking trail, Chelsea, Quebec (2014). In charge of inventory and C.A. 22 permit applications. Client: Municipality of Chelsea (internally)
- Development project of footbridges in wetlands, Bois-de-Saraguay, Montreal, Quebec (2013). In charge of permit applications and compensation plan. Client: City of Montreal. Environmental fees: $100K
- Tree inventory of the borough of St-Laurent, Montreal, Quebec (2012). Field tree inventories and identification of tree diseases. Client: City of Montreal, borough of St-Laurent. Environmental fees: $100K
- Les Hauts-Quartiers Jérômiens, Saint-Jérôme, Quebec (2011). Inventories and ecological characterization for the municipal development planning. Client: Municipality of St-Jérôme. Environmental fees: $30K
- Highway extension project and construction of the municipal garage in Mirabel, Quebec (2011). In charge of inventories, development plan and authorities approvals. Client: City of Mirabel. Environmental fees: $20K
- Commercial development project, Michèle-Bohec sector, Quebec (2013). In charge of inventory and authorization requests. Client: City of Blainville. Environmental fees: $25K

Industrial and Commercial Projects

- Pipeline NPS10 segment relocation Project, Saint-Eustache, Quebec (2017). In charge of project management, Environmental and Socio-economical Assessment, assistance with online application. Client: Trans-Northern Pipelines Inc. Environmental fees: $35K
- Commercial project, Gatineau, Quebec (2017). In charge of characterization of the hydrographic network. Client: BBL Construction. Environmental fees: $2.7K
- Commercial project, Gatineau, Quebec (2017). In charge of characterization of the hydrographic network. Client: BBL Construction. Environmental fees: $2.5K
- Various work on an industrial site, Thurso, Quebec (2017). In charge of wetlands survey. Client: Foresterie Lauzon (Fiducie). Environmental fees: $3K
- Various developments, Gatineau local airport, Gatineau, Quebec (2016). In charge of hydrographical survey. Client: Gatineau-Ottawa Executive Airport. Environmental fees: $3K
- Construction of a curling centre, Chelsea, Quebec (2016). In charge of ecological study and municipal compensation plan. Client: Mr. David Meredith. Environmental fees: $5K
- Carrière Sablière Dagenais Inc.
    - Project of addition of brick, concrete and asphalt activities for the quarry of Saint-Antoine Road in Val-des-Monts, Quebec (2016). In charge of ecological characterization, identification of environmental constraints, follow-up and requests for ministerial approvals. Environmental Fees: $10K

- Expansion of the Fillion quarry, Ange-Gardien, Quebec (2015-2016). Ecological characterization, identification of environmental constraints, follow-up and requests for ministerial approvals. Environmental Fees: $10K

Real estate promotor

- Residential development project, Gatineau (Templeton), Quebec (2017). In charge of ecological study. Client: 8078823 Canada Inc. Environmental fees: $5K
- Residential development project, Gatineau (Templeton), Quebec (2017). In charge of for ecological study. Client: Construction Chartro. Environmental fees: $6K
- Residential development project, Groulx road, Cantley, Quebec (2017). In charge of ecological study. Client: Ute Keuchel In Trust. Environmental fees: $4K
- Extension of a rural road, l'Ange-Gardien, Quebec (2017). In charge of ecological study. Client: Industries CAMA. Environmental fees: $4K
- Residential development project, Val-des-Monts, Quebec (2017). In charge of ecological study. Client: Mr. Denis Chagnon. Environmental fees: $8K
- Residential development project, Pontiac (Luskville), Quebec (2017). In charge of ecological study. Client: Mr. Yves Arbour. Environmental fees: $5K
- Residential development, Winchester, Ontario (2016). In charge of characterization of the fish habitat in streams, ecologicalsurvey and project notice to the FOC ministry. Client: 7985509 Canada inc. - Winchester development. Environmental Fees: $1.5K
- Residential development project, 1009 Trim road, Ottawa, Ontario (2016). In charge of ecological study and federal requirements. Client: Grandmaître Estate. Environmental fees: $10K
- Residential development project, Gatineau, Quebec (2016). In charge of ecological study in a municipally protected wooded area. Client: Société Tree-Gestion inc. Environmental fees: $2K
- Residential and commercial development project, Pontiac (Luskville), Quebec (2016). In charge of ecological study. Client: Lantian International Student Service Centre Ltd. Environmental fees: $10K
- Residential development project, Les Quartiers Meredith, Chelsea, Quebec (2017). In charge of ecological study, wetland compensation plan and C.A. 22 permit applications. Government negotiations. Client: Mr. David Meredith. Environmental fees: $16K
- Residential development project, Fossambault-sur-le-Lac (Carrefour Street), Quebec (2011). In charge of inventories and ecological characterization. Client: Private promotor. Environmental fees: $6K
- Residential development project (de la Forêt Road), Stoneham, Quebec (2011): In charge of inventories and ecological characterization. Client: Private promotor. Environmental fees: $10K
- Residential development project, Mont Shefford, Shefford, Quebec (2011): In charge of inventory and ecological characterization. Client: Private promotor. Environmental fees: $10K

- Residential or commercial development project. Vacant lots, Saint-Canut, Saint-Jérôme, Lachute, Staynerville, Montréal, Laval, Québec (2011-2013): In charge of ESA1. Private clients. Environmental fees: $2.5K to $5K
- Tree houses project (Les refuges perchés), Saint-Faustin Lac-Carré, Quebec (2012): In charge of inventory, ecological characterization, identification of constraints and mitigation measures. Client: Centre touristique et éducatif des Laurentides (CTEL). Environmental fees: $10K
- Volière development project, Saint-Jérôme, Quebec (2012): In charge of inventory and authorization requests. Environmental fees: $12K
- Bois de l'Équerre residential development project, Laval, Quebec (2012): Responsible of EMV component inventories. Client: Immeubles Équerre. Environmental fees: $10K
- Extension of Touchette Street, Saint-Jérôme, Quebec (2012). In charge of ESA1. Client: MOBIUS. Environmental fees: $5K

Roadway and Infrastructure

- Construction of a rest stop, Papineauville, Quebec (2017). In charge of ecological survey. Client: 9283-5859 Quebec Inc. Environmental fees: $4K
- Four (4) culverts replacement, Gatineau (Aylmer), Quebec (2017). In charge of inventory and survey of fish habitat, federal permits application. Client: Les Construction B.G.P. Environmental fees: $4K.
- Quebec Ministry of Transportation
  - New Champlain Bridge and Turcot Interchange, Montréal and Longueuil, Quebec (2012-2013). In charge of inventory and characterization of wetlands and forest environments, wildlife inventories and public consultations. Environmental fees: $50K
  - Update of the environmental impacts study, Road 323 between Brébeuf and Mont-Tremblant, Quebec (2012). In charge of ESA1. Environmental fees: $70K
  - Rehabilitation of La Salette Blvd interchange and Highway 15, Saint-Jérôme, Quebec (2012). In charge of the ecological characterization (wildlife and plants), impact assessments and identification of mitigation measures. Environmental fees: $10K
  - Rehabilitation of Highway 138, 5 km stretch, Huntingdon, Quebec (2012). In charge of the ecological characterization (wildlife and plants), assessment of the impacts of the road rehabilitation and identification of mitigation measures. Environmental fees: $25K
  - Rehabilitation of Pie-IX Bridge, Montréal, Quebec (2012). In charge of the ecological characterization (wildlife and plants), impact assessment of the bridge rehabilitation and identification of mitigation measures. Environmental fees: $5K
  - Rehabilitation of 4 bridges in Montérégie, Quebec (2012. In charge of the ecological characterization (wildlife and plants), the impact assessment of the bridge rehabilitation and identification of mitigation measures. Environmental fees: $15K

Other Projects

- Development of a new National Park, Temiscaming, Quebec (2017). Ecological survey and identification of environmental constraints and species of special concern. Client: SEPAQ. Environmental fees: $10K
- Study for a new National Park, Temiscaming, Quebec (2016). Ecological survey of a potential site for a new national park. Client: SEPAQ. Environmental fees: $10K

Fauna surveys

- Western chorus frog survey, Gatineau, Quebec (2017). In charge of field survey. Client : Construction Chartro. Environmental fees : $2K
- Western chorus frog habitat evaluation, Gatineau, Quebec (2017). In charge of field survey. Client : Square Urbania. Environmental fees : $3K
- Eastern whip-poor-will and amphibians survey, Cornwall, Ontario (2017). Field survey. Client : Cornwall Gravel Co Ltd. Environmental fees : $5K
- Four-toed salamander survey, Gatineau (Buckingham), Quebec (2017). In charge of field survey, report and negotiations with authorities. Client : 8789622 Canada inc. Environmental fees : $3K

Natural Areas Management Plans

- Municipality of Chelsea (internally)
  - Knowledge acquisition project on surface water and groundwater on the territory of the Municipality of Chelsea, Quebec (2013-2015). Project manager, organization of the field campaign, collection of field data, results analysis, report and detection of problems.
  - Management initiatives of invasive alien plants on the territory of the Municipality of Chelsea, Quebec (2014-2015). Training to employees of public works and organization of a communal collection to dispose of plants.
- Monitoring of the water conditions of a wetland following the installation of catch basins as part of a residential development, Saint-Jérôme, Quebec (2011-2013): In charge of the ecological characterization and annual monitoring of ecological conditions and water levels, as required by the MDDEP. Client: Guy Bertrand. Environmental fees: $2.5K per year
- Strategy for conservation and enhancement of the natural environment on the territory of Blainville, Quebec (2012). In charge of field inventories, collaboration in the creation of a database and calculation of the ecological value of wetlands, land and water courses. Client: City of Blainville. Environmental fees: $40K
- Conservation plan and development of natural areas on the territory of Granby, Quebec (2010): In charge of land inventories, creation of a database, mapping and multi-criteria analysis of the ecological value of natural environments. Client: City of Granby. Environmental fees: $10K
- Database of wildlife observations for the Pingualuit National Park, Quebec (2009): In charge of land inventory and creation of the database. Client: Kativik Regional Government. Environmental fees: $10K

Restoration of Natural Areas

- Shoreline restauration plan, Chelsea, Quebec (2017). In charge of restauration plan. Client: Mr. Yvan St-Gelais. Environmental fees: $3K

- Revegetation of a shoreline and plantation of 15 butternut trees, Chelsea generating station, Chelsea, Québec (2017). Client: Hydro-Quebec. Environmental fees: $4K
- Shoreline restauration plan, Cantley, Quebec (2017). In charge of restauration plan and compliance report. Client: Mr. Stéphane Blanchard. Environmental fees: $3K
- Reforestation of a wetland, l'Ange-Gardien, Quebec (2017). In charge of field work, tree planting and report. Client: Carrière Sablière Dagenais Inc. Environmental fees: $28K
- Development plan of a wetland and management of beaver dams as part of a compensation project for the construction of Highway 5 by the MTQ, Chelsea, Quebec (2015). Field inventories, report review and communication with stakeholders. Plan submitted to the MTQ. Client: Municipality of Chelsea (internally)
- Revegetation of the shoreline, Lac Grand Pré pond, Cantley, Quebec (2015). Field inventories and drafting of the revegetation plan. Client: S.E.C Immeubles – Marché Cantley. Environmental fees: $2K
- Restoration of the shoreline and replacement of a bridge to the municipal bike path, Mirabel, Quebec (2013). Field inventories. Client: City of Mirabel. Environmental fees: $5K
- Revegetation plan and compensation plans for various road construction projects to repair bridges and bike paths in riparian strips, Quebec (2011-2015). Environmental fees: $2.5K to $10K

Environmental Monitoring

- Slope stabilization and culvert replacement, Road 323, Notre-Dame-de-la-Paix, Quebec (2017). In charge of environmental monitoring. Client: Ministère des Transports, de la Mobilité durable et de l'Électrification des transports. Environmental fees: $5K.
- Slope stabilization, road adjacent to Coulonge River, Mansfield-et-Pontefract, Quebec (2017). In charge of environmental monitoring. Client: Ministère des Transports, de la Mobilité durable et de l'Électrification des transports. Environmental fees: $3K.

APPENDIX

B RESULTS OF 2018 TREE INVENTORY

TABLE B-1: Results of 2018 Tree Inventory

TREE #	SCIENTIFIC NAME	COMMON NAME	Tree Diameter (cm)*	CONDITION	COMMENTS
1	*Acer negundo*	*Manitoba Maple*	MS (5) - 29.1-40	POOR	The tree is failing, with some of the stems splitting away from the tree. There is severe suckering and evidence of decay.
2	*Acer negundo*	*Manitoba Maple*	29.9	POOR	The tree is leaning slightly, but otherwise appears healthy and well-formed.
3	*Acer negundo*	*Manitoba Maple*	MS (5) - 12.1-51.7	MODERATE	The tree is poorly formed, and suckering, but appears healthy.
4	*Lonicera*	*Honeysuckle*	n/a	N/A	A large shrub, seemingly in good health.
~~5~~	~~*Ulmus pumila*~~	~~*Siberian Elm*~~	~~36.25~~	~~**REMOVED**~~	
6	*Acer negundo*	*Manitoba Maple*	MS (4) - 11.7-16.2	MODERATE	The tree is suckering and poorly formed. but appears moderately healthy.
7	*Acer negundo*	*Manitoba Maple*	MS (3) - 5.8-16.6	MODERATE	The tree is suckering and poorly formed. but appears moderately healthy.
8	*Acer negundo*	*Manitoba Maple*	MS (2) - 13Â·1 & 14.5	MODERATE	The tree is suckering and poorly formed, but appears moderately healthy.
9	*Acer negundo*	*Manitoba Maple*	14.1	MODERATE	The tree is suckering and poorly formed, but appears moderately healthy.
10	*Acer negundo*	*Manitoba Maple*	12.3	MODERATE	The tree is leaning slightly, suckering and poorly formed, but appears moderately healthy.
11	*Acer negundo*	*Manitoba Maple*	21.6	MODERATE	The tree is leaning slightly, suckering and poorly formed, but appears moderately healthy.
12	*Acer negundo*	*Manitoba Maple*	MS (2) -12.5 & 457	POOR	The tree is poorly formed, with a very large broken branch off the main stem.
13	*Acer negundo*	*Manitoba Maple*	MS (2) - 37 & n/a	POOR	The tree is failing, with a very large crack between the two stems.
14	*Acer negundo*	*Manitoba Maple*	MS (2) - 14.6-28.3	MODERATE	The tree is poorly formed, but appears healthy.
15	*Acer negundo*	*Manitoba Maple*	MS (4) - 12.9-20.2	MODERATE	The tree is poorly formed, but appears healthy.
16	*Acer negundo*	*Manitoba Maple*	13.3	MODERATE	The tree is poorly formed, but appears healthy.
17	*Acer negundo*	*Manitoba Maple*	MS (2) - 9.7-25.7	MODERATE	The tree is poorly formed, but appears healthy.
18	*Populus tremuloides*	*Trembling Aspen*	9.8	POOR	The tree was originally multi-stemmed with two stems, but one (the larger of the two) has died. The tree will likely die.
19	*Acer negundo*	*Manitoba Maple*	22.2	MODERATE	The tree is poorly formed, but appears healthy.
20	*Acer negundo*	*Manitoba Maple*	MS (2) - 12.5-13.l	MODERATE	The tree is poorly formed, but appears healthy.
~~21~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~17~~	~~**REMOVED**~~	
~~22~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~20.6~~	~~**REMOVED**~~	
23	*Acer negundo*	*Manitoba Maple*	15	POOR	The tree is very poorly formed. with a severe lean. and girdled around the base.
24	*Acer negundo*	*Manitoba Maple*	13.9	MODERATE	The tree is poorly formed, but appears healthy.
25	*Acer negundo*	*Manitoba Maple*	20.7	MODERATE	The tree is poorly formed. but appears healthy.
~~26~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~14.6~~	~~**REMOVED**~~	
~~27~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~17~~	~~**REMOVED**~~	
~~28~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~MS (2) - 23.4-33.8~~	~~**REMOVED**~~	
29	*Acer negundo*	*Manitoba Maple*	MS (2) - 13.3-13.5	MODERATE	The tree is poorly formed. but appears healthy.
~~30~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~MS (2) - 12.7-21.6~~	~~**REMOVED**~~	
31	*Acer negundo*	*Manitoba Maple*	19.2	MODERATE	The tree is leaning and poorly formed, but appears healthy.
32	*Acer negundo*	*Manitoba Maple*	MS (2) - 13.3-16.8	MODERATE	The tree is leaning and poorly formed, but appears healthy.
33	*Ulmus americana*	*White Elm*	15.1	GOOD	The tree is healthy and well-formed.
34	*Acer negundo*	*Manitoba Maple*	MS (2) - 534 & Approx. 60	POOR	The tree is very large, with many dead and broken branches The tree is leaning moderately.
35	*Acer negundo*	*Manitoba Maple*	MS (6) - 11.3-30.1	POOR	The tree is very poorly formed, with several dead stems. and severe suckering.
~~36~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~18~~	~~**REMOVED**~~	
~~37~~	~~*Ulmus pumila*~~	~~*Siberian Elm*~~	~~17.2~~	~~**REMOVED**~~	
38	*Acer negundo*	*Manitoba Maple*	Approx. 50	POOR	The tree is very large, and is leaning severely, with heaving around the roots, clearly begriming to fail.
39	*Acer negundo*	*Manitoba Maple*	MS (3) - 45.1 - Approx. 45	POOR	The tree is very large, and is leaning severely, with heaving around the roots. evidence of rot and insect damage, clearly begrimfng to fail
~~40~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~MS (5) - 14.2-43.1~~	~~**REMOVED**~~	
~~41~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~MS (4) - Approx. 30 - Approx. 60~~	~~**REMOVED**~~	
42	*Ulmus americana*	*White Elm*	15	GOOD	The tree is healthy and well-formed.

TREE #	SCIENTIFIC NAME	COMMON NAME	Tree Diameter (cm)*	CONDITION	COMMENTS
43	*33 - Acer negundo*	*Thirty-three Manitoba Maples*	VARIES - 6.9 to 20.8	MODERATE	The trees are all single-stemmed, ail somewhat sparse in the canopy and all leaning slightly. They are all somewhat poorly formed, but appear healthy. The majority of the trees are approximately 15 cm in diamater, and are spaced at approximately 3-4 metres on centre. There is little undergrowth, and the area is surrounded by Dogwood and other shrubby growth on the north-west side. There are several Popu/us tremuloides growing in the area, all of them less than 10cm dbh.
44	*Acer negundo*	*Manitoba Maple*	MS (2) - 22Â·6 & 25.9	MODERATE	The tree is poorly formed with a moderate but corrected lean, and good reaction wood growth.
~~45~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~MS (8) - 4.0-14.6~~	~~**REMOVED**~~	
~~46~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~MS (5) - 13.3-38.4~~	~~**REMOVED**~~	
~~47~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~21.2~~	~~**REMOVED**~~	
48	*Acer negundo*	*Manitoba Maple*	25.9	MODERATE	The tree is leaning and poorly-formed but appears healthy.
49	*Acer negundo*	*Manitoba Maple*	MS (5) - 16.2-48.5	POOR	Two of the stems have fallen, and two others are leaning severely and cracked. There are large hangers in the remaining canopy.
50	*Acer negundo*	*Manitoba Maple*	n/a	n/a	The tree is windthrown.
51	*Acer negundo*	*Manitoba Maple*	n/a	n/a	The tree is windthrown.
52	*Acer negundo*	*Manitoba Maple*	Approx. 30	MODERATE	The tree is severely sait damaged, and there are abundant suckers and small branches throughaut the trunk.
53	*Ulmus americana*	*White Elm*	25.8	GOOD	The tree is leaning but appears healthy.
54	*Ulmus americana*	*White Elm*	26.2	GOOD	The tree is leaning but appears healthy.
55	*Acer negundo*	*Manitoba Maple*	MS (4) - 34Â·4 - Approx. 50	MODERATE	The tree is leaning and poorly-formed but appears healthy.
56	*Populus tremuloides*	*Trembling Aspen*	17.9	MODERATE	The tree is healthy and well-formed, but there are two dead, broken Trembling Aspen nearby.
57	*Populus tremuloides*	*Trembling Aspen*	n/a	n/a	The tree is windthrown.
58	*Acer negundo*	*Manitoba Maple*	MS (2) - 28.7-30.7	MODERATE	The tree has two codomlnant stems that are poorly Jolned wlth included bark but appears healthy
59	*Acer negundo*	*Manitoba Maple*	MS (4) - 10.1-24.9	MODERATE	The tree is leaning and poorly-formed but appears healthy.
60	*Acer negundo*	*Manitoba Maple*	MS (3) - Approx. - 15-40	POOR	The tree has been struck with large fallen stems from another tree. The tree is poorly formed and suckering.
61	*Acer negundo*	*Manitoba Maple*	n/a	n/a	The tree has broken at the base and fallen.
~~62~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~15.9~~	~~**REMOVED**~~	
~~63~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~25.1~~	~~**REMOVED**~~	
~~64~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~19.4~~	~~**REMOVED**~~	
~~65~~	~~*Ulmus americana*~~	~~*White Elm*~~	~~19.8~~	~~**REMOVED**~~	
66	*Ulmus americana*	*White Elm*	36.7	GOOD	The tree is healthy and well-formed.
~~67~~	~~*Ulmus americana*~~	~~*White Elm*~~	~~40.4~~	~~**REMOVED**~~	
~~68~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~MS (3) - <10-17.2~~	~~**REMOVED**~~	
~~69~~	~~*Acer negundo*~~	~~*Manitoba Maple*~~	~~Approx. - 30-50~~	~~**REMOVED**~~	
70	*Acer negundo*	*Manitoba Maple*	Approx. - 30-50	POOR	The tree has between 4 and 6 stems. Ali of the stems have either fallen or are clearly about to fail.
71	*Acer negundo*	*Manitoba Maple*	22.8	MODERATE	The tree is leaning and poorly-formed but appears healthy.
72	*Acer negundo*	*Manitoba Maple*	Approx. 30	POOR	The tree was clearly damaged in the 1998 Ice storm. and is consequently very poorly formed. It appears somewhat healthy.
73	*Malus sp.*	*Crabapple*	30.9	GOOD	The tree has a large wound on the north-east side, but is otherwise well-formed and appears healthy.
74	*Ulmus americana*	*White Elm*	32.5	GOOD	The tree is healthy and well-formed.
75	*Populus tremuloides*	*Trembling Aspen*	27.5	GOOD	The tree is healthy and well-formed.
76	*Ulmus americana*	*White Elm*	MS (2) - Approx. 30 - 30	MODERATE	The tree has codominant stems with severely included bark.
77	*Populus tremuloides*	*Trembling Aspen*	27.7	GOOD	The tree is healthy and well-formed.
78	*Populus tremuloides*	*Trembling Aspen*	29.7	GOOD	The tree is healthy and well-formed.

TREE #	SCIENTIFIC NAME	COMMON NAME	Tree Diameter (cm)*	CONDITION	COMMENTS
79	*12 Populus tremuloides, 6 Acer negundo, 2 Ulmus am*	*Twelve Trembling Aspen. Six Manitoba Maples*	PT - 10-15 - AN -10-12 - UA - 198. 21.4	MODERATE TO GOOD.	The trees are very consistently sized, scattered throughout the area, in generally good condition. though they are all leaning slightly, and somewhat sparse due ta the close growing environment. One Trembling Apsen was girdled, possibly by mice, and there is minimal undergrowth.
80	*n/a*	*n/a*	N/A	DEAD	There are 6 fallen, dead trees in this area, as well as two other standing dead trees. The bark is entirely gone, and the area is littered with dead branches.
81	*Populus tremuloides*	*Trembling Aspen*	26.8	GOOD	The tree is healthy and well-formed.
82	*Ulmus americana*	*White Elm*	33.6	GOOD	The tree is healthy and well-formed.
83	*Ulmus americana*	*White Elm*	30.9	MODERATE	The tree appears to be heavily sait damaged and somewhat poorly formed.
84	*Ulmus americana*	*White Elm*	27.7	GOOD	The tree is healthy and well-formed.
85	*Populus tremuloides*	*Trembling Aspen*	21.4	GOOD	The tree is healthy and well-formed
86	*Ulmus americana*	*White Elm*	13.5	MODERATE	The tree appears to be heavily sait damaged and somewhat poorly formed.
87	*Acer negundo*	*Manitoba Maple*	MS (5) – Approx . 15 - 34	MODERATE	The tree is leaning and poorly formed, but appears healthy.

* MS = Multi-stem Tree (Number of Stems indicated in brackets), PT = Trembling Aspen, AN = Manitoba Maple, UA = American Elm