



**Environmental Impact Statement
for 4041 Moodie, Ottawa, Ontario**

FINAL REPORT

September 10, 2018

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Sign-off Sheet

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Table of Contents

1.0	INTRODUCTION.....	1.1
1.1	STUDY AREA	1.1
1.2	PURPOSE.....	1.1
1.3	APPROACH	1.1
2.0	NATURAL HERITAGE AND HAZARD POLICY CONSIDERATIONS	2.1
2.1	PROVINCIAL POLICY STATEMENT	2.1
2.2	CITY OF OTTAWA OFFICIAL PLAN.....	2.2
2.3	RIDEAU VALLEY CONSERVATION AUTHORITY POLICIES	2.2
2.4	ENDANGERED SPECIES ACT.....	2.3
2.5	FEDERAL PROTECTION OF SPECIES AT RISK, FISH, AND MIGRATORY BIRDS	2.3
2.6	SUMMARY OF POLICY IMPLICATIONS	2.4
3.0	METHODS FOR DATA COLLECTION.....	3.1
3.1	BACKGROUND INFORMATION.....	3.1
3.1.1	Species at Risk	3.1
3.1.2	Provincially Rare Species.....	3.1
3.2	AGENCY CONSULTATION	3.2
3.3	FIELD INVESTIGATIONS	3.2
3.3.1	Vegetation Survey.....	3.3
3.3.2	Species at Risk Survey	3.3
3.3.3	Butternut Search	3.3
3.3.4	Bat Maternity Roost Habitat Assessment	3.3
3.3.5	Breeding Bird Surveys.....	3.4
3.3.6	Breeding Amphibian Surveys	3.4
3.3.7	Aquatic Habitat Assessment.....	3.4
3.3.8	Wildlife Observations and General Wildlife Habitat Surveys	3.4
3.3.9	Significant Wildlife Habitat.....	3.4
3.3.10	Wetland Delineation	3.4
4.0	SITE DESCRIPTION	4.1
4.1	GENERAL OVERVIEW OF SITE CONDITIONS	4.1
5.0	EXISTING ECOLOGICAL CONDITIONS.....	5.1
5.1	BACKGROUND DATA	5.1
5.1.1	Geology and Topography.....	5.1
5.1.2	Landscape Ecology.....	5.1
5.1.3	Hydrology.....	5.1
5.1.4	Species at Risk and Provincially Rare Species	5.1
5.1.5	Significant Natural Areas.....	5.2
5.2	FIELD INVESTIGATIONS	5.3
5.2.1	Vegetation.....	5.3
5.2.2	Species at Risk	5.4



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

5.2.3	Bat Maternity Roost Habitat	5.4
5.2.4	Breeding Birds	5.4
5.2.5	Breeding Amphibians	5.5
5.2.6	Fish and Fish Habitat	5.5
5.2.7	Incidental Wildlife Observations and Wildlife Habitat	5.5
5.2.8	Wetland Delineation	5.6
5.3	SIGNIFICANT WILDLIFE HABITAT	5.6
5.3.1	Seasonal Concentration Areas	5.6
5.3.2	Rare or Specialized Habitat	5.7
5.3.3	Habitat for Species of Conservation Concern	5.7
5.3.4	Animal Movement Corridors	5.9
6.0	DESCRIPTION OF THE PROPOSED DEVELOPMENT	6.1
7.0	IMPACT ASSESSMENT	7.1
7.1	DIRECT IMPACTS	7.1
7.1.1	Vegetation Cover	7.1
7.1.2	Species at Risk	7.1
7.1.3	Significant Wildlife Habitat	7.2
7.1.4	Migratory Birds	7.2
7.2	INDIRECT IMPACTS	7.2
7.3	LONG-TERM DEVELOPMENT IMPACTS	7.2
7.4	MITIGATION	7.3
7.4.1	Protection of Natural Areas	7.3
7.4.2	Species at Risk	7.3
7.5	WILDLIFE MANAGEMENT	7.4
7.6	PROTECTION OF MIGRATORY BIRDS	7.5
8.0	SUMMARY AND RECOMMENDATIONS	8.1
9.0	REFERENCES	9.1

LIST OF TABLES

Table 1:	Ecological Field Work	3.2
Table 2:	Provincially Listed Threatened/ Endangered Species with Potential to Occur within the Study Area	5.2
Table 3:	Ecological Land Classification Vegetation Types	5.3
Table 4:	Number of Calling Amphibians	5.5
Table 5:	Species of Conservation Concern with Records in the Vicinity of the Study	5.8
Table 6:	Potential for Project Interactions with Species at Risk	7.1



LIST OF APPENDICES

APPENDIX A FIGURES

- Figure 1: Subject Property
- Figure 2: Soils and Geology
- Figure 3: Surface Water and Wetlands
- Figure 4: Ecological Land Classifications
- Figure 5: Candidate Bat Maternity Roost Trees
- Figure 6: Wildlife Survey Locations
- Figure 7: Delineated Wetlands
- Figure 8: Candidate Habitat for Bat Maternity Colonies
- Figure 9: Proposed Development

APPENDIX B AGENCY CONSULTATION

APPENDIX C ELC FIELD CARDS

APPENDIX D SPECIES AT RISK HABITAT ASSESSMENT

APPENDIX E BREEDING BIRD SURVEY OBSERVATIONS

APPENDIX F WILDLIFE HABITAT ASSESSMENT



1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by the Ottawa Fire Services to prepare an Environmental Impact Statement (EIS) in support of an application for Zoning By-Law Amendment for the Subject Property shown on **Figure 1, Appendix A** and described below. This work was carried out under the Standing Offer Agreement #19617-91843-S01 between the City of Ottawa and Stantec.

This EIS is intended to identify the natural heritage features and functions, on and within 120 metres (m) of the proposed rezoning boundary, that may pose constraints to development, and to recommend appropriate measures to avoid and mitigate potential impacts and enhance the natural heritage features and associated functions, where possible.

1.1 STUDY AREA

The Study Area for this report generally includes the area bound by wetland and an aggregate operation to the north, forest and wetland to the south, Moodie Drive to the west, and disturbed land to the east. The Study Area is located at the northeastern portion of 4041 Moodie Drive, Concession 4, Lot 5 within the City of Ottawa (**Figure 1, Appendix A**). For the purposes of this report, the Study Area includes the proposed rezoning boundary (referred to as the Subject Property) and the 120 m area beyond the Subject Property (**Figure 1, Appendix A**).

According to the City of Ottawa's Rural Policy Plan (City of Ottawa, 2003), land use designation within the Subject Property is Sand and Resource Area. According to the consolidated City of Ottawa By-law No. 2008-250, current zoning within the Subject Property is Mineral Extraction Zone (City of Ottawa, 2008).

1.2 PURPOSE

The City of Ottawa has identified the need for Ottawa Fire Services to complete a detailed EIS as part of the permanent rezoning application for the 4 hectare (ha) Study Area to be used as a Fire Training Facility for Ottawa Fire Services.

1.3 APPROACH

Background information was reviewed prior to completing the targeted field work, consisting of existing published data and data made available through various public agencies, web-based mapping programs and other environmental reports pertaining to the Study Area.

The background information has been summarized to identify the natural heritage features that may be affected by the proposed rezoning application. The targeted field work was used to confirm and further consider issues raised by review of the background information.



2.0 NATURAL HERITAGE AND HAZARD POLICY CONSIDERATIONS

An assessment of the natural heritage features and functions within the Study Area was undertaken to comply with the requirements of the following policy and guideline documents.

2.1 PROVINCIAL POLICY STATEMENT

The Provincial Policy Statement (PPS) was issued under Section 3 of the Planning Act and came into effect on May 22, 1996, and revised in 2005 and 2014 (Ministry of Municipal Affairs and Housing, 2014). Decisions made by Planning Authorities shall be consistent with the policy statements issued under the Planning Act, such as the PPS, which includes policies on development and land use patterns, resources and public health and safety. Section 2.1 of the PPS deals with Natural Heritage Features in various ecoregions including Ecoregion 6E, which includes the Subject Property.

According to Section 2.1.4 of the PPS, development and site alteration shall not be permitted in the following features in Ecoregion 6E:

- significant wetlands
- significant coastal wetlands

According to Section 2.1.5 of the PPS, development and site alteration shall not be permitted in the following features in Ecoregion 6E, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions:

- significant woodlands
- significant valleylands
- significant wildlife habitat
- significant areas of natural and scientific interest (ANSI)

Sections 2.1.6 and 2.1.7 of the PPS state that development and site alteration shall not be permitted in the following features, except in accordance with provincial and federal requirements:

- habitat of endangered or threatened species
- fish habitat

According to Section 2.1.8, development and site alteration are prohibited on lands adjacent to the natural heritage features identified in 2.1.4, 2.1.5, and 2.1.6, unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Natural Heritage and Hazard Policy Considerations
September 10, 2018

2.2 CITY OF OTTAWA OFFICIAL PLAN

The City of Ottawa Official Plan (Plan) was adopted by Council on in May 2003. Schedules A, B, K, and L of the Plan designate the Natural Heritage System Features and Areas, which generally include features that are protected by the PPS such as significant wetlands and woodlands, and other habitat features (City of Ottawa, 2003).

Section 3.2.1 of the Plan states that development and site alteration shall not be permitted within Significant Wetlands, including Provincially Significant Wetlands (PSW). According to Section 3.2.1, development and site alterations are not be permitted within 120 m of the boundary of a Significant Wetland unless an EIS demonstrates that there will be no negative impacts on the wetland or its ecological function.

Section 3.2.2 of the Plan states that development and site alteration shall not be permitted within Natural Environment Areas (i.e., wetlands, Significant Woodlands, Significant Wildlife Habitat (SWH), Areas of Natural and Scientific Interest (ANSIs)). According to Section 3.2.2, development and site alterations are not permitted within 120 m of a Natural Environment Area; unless an EIS demonstrates that there will be no negative impacts on the natural features within the area or their ecological functions.

According to Section 4.7.3, development and site alteration is not permitted in fish habitat except in accordance with federal and provincial requirements. Proposed development near or adjacent to water bodies that provide fish habitat must demonstrate that the proposed development will not have a negative impact on fish habitat.

Section 4.7.4 of the Plan states that development and site alteration shall not be permitted in significant habitat of endangered and threatened species. According to Section 4.7.4, development and site alterations are not permitted within 120 m of the boundary of identified significant habitat of endangered and threatened species unless the ecological function of the adjacent lands has been evaluated and an EIS demonstrates that there will be no negative impacts on the significant habitat of endangered and threatened species or on its ecological functions.

2.3 RIDEAU VALLEY CONSERVATION AUTHORITY POLICIES

Pursuant to *Ontario Regulation 174/06, Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, May 2006*, prior permission is required from the Rideau Valley Conservation Authority (RVCA) for development within a floodplain, valleylands, wetland, or other hazardous land.

Permission is also required from the RVCA for alteration to a river, creek, stream or watercourse or interference with the hydrological function of a wetland. Generally, development, interference or other alteration that may negatively impact the control of flooding, erosion, dynamic beaches, pollution, or the conservation of land are not permitted (RVCA, 2010).



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Natural Heritage and Hazard Policy Considerations
September 10, 2018

Alteration to a watercourse within the jurisdiction of the Authority must be in accordance with the policies and guidelines in Section 3.0 of the *RVCA Policies Regarding Development Including the Construction / Reconstruction of Building and Structures, Placing of Fill and Alterations to Waterways Under Section 28 of the Conservation Authorities Act of Ontario* and must be to the satisfaction of the Authority.

Development and/or site alteration within the jurisdiction of the Authority and in, on or adjacent to natural heritage features must be in accordance with the policies and guidelines in Sections 1.2, 1.4, and 1.5 of the *RVCA Policies Regarding Development Including the Construction / Reconstruction of Building and Structures, Placing of Fill and Alterations to Waterways Under Section 28 of the Conservation Authorities Act of Ontario* and must be to the satisfaction of the Authority.

The RVCA (2010) policy with respect to development in wetlands is that it “may be permitted provided it will not have an adverse effect on the control of flooding, erosion, pollution or the conservation of land and, in the case of wetlands, the hydrologic function of the wetland.”

2.4 ENDANGERED SPECIES ACT

The *Ontario Endangered Species Act, 2007* (ESA, 2007) protects habitat and individuals of wildlife species designated as threatened, endangered, or extirpated in Ontario. Provincial species at risk are identified and assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO).

The ESA, 2007 protects species listed by COSSARO as threatened, endangered, or extirpated in Ontario and their habitats by prohibiting anyone from killing, harming, harassing or possessing protected species, as well as prohibiting any damage or destruction to the habitat of the listed species. All listed species are provided with general habitat protection under the ESA, 2007 aimed at protecting areas that species depend on to carry out their life processes, such as reproduction, rearing, hibernation, migration or feeding. Some species have had detailed habitat regulations passed that go beyond the general habitat protection to define specifically the extent and character of protected habitats.

Activities that may impact a protected species or its habitat require the prior issuance of a Permit from the Ministry of Natural Resources and Forestry (MNRF), unless the activities are exempted under Regulation. Ontario Regulation 242/08 identifies activities that are exempt from the permitting requirements of the Act subject to rigorous controls outside the permit process, including registration of the activity and preparation of mitigation. Activities not exempt under O. Reg. 242.08 require a complete permit application process.

2.5 FEDERAL PROTECTION OF SPECIES AT RISK, FISH, AND MIGRATORY BIRDS

Federally protected special concern, threatened, or endangered species are listed in Schedule 1 of the *Species at Risk Act* (SARA). SARA applies to federally owned lands and regulated projects, with the exception of fish (those species covered by the *Fisheries Act*) and migratory birds (those species covered by the *Migratory Birds Convention Act, 1994* (MBCA)), which are afforded protection on all lands.



2.6 SUMMARY OF POLICY IMPLICATIONS

The policies and guidelines summarized above were used to scope the study methodologies and inform an analysis of the opportunities and constraints for the Study Area.



3.0 METHOODS FOR DATA COLLECTION

3.1 BACKGROUND INFORMATION

The information in this report is based on field investigations completed by Stantec biologists, existing published data, data made available through various public agencies, web-based mapping programs, and online databases, including the following primary data sources:

- City of Ottawa Official Plan (2003) (City of Ottawa, 2003)
- Satellite Imagery (Google Earth Pro Ver. 7.1.2.2041)
- Topographic Maps (MNRF, 2014a)
- Land Information Ontario (LIO) Natural Heritage Mapping Tool (LIO, 2018)
- RVCA's Public Geoportal (RVCA, 2018)

3.1.1 Species at Risk

A list of species at risk, designated under the ESA, 2007 and/or SARA as endangered, threatened, or special concern, with potential to occur within the Study Area was developed by reviewing the following sources:

- Natural Heritage Information Centre (MNRF, 2014)
- Ontario Breeding Bird Atlas (Cadman et. al., 2007)
- Ottawa Bird Count (OBC, 2014)
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2018)
- eBird Canada (eBird, 2018)
- Atlas of the Mammals of Ontario (Dobbyn, 1994)
- Ontario Butterfly Atlas Online (Toronto Entomologists' Association, 2015)
- Aquatic Species at Risk Mapping (DFO, 2017)

Some of the sources above provide data on a scale as large as 10 kilometres (km) by 10 km. Results were therefore screened to assess their relevance to the Study Area and species were removed from consideration if no suitable habitat was observed within the Study Area.

3.1.2 Provincially Rare Species

Biological field data were evaluated to determine the significance of natural heritage features. Status rankings (S ranks) for plants, vegetation communities and wildlife are based on the number of occurrences in Ontario and have the following meanings:

- **S1:** critically imperiled; often fewer than 5 occurrences
- **S2:** imperiled; often fewer than 20 occurrences
- **S3:** vulnerable; often fewer than 80 occurrences
- **S4:** apparently secure
- **S5:** secure



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Methods for Data Collection
September 10, 2018

- **S?**: unranked, or, if following a ranking, rank uncertain (e.g. S3?).

The global, federal and provincial status of wildlife was determined by reviewing species accounts published by the Natural Heritage Information Centre (MNRF, 2014). The provincial status of all plant species is based on Newmaster et al. (1998), with updates from the database of the Natural Heritage Information Centre (MNRF, 2014).

3.2 AGENCY CONSULTATION

Information regarding the Study Area was requested from the Kemptville District, MNRF and the RVCA on January 22, 2018. Responses were received from MNRF on May 23, 2018 and from RVCA on January 31, 2018 (see **Appendix B**) and the information has been incorporated into this EIS.

3.3 FIELD INVESTIGATIONS

The fieldwork conducted for this study was scoped to support the rezoning application. Field studies and natural heritage inventories were completed in the Study Area, where property access was available, to confirm and refine the boundaries, characteristics and significance of the natural features that may be affected by the proposed development.

Table 1 below provides a summary of the field investigations undertaken for this project.

Table 1: Ecological Field Work				
Purpose of Field Work	Date of Field Work	Start/End Time	Weather Conditions	Biologist
Bat maternity roost habitat assessment, visual survey (vegetation, wildlife), aquatic habitat assessment)	March 6, 2018	1000 – 1330	Temperature: 1°C Wind (Beaufort scale): 1-2 Cloud cover: 100% Precipitation: 0mm Precip. in last 24hrs: <1mm	Josh Mansell
Breeding amphibian survey visit #1 (early season breeders), visual survey (species at risk)	April 24, 2018	1600 – 2100	Temperature: 18°C Wind (Beaufort scale): 1-2 Cloud cover: 70% Precipitation: 0mm Precip. in last 24hrs: 0mm	Josh Mansell
Breeding amphibian survey visit #2 (mid- season breeders)	May 18, 2018	2100 – 2130	Temperature: 15°C Wind (Beaufort scale): 0 Cloud cover: 0% Precipitation: 0mm Precip. in last 24hrs: 0mm	Josh Mansell
Breeding bird survey visit #1, visual survey (vegetation, butternut search, wildlife, species at risk, wetland delineation)	June 12, 2018	0630 – 0830	Temperature: 15 - 16°C Wind (Beaufort scale): 1 Cloud cover: 0% Precipitation: 0mm	Josh Mansell



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Methodds for Data Collection
September 10, 2018

Table 1: Ecological Field Work				
Purpose of Field Work	Date of Field Work	Start/End Time	Weather Conditions	Biologist
			Precip. in last 24hrs: 0mm	
Breeding bird survey visit #2, visual survey (vegetation)	June 25, 2018	0600 – 0700	Temperature: 11°C Wind (Beaufort scale): 1 - 2 Cloud cover: 0% Precipitation: 0mm Precip. in last 24hrs: 0mm	Josh Mansell

3.3.1 Vegetation Survey

Initial characterization of existing vegetation communities was completed by interpreting available aerial imagery. Vegetation was identified and communities were assessed in the field following a meandering transect within the Study Area. Community characterizations (ecosites and vegetation types) were based on the Ontario Ecological Land Classification (ELC) system (Lee et. al., 2001).

3.3.2 Species at Risk Survey

The potential presence of species at risk was determined through assessing habitat potential while conducting the meandering transect vegetation survey. Adjacent lands were visually assessed using binoculars. Targeted surveys were conducted for butternut, vascular plants, breeding birds, and calling amphibians, and species at risk were documented by location, if encountered. A handheld GPS, a GPS camera and a field notebook were used to document observations.

3.3.3 Butternut Search

A dedicated search for butternut trees was conducted by walking transects approximately 25 m apart, within the Subject Property and adjacent to the Subject Property (i.e., within 50 m). Where permission to enter adjacent lands was not provided, the area was searched from within the property boundary using binoculars.

3.3.4 Bat Maternity Roost Habitat Assessment

A Stantec biologist traversed forested communities during leaf-off conditions to identify individual trees that provide good cavity habitat, greater than or equal to 25 cm diameter at breast height (DBH), and that met the criteria for candidate bat maternity roost habitat provided in MNRF's *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNRF, 2011). Stantec used ELC to delineate vegetation communities within the Study Area within all forested communities. Forested swamps are also considered potential maternity roost habitats, but were not encountered within the Study Area. The locations of trees within the Study Area that fulfilled the MNRF criteria were marked with a hand-held GPS and described on field forms. The quality of potential bat maternity roost trees was determined by assigning a rank from 1 to 8 based on the number of criteria met.



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Methodds for Data Collection
September 10, 2018

3.3.5 Breeding Bird Surveys

Two breeding bird surveys were conducted by traversing the Study Area on foot, recording all species of birds that were heard or seen. The highest level of breeding evidence was recorded for each species using the codes in the Ontario Breeding Bird Atlas (Cadman et. al., 2007). Five-minute point counts were repeated on two dates at four locations to document the relative abundance of birds.

3.3.6 Breeding Amphibian Surveys

Two breeding amphibian surveys were conducted at two locations during the appropriate survey window in April and May 2018. The surveys generally followed methodology outlined in the *Marsh Monitoring Program* prepared by Bird Studies Canada (BSC, 2008). They were performed at least fifteen days apart, during appropriate weather conditions and during appropriate survey times (i.e., between one half of an hour after sunset and midnight).

3.3.7 Aquatic Habitat Assessment

The characterization of fisheries habitat in the Study Area was based on the presence/absence of key aquatic habitat features. The information was used to identify potential fisheries and aquatic habitat constraints associated with the rezoning application. The field investigation documented existing habitat conditions. No aquatic habitat features were observed within the Subject Property during field investigations, therefore fish community sampling and a headwater drainage features assessment were not completed.

3.3.8 Wildlife Observations and General Wildlife Habitat Surveys

Wildlife habitat suitability assessments were conducted for ESA protected species that may occur in the area, including species identified in the Natural Heritage Information Centre (NHIC) database and other planning reports. Incidental wildlife observations were documented and wildlife habitat suitability was assessed in the field by following a meandering transect within the Study Area

3.3.9 Significant Wildlife Habitat

Field investigations documented candidate SWH features outlined in the *Significant Wildlife Technical Guide* (MNRF, 2000) and the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (MNRF, 2015). There are four general types of SWH: (a) seasonal concentrations, (b) rare or specialized habitat, (c) habitat for species of conservation concern and (d) animal migration corridors. Observations of candidate SWH were recorded during environmental field investigations.

3.3.10 Wetland Delineation

Delineation of wetland features followed methodology outlined in the *Ontario Wetland Evaluation System, Southern Manual* prepared by MNRF (2014b). Interpretation of aerial imagery and the '50% wetland vegetation' rule was used to map points along a contour line where relative plant species cover consisted mostly of wetland species.



Site Description
September 10, 2018

4.0 SITE DESCRIPTION

The information in this section describes the natural heritage features and functions within Study Area based on a review of existing information, refinement of current conditions based on the field investigations and consultation with agency staff described in **Section 3.0**.

4.1 GENERAL OVERVIEW OF SITE CONDITIONS

The Study Area consists of meadow, forests, constructed lands, swamp, and marsh. Adjacent lands consist predominantly of aggregate operation and disturbed land with some meadow, a road, and forest (Google Earth Pro Ver. 7.1.2.2041). The Subject Property consists of a gravel access road, gravel pad, shipping containers, and metal trailers. There are no permanent structures or buildings on the Subject Property.

The Subject Property is located within RVCA's watershed, however it is not located within the RVCA's regulated area (see **Appendix B**). According to RVCA's Public Geoportal, there are no watercourses, identified floodplains, or PSWs located within the Study Area (RVCA, 2018).



5.0 EXISTING ECOLOGICAL CONDITIONS

5.1 BACKGROUND DATA

5.1.1 Geology and Topography

The Study Area is generally flat with gradual sloping towards the south (MNRF, 2014); it lies within the eastern portion of southern Ontario Physiographic region (Ontario Geological Survey, 2018). The surficial geology consists of coarse-textured glaciomarine deposits including sand, gravel, minor silt and clay, and foreshore and basinal deposits (**Figure 2, Appendix A**) (Ontario Geological Survey, 2018). Underlying bedrock is part of the Beekmantown Group, consisting of dolostone and sandstone (Ontario Geological Survey, 2018).

5.1.2 Landscape Ecology

The Study Area is located in the Upper St. Lawrence section of the Great Lakes-St. Lawrence Forest Region, characterized by predominantly deciduous forests, dominated by sugar maple, American beech, red maple, yellow birch, basswood, white ash, largetooth aspen, red oak, and bur oak (Rowe, 1972). Other tree species occurring in the Upper St. Lawrence section include white oak, green ash, grey birch, rock elm, blue-beech, and bitternut hickory. White elm is typically prominent in contemporary settled landscapes. Less frequent species in this section include butternut, eastern cottonwood, slippery elm, black maple, silver maple, and black ash. Coniferous trees such as eastern hemlock, white spruce, and balsam fir occur frequently on shallow, acidic, or eroding materials. Eastern white pine, red pine, black spruce, and eastern white cedar may be found where soil conditions are favorable (Rowe, 1972).

5.1.3 Hydrology

No surface water features are located within the Subject Property. The Thomas Baxter Municipal Drain was identified within proximity of the Study Area during consultation with MNRF (**Figure 3, Appendix A**), however surface water information provided on geoOttawa indicates it is located approximately 1.3 km southwest of the Study Area (City of Ottawa, 2018).

One unevaluated wetland was identified within the Study Area during consultation with MNRF (**Figure 3, Appendix A**).

5.1.4 Species at Risk and Provincially Rare Species

A NHIC search was conducted on 1 km² squares identified within the Study Area (i.e., 18VR3907, 18VR4007). One provincially listed threatened species (i.e., eastern meadowlark) was identified within the Study Area during the NHIC search. No other species at risk or provincially rare species were identified within the Study Area (MNRF, 2014).

Desktop background review resulted in a list of 12 species provincially listed as threatened or endangered that have been previously documented or have potential to occur within the Study Area (**Table 2**).



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Existing Ecological Conditions
September 10, 2018

Table 2: Provincially Listed Threatened/ Endangered Species with Potential to Occur within the Study Area

Species	Status	
	Ontario ESA, 2007	Federal SARA, Schedule 1
Plants		
Butternut (<i>Juglans cinerea</i>) ¹	Endangered	Endangered
Reptiles		
Blanding's turtle (<i>Emydoidea blandingii</i>) ^{1,2}	Threatened	Threatened
Birds		
Chimney swift (<i>Chaetura pelagica</i>) ³	Threatened	Threatened
Bank swallow (<i>Riparia riparia</i>) ^{1,3,4}	Threatened	Threatened
Barn swallow (<i>Hirundo rustica</i>) ^{1,3,4}	Threatened	Threatened
Henslow's sparrow (<i>Ammodramus henslowii</i>) ¹	Endangered	Endangered
Bobolink (<i>Dolichonyx oryzivorus</i>) ^{1,3,4}	Threatened	Threatened
Eastern meadowlark (<i>Sturnella magna</i>) ^{1,3,4,5}	Threatened	Threatened
Mammals		
Eastern small-footed myotis (<i>Myotis leibii</i>) ⁶	Endangered	N/A
Little brown myotis (<i>Myotis lucifungus</i>) ⁶	Endangered	Endangered
Northern myotis (<i>Myotis septentrionalis</i>) ⁶	Endangered	Endangered
Tri-colored bat (<i>Perimyotis subflavus</i>) ⁶	Endangered	Endangered

¹ Response from MNRF on May 23, 2018 (see **Appendix B**)

² Ontario Reptile and Amphibian Atlas (Ontario Nature, 2018)

³ eBird Canada (eBird, 2018)

⁴ Ontario Breeding Bird Atlas (Cadman et. al., 2007)

⁵ NHIC (MNRF, 2014)

⁶ Atlas of the Mammals of Ontario (Dobbyn, 1994)

5.1.5 Significant Natural Areas

A review of the Plan (City of Ottawa, 2003) and NHIC and LIO data indicates there are no designated PSWs, Significant Woodlands, Significant Valleylands, or SWH on or within 5 km of the Subject Property. According to NHIC and LIO data, no ANSIs are located within the Subject Property, however the Twin Elm Moraine Earth Science ANSI is located approximately 2 km north of the Subject Property. The Study Area does contain one unevaluated wetland (**Figure 3, Appendix A**).



5.2 FIELD INVESTIGATIONS

5.2.1 Vegetation

The Study Area is predominantly a mixture of meadow, forests, constructed lands, swamp, and marsh (**Figure 4, Appendix A**). A fresh-moist open graminoid meadow (MEGM4-1) is located west of the Subject Property in the western portion of the Study Area. A fresh-moist poplar deciduous forest (FODM8-1) occurs within the Subject Property and adjacent lands, in the central and northeastern portion of the Study Area.

A transportation community (CVI_1) associated with the Barnsdale Road right-of-way, occurs to the north of the Subject Property. A commercial and institutional (CVC) community, associated with a temporary fire training facility, occurs within the Subject Property in the central portion of the Study Area. A mixed willow mineral deciduous thicket swamp (SWTM3-6) associated with former aggregate operations occupies much of the southeastern portion of the Study Area.

An extraction (CVC_4) community associated with ongoing aggregate operations is located north of the Subject Property in the northern portion of the Study Area. A shallow marsh (MAS) is also located north of the Subject Property in the northwestern portion of the Study Area.

The vegetation communities, based on the ELC system for Southern Ontario, are shown on **Figure 4, Appendix A**. The vegetation community types are briefly described in **Table 3** below. Field datacards are provided in **Appendix C**.

Table 3: Ecological Land Classification Vegetation Types

ELC TYPE	Community Description
Meadow (ME)	
Graminoid Meadow (MEG)	
Fresh – Moist Open Graminoid Meadow Type (MEGM4-1)	This community occurs west of the Subject Property in the western portion of the Study Area and is dominated by reed canary grass (<i>Phalaris arundinacea</i>) with wool grass (<i>Scirpus cyperinus</i>) occurring abundantly.
Forest (FO)	
Deciduous Forest (FOD)	
Fresh – Moist Poplar Deciduous Forest Type (FODM8-1)	This community occurs in the central and northeastern portion of the Study Area. The canopy and sub-canopy layers are dominated by trembling aspen (<i>Populus tremuloides</i>) with eastern cottonwood (<i>Populus deltoides deltoides</i>) and Balsam poplar (<i>Populus balsamifera</i>) occasionally occurring. The understory layer is dominated by sensitive fern (<i>Onoclea sensibilis</i>) with green ash (<i>Fraxinus pennsylvanica</i>) and sedge species (<i>Carex</i> sp.) abundantly occurring.
Constructed (CV)	
Transportation and Utilities (CVI)	
Transportation (CVI_1)	This community occurs to the north of the Subject Property and is associated with the Barnsdale Road right-of-way. Vegetation in this community consists mainly of mowed grass and herbaceous plants. There is potential for common milkweed (<i>Asclepias syriaca</i>) to occur in this community.



Existing Ecological Conditions
September 10, 2018

Table 3: Ecological Land Classification Vegetation Types

ELC TYPE	Community Description
Commercial and Institutional (CVC)	
Commercial and Institutional (CVC)	This community occurs in the central portion of the Study Area and is associated with a temporary fire training facility consists of a gravel access road, gravel pad, shipping containers and metal trailers.
Extraction (CVC_4)	This community occurs to the north of the Subject Property, in the northern portion of the Study Area, and is associated with a large aggregate operation.
Swamp (SW)	
Thicket Swamp (SWT)	
Mixed Willow Mineral Deciduous Thicket Swamp Type (SWTM3-6)	This community occurs in the southeastern portion of the Study Area, and is dominated by willow species (<i>Salix sp.</i>). The understory layer is dominated by common scouring rush (<i>Equisetum hyemale affine</i>) with path rush (<i>Juncus tenuis</i>), wild strawberry (<i>Fragaria virginiana virginiana</i>) and <i>Phragmites sp.</i> abundantly occurring.
Marsh (MA)	
Shallow Marsh (MAS)	This community occurs to the northwest of the Subject Property, in the northwestern portion of the Study Area.

5.2.2 Species at Risk

The list of potential species at risk identified during a background review (**Table 2**) was assessed based on observations collected during the site visits to determine which species have the potential to occur within the Study Area (**Appendix D**). Seven of these species are considered absent on the basis of suitable habitat not being observed, or survey effort sufficient to determine absence (**Appendix D**).

Bank swallow, a species listed as threatened under ESA, 2007 and SARA was observed foraging over the SWTM3-6 within the Study Area.

No other species at risk identified during a background review (**Table 2**) were observed within the Study Area.

5.2.3 Bat Maternity Roost Habitat

A bat maternity roost habitat assessment identified 14 trees (4 high quality, 10 poor quality) as candidate bat maternity roost trees within mature portions of the FODM8-1 (**Figure 5, Appendix A**).

5.2.4 Breeding Birds

Breeding bird survey station locations are shown on **Figure 6, Appendix A**. A complete list of birds observed during the breeding bird surveys are located in **Appendix E**.



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Existing Ecological Conditions
September 10, 2018

5.2.5 Breeding Amphibians

Amphibian call count station locations are shown on **Figure 6, Appendix A**. Two species were observed, spring peeper (*Pseudacris crucifer*) and wood frog (*Lithobates sylvaticus*) (**Table 4**).

Table 4: Number of Calling Amphibians

Station	Date	Species	
		Spring Peeper	Wood Frog
001	April 24, 2018	>10*	6*
	May 18, 2018	-	-
002	April 24, 2018	>10*	-
	May 18, 2018	-	-

Note:

* denotes species heard outside of the study area

Station 001 targeted a disturbed portion of the Study Area on the southern property boundary. Spring peeper and wood frog were heard calling during Round 1 south of the Subject Property. No frogs were heard calling during Round 2.

Station 002 targeted a disturbed portion of the Study Area on the eastern property boundary. Spring peeper were heard calling during Round 1, south of the Subject Property. No frogs were heard calling during Round 2.

5.2.6 Fish and Fish Habitat

No aquatic features and no potential fish habitat were observed within the Subject Property, however the MAS located in the northern portion of the Study Area, outside the Subject Property, may provide suitable fish habitat.

5.2.7 Incidental Wildlife Observations and Wildlife Habitat

Incidental wildlife observations were recorded and habitat assessments were conducted during all field investigations.

No reptile species were observed during field surveys. No candidate overwintering habitat for reptiles was observed within the Subject Area, however the MAS located in the northern portion of the Study Area may provide suitable overwintering habitat for reptiles. The Study Area does provide habitat for migratory birds. Although no active bat roosting sites were observed within the Study Area, trees within the Study Area could provide habitat for bats.

One mammal species, white-tailed deer (*Odocoileus virginianus*), was observed during the field surveys.



5.2.8 Wetland Delineation

Delineation of the unevaluated wetland within the FODM8-1 followed methods outlined in **Section 3.3.10**. The delineated wetland boundary completed by Stantec is consistent with the unevaluated wetland boundary shown on GeoOttawa (City of Ottawa, 2018) (**Figure 7, Appendix A**). The ELC classification of this area is FODM8-1, which is consistent with a wetland that is transitioning to a forest.

5.3 SIGNIFICANT WILDLIFE HABITAT

The Wildlife Habitat Assessment table in **Appendix F** provides an assessment for each of the Candidate Wildlife Habitat features listed in the SWH Criteria Schedules for Ecoregion 6E (MNRF, 2015). A summary of each type of SWH is provided in **Sections 5.3.1 to 5.3.4**.

5.3.1 Seasonal Concentration Areas

Seasonal concentration areas are those sites where large numbers of a species gather together at one time of the year, or where several species congregate. Such areas include, but are not limited to, deer yards, snake and bat hibernacula, waterfowl staging and molting areas, raptor roosts, bird nesting colonies, shorebird staging areas, and passerine migration concentrations. Only the best examples of these concentration areas are usually designated as SWH. Areas that support a species at risk, or areas where a large proportion of the population may be lost if the habitat is destroyed, are examples of seasonal concentration areas which should be designated as significant (MNRF, 2015).

Waterfowl Stopover and Staging Area (Aquatic): According to the SWH Criteria Schedules for Ecoregion 6E (MNRF, 2015), aquatic waterfowl stopover and staging areas are characterized by ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration located in shallow marsh (MAS), shallow aquatic (SA), or deciduous swamp (SWD) communities. The MAS identified within the Study Area, north of the Subject Property, could provide suitable habitat for a waterfowl stopover and staging

Bat Maternity Colonies: According to the SWH Criteria Schedules for Ecoregion 6E (MNRF, 2015), bat maternity colonies are characterized by mature deciduous or mixed forest stands with greater than 10 ha of large diameter (>25 cm) trees located within deciduous forest (FOD), mixed forest (FOM), SWD, and mixed swamp (SWM) communities. The area of the FODM8-1 is greater than 10 ha, therefore there is potential for bat maternity colonies within the Study Area, particularly in mature portions of the FODM8-1 (**Figure 8, Appendix A**).

Turtle Wintering Areas: According to the SWH Criteria Schedules for Ecoregion 6E (MNRF, 2015) for an area to qualify as significant turtle wintering areas, five or more midland painted turtles, one map turtle, or one snapping turtle must be using the habitat. The open water features within the MAS and CVC_4 located north of the Subject Property, may be deep enough to not freeze. Field investigations were not completed within these communities, therefore the presence or absence of turtle wintering areas in the MAS cannot be confirmed.



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Existing Ecological Conditions
September 10, 2018

Deer Winter Congregation Areas: According to the SWH Criteria Schedules for Ecoregion 6E (MNRF, 2015), deer winter congregation areas are characterized by woodlots greater than 100 ha in size within coniferous forest (FOC), FOM, FOD, coniferous swamp (SWC), SWM, and SWD communities. The area of the FODM8-1 is greater than 100 ha, therefore there is potential for deer winter congregation areas within the Study Area. No deer winter congregation areas were identified by the MNRF within the Study Area.

No other candidate habitat for seasonal concentration areas was observed within the Study Area.

5.3.2 Rare or Specialized Habitat

Rare habitats are those with vegetation communities that are considered rare in the province. It is assumed that these habitats are at risk and that they are also likely to support additional wildlife species that are considered significant. Field investigations indicated that the ELC communities within the Study Area are all considered common in Ontario (S5). Therefore, no rare habitats exist within the Study Area.

Specialized habitats are microhabitats that are critical to some wildlife species. The SWH Criteria Schedules for Ecoregion 6E (MNRF, 2015) identifies a number of habitats that could be considered specialized habitats, such as amphibian woodland breeding ponds.

Amphibian Breeding Habitat (Woodland): According to the SWH Criteria Schedules for Ecoregion 6E (MNRF, 2015), woodland amphibian breeding habitat is confirmed by the presence of a breeding population of two or more frog species (i.e., spring peeper, grey treefrog, western chorus frog, wood frog) with at least 20 individuals (including adults, juveniles, eggs, and larval masses) located in a wetland, lake, or pond within 120 m of FOC, FOM, FOD, SWC, SWM, or SWD communities.

Fewer than 20 individuals of one amphibian species (i.e., wood frog) were observed during evening breeding amphibian surveys at Stations 1 and 2. Therefore, there is no significant amphibian woodland breeding habitat within the Study Area.

5.3.3 Habitat for Species of Conservation Concern

Field investigations screened the Study Area for the presence or absence of area sensitive breeding birds and species of conservation concern within the Study Area. Results are summarized below.

Marsh Bird Breeding Habitat: According to the SWH Criteria Schedules for Ecoregion 6E (MNRF, 2015), marsh bird breeding habitat includes wetland habitats with shallow water and emergent aquatic vegetation located in meadow marsh (MAM), SA, open bog (BOO), open fen (FEO), swamp (SW), marsh (MA) or meadow (CUM) communities. The open water feature within the MAS may provide candidate habitat for marsh breeding birds.

Special Concern and Rare Wildlife Species: Wood thrush, a species provincially listed as special concern, was observed within the FODM8-1, on lands adjacent to the Subject Property, within the Study Area. No other special concern or rare wildlife species were observed during the field investigations. Potentially suitable habitat for the following special concern and rare wildlife species was observed within the Study Area:



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Existing Ecological Conditions
September 10, 2018

- snapping turtle (S3; special concern)
- common nighthawk (special concern)
- red-necked phalarope (special concern)
- black tern (S3B, special concern)
- eastern wood-pewee (special concern)

The 16 species of conservation concern (S1-S3 ranked species, including provincially designated Special Concern species) in **Table 5** were identified during the background review as being present in the vicinity of the Study Area. Habitat availability for these species within the Study Area was assessed in the “Species of Conservation Concern” section of the Wildlife Habitat Assessment table in **Appendix F**.

Table 5: Species of Conservation Concern with Records in the Vicinity of the Study		
Species	S-Rank (S1-S3)	Ontario ESA, 2007
Insects		
Monarch (<i>Danaus plexippus</i>) ¹	S4	Special concern
Amphibians		
Western chorus frog (Great Lakes - Shield) (<i>Pseudacris triseriata</i>) ²	S3	Not listed
Reptiles		
Snapping turtle (<i>Chelydra serpentina</i>) ^{2,3}	S3	Special concern
Eastern musk turtle (<i>Sternotherus odoratus</i>) ²	S3	Special concern
Birds		
Horned grebe (western population) (<i>Podiceps auritus</i>) ⁴	S4	Special concern
Common nighthawk (<i>Chordeiles minor</i>) ^{4,5}	S4	Special concern
Red-necked phalarope (<i>Phalaropus lobatus</i>) ⁴	S4	Special concern
Black tern (<i>Chlidonias niger</i>) ⁴	S3	Special concern
Bald eagle (<i>Haliaeetus leucocephalus</i>) ⁴	S3	Special concern
Short-eared owl (<i>Asio flammeus</i>) ^{4,5}	S4	Special concern
Peregrine falcon (<i>Falco peregrinus</i>) ⁴	S3	Special concern
Olive-sided flycatcher (<i>Contopus borealis</i>) ⁵	S4	Special concern
Eastern wood-pewee (<i>Contopus virens</i>) ^{3,5}	S4	Special concern
Wood thrush (<i>Hylocichla mustelina</i>) ^{3,4,5}	S4	Special concern
Grasshopper sparrow (<i>Ammodramus savannarum</i>) ⁵	S4	Special concern
Canada warbler (<i>Cardellina canadensis</i>) ⁵	S4	Special concern

¹ Ontario Butterfly Atlas Online (Toronto Entomologists' Association, 2015)

² Ontario Reptile and Amphibian Atlas (Ontario Nature, 2018)

³ Response from MNRF on May 23, 2018 (see **Appendix B**)

⁴ eBird Canada (eBird, 2018)

⁵ Ontario Breeding Bird Atlas (Cadman et. al., 2007)

⁶ NHIC (MNRF, 2014)



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Existing Ecological Conditions
September 10, 2018

5.3.4 Animal Movement Corridors

Migration corridors are areas that are regularly used by wildlife to move to one habitat from another. This is usually in response to different seasonal habitat requirements. The SWH Criteria Schedules for Ecoregion 6E (MNRF, 2015) speak specifically to amphibian movement corridors. These corridors are only considered when significant amphibian breeding habitat is identified for eastern newt, blue-spotted salamander, spotted salamander, gray treefrog, spring peeper, western chorus frog or wood frog. Amphibian movement corridors should be at least 200 m wide and consist of native vegetation, roadless area, no gaps such as fields, waterways or bodies.

No significant amphibian breeding habitat was observed within the Study Area, therefore there are no animal movement corridors within the Study Area.



6.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The Subject Property is currently being used as a fire fighting training facility under a temporary zoning approval. Activities with the potential to occur at the property include contained and controlled fire experiments and training for fire fighting crews to gain real experience of classroom materials. Training occurs seasonally, when it's not too hot or cold (i.e. spring and fall) and may occur on weekdays, evenings and/or weekends.

Existing structures that are present to support the activities include the gravel pad and various temporary shipping containers and trailers.

Ottawa Fire Service will expand the gravel pad to the south and east by approximately 0.5 ha within the SWTM3-6 and CVC. (**Appendix A, Figure 9**). There is no intent to clear any vegetation within the FODM8-1 community present at the perimeter of the Subject Property.

Construction activities in support of the gravel pad are assumed to include vegetation removal and grading. It is expected that standard construction materials (e.g., gravel) will be used and that during construction, all applicable safety codes with reference to public health, fire protection, and structural sufficiency will be followed.



7.0 IMPACT ASSESSMENT

The environmental effects identified as being of potential concern as a result of the proposed development are identified and discussed in this section. Potential direct and indirect impacts, as well long-term impacts have been considered separately.

The impact assessment and recommendations for mitigation were developed in consideration of the policies that pertain to the significant natural heritage features identified for the Subject Property.

7.1 DIRECT IMPACTS

Direct impacts are discussed below, including loss to vegetation cover and wildlife habitat as a result of the proposed plan.

7.1.1 Vegetation Cover

Vegetation removal will occur within the Study Area to facilitate construction of the gravel pad (**Figure 9, Appendix A**), within two ELC communities: mixed willow mineral deciduous thicket (SWTM3-6) and commercial and institutional (CVC).

7.1.2 Species at Risk

The project has the potential to impact four species at risk (i.e., bank swallow, little brown myotis, northern myotis, tri-colored bat); a summary of the potential (or lack of) for interactions is provided in **Table 6**.

Table 6: Potential for Project Interactions with Species at Risk

Species	Potential Interactions
Blanding's turtle	Potential habitat in the CVC_4 and MAS communities located north of the Subject Property, within the Study Area. No work will be occurring within these habitats; direct impacts are not anticipated.
Bank swallow	Individuals and suitable foraging habitat was observed in SWTM3-6 and potential nesting habitat may occur in the CVC_4 north of the Subject Property, within the Study Area. Although work will be occurring in the SWTM3-6, direct impacts to this species are not anticipated.
Little brown myotis Northern myotis Tri-coloured bat	Potential roosting and maternity roosting habitat was observed in mature portions of FODM8-1 within the Study Area. Potential foraging habitat was observed in MEGM4-1, CVC, CVC_4, SWTM3-6 and MAS within the Study Area. Although work will be occurring in the SWTM3-6 and CVC, direct impacts to these species are not anticipated.



7.1.3 Significant Wildlife Habitat

There is potential for bat maternity roosting colonies to be present in mature portions of the FODM8-1 within the Study Area, adjacent to the Subject Property (**Figure 8, Appendix A**). The FODM8-1 may also provide suitable habitat for deer winter congregation areas and eastern wood-pewee. The FODM8-1 provides habitat for wood thrush within the Study Area. No development is proposed within the FODM8-1.

The MAS community identified within the Study Area, north of the Subject Property, may provide suitable habitat for an aquatic waterfowl stopover and staging area and marsh breeding birds. The MAS and CVC_4 communities may provide suitable habitat for turtle wintering areas, snapping turtle, red-necked phalarope, and black tern. The CVC_4 community may also provide suitable habitat for common nighthawk. No development is proposed within the MAS and CVC_4.

7.1.4 Migratory Birds

The MBCA protects migratory birds and their nests from damage and disruption while they are active, including nests in vegetation and on structures. Site alteration activities within the Subject Property have the potential to disturb breeding birds and damage nests of protected species. Measures to avoid contravention of the MBCA during vegetation clearing and construction are provided in **Section 7.6**.

7.2 INDIRECT IMPACTS

Potential indirect effects may occur as a result of activities including sensory disturbance to and species at risk (i.e., bank swallow, SAR bats). However, there is existing sensory disturbance in the area and the incremental increase in disturbance as a result of site activities would be infrequent and low in magnitude and are not expected to be significant.

Potential impacts that are relevant to the proposed project are the following:

- Disturbance and damage of vegetation along the edge of the natural areas. Heavy machinery may damage trees and shrubs within affected areas. This impact can be easily prevented by clearly delineating any work areas in the field.
- Dust deposition on vegetation. This impact can be easily mitigated by the use of dust suppressants to reduce or eliminate dust generation, if necessary.
- Fill and sediment deposition. Fill and sediment runoff from site activities may enter natural areas. This impact can be easily prevented with the installation of sediment control fencing around the perimeter of areas where ground disturbance is planned.

7.3 LONG-TERM DEVELOPMENT IMPACTS

Potential long-term impacts to natural areas could result from permanent loss of vegetation within the SWTM3-6. Vegetation to be removed consists primarily of non-native species and will be restricted to approximately 0.5 ha. Limiting vegetation removal to within the boundary of the proposed development is required to minimize impacts on these features.



7.4 MITIGATION

Due diligence for the natural heritage features within the Study Area should include general mitigation measures to reduce or eliminate potential negative effects. These general mitigation measures should be applied to the design and activities of the proposed development.

7.4.1 Protection of Natural Areas

The following strategies are recommended to protect areas of natural vegetation that will be retained through development of the proposed plan:

- Clearly delineate work areas to avoid encroachment and incidental damage to areas of natural vegetation to be retained.
- In the event of accidental damage to trees, or unexpected vegetation removal, vegetation should be replaced / restored with native species.
- All maintenance activities, vehicle refueling or washing, as well as the storage of chemical and construction equipment should be located >30 m from natural areas.
- In the event of an accidental spill, the MOE Spills Action Centre should be contacted and emergency spill procedures implemented immediately.
- Implementation of a clean equipment protocol is recommended for all equipment used on site to avoid the introduction and spread of invasive species.
- Install, monitor and maintain proper muffling of machinery and equipment.

7.4.2 Species at Risk

The most current species at risk information available for the 4041 Moodie Drive proposed development has been reviewed and reported in this EIS (**Table 2; Appendix D**); however, because federal and provincial lists of species at risk are periodically updated to reflect changes in species status and occurrence data for these species is also subject to change, this information should be reviewed immediately prior to the commencement of on-site activities to confirm that any newly listed species at risk are adequately addressed.

Prior to any site alterations, the following mitigation measures are recommended:

- Implement a worker awareness program for construction staff that includes species at risk identification and habitat characteristics
- Conduct a daily pre-construction search of the work area to identify presence of species at risk
- If threatened or endangered species are seen in or near the work area, stop work immediately
 - Take photographs if possible, but do not interact with the animal
 - Contact MNRF



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Impact Assessment
September 10, 2018

7.4.2.1 Reptiles

There is potential for turtle species at risk (i.e., Blanding's turtle) to be present within the Study Area during site alterations. A search of the work area should be conducted by construction contractors before work commences each day. Visual searches should include inspection of machinery and equipment, prior to starting equipment, particularly during the peak activity period from April 15 to November 1. If reptiles are encountered, they should be permitted reasonable time to flee the area. Reptiles basking on roadways should be avoided and individuals should not be handled, chased or harassed.

7.4.2.2 Birds

There is potential for bird species at risk (i.e., bank swallow) to be present within the Study Area during site alterations; mitigation measures outlined in **Section 7.6** should be followed to mitigate negative impacts to bird species at risk.

Bank swallow, a threatened species, is protected and afforded general habitat protection under the ESA, 2007. General habitat for bank swallow is categorized as follows (MNRF, 2017):

- Category 1: The bank swallow breeding colony, including the congregation of burrows and the substrate between and around them.
- Category 2: The area within 50 m in front of the breeding colony bank face (i.e., the vertical face that is directly associated with and supports, the Category 1 habitat) to allow bank swallows to enter and exit burrows.
- Category 3: The area of suitable foraging habitat within 500 m of the outer edge of the breeding colony.

Bank swallows were observed foraging over the SWTM3-6 and potential nesting habitat may occur in the CVC_4, north of the Subject Property, within the Study Area. The SWTM3-6 within the Study Area is located less than 500 m from the outer edge of the CVC-4 where breeding colonies may occur, therefore potential Category 3 habitat for bank swallow is located within the Study Area. Since the proposed development is planned to occur in potential Category 3 habitat, a category with high tolerance to alteration, a permit from MNRF may not be required under the ESA, 2007. The following general management practices for protection and maintenance of bank swallow foraging habitat provided by the Ontario MNRF should be followed (MNRF, 2017):

- To the extent feasible, avoid operations in the delineated wetland or grassland habitats.
- Avoid use of insecticides, herbicides or fungicides in foraging habitat wherever possible.

7.5 WILDLIFE MANAGEMENT

Wildlife is present within the Study Area. To avoid adverse effects to wildlife, the following mitigation measures are recommended:

- Prior to commencing any site alterations, visually inspect the work area for wildlife presence.
- Do not feed any wildlife or leave food out that may attract wildlife.



ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

Impact Assessment
September 10, 2018

- If wildlife is encountered within the work area, keep distance and allow the animal to exit the work area.

7.6 PROTECTION OF MIGRATORY BIRDS

The MBCA provides legal protection of migratory birds and their nests in Canada. The loss of migratory bird nests, eggs and or nestlings due to tree cutting or other vegetation clearing can be avoided by limiting clearing of vegetation to outside of the general nesting period for migratory birds in this region as identified by Environment Canada (i.e., between April 15 and August 13) (Environment Canada, 2015). If work must be performed within this window, a survey for active nests or breeding should be conducted by a qualified biologist before work commences and additional mitigation measures (e.g., implementation of avoidance distances during construction) implemented, if required.



8.0 SUMMARY AND RECOMMENDATIONS

This EIS provides an assessment of the potential impacts on the natural heritage features and functions that may result from the proposed development. The key natural heritage features and functions identified within the Study Area which may be impacted by this development include the following:

- Vegetation removal - damage or loss of vegetation during site alteration activities
- The loss of migratory bird nests, eggs and or nestlings due to vegetation removal

Consultation with MNRF is recommended to determine permitting requirements for removal of suitable foraging habitat for bank swallow, little brown myotis, northern myotis, and tri-colored bat under ESA, 2007.

By following the mitigation measures recommended in this EIS, the proposed development poses minimal impact to the significant natural heritage features identified.



References

September 10, 2018

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ENVIRONMENTAL IMPACT STATEMENT FOR 4041 MOODIE, OTTAWA, ONTARIO

References

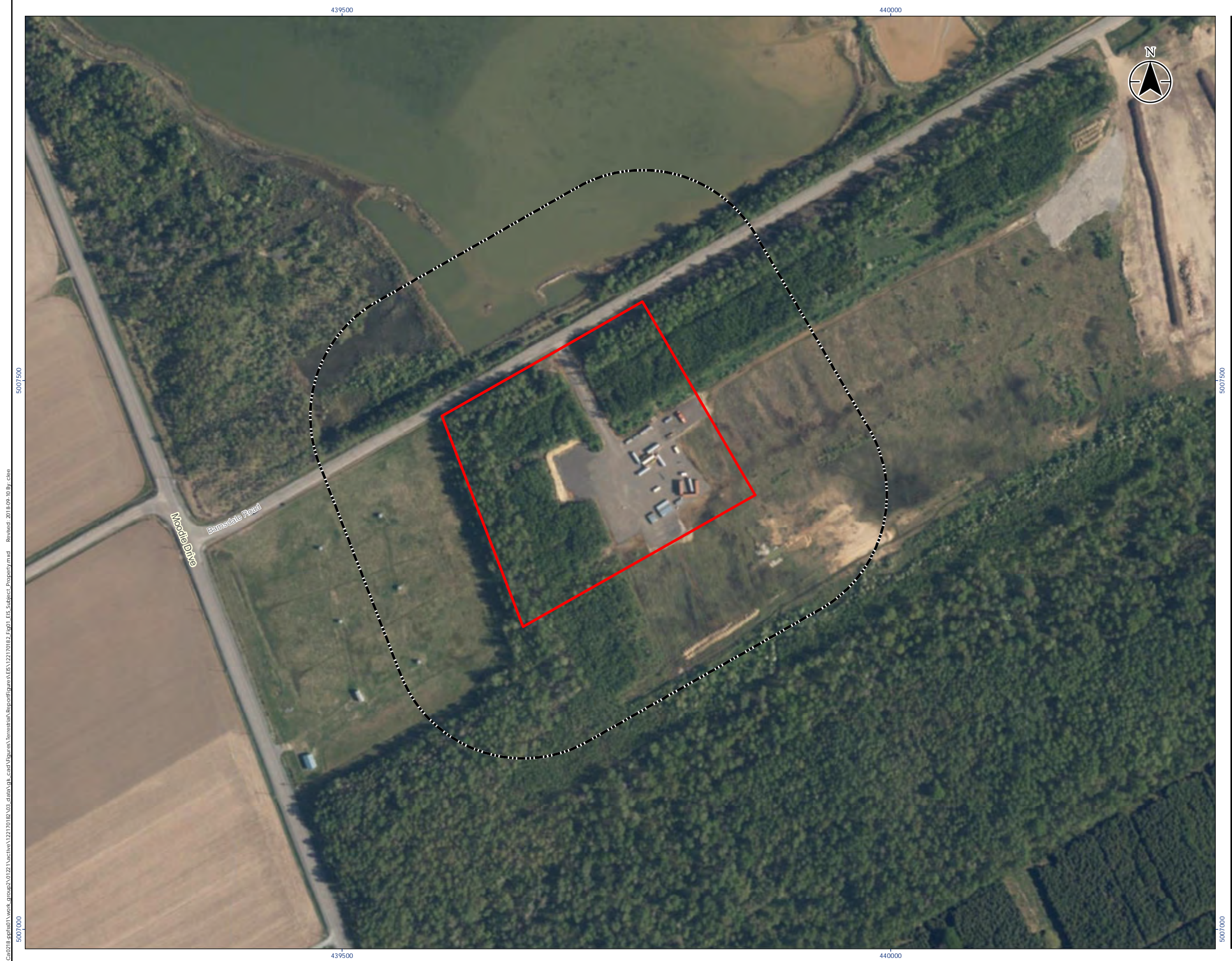
September 10, 2018

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APPENDIX A

Figures



- Legend
- Site Boundary
 - 120 metre Study

0 50 100 Meters

1:3,500 (At original document size of 11x17)

- Notes
1. Coordinate System: NAD 1983 UTM Zone 18N
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
 3. Orthoimagery: City of Ottawa, 2018. Imagery Date: 2017.



Project Location
City of Ottawa

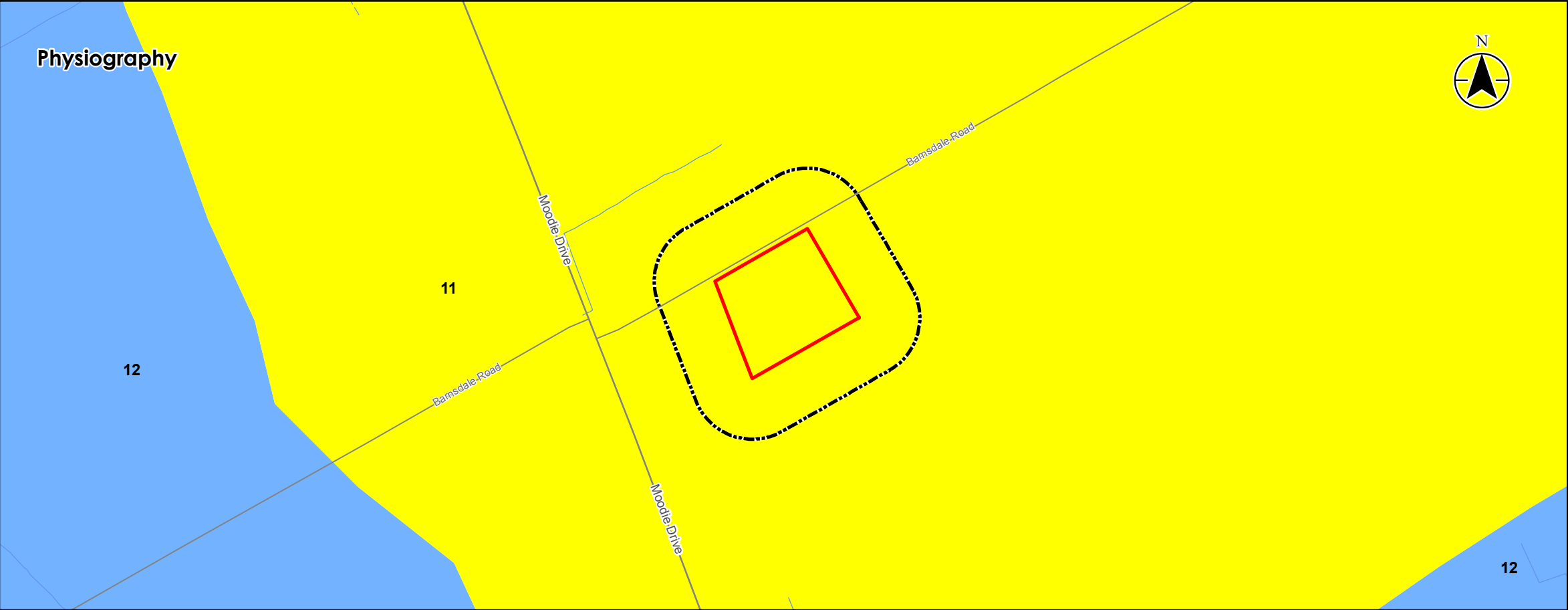
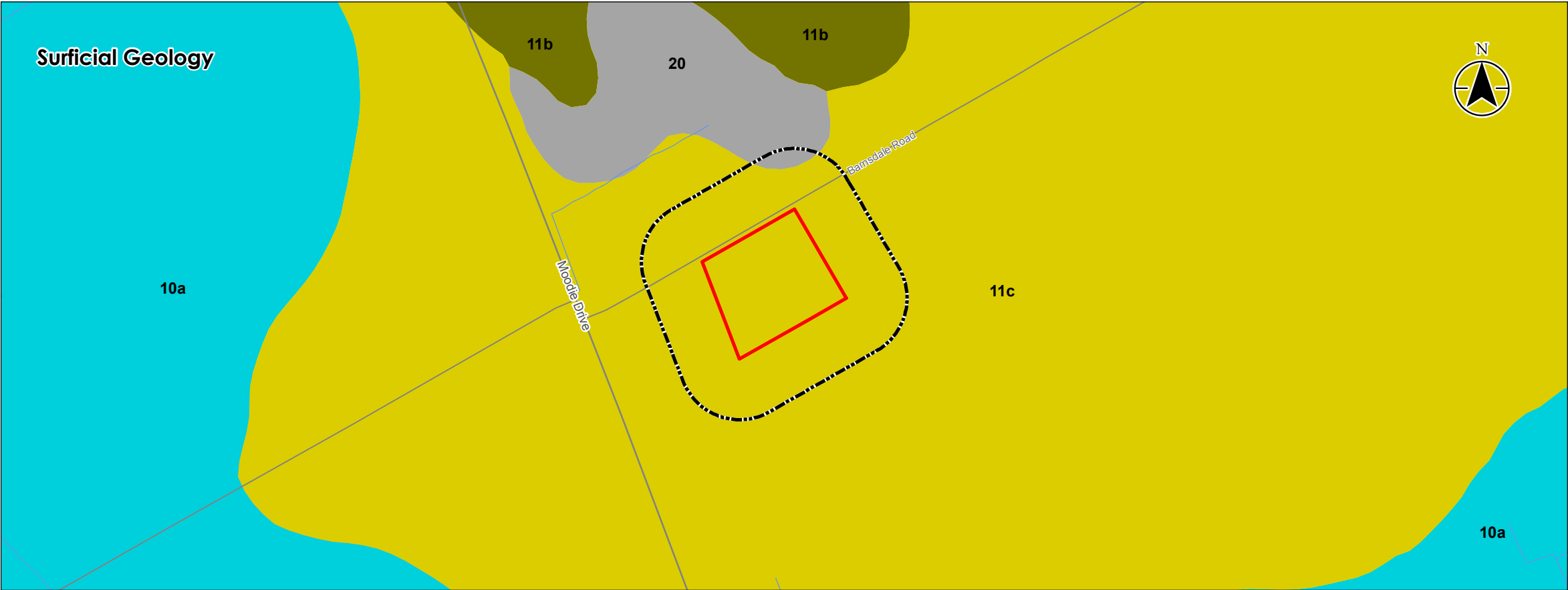
122170182 REV8
Prepared by IP on 2018-09-10
Technical Review by LH on 2018-09-10

Client/Project
CITY OF OTTAWA / NATIONAL RESEARCH COUNCIL
CANADA
4041 MOODIE DRIVE - EIS

Figure No.
1

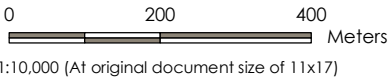
Title
Subject Property

\\Ca0218-apl\apl\work_group2\01221\active\122170182\03_data\figs\8_coad\figures\Terrestrial\Report\Figure\ES\122170182_Fig02_EIS_Soils_Geology.mxd Revised: 2018-09-10 By: clea



Legend

- Site Boundary
- 120 metre Study Area
- Surficial Geology
 - 20: Organic deposits
 - 11b: Coarse-textured glaciomarine deposits (Littoral-foreshore deposits)
 - 11c: Coarse-textured glaciomarine deposits (Foreshore-basinal deposits)
 - 10a: Fine-textured glaciomarine deposits (Massive-well laminated)
- Physiography
 - 12: Clay Plains
 - 11: Sand Plains



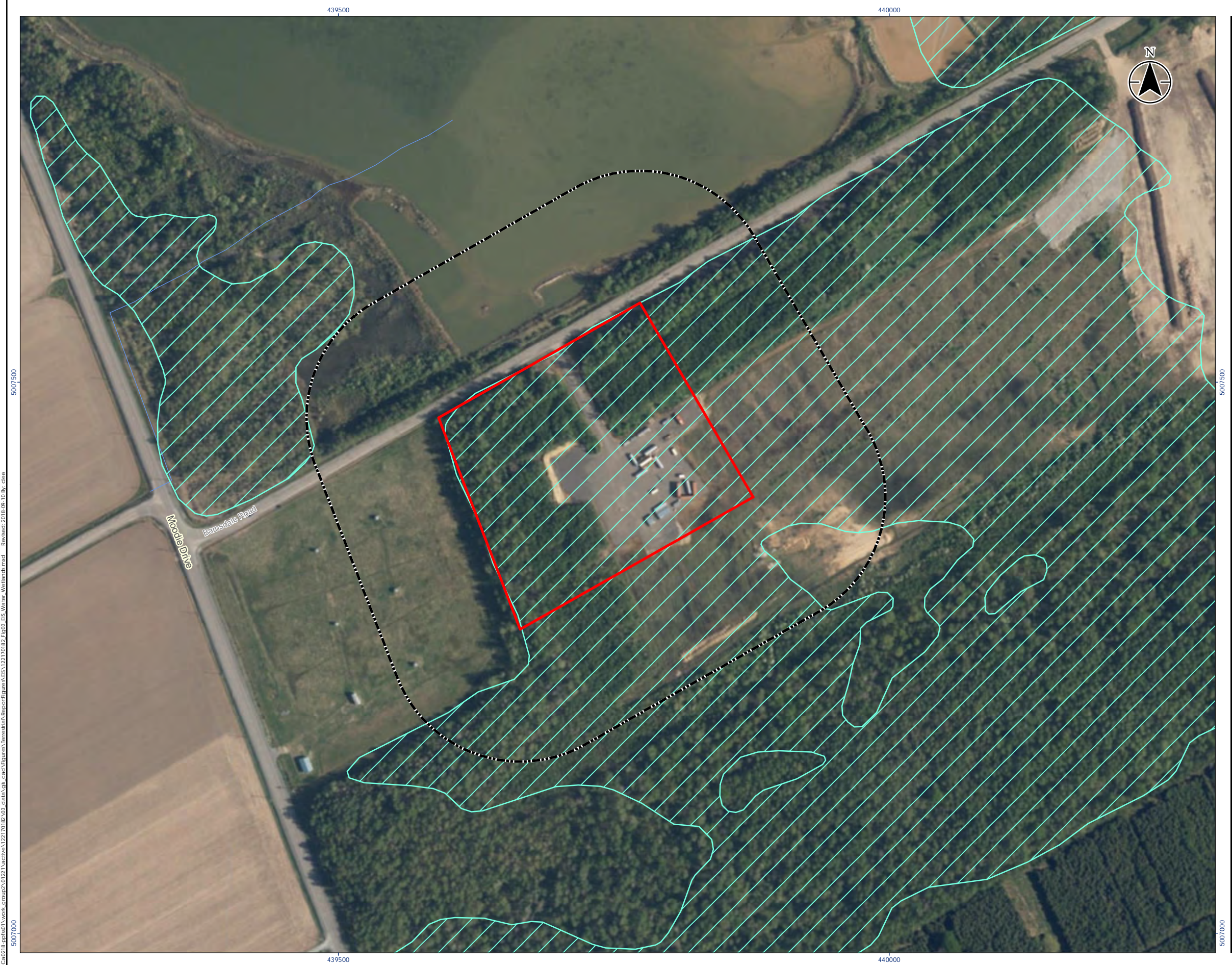
- Notes**
- Coordinate System: NAD 1983 UTM Zone 18N
 - Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
 - Surficial geology produced by the Ontario Geological Survey 2003. Surficial geology of Southern Ontario; Ontario Geological Survey, MRD 128.



Project Location: Ottawa, Ontario
122170182 REV8
Prepared by IP on 2018-09-10
Technical Review by LH on 2018-09-10

Client/Project:
CITY OF OTTAWA / NATIONAL RESEARCH COUNCIL
CANADA
4041 MOODIE DRIVE - EIS

Figure No.
2
Title
Soils and Geology



Legend

- Site Boundary
- 120 metre Study Area
- Watercourse (Permanent)
- Wetland, Not evaluated per OWES

1:3,500 (At original document size of 11x17)

Notes

- Coordinate System: NAD 1983 UTM Zone 18N
- Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
- Orthoimagery: City of Ottawa, 2018. Imagery Date: 2017.

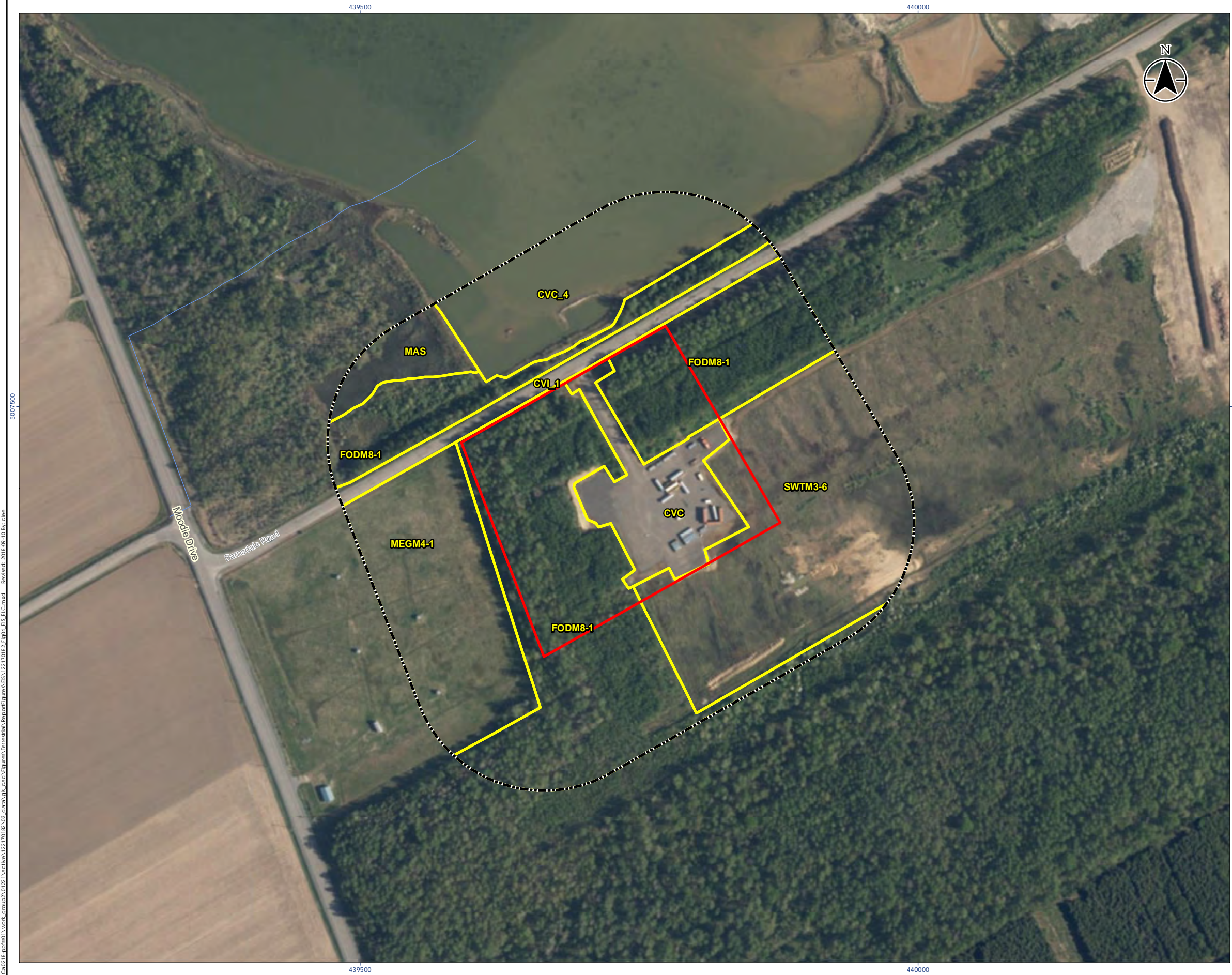
Project Location
Ottawa, Ontario

122170182 REV8
Prepared by IP on 2018-09-10
Technical Review by LH on 2018-09-10

Client/Project
CITY OF OTTAWA / NATIONAL RESEARCH COUNCIL
CANADA
4041 MOODIE DRIVE - EIS

Figure No.
3

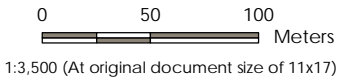
Title
Surface Water and Wetlands



Legend

- Site Boundary
- 120 metre Study Area
- Ecological Land Classification
- Watercourse (Permanent)

SWTM3-6	Mixed Willow Mineral Deciduous Thicket Swamp
FODM8-1	Fresh – Moist Poplar Deciduous Forest Type
MEGM4-1	Fresh – Moist Open Graminoid Meadow Type
MEG	Gramoid Meadow
CVC	Commercial and Institutional
CVC_1	Transportation
MAS	Shallow Marsh
CVC_4	Extraction



- Notes
- Coordinate System: NAD 1983 UTM Zone 18N
 - Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
 - Orthoimagery: City of Ottawa, 2018. Imagery Date: 2017.



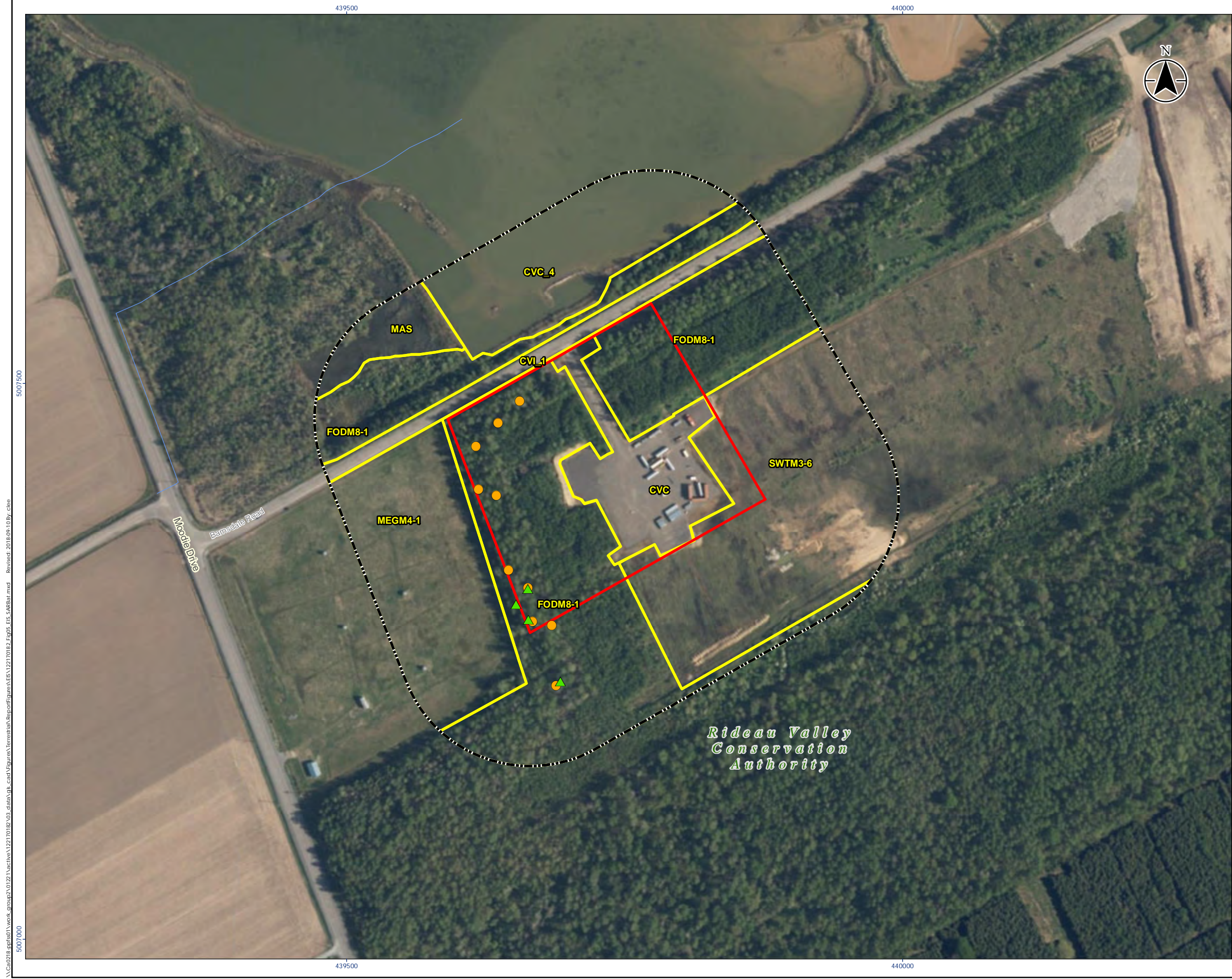
Project Location
Ottawa, Ontario

122170182 REV8
Prepared by IP on 2018-09-10
Technical Review by LH on 2018-09-10

Client/Project
CITY OF OTTAWA / NATIONAL RESEARCH COUNCIL
CANADA
4041 MOODIE DRIVE - EIS

Figure No.
4

Title
Ecological Land Classifications



Legend

- Site Boundary
- 120 metre Study Area
- Ecological Land Classification
- Candidate Maternity Roost Trees
 - High Quality
 - Low Quality
- Existing Features
 - Watercourse (Permanent)
 - Conservation Area Administrative Boundary

SWTM3-6	Mixed Willow Mineral Deciduous Thicket Swamp
FODM8-1	Fresh – Moist Poplar Deciduous Forest Type
MEGM4-1	Fresh – Moist Open Graminoid Meadow Type
MEG	Gramoid Meadow
CVC	Commercial and Institutional
CVC_1	Transportation
MAS	Shallow Marsh
CVC_4	Extraction

050100

Meters

1:3,500 (At original document size of 11x17)

Notes

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- Orthoimagery: City of Ottawa, 2018. Imagery Date: 2017.



Project Location

Ottawa, Ontario

122170182 REV8

Prepared by IP on 2018-09-10

Technical Review by LH on 2018-09-10

Client/Project

CITY OF OTTAWA / NATIONAL RESEARCH COUNCIL
CANADA
4041 MOODIE DRIVE - EIS

Figure No.

5

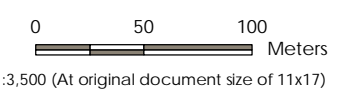
Title

Candidate Bat Maternity Roost Trees



Legend

- Amphibian Survey Location
- Breeding Bird Survey Location
- Site Boundary
- 120 metre Study Area
- Watercourse (Permanent)



- Notes
1. Coordinate System: NAD 1983 UTM Zone 18N
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
 3. Orthoimagery: City of Ottawa, 2018. Imagery Date: 2017.



Project Location
Ottawa, Ontario

122170182 REV8
Prepared by IP on 2018-09-10
Technical Review by LH on 2018-09-10

Client/Project
CITY OF OTTAWA / NATIONAL RESEARCH COUNCIL
CANADA
4041 MOODIE DRIVE - EIS

Figure No.
6

Title
Wildlife Survey Locations

\\Ca0218.ppl\p01\work_group\2012\1\active\122170182\03_data\18_End\Figures\Terrestrial\Report\Figures\ES\122170182_Fig07_EIS_UnevaluatedWetlands.mxd Revised: 2018-09-10 By: cle

5007500

5007000



439500

440000

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Legend

- Site Boundary
- 120 metre Study Area
- Watercourse (Permanent)
- Delineated Wetland (Stantec)

0 50 100 Meters

1:3,500 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
3. Orthoimagery: City of Ottawa, 2018. Imagery Date: 2017.



Project Location
Ottawa, Ontario

122170182 REV8
Prepared by IP on 2018-09-10
Technical Review by LH on 2018-09-10

Client/Project
CITY OF OTTAWA / NATIONAL RESEARCH COUNCIL
CANADA
4041 MOODIE DRIVE - EIS

Figure No.

7

Title

Delineated Wetlands



Legend

- Site Boundary
- 120 metre Study Area
- Potential Candidate Habitat for Bat Maternity Colonies



1:3,500 (At original document size of 11x17)

Notes

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2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
3. Orthoimagery: City of Ottawa, 2018. Imagery Date: 2017.



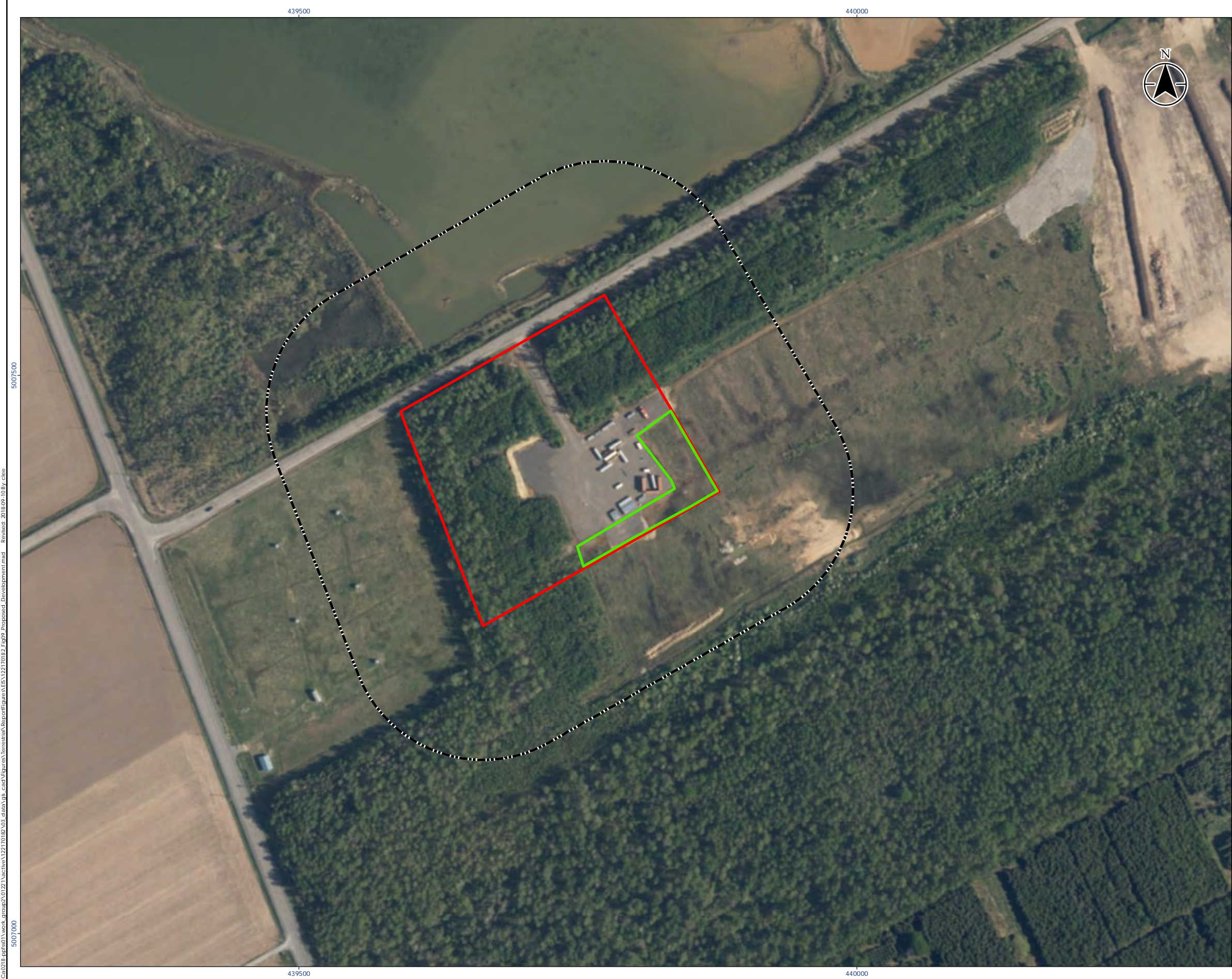
Project Location
Ottawa, Ontario

122170182 REV8
Prepared by IP on 2018-09-10
Technical Review by LH on 2018-09-10

Client/Project
CITY OF OTTAWA / NATIONAL RESEARCH COUNCIL
CANADA
4041 MOODIE DRIVE - EIS

Figure No.
8

Title
Candidate Habitat for Bat Maternity
Colonies



Legend

- Site Boundary
- 120 metre Study Area
- Proposed Development



1:3,500 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
3. Orthoimagery: City of Ottawa, 2018. Imagery Date: 2017.



Project Location
Ottawa, Ontario

122170182 REV8
Prepared by IP on 2018-09-10
Technical Review by LH on 2018-09-10

Client/Project
CITY OF OTTAWA / NATIONAL RESEARCH COUNCIL
CANADA
4041 MOODIE DRIVE - EIS

Figure No.
9

Title
Proposed Development

APPENDIX B

Agency Consultation

From: Hill, Laura
To: ["Kemptville.Inforequest@ontario.ca"](mailto:Kemptville.Inforequest@ontario.ca)
Subject: Information Request: Fire Training Facility at 4041 Moodie Drive (Project Number 160410204)
Date: Monday, January 22, 2018 5:12:00 PM
Attachments: [frm_mnrf_kemptville_20180116.pdf](#)

Good Evening,

Please see the attached information request.

Let me know if you have any questions or require any further information.

Thank you,

Laura

Laura Hill

M.Env.Sc
Environmental Scientist

Direct: (613) 784-2256
Mobile: (613) 862-9895

Stantec Consulting Ltd.
400 - 1331 Clyde Avenue
Ottawa ON K2C 3G4 CA

The content of this email is the confidential property of Stantec and should not be copied, modified, retransmitted, or used for any purpose except with Stantec's written authorization. If you are not the intended recipient, please delete all copies and notify us immediately.



Natural Areas and Features Information Request Form

Contact Information

Name:

Address:

Phone Number: ☐ Owner ☒ Consultant

E-mail Address:

Clear Contact

***All red fields are mandatory**

This includes X & Y Coordinates.

Please see [page 2](#) for assistance.

Site Information

Project Name:

Geographic Township:

Lot:

Concession:

****Please refer to map on page 2 for info**

X:

Y:

Address:

****If more than 1 site, please provide all individual coordinates in an attached spreadsheet**

Clear Site

Type of Proposal

☒ Severance / Zoning

☐ Drains / Roads / Culverts

☐ Hydroline clearing

☐ Small Scale Projects (less than 5 hectares)

☐ RE Projects

☐ Large Scale Projects (5 hectares or greater)

☐ Aggregate Project

☐ Other: _____

Clear Details

Attachments

*****Please attach a Site Map showing the area of interest**

☐ Picture

☒ Map(s)

☐ Engineered Drawings

☐ Other: _____

Request

I would like to request the following information for the property identified above:

I am writing to request information identifying if any terrestrial or aquatic species protected under Ontario's Endangered Species Act, 2007, or the federal Species at Risk Act, that have been documented as occurring at or adjacent to (i.e., within 120 m of) the project site. I would also like

To better respond to your request please briefly outline the purpose for which this information is required

(e.g. proposed development, lot severance, etc. or attach details):

The proponent has asked Stantec to complete an Environmental Impact Assessment for which we are completing a desktop review and site survey.

Date of works proposed: / /

Please forward the completed form to:

Kempenville.Inforequest@Ontario.ca OR Fax: 613-258-3920

Attention: Information Requests

10 Campus Drive, Postal Bag 2002

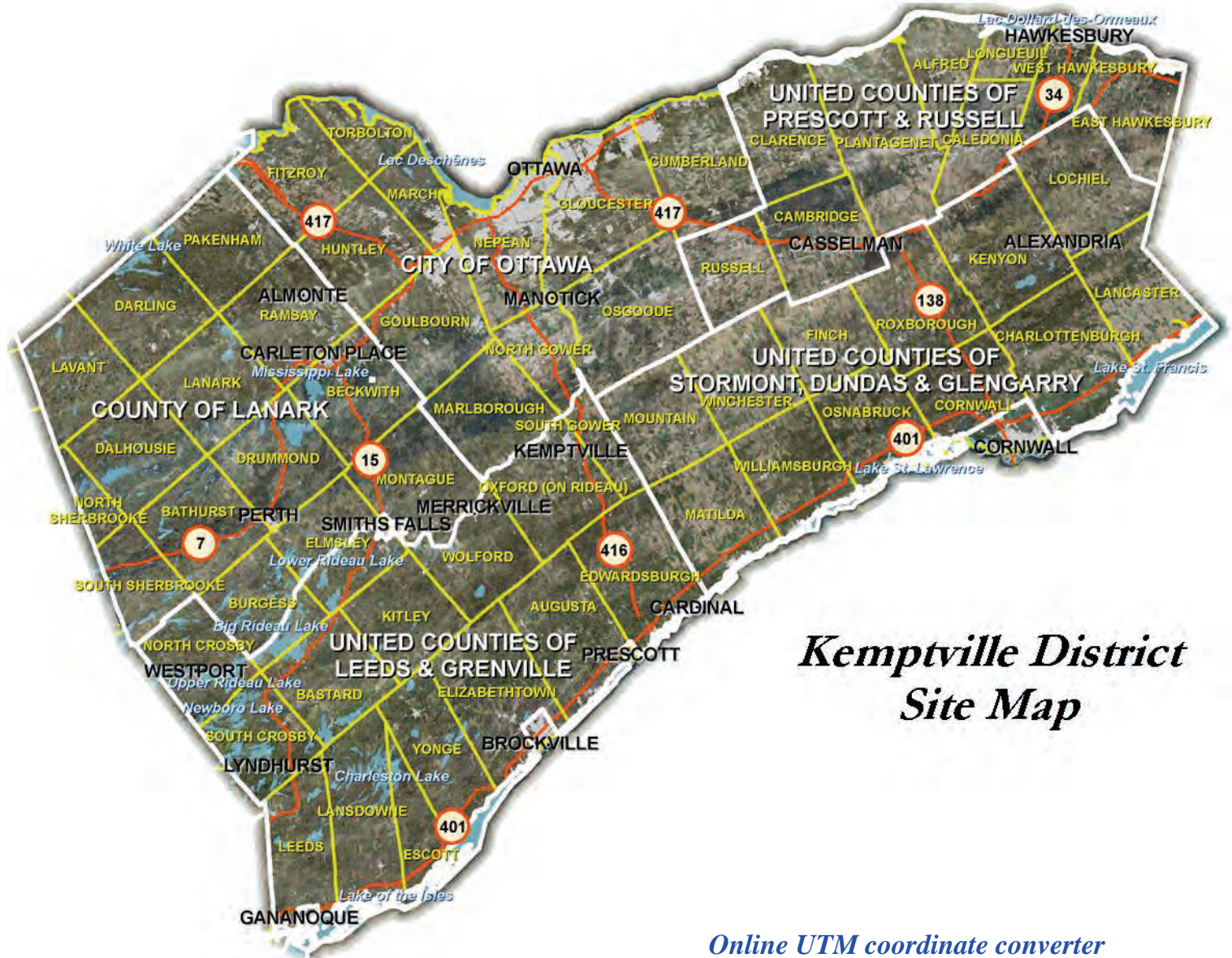
Kempenville, ON K0G 1J0

Personal information contained in this form is collected in order to fulfill your request, respond to your inquiries and for other administration purposes. With regard to the personal information it collects, the ministry is bound by privacy protection rules under the Freedom of Information and Protection of Privacy Act and takes all necessary steps to safeguard personal information collected.

Please Note: This request **MUST** be made by the property owner or by someone acting on their behalf. Depending on the nature of the request, it may take 6-8 weeks to respond to your inquiry. If the request does not include the mandatory information, it may delay response time.



I have read the above and agree to all Terms and Conditions



Kemptville District Site Map

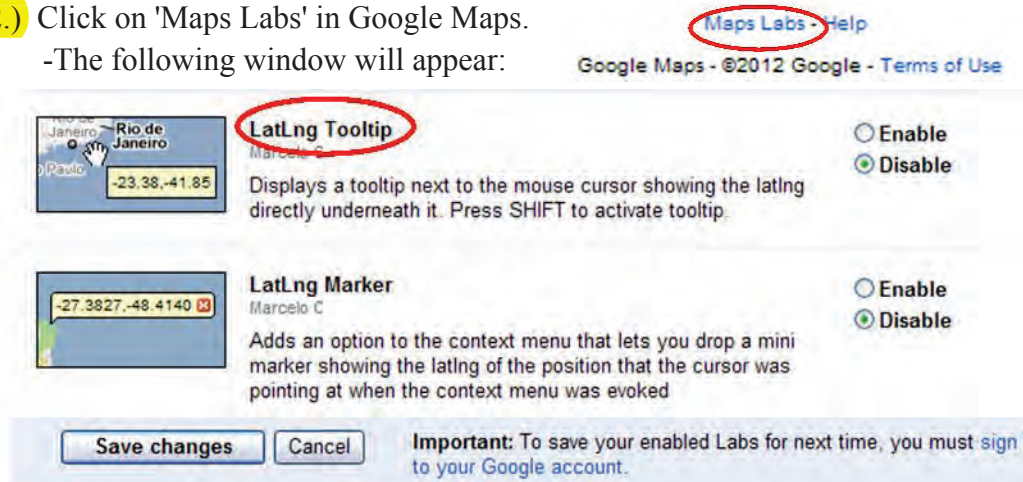
[Online UTM coordinate converter](#)

How to get X, Y coordinates from Google Maps (2 options):

- 1.) Right-click on the map, at the point of interest, and select 'What's here?'.
-The Latitude & Longitude of the mouse click, in decimal degrees, will automatically appear in the Search box.

OR


- 2.) Click on 'Maps Labs' in Google Maps.
-The following window will appear:

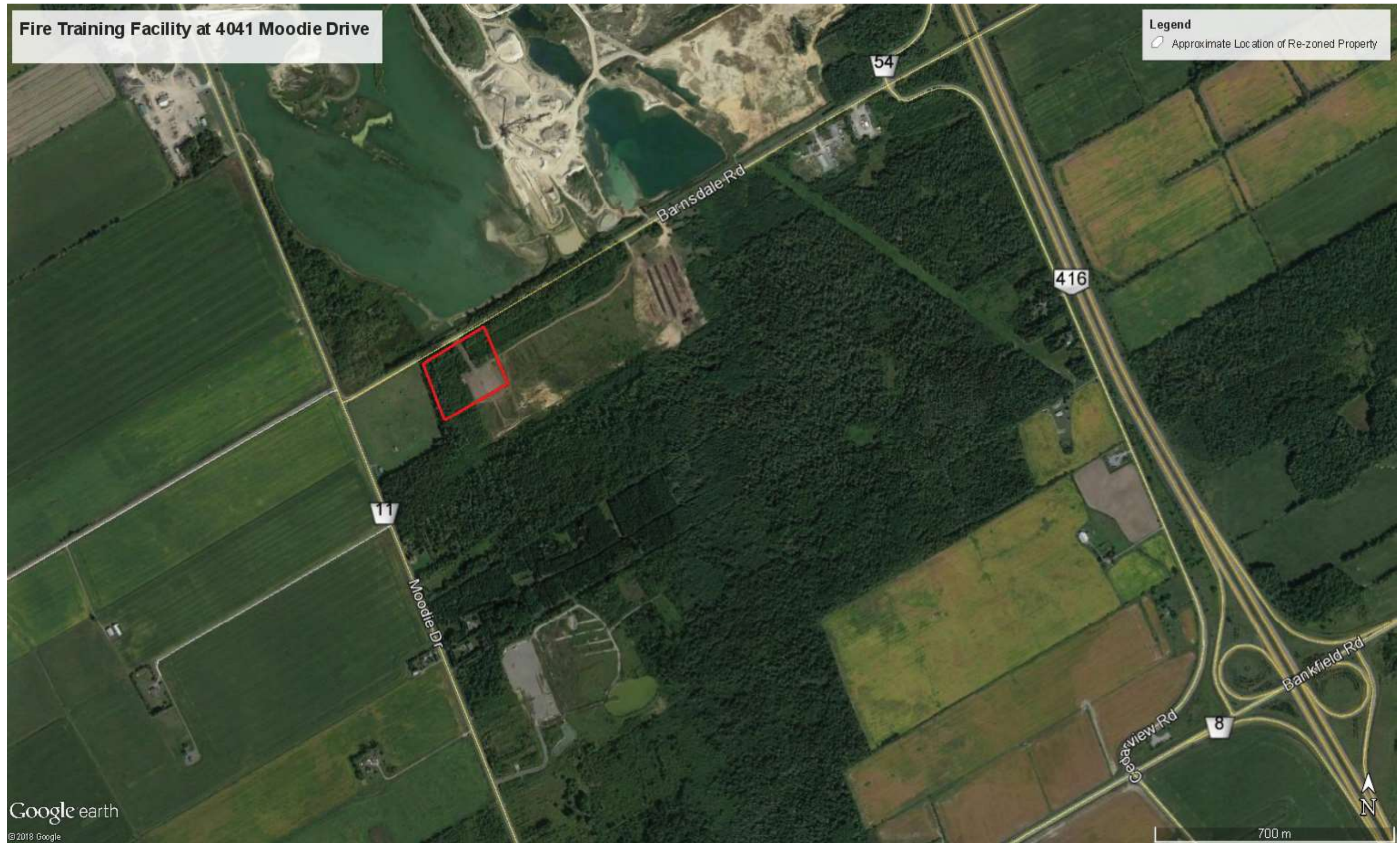


- Enable the LatLng Tooltip and then Save Changes.
- Now every time the **SHIFT** button is pressed in Google Maps, a Tool tip will appear with the Latitude and Longitude of the mouse location in decimal degrees.

Fire Training Facility at 4041 Moodie Drive

Legend

 Approximate Location of Re-zoned Property



From: [Inforequest, Kemptville \(MNRF\)](#)
To: [Hill, Laura](#)
Cc: [Inforequest, Kemptville \(MNRF\)](#)
Subject: MNR Kemptville District Information Request (2018_NEP-4544) Response
Date: Wednesday, May 23, 2018 3:23:31 PM
Attachments: [ESA Infosheet-InfoRequest.pdf](#)
[NHIC-LIO Infosheet-InfoRequest.pdf](#)
[2018_NEP-4544_Response.pdf](#)
Importance: High

Hello,

Laura Hill
Stantec

Please find attached a response to your information request for project 'Fire Training Facility at 4041 Moodie Drive'.

Sincerely,

Information Request Services
Kemptville District
Ministry of Natural Resources

Kemptville District

District de Kemptville

10 Campus Drive
Postal Box 2002
Kemptville ON K0G 1J0
Tel.: 613 258-8204
Fax: 613 258-3920

10, promenade Campus
Case postale, 2002
Kemptville ON K0G 1J0
Tél.: 613 258-8204
Téléc.: 613 258-3920

Wed. May 23, 2018

Laura Hill
Stantec
400-1331 Clyde Avenue
Gloucester, Ontario
K2C 3G4
(613) 784-2256
laura.hill@stantec.com

Attention: Laura Hill

Subject: Information Request - Developments
Project Name: Fire Training Facility at 4041 Moodie Drive
Site Address: 4041 Moodie Drive, Ottawa, ON
Our File No. 2018_NEP-4544

Natural Heritage Values

The Ministry of Natural Resources and Forestry (MNRF) Kemptville District has carried out a preliminary review of the above mentioned area in order to identify any potential natural resource and natural heritage values.

The following Natural Heritage values were identified for the general subject area:

- Municipal Drain, Thomas Baxter (Dynes Br) Drain (Non-Sensitive)
- Pit, 4108 (Non-Sensitive)
- Pit, 608701 (Non-Sensitive)
- Unevaluated Wetland (Not evaluated per OWES)

Municipal Official Plans contain information related to natural heritage features. Please see the local municipal Official Plan for more information, such as specific policies and direction pertaining to activities which may impact natural heritage features. For planning advice or Official Plan interpretation, please contact the local municipality. Many municipalities require environmental impact studies and other supporting studies be carried out as part of the development application process to allow the municipality to make planning decisions which are consistent with the Provincial Policy Statement (PPS, 2014).

The MNRF strongly encourages all proponents to contact partner agencies and appropriate municipalities early on in the planning process. This provides the proponent with early knowledge regarding agency requirements, authorizations and approval timelines; Ministry of the Environment and Climate Change (MOECC) and the local Conservation Authority may require approvals and permitting where natural values and natural hazards (e.g., floodplains) exist.

As per the Natural Heritage Reference Manual (NHRM, 2010) the MNRF strongly recommends that an ecological site assessment be carried out to determine the presence of natural heritage features and species at risk and their habitat on site. The MNRF can provide survey methodology for particular species at risk and their habitats.

The NHRM also recommends that cumulative effects of development projects on the integrity of natural heritage features and areas be given due consideration. This includes the evaluation of the past, present and possible future impacts of development in the surrounding area that may occur as a result of demand created by the presently proposed project.

Wildland Fire

MNRF woodland data shows that the site contains woodlands. The lands should be assessed for the risk of wildland fire as per PPS 2014, Section 3.1.8 "*Development shall generally be directed to areas outside of lands that are unsafe for development due to the presence of hazardous forest types for wildland fire. Development may however be permitted in lands with hazardous forest types for wildland fire where the risk is mitigated in accordance with wildland fire assessment and mitigation standards*". Further discussion with the local municipality should be carried out to address how the risks associated with wildland fire will be covered for such a development proposal. Please see the Wildland Fire Risk Assessment and Mitigation Guidebook (2016) for more information.

Significant Woodlands

Section 2.1.5 b) of the PPS states: *Development and site alteration shall not be permitted in significant woodlands unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions*. The 2014 PPS directs that significant woodlands must be identified following criteria established by the Ontario Ministry of Natural Resources and Forestry, i.e. the Natural Heritage Reference Manual (NHRM), 2010. Where the local or County Official Plan has not yet updated significant woodland mapping to reflect the 2014 PPS, all wooded areas should be reviewed on a site specific basis for significance. The MNRF Kemptville District modelled locations of significant woodlands in 2011 based on NHRM criteria. The presence of significant woodland on site or within 120 metres should trigger an assessment of the impacts to the feature and its function from the proposed development.

Significant Wildlife Habitat

Section 2.1.5 d) of the PPS states: *Development and site alteration shall not be permitted in significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions*. It is the responsibility of the approval authority to identify significant wildlife habitat or require its identification. The MNRF has several guiding documents which may be useful in identification of significant wildlife habitat and characterization of impacts and mitigation options:

- Significant Wildlife Habitat Technical Guide, 2000
- The Natural Heritage Reference Manual, 2010
- Significant Wildlife Habitat Mitigation Support Tool, 2014
- Significant Wildlife Habitat Criteria Schedule for Ecoregion 5E and 6E, 2015

The habitat of special concern species (as identified by the Species at Risk in Ontario list) and Natural Heritage Information Centre tracked species with a conservation status rank of S1, S2 and S3 may be significant wildlife habitat and should be assessed accordingly.

Species at Risk

A review of the Natural Heritage Information Centre (NHIC) and internal records indicate that there is a potential for the following threatened (THR) and/or endangered (END) species on the site or in proximity to it:

- Bank Swallow (THR)
- Barn Swallow (THR)
- Blanding's Turtle (THR)
- Bobolink (THR)
- Butternut (END)
- Eastern Meadowlark (THR)
- Henslow's Sparrow (END)

All endangered and threatened species receive individual protection under section 9 of the ESA and receive general habitat protection under Section 10 of the ESA, 2007. Thus any potential works should consider disturbance to the individuals as well as their habitat (e.g. nesting sites). General habitat protection applies to all threatened and endangered species. Note some species in Kemptville District receive regulated habitat protection. The habitat of these listed species is protected from damage and destruction and certain activities may require authorization(s) under the ESA. For more on how species at risk and their habitat is protected, please see: <https://www.ontario.ca/page/how-species-risk-are-protected>.

If the proposed activity is known to have an impact on any endangered or threatened species at risk (SAR), or their habitat, an authorization under the ESA may be required. It is recommended that MNRF Kemptville be contacted prior to any activities being carried out to discuss potential survey protocols to follow during the early planning stages of a project, as well as mitigation measures to avoid contravention of the ESA. Where there is potential for species at risk or their habitat on the property, an Information Gathering Form should be submitted to Kemptville MNRF at sar.kemptville@ontario.ca.

The Information Gathering Form may be found here:

<http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf/FormDetail?OpenForm&ACT=RDR&TAB=PROFILE&ENV=WWE&NO=018-0180E>

For more information on the ESA authorization process, please see:

<https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization>

One or more special concern species has been documented to occur either on the site or nearby. Species listed as special concern are not protected under the ESA, 2007. However, please note that some of these species may be protected under the Fish and Wildlife Conservation Act and/or Migratory Birds Convention Act. Again, the habitat of special concern species may be significant wildlife habitat and should be assessed accordingly. Species of special concern for consideration:

- Eastern Wood-Pewee (SC)
- Snapping Turtle (SC)
- Wood Thrush (SC)

If any of these or any other species at risk are discovered throughout the course of the work, and/or should any species at risk or their habitat be potentially impacted by on site activities, MNRF should be contacted and operations be modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by MNRF.

Please note that information regarding species at risk is based largely on documented occurrences and does not necessarily include an interpretation of potential habitat within or in proximity to the site in question. Although this data represents the MNRF's best current available information, it is important to note that a lack of information for a site does not mean that additional features and values are not present. It is the responsibility of the proponent to ensure that species at risk are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the activities carried out on the site.

The MNRF continues to strongly encourage ecological site assessments to determine the potential for SAR habitat and occurrences. When a SAR or potential habitat for a SAR does occur on a site, it is recommended that the proponent contact the MNRF for technical advice and to discuss what activities can occur without contravention of the Act. For specific questions regarding the Endangered Species Act (2007) or SAR, please contact MNRF Kemptville District at sar.kemptville@ontario.ca.

The approvals processes for a number of activities that have the potential to impact SAR or their habitat have recently changed. For information regarding regulatory exemptions and associated online registration of certain activities, please refer to the following website: <https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization>.

Please note: The advice in this letter may become invalid if:

- The Committee on the Status of Species at Risk in Ontario (COSSARO) re-assesses the status of the above-named species OR adds a species to the SARO List such that the section 9 and/or 10 protection provisions apply to those species; or
- Additional occurrences of species are discovered on or in proximity to the site.

This letter is valid until: Thu. May 23, 2019

The MNRF would like to request that we continue to be circulated on information with regards to this project. If you have any questions or require clarification please do not hesitate to contact me.

Sincerely,

Jane Devlin
Management Biologist
jane.devlin@ontario.ca

Encl.: ESA Infosheet; NHIC/LIO Infosheet.

From: Hill, Laura
To: ["info@rvca.ca"](mailto:info@rvca.ca)
Subject: RVCA Information Request - Project #160410205 - Fire Training Facility at 4041 Moodie Drive
Date: Monday, January 22, 2018 5:13:00 PM
Attachments: [fig_projectlocation.pdf](#)

Good Day,

On behalf of our client (City of Ottawa) I am writing to request any information the Rideau Valley Conservation Authority might have within, nearby, or from adjacent properties within the approximate boundaries of a project site located at 4041 Moodie Drive, Ottawa, Ontario (please see attached figure) related to:

- Fish and Fish Habitat;
- Water Quality & Quantity; and,
- Natural Environment Features (including woodlots, watercourses, wetlands, hazard lands, provincial and/or federal species at risk).

The purpose of this request is to collect information as part of an environmental impact assessment in support of a re-zoning application.

If you require any further information to complete the request, please do not hesitate to contact me directly.

Thank you,

Laura

Laura Hill

M.Env.Sc
Environmental Scientist

Direct: (613) 784-2256
Mobile: (613) 862-9895

Stantec Consulting Ltd.
400 - 1331 Clyde Avenue
Ottawa ON K2C 3G4 CA

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From: [Emma Bennett](#)
To: [Hill, Laura](#)
Subject: RVCA Information Request - Project #160410205 - Fire Training Facility at 4041 Moodie Drive
Date: Wednesday, January 31, 2018 9:17:52 AM
Attachments: [4041 Moodie Drive NEPz.pdf](#)
[4041 Moodie Drive NEPc.pdf](#)
[KV Info Request English 2016.pdf](#)

Good morning Laura,

Thank you for your email regarding 4041 Moodie Drive. I have attached mapping of the property to this email for your reference (note, map may not be to scale). Please contact our office if the mapping does not depict the property of interest.

The RVCA does not have any fish, thermal, stream characterization or OBBN data for the site.

However, the site appears to be within the **Jock River – Leamy Creek** catchment area. You can download the RVCA's 2016 Catchment Report here: <https://watersheds.rvca.ca/subwatersheds-reports/jock-river/catchment-reports-jock-river/leamy-creek/full-catchment-report-leamy-creek>

Inquiries related to Species at Risk should be directed to the Ministry of Natural Resources and Forestry (Kemptville District). Attached for your convenience, please find the MNRF Info Request form that is used to submit inquiries to their office. Once completed, this form should be emailed to Kemptville.Inforequest@ontario.ca.

RVCA Regulations & RVCA Mapping

-

- The RVCA administers development regulations (Conservation Authorities Act – Ontario Regulation 174/06 “*Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*”) in areas subject to natural hazards (flooding, erosion, and unstable slopes) and in environmentally sensitive areas (wetlands, shorelines, and waterways). The RVCA also reviews and provides comments on development proposals (Municipal Planning applications) if circulated on Planning Act Applications by the municipality.
 - Ontario Regulation 174/06 can be reviewed at:
<https://www.ontario.ca/laws/regulation/060174>
- RVCA's mapping indicates the following:
 - There do not appear to be watercourses on the property.
 - The property is not within an identified floodplain. A floodplain mapping study has not been completed in this area.
 - Provincially Significant Wetlands do not appear to be present.
 - **There appears to be an unevaluated wetland present on the majority of the property.**

-

- Although the property is within RVCA's watershed, the property is not in an area where the RVCA currently administers Ontario Regulation 174/06 under the Conservation Authorities

Act. Therefore, a permit under O.Reg 174/06 from our office is not required for development on the property at this time. However, although unevaluated wetlands are currently not regulated by our office, they may become regulated in the future:

- Please note: Bill 139 received Royal Assent on December 12th, 2017 which included amendments to the Conservation Authorities Act and redefines the Conservation Authority's role in watershed management, climate change adaptability and natural hazards. Among the changes, a new Section 28 specifically changes regulation of areas over which authorities have jurisdiction. As a result, the RVCA will be reviewing the implementation of our policies and procedures to comply with the updated Conservation Authorities Act. For further information on these changes please see the link below: <http://conservationontario.ca/policy-priorities/conservation-authorities-act/>

Approvals may be required from other municipal/provincial/federal/other agencies. Approval must be obtained from all Regulatory agencies prior to commencing any work. You may wish to contact the City of Ottawa (613-580-2424) regarding the property's zoning and to discuss any proposed development.

Trusting this is of assistance. Please contact our office should you have any questions.

Sincerely,

Emma Bennett, B.Sc.
Resource Specialist
T: 613-692-3571 x 1132 | E: emma.bennett@rvca.ca
Rideau Valley Conservation Authority
3889 Rideau Valley Dr.
Manotick, ON
K4M 1A5

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This message is directed in confidence solely to the person(s) named above and may contain privileged, confidential or private information which is not to be disclosed. If you are not the addressee or an authorized representative thereof, please contact the undersigned and then destroy this message.

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From: Jennifer Lamoureux

Sent: Friday, January 26, 2018 2:38 PM

To: RVCA Info <info@rvca.ca>; LRC Info <info@lrconline.com>; Emma Bennett <emma.bennett@rvca.ca>; Megan Peacock <megan.peacock@rvca.ca>

Subject: RE: RVCA Information Request - Project #160410205 - Fire Training Facility at 4041 Moodie Drive

From: LRC Info

Sent: Wednesday, January 24, 2018 8:39 AM

To: Megan Peacock <megan.peacock@rvca.ca>

Subject: FW: RVCA Information Request - Project #160410205 - Fire Training Facility at 4041 Moodie Drive

From: RVCA Info

Sent: Tuesday, January 23, 2018 3:10 PM

To: LRC Info <info@lrconline.com>; Jennifer Lamoureux <jennifer.lamoureux@rvca.ca>

Subject: Fw: RVCA Information Request - Project #160410205 - Fire Training Facility at 4041 Moodie Drive

From: Hill, Laura <Laura.Hill@stantec.com>

Sent: January 22, 2018 5:13 PM

To: RVCA Info

Subject: RVCA Information Request - Project #160410205 - Fire Training Facility at 4041 Moodie Drive

Good Day,

On behalf of our client (City of Ottawa) I am writing to request any information the Rideau Valley Conservation Authority might have within, nearby, or from adjacent properties within the approximate boundaries of a project site located at 4041 Moodie Drive, Ottawa, Ontario (please see attached figure) related to:

- Fish and Fish Habitat;
- Water Quality & Quantity; and,
- Natural Environment Features (including woodlots, watercourses, wetlands, hazard lands, provincial and/or federal species at risk).

The purpose of this request is to collect information as part of an environmental impact assessment in support of a re-zoning application.

If you require any further information to complete the request, please do not hesitate to contact me directly.

Thank you,

Laura

Laura Hill

M.Env.Sc
Environmental Scientist

Direct: (613) 784-2256
Mobile: (613) 862-9895

Stantec Consulting Ltd.
400 - 1331 Clyde Avenue
Ottawa ON K2C 3G4 CA

APPENDIX C

ELC Field Cards

POLYGON DESCRIPTION

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

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	3	PERTREM > PORDEL > POROALS
2	SUB-CANOPY	3	4	PERTREM > PORDEL > FRANKEN > JALIX
3	UNDERSTOREY	5	4	ONGEUS > CAREX SP. > Dual Restioid
4	GRD. LAYER	6	3	Stropharia > Boletinus

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

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

STAND COMPOSITION: *POPTREM* to *PERCULUS* Sp. 20 BA: nb.

SIZE CLASS ANALYSIS:	A	<10	O	10 - 24	R	25 - 50	N	>50
----------------------	---	-----	---	---------	---	---------	---	-----

STANDING SNAGS:	N	<10	R	10 - 24	R	25 - 50	N	>50
-----------------	---	-----	---	---------	---	---------	---	-----

DEADFALL/LOGS:	R	<10	R	10 - 24	R	25 - 50	N	>50
----------------	---	-----	---	---------	---	---------	---	-----

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

COMM. AGE:	<input type="checkbox"/>	PIONEER	<input checked="" type="checkbox"/>	YOUNG	<input checked="" type="checkbox"/>	MID-AGE	<input type="checkbox"/>	MATURE	<input type="checkbox"/>	OLD GROWTH
------------	--------------------------	---------	-------------------------------------	-------	-------------------------------------	---------	--------------------------	--------	--------------------------	------------

SOIL ANALYSIS: n/a

TEXTURE:	DEPTH TO MOTTLES/GLEY	g=	G=
----------	-----------------------	----	----

MOISTURE:	DEPTH OF ORGANICS:	(cm)
-----------	--------------------	------

HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:				(cm)
------------------------	-------------------	--	--	--	------

COMMUNITY CLASSIFICATION: FCDMG-1

COMMUNITY CLASS:	Forest	CODE:	Fo
------------------	--------	-------	----

COMMUNITY SERIES:	F. J. J. J. J. J.	CODE:	F. J. J. J. J.
ECCITE		CASE	

ECOSITE:	Fresh Moist Tephel	CODE:	FOU MO
VEGETATION TYPE:		CODE:	U 2 N 1

VEGETATION TYPE:	<i>100%</i>	CODE:	<i>FQDME-1</i>

INCLUSION	n/a	CODE: /
-----------	-----	---------

	COMPLEX	7/9	CODE: 1
--	---------	-----	---------

Notes: (e.g. disturbance, surface water depths, etc.)

Community is divided into two distinct age groups.
Same community \rightarrow same species.
Inside edge was cleared previously.

LAYERS: 1=CANOPY>10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT

[illegible]Page 1 of 2

Print Name:

(Field Notes Author)

Quality Control: This form is complete ☒ & legible ☒

Signature: _____

(field notes, QA/QC, personnel)



Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Project Number: 105410800

Project Name: 4th Nov. 2020

Date: Jan 25 2014

Field Personnel: J. Howell

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT.

PPT (in last 24 hrs):

POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON: MEG	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input checked="" type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL. UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	HISTORY <input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL
	START TIME: 0700 END TIME: 0715			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	-	-	-
2	SUB-CANOPY	-	-	-
3	UNDERSTOREY	5	4	Rc. Grass > Wd-grass > Red Clover
4	GRD. LAYER	-	-	-

HT CODES: 1= $\geq 25m$ 2= $10 < HT \leq 25m$ 3= $2 < HT \leq 10m$ 4= $1 < HT \leq 2m$ 5= $0.5 < HT \leq 1m$ 6= $0.2 < HT \leq 0.5m$ 7= $HT < 0.2m$

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	N	>50
-----------------	---	-----	---	---------	---	---------	---	-----

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	<input checked="" type="checkbox"/> PIONEER	<input type="checkbox"/> YOUNG	<input type="checkbox"/> MID-AGE	<input type="checkbox"/> MATURE	<input type="checkbox"/> OLD GROWTH
-----------------	---	--------------------------------	----------------------------------	---------------------------------	-------------------------------------

VEGETATION TYPE: MEGMAH-1 Fest-Mount		CODE: MEGMAH-1
COMPLEX	n/a	CODE: n/a

Evidence of Disturbance / Notes:

Reed-canary grass dominated field @ corner of
Barnsdale + Moode.

- ↳ communication lowers in feature.

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Page 1 of 2

Print Name: _____

(Field Notes April 1991)

Quality Control: This form is complete ☐ & legible ☐

Signature:

(Field Notes QA/QC personnel)

ELC Polygon: # *MEG* Assessment Type: ☒-Visual; no access /
☐-Walk through featureExtent of Physical Investigation of Feature: ☐-Entire /
☐-Partial, walk through polygon (indicate on map)

NOTES & SPECIES OBSERVATIONS (list species and type of observation, indicate on map):

WTD White-tailed Deer RAB.

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

Wildlife Habitat Type & Description	Site Assessment	Photo ID	Map ID	UTM Coordinates		
				Zone	Easting	Northing
ALL SITES						
Bat Hibernacula: Caves, abandoned mines, underground foundations, karst features	Size of opening(s) Bedrock Type Depth of feature (if possible)					
Snake Hibernacula: Burrows, rock crevices, fissures that extend below the frost line (i.e. at least 1 m)	Number of access points Size of opening(s) Substrate					
Bank / Cliff Colonial Bird Nesting Habitat: Exposed soil banks, undisturbed, naturally eroding, steep slopes, cliff faces with evidence of nests or burrows	Size of burrow Number of burrows					
Stick Nests: Stick nests found in any forest/ woodland/swamp; includes heron colonies and bald eagle/ osprey/other raptor nests	Tree species Nest size					
WOODLANDS						
Vernal Pools: Permanent or semi-permanent pool or pond. Evidence of holding water in most years through late spring (i.e. late May) or into summer	Number of features Feature size (diameter) Water depth					
Seeps and Springs: Locations where groundwater comes to the surface in forests (see document for indicator species)	Sub/emergent veg present Shrubs/logs at edge present Water permanency					
WETLANDS						
Turtle Wintering Areas: Permanent water bodies, large wetlands, bogs, or fens with soft substrates and deep enough not to freeze solid	Feature size (diameter) Water depth Substrate of water body Water permanency					
Turtle Nesting Habitat: Exposed mineral soil (sand or gravel) areas adjacent (<100 m) to MAM/SA/BOO/ FEO (note if man-made)	Type of substrate Distance to wetland Size of feature					
Terrestrial Crayfish Habitat: Edges of shallow marshes and meadows (no minimum size) with crayfish chimneys	Number of chimneys					

APPENDIX D

Species at Risk Habitat Assessment

Observed Species at Risk and/or Potential Species at Risk Habitat Within the Study Area

Species	Habitat Preference	On- Subject Property		Adjacent	Field Observations
		Species observed (✓/✗)	Potential Habitat observed (✓/✗)	Potential Habitat observed (✓/✗)	
Plants					
Butternut	Forest openings, and forest edges, with good sun exposure (Environment Canada, 2010).	✗	✓	✓	Suitable habitat was observed in FODM8-1 communities within the Study Area, however no individuals were observed. Species is considered absent
Reptiles					
Blanding's turtle	Lakes, ponds, and marshes, especially shallow water with abundant aquatic vegetation and a soft bottom; also adjacent upland forests (COSEWIC, 2016).	✗	✗	✓	Potential habitat in the adjacent CVC_4 and MAS communities. Blanding's turtle was not observed within the Study Area during field investigations.
Bird					
Chimney swift	Hollow trees and chimneys, often near bodies of water (COSEWIC, 2007).	✗	✗	✗	No potential habitat observed. Species is considered absent.
Bank swallow	Nest in river banks, bluffs, sand piles; generally, prefers eroding, unconsolidated material with a vertical face (COSEWIC, 2013a).	✗	✗	✓	Individuals were observed foraging over SWTM3-6 community. Aggregate stockpiles within the adjacent CVC_4 community may provide suitable nesting habitat.
Barn swallow	Nest on walls or ledges of barns as well as on other human-made structures such as bridges, culverts or other buildings; forages in open areas for flying insects (COSEWIC, 2011a).	✗	✗	✗	No potential habitat observed. Species is considered absent.

Species	Habitat Preference	On- Subject Property		Adjacent	Field Observations
		Species observed (✓/✗)	Potential Habitat observed (✓/✗)	Potential Habitat observed (✓/✗)	
Henslow's sparrow	Large areas of grassland that lack emergent woody vegetation, with tall dense grass cover, thick thatch layer, and low-lying wet areas in the spring. This species is area-sensitive and required greater than 30 hectares but prefer more than 100 hectares of suitable habitat (COSEWIC, 2011b).	✗	✗	✗	No potential habitat observed. The MEGM4-1 community is approximately 5.5 hectares. Species is considered absent.
Bobolink	Nests primarily in forage crops with a mixture of grasses and broad-leaved forbs, predominantly hayfields and pastures (COSEWIC, 2010).	✗	✗	✓	Habitat for this species can be determined through the consideration of Open Area-Sensitive Bird Breeding Habitat. No Open Area - Sensitive Bird Breeding Habitat was identified in the Study Area, therefore no potential habitat was observed within the Study Area. Species is considered absent
Eastern meadowlark	Meadows, hayfields and pastures; also other open habitat types including mown lawn (COSEWIC, 2011c).	✗	✗	✓	Potential habitat in MEGM4-1 community within the Study Area. Eastern meadowlark was not observed within the Study Area during field investigations. Species is considered absent

Species	Habitat Preference	On- Subject Property		Adjacent	Field Observations
		Species observed (✓/✗)	Potential Habitat observed (✓/✗)	Potential Habitat observed (✓/✗)	
Mammal					
Eastern small-footed myotis	Roost in rock outcrops, caves, buildings, or bridges (MNRF, 2018).	✗	✓	✓	No potential habitat observed. Species is considered absent.
Little brown myotis	Trees, buildings and bridges for roosting. Caves and mines provide overwintering habitat (COSEWIC, 2013b).	✗	✓	✓	Potential maternal roosting habitat was observed in mature portions of FODM8-1 community within the Study Area. Potential foraging habitat was observed in the MEGM4-1, CVC, CVC_4, SWTM3-6 and MAS communities within the Study Area.
Northern myotis	Trees, buildings and bridges for roosting. Caves provide overwintering habitat. Rarely uses human-made structures for roosting (COSEWIC, 2013b).	✗	✓	✓	
Tri-coloured bat	Trees, buildings and bridges for roosting. Found in a variety of habitats. Caves provide overwintering habitat (COSEWIC, 2013b).	✗	✓	✓	

REFERENCES

- COSEWIC. (2007). *COSEWIC Assessment and Status Report on the Chimney Swift (Chaetura pelagica) in Canada*. Ottawa: COSEWIC. Retrieved from Species at Risk Public Registry.
- COSEWIC. (2010). *COSEWIC Assessment and Status Report on the Bobolink (Dolichonyx oryzivorus) in Canada*. Ottawa: COSEWIC. Retrieved from Species at Risk Public Registry.
- COSEWIC. (2011a). *COSEWIC Assessment and Status Report on the Barn Swallow (Hirundo rustica) in Canada*. Ottawa: COSEWIC. Retrieved from Species at Risk Public Registry.
- COSEWIC. (2011b). *COSEWIC Assessment and Status Report on the Henslow's Sparrow (Ammodramus henslowii) in Canada*. Ottawa: COSEWIC. Retrieved from Species at Risk Public Registry.
- COSEWIC. (2011c). *COSEWIC Assessment and Status Report on the Eastern Meadowlark (Sturnella magna) in Canada*. Ottawa: COSEWIC. Retrieved from Species at Risk Public Registry.

- COSEWIC. (2013a). *COSEWIC Assessment and Status Report on the Bank Swallow (Riparia riparia) in Canada*. Ottawa: COSEWIC. Retrieved from Species at Risk Public Registry.
- COSEWIC. (2013b). *COSEWIC Assessment and Status Report on the Little Brown Myotis (Myotis lucifugus), Northern Myotis (Myotis septentrionalis), Tri-colored Bat (Perimyotis subflavus) in Canada*. Ottawa: COSEWIC. Retrieved from Species at Risk Public Registry.
- COSEWIC. (2016). *COSEWIC Assessment and Status Report on the Blanding's Turtle Emydoidea blandingii Nova Scotia population and Great Lakes/St. Lawrence population in Canada*. Ottawa: COSEWIC.
- Environment Canada. (2010). *Recovery Strategy for the Butternut (Juglans cinerea) in Canada*. Species at Risk Act Recovery Strategy Series. Ottawa: Environment Canada.
- MNRF. (2018). *Eastern small-footed myotis*. Retrieved June 25, 2018, from Species at Risk in Ontario List: <https://www.ontario.ca/page/eastern-small-footed-myotis>

APPENDIX E

Breeding Bird Survey Observations

Bird Species Recorded During Field Investigations at 4041 Moodie Drive, Ottawa, Ontario

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	ESA	SARA	AREA SENSITIVITY (ha)
Canada Goose	<i>Branta canadensis</i>	S5	G5			
Mallard	<i>Anas platyrhynchos</i>	S5	G5			
Killdeer	<i>Charadrius vociferus</i>	S5B, S5N	G5			
American Woodcock	<i>Scolopax minor</i>	S4B	G5			
Wilson's Snipe	<i>Gallinago delicata</i>	S5B	G5			
Ring-billed Gull	<i>Larus delawarensis</i>	S5B,S4N	G5			
Great Blue Heron	<i>Ardea herodias</i>	S5	G5			
Northern Flicker	<i>Colaptes auratus</i>	S4B	G5			
Alder Flycatcher	<i>Empidonax alnorum</i>	S5B	G5			
Willow Flycatcher	<i>Empidonax traillii</i>	S5B	G5			
Warbling Vireo	<i>Vireo gilvus</i>	S5B	G5			
Blue Jay	<i>Cyanocitta cristata</i>	S5	G5			
Tree Swallow	<i>Tachycineta bicolor</i>	S4B	G5			
Bank Swallow	<i>Riparia riparia</i>	S4B	G5	THR	THR	
Hermit Thrush	<i>Catharus guttatus</i>	S5B	G5			20-30
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	G5	SC	THR	
American Robin	<i>Turdus migratorius</i>	S5B	G5			
Gray Catbird	<i>Dumetella carolinensis</i>	S4B	G5			
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B	G5			
Common Yellowthroat	<i>Geothlypis trichas</i>	S5B	G5			
American Redstart	<i>Setophaga ruticilla</i>	S5B	G5			20-30
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	S5B	G5			
Pine Warbler	<i>Setophaga pinus</i>	S5B	G5			15-30
Savannah Sparrow	<i>Passerculus sandwichensis</i>	S4B	G5			
Song Sparrow	<i>Melospiza melodia</i>	S5B	G5			
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S4	G5			
Brown-headed Cowbird	<i>Molothrus ater</i>	S4B	G5			
Baltimore Oriole	<i>Icterus galbula</i>	S4B	G5			
American Goldfinch	<i>Carduelis tristis</i>	S5B	G5			

ESA: Endangered Species Act

SARA: Species at Risk Act

REGION: Rare in a Site Region

S4: Apparently Secure—Uncommon but not rare

S5: Secure—Common, widespread, and abundant in the province

S#B- Breeding status rank

S#N- Non Breeding status rank

G5: Very common globally; demonstrably secure

SC: Special Concern

THR: Threatened

Area: Minimum patch size for area-sensitive species (ha)

Note: All rankings for birds refer to breeding birds unless the ranking is followed by N

REFERENCES

ESA Status

Endangered Species Act, 2007 (Bill 184). Species at Risk in Ontario List. Last updated: June 28, 2018

SARA Status

COSEWIC. 2007. Canadian Species at Risk. Committee on the Status of Endangered Wildlife in Canada. Last updated: July 3, 2018

APPENDIX F

Wildlife Habitat Assessment

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Seasonal Concentration Areas			
Waterfowl Stopover and Staging Area (Terrestrial)	<p>Fields with sheet water or utilized by tundra swans during spring (mid-March to May), or annual spring melt water flooding found in any of the following Community Types: Meadow (CUM1), Thicket (CUT1).</p> <p>Agricultural fields with waste grains are commonly used by waterfowl, and these are not considered SWH unless used by Tundra swans in the Long Point, Rondeau, Lake St. Clair, Grand Bend and Point Pelee Areas.</p>	ELC surveys were used to assess features within the Study Area that may support waterfowl stopover and staging areas (terrestrial).	No candidate habitat for waterfowl stopover and staging areas occurs within the Study Area.
Waterfowl Stopover and Staging Area (Aquatic)	<p>The following Community Types: Shallow Marsh (MAS), Shallow Aquatic (SA), Deciduous Swamp (SWD). Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration.</p> <p>The combined area of the ELC ecosites and a 100 m radius area is the SWH.</p> <p>Sewage treatment ponds and storm water ponds do not qualify as a SWH; however, a reservoir managed as a large wetland or pond/lake does qualify.</p>	ELC surveys were used to assess features within the Study Area that may support waterfowl stopover and staging areas (aquatic).	The shallow marsh (MAS) identified within the Study Area, north of the Subject Property, could provide suitable habitat for an aquatic waterfowl stopover and staging area.
Shorebird Migratory Stopover Area	<p>Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats.</p> <p>Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October.</p> <p>Sewage treatment ponds and storm water ponds do not qualify as a significant wildlife habitat.</p> <p>The following community types: Meadow Marsh (MAM), Beach/Bar (BB), or Sand Dune (SD)</p>	ELC surveys were used to assess features within the Study Area that may support migratory shorebirds.	<p>No ELC communities were identified within the Study Area that are generally associated with potential candidate shorebird migratory stopover areas.</p> <p>No candidate habitat for shorebird stopover areas occurred within the Study Area.</p>

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Raptor Wintering Area	At least one of the following Forest Community Types: Deciduous Forest (FOD), Mixed Forest (FOM) or Coniferous Forest (FOC), in combination with one of the following Upland Community Types: Meadow (CUM), Thicket (CUT), Savannah (CUS), Woodland (CUW) (<60% cover) that are >20 ha and provide roosting, foraging and resting habitats for wintering raptors. Upland habitat (CUM, CUT, CUS, CUW), must represent at least 15 ha of the 20 ha minimum size.	ELC surveys were used to assess features within the Study Area that may support wintering raptors.	No candidate habitat for raptor wintering areas occurred within the Study Area.
Bat Hibernacula	Hibernacula may be found in caves, mine shafts, underground foundations and karsts. May be found in these Community Types: Crevice (CCR), Cave (CCA).	ELC surveys were used to assess features within the Study Area that may support bat hibernacula.	No crevices, caves or abandoned mines are located within the Study Area. No candidate habitat for bat hibernacula occurred within the Study Area.
Bat Maternity Colonies	Maternity colonies considered significant wildlife habitat are found in forested ecosites. Any of the following Community Types: Deciduous Forest (FOD), Mixed Forest (FOM), Deciduous Swamp (SWD), Mixed Swamp (SWM), that have >10/ha wildlife trees >25cm diameter at breast height (dbh). Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. Northern Myotis prefer contiguous tracts of older forest cover for foraging and roosting in snags and trees Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred.	ELC surveys were used to assess features within the Study Area that may support bat maternity colonies.	Large trees located within the FODM8-1 may provide candidate habitat for bat maternity colonies within the Study Area.

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Turtle Wintering Areas	<p>Snapping and Midland Painted turtles utilize ELC community classes: Swamp (SW), Marsh (MA) and Open Water (OA). Shallow water (SA), Open Fen (FEO) and Open Bog (BOO).</p> <p>Northern Map turtle- open water areas such as deeper rivers or streams and lakes can also be used as over-wintering habitat.</p> <p>Water has to be deep enough not to freeze and have soft mud substrate.</p> <p>Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen.</p>	ELC surveys were used to assess features within the Study Area that may support areas of permanent standing water but not deep enough to freeze.	<p>The open water features within the MAS and CVC_4, located north of the Subject Property, may be deep enough to not freeze.</p> <p>No suitable habitat for turtle overwintering was observed within the Subject Property, however the MAS may provide suitable habitat for turtle wintering areas.</p>
Snake Hibernacula	<p>Hibernation occurs in sites located below frost lines in burrows, rock crevices, broken and fissured rock and other natural features. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover.</p> <p>Any ecosite in southern Ontario other than very wet ones may provide habitat. The following Community Types may be directly related to snake hibernacula: Talus (TA), Rock Barren (RB), Crevice (CCR), Cave (CCA), and Alvar (RBOA1, RBSA1, RBTA1).</p>	ELC surveys and wildlife assessments were used to assess features within the Study Area that may support snake hibernacula.	No candidate snake hibernacula were observed within the Study Area.
Colonial-Nesting Bird Breeding Habitat (Bank and Cliff)	<p>Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, or barns found in any of the following Community Types: Meadow (CUM), Thicket (CUT), Bluff (BL), Cliff (CL).</p> <p>Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles.</p> <p>Does not include a licensed/permitted Mineral Aggregate Operation.</p>	ELC surveys were used to assess features within the Study Area that may support colonial bird breeding habitat.	<p>No ELC communities were identified within the Study Area that are generally associated with potential candidate colonial-nesting bird breeding habitat (bank and cliff).</p> <p>No candidate habitat for bank or cliff colonial nesting birds occurs within the Study Area.</p>

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Colonial-Nesting Bird Breeding Habitat (Tree/Shrubs)	<p>Identification of stick nests in any of the following Community Types: Mixed Swamp (SWM), Deciduous Swamp (SWD), Treed Fen (FET).</p> <p>The edge of the colony and a minimum 300 m area of habitat or extent of the Forest Ecosite containing the colony or any island <15.0 ha with a colony is the SWH. Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used.</p>	ELC surveys and Woodland Assessments were used to assess features within the Study Area that may support colonial bird breeding habitat (Trees/Shrubs).	<p>No large stick nests were observed during Stantec surveys.</p> <p>No candidate habitat for tree/shrub colonial nesting birds occurred within the Study Area.</p>
Colonial-Nesting Bird Breeding Habitat (Ground)	<p>Any rocky island or peninsula within a lake or large river.</p> <p>For Brewer's Blackbird close proximity to watercourses in open fields or pastures with scattered trees or shrubs found in any of the following Community Types: Meadow Marsh (MAM1-6), Shallow Marsh (MAS1-3), Meadow (CUM), Thicket (CUT), Savannah (CUS).</p>	ELC surveys and Woodland Assessments were used to assess features within the Study Area that may support colonial bird breeding habitat (ground).	<p>No rocky islands or peninsulas are present within the Study Area.</p> <p>The shallow marsh (MAS) within the Study Area is not sufficient in size to provide suitable habitat for ground colonial nesting breeding birds.</p>
Migratory Butterfly Stopover Areas	<p>Located within 5 km of Lake Ontario</p> <p>A combination of ELC communities, one from each land class is required: Field (CUM, CUT, CUS) and Forest (FOC, FOM, FOD, CUP)</p> <p>Minimum of 10 ha in size with a combination of field and forest habitat present</p>	ELC surveys were used to assess features within the Study Area that may support migratory butterfly stopover areas.	<p>The combined areas of the FODM8-1 and MEGM4-1 is greater than 10 ha, however these communities are not within 5 km of Lake Ontario.</p> <p>No Candidate Significant Wildlife Habitat for migratory butterfly stopover areas occurs within the Study Area.</p>
Landbird Migratory Stopover Areas	<p>The following community types: Forest (FOD, FOM, FOC) or Swamp (SWC, SWM, SWD)</p> <p>Woodlots must be >10 ha in size and within 5 km of Lake Ontario – woodlands within 2 km of Lake Ontario are more significant</p>	ELC surveys and GIS analysis were used to assess features within the Study Area that may support landbird migratory stopover areas.	No candidate habitat for migratory landbird stopover areas occurs within the Study Area.
Deer Winter Congregation Areas	<p>Woodlots typically > 100 ha in size unless determined by the MNR as significant. (If large woodlots are rare in a planning area >50ha)</p> <p>All forested ecosites within Community Series: FOC, FOM, FOD, SWC, SWM, SWD</p> <p>Conifer plantations much smaller than 50 ha may also be used</p>	No studies required as the MNR determines this habitat.	<p>No deer winter congregation areas were identified by the MNR within the Study Area.</p> <p>The FODM8-1 is part of a woodlot that is greater than 100 ha in size and may provide suitable habitat for deer winter congregation areas.</p>

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Rare Vegetation Communities			
Cliffs and Talus Slopes	<p>A Cliff is vertical to near vertical bedrock >3 m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris</p> <p>Any ELC Ecosite within Community Series: TAO, TAS, TAT, CLO, CLS, CLT</p> <p>Most cliff and talus slopes occur along the Niagara Escarpment</p>	ELC surveys were used to assess features within the Study Area that would be considered cliffs or talus slopes.	<p>No cliffs or talus slopes were identified within the Study Area.</p> <p>No candidate wildlife habitat for cliffs or talus slopes occurs within the Study Area.</p>
Sand Barrens	<p>Sand barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion.</p> <p>Vegetation can vary from patchy and barren to tree covered but less than 60%.</p> <p>Any of the following Community Types: SBO1 (Open Sand Barren Ecosite), SBS1 (Shrub Sand Barren Ecosite), SBT1 (Treed Sand Barren Ecosite).</p>	ELC surveys were used to assess features within the Study Area that would be considered to be sand barrens.	<p>No sand barrens were identified within the Study Area.</p> <p>No candidate wildlife habitat for sand barrens occurs within the Study Area.</p>

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Alvars	<p>An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species.</p> <p>Vegetation cover varies from patchy to barren with a less than 60% tree cover.</p> <p>Any of the following Community Types: ALO1 (Open Alvar Rock Barren Ecosite), ALS1 (Alvar Shrub Rock Barren Ecosite), ALT1 (Treed Alvar Rock Barren Ecosite), FOC1 (Dry-Fresh Pine Coniferous Forest), FOC2 (Dry-Fresh Cedar Coniferous Forest), CUM2 (Bedrock Cultural Meadow), CUS2 (Bedrock Cultural Savannah), CUT2-1 (Common Juniper Cultural Alvar Thicket), or CUW2 (Bedrock Cultural Woodland)</p> <p>An Alvar site > 0.5 ha in size</p>	ELC surveys were used to assess features within the Study Area that would be considered to be alvar communities.	No candidate wildlife habitat for alvars occurs within the Study Area.
Old-growth Forest	<p>Old-growth forests tend to be relatively undisturbed, structurally complex, and contain a wide variety of trees and shrubs in various age classes. These habitats usually support a high diversity of wildlife species.</p> <p>No minimum size criteria in any of the following Community Types: FOD (Deciduous Forest), FOM (Mixed Forest), FOC (Coniferous Forest)</p> <p>Forests greater than 120 years old and with no historical forestry management was the main criteria when surveying for old-growth forests.</p>	ELC surveys were used to assess features within the Study Area that would be considered to be old-growth forest communities.	<p>No old growth forests were identified within the Study Area.</p> <p>No candidate wildlife habitat for old growth forests occurs within the Study Area.</p>

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Savannahs	<p>A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.</p> <p>In Ecoregion 6E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).</p> <p>Any of the following Community Types: TPS1 (Dry- Fresh Tallgrass Mixed Savannah Ecosite), TPS2 (Fresh-Moist Tallgrass Deciduous Savannah Ecosite), TPW1 (Dry-Fresh Black Oak Tallgrass Deciduous Woodland Ecosite), TPW2 (Fresh-Moist Tallgrass Deciduous Woodland Ecosite), CUS2 (Bedrock Cultural Savannah Ecosite).</p>	ELC surveys were used to assess features within the Study Area that would be considered to be savannah communities.	<p>No savannahs were identified within the Study Area.</p> <p>No candidate wildlife habitat for savannahs occurs within the Study Area.</p>
Tall-grass Prairies	<p>A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.</p> <p>In Ecoregion 6E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).</p> <p>Any of the following Community Types: TPO1 (Dry Tallgrass Prairie Ecosite), TPO2 (Fresh-Moist Tallgrass Prairie Ecosite).</p>	ELC surveys were used to assess features within the Study Area that would be considered to be tall-grass communities.	No candidate wildlife habitat for tall grass prairies occurs within the Study Area.
Other Rare Vegetation Communities	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG	ELC surveys were used to assess features within the Study Area that would be considered to be other rare vegetation communities.	<p>No rare vegetation communities were identified within the Study Area.</p> <p>No candidate wildlife habitat for rare vegetation communities occurs within the Study Area.</p>

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Specialized Habitat for Wildlife			
Waterfowl Nesting Area	<p>All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SWT1, SWT2, SWD1, SWD2, SWD3, SWD4.</p> <p>Waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5 ha) and any small wetlands (0.5ha) within 120 m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur.</p> <p>Note: includes adjacency to Provincially Significant Wetlands</p>	ELC surveys were used to assess features within the Study Area that may support nesting waterfowl.	<p>The MAS is the only wetland within the Study Area and is less than 0.5 ha in size.</p> <p>No candidate wildlife habitat for waterfowl nesting areas occurs within the Study Area.</p>
Bald Eagle and Osprey nesting, Foraging, and Perching Habitat	<p>Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water.</p> <p>Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms).</p> <p>ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands</p>	ELC surveys and Woodland Assessments were used to assess features within the Study Area that may support nesting, foraging and perching habitat for large raptors.	<p>No large stick nests were identified within the Study Area.</p> <p>No candidate wildlife habitat for Osprey or Bald Eagle habitat occurs within the Study Area.</p>
Woodland Raptor Nesting Habitat	<p>All natural or conifer plantation woodland/forest stands combined >30 ha and with >4 ha of interior habitat. Interior habitat determined with a 200 m buffer.</p> <p>Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands.</p> <p>May be found in all forested ELC Ecosites.</p> <p>May also be found in SWC, SWM, SWD and CUP3</p>	ELC surveys, Woodland Assessments and GIS analysis were used to assess features within the Study Area that may support nesting habitat for woodland raptors.	<p>There is no interior habitat within the Study Area, and no stick nests were identified in woodland/forest communities during field surveys.</p> <p>No candidate wildlife habitat for woodland raptor nesting occurs within the Study Area.</p>

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Turtle Nesting Areas	<p>Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC Ecosites: MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, BOO1, FEO1</p> <p>Best nesting habitat for turtles is close to water, away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals.</p> <p>For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas.</p> <p>Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH.</p> <p>Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.</p>	ELC surveys and GIS analysis were used to assess features within the Study Area that may support turtle nesting areas.	<p>No ELC communities were identified within the Study Area that are generally associated with potential candidate wildlife habitat for turtle nesting areas.</p> <p>No other potential turtle nesting areas were observed within the Study Area.</p>
Seeps and Springs	<p>Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.</p> <p>Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system</p>	The presence of seeps and springs was recorded during spring and summer field investigations.	No seeps or springs were observed within the Study Area.
Amphibian Breeding Habitat (Woodland)	<p>All Ecosites associated with these ELC Community Series; FOC, FOM, FOD, SWC, SWM, SWD</p> <p>Presence of a wetland, lake, or pond within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians.</p> <p>Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat</p>	<p>ELC surveys and Woodland Assessments were used to assess features within the Study Area that may support woodland breeding amphibians.</p> <p>Amphibian call count surveys and were conducted in the spring of 2017.</p>	<p>Fewer than 20 individuals of 2 listed frog species (i.e., spring peeper, grey treefrog, western chorus frog, wood frog) were observed within the FODM8-1.</p> <p>No significant amphibian breeding habitat (woodland) occurs within the Study Area.</p>

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Amphibian Breeding Habitat (Wetland)	<p>ELC Community Classes SW, MA, FE, BO, OA and SA. Wetland areas >120 m from woodland habitats.</p> <p>Wetlands and pools (including vernal pools) >500 m² (about 25 m diameter) supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats.</p> <p>Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators.</p> <p>Bullfrogs require permanent water bodies with abundant emergent vegetation</p>	<p>ELC surveys were used to identify wetland habitat features within the Study Area including those that may support bullfrogs (i.e., natural open aquatic and marsh habitats greater than 1 ha in size).</p> <p>Amphibian call count surveys and were conducted in the spring of 2017.</p>	<p>The MAS and SWTM3-6 are located within 120 m of woodland habitats.</p> <p>No significant wetland amphibian breeding habitat was observed within the Study Area.</p>
Species of Conservation Concern			
Marsh Bird Breeding Habitat	<p>All wetland habitats with shallow water and emergent aquatic vegetation.</p> <p>May include any of the following Community Types: Meadow Marsh (MAM), Shallow Aquatic (SA), Open Bog (BOO), Open Fen (FEO), or for Green Heron: Swamp (SW), Marsh (MA) and Meadow (CUM) Community Types.</p>	<p>ELC surveys were used to identify marshes with shallow water and emergent vegetation that may support marsh breeding birds.</p>	<p>The open water feature within the MAS may provide suitable habitat for marsh breeding birds.</p>
Woodland Area-sensitive Bird Breeding Habitat	<p>Habitats >30ha where interior forest is present (at least 200 m from the forest edge); typically, >60 years old.</p> <p>These include any of the following Community Types: Forest (FO), Treed Swamp (SW)</p>	<p>ELC surveys and GIS analysis were used to determine whether woodlots that occurred within the Study Area that were >30 ha with interior habitat present (>200 m from edge).</p>	<p>Although the FODM8-1 exceeds 30 ha in size, no interior forest is present within the Study Area.</p> <p>No candidate wildlife habitat for woodland area-sensitive breeding bird habitat occurs within the Study Area.</p>

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Open Country Bird Breeding Habitat	Grassland areas > 30 ha, not Class 1 or Class 2 agricultural lands, with no row-cropping or hay or livestock pasturing in the last 5 years, in the following Community Type: Meadow (CUM).	ELC surveys and GIS analysis were used to identify grassland communities within the Study Area that may support area-sensitive breeding birds.	No non-agricultural grassland communities >30 ha were identified within the Study Area. No candidate wildlife habitat for open country breeding bird habitat occurs within the Study Area.
Shrub/Early Successional Bird Breeding Habitat	Oldfield areas succeeding to shrub and thicket habitats >10 ha, not Class 1 or Class 2 agricultural lands, with no row-cropping or intensive hay or livestock pasturing in the last 5 years, in the following Community Types: Thickets (CUT), Savannahs (CUS), or Woodlands (CUW).	ELC surveys and GIS analysis were used to identify large CUT, CUS or CUW communities that may support shrub/early successional breeding birds.	No candidate wildlife habitat for shrub/early successional breeding bird habitat occurs within the Study Area.
Terrestrial Crayfish	Meadow marshes and edges of shallow marshes (no minimum size). Vegetation communities include MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, MAS1, MAS2, MAS3. Construct burrows in marshes, mudflats, meadows Can be found far from water	ELC surveys were used to identify shallow marsh and meadow marsh communities that occurred within the Study Area.	No candidate wildlife habitat for terrestrial crayfish were observed within the Study Area. No Terrestrial Crayfish chimneys were observed within the Study Area.
Special Concern and Rare Wildlife Species (i.e. all special concern and S1-S3 species)			
Insects			
Monarch (<i>Danaus plexippus</i>)	Found primarily wherever milkweed and wildflowers (e.g., goldenrods, asters, purple loosestrife) exist. The Larvae occur only where milkweed exists; adults are more generalized, feeding on a variety of wildflower nectar. This includes abandoned farmland, along roadsides, and other open spaces where these plants grow (COSEWIC, 2016).	Botanical inventories conducted on March 6, June 12, and June 25, 2018 confirmed the presence/absence of this species.	No milkweed was observed within the Study Area. The MEGM4-1 may provide suitable habitat for this species however, meadow habitat is not limiting for this species and is not deemed SWH (i.e., within 5 km of Lake Ontario).

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Amphibians			
Western Chorus Frog (Great Lakes - Shield) (<i>Pseudacris triseriata</i>)	A variety of lowland habitats with an open or discontinuous canopy (clearings, damp meadows, fields, and shrublands), where slight depressions in topography allows the formation of wetlands (marshes, swamps, ponds) that generally dry out in summer (Environment Canada, 2015).	Botanical inventories conducted on March 6, June 12, and June 25, 2018 and breeding amphibian surveys conducted on April 24 and May 18, 2018.	No potential habitat observed within the Subject Property. Western chorus frog was not observed within the Study Area during field investigations.
Reptiles			
Snapping turtle (<i>Chelydra serpentina</i>)	Inhabits ponds, sloughs, streams, rivers, and shallow bays that are characterized by slow moving water, aquatic vegetation, and soft bottoms. Females show strong nest site fidelity and nest in sand or gravel banks at waterway edges in late May or early June (COSEWIC, 2008a)	Botanical inventories conducted on March 6, June 12, and June 25, 2018 targeted detection of this species.	Open water features within MAS and CVC_4 located north of Subject Property may provide suitable habitat for snapping turtle. Snapping turtle was not observed within the Study Area during field investigations.
Eastern musk turtle (<i>Sternotherus odoratus</i>)	Requires aquatic habitats of soft substrate and shallow water with little to no current. Nesting occurs in areas close to the water with direct exposure to sunlight, eggs are laid on the open ground or in shallow excavations in decaying vegetation and rotting wood, nests have also been found in shallow gravel or rock crevices. This species is highly aquatic, and rarely leaves the water (Environment Canada, 2016).		No potential habitat observed within the Study Area. Eastern musk turtle was not observed within the Study Area during field investigations.
Birds			
Horned grebe (western population) (<i>Podiceps auritus</i>)	Small semi-permanent or permanent freshwater ponds, marshes, and shallow bays on lake borders, that have open water rich in emerging vegetation (COSWEIC, 2009).	Botanical inventories conducted on March 6, June 12, and June 25, 2018 and breeding bird surveys conducted on June 12 and 25, 2018 targeted detection of these species	No potential habitat observed within the Study Area. Horned grebe was not observed within the Study Area during field investigations.
Common nighthawk (<i>Chordeiles minor</i>)	Open areas that are free of vegetation (e.g., beaches, exposed rock, forest clearings, or flat gravel roofs) (COSEWIC, 2007a).		Potential habitat in CVC_4 within the Study Area. Common nighthawk was not observed within the Study Area during field investigations.

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Red-necked phalarope (<i>Phalaropus lobatus</i>)	Lakes, ponds, and streams with abundant aquatic invertebrates (COSEWIC, 2014).		The open water features in the MAS and CVC_4 may provide suitable habitat for red-necked phalarope.
Black tern (<i>Chlidonias niger</i>)	Limestone-based, rich, freshwater marshes with an abundance of emergent vegetation along rivers, lakes or inland locations. Generally considered an area-sensitive species; prefers wetlands in excess of 20 ha (Burke, 2012).		The open water features in the MAS and CVC_4 may provide suitable habitat for black tern.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Mature forest with scattered supercanopy trees, and adjacent large productive waterbodies typically within 2 km. Prefer lakes greater than 1,000 ha with more than 11 km of shoreline (Armstrong, 2014).		Habitat for this species can be determined through the consideration of Bald Eagle and Osprey Nesting, Foraging and Perching Habitat. No Bald Eagle and Osprey Nesting, Foraging and Perching Habitat was identified within the Study Area. An evaluation of significance is therefore not required to determine the presence/absence of this species.
Short-eared owl (<i>Asio flammeus</i>)	Open habitats including grasslands, arctic tundra, taiga, bogs, marshes, old pastures, sand-sage, and agricultural fields. This area sensitive species nests on the ground usually in tall vegetation and typically prefers 75 ha of suitable habitat in order for nesting to occur (COSEWIC, 2008b).		MEGM4-1 is present within the Study Area however, this community is not large enough for this species to breed. Short-eared owl was not observed within the Study Area during field investigations.
Peregrine falcon (<i>Falco peregrinus</i>)	Steep to vertical natural cliff faces, typically 50 to 200 m high, in remote areas containing ledges suitable for nest scrapes, often overlooking water bodies, forested areas, ledges in urban areas, quarries, and open-pit mines (Ontario Peregrine Falcon Recovery Team, 2010).		No potential habitat observed within the Study Area. Peregrine falcon was not observed within the Study Area during field investigations.

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Olive-sided flycatcher (<i>Contopus borealis</i>)	Open coniferous or mixed coniferous forests, often located near water or wetlands with the presence of tall snags (COSEWIC, 2007).		No potential habitat observed within the Study Area. Olive-sided flycatcher was not observed within the Study Area during field investigations.
Eastern wood-pewee (<i>Contopus virens</i>)	Woodland species often found near clearings and edges (COSEWIC, 2012a).		Suitable forest habitat is present in the FODM8-1 within the Study Area. Eastern wood-pewee was not observed within the Study Area during field investigations.
Wood thrush (<i>Hylocichla mustelina</i>)	Mature deciduous and mixed forests with a well-developed understory (COSEWIC, 2012b).		Individuals were observed in the FODM8-1 within the Study Area on adjacent lands.
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	Large patches of grassland habitat such as abandoned fields, moist meadows, and pasturelands (COSEWIC, 2013).		No potential habitat observed within the Study Area. Grasshopper sparrow was not observed within the Study Area during field investigations.
Canada warbler (<i>Cardellina canadensis</i>)	Well-developed wet forest types with a dense shrub layer, often near streams or hummocks. This area sensitive species typically prefers a minimum of 30 ha of suitable habitat for nesting (COSEWIC, 2008c).		Habitat for this species can be determined through the consideration of Woodland Area-sensitive Bird Breeding Habitat. No Woodland Area-sensitive Bird Breeding Habitat was identified in the Study Area. An evaluation of significance is therefore not required to determine the presence/absence of this species. Canada warbler was not observed within the Study Area during field investigations.

Candidate Wildlife Habitat	Criteria	Methods	Habitat Assessment of Features Found Within the Study Area
Animal Movement Corridors			
Amphibian Movement Corridor	Corridors may be found in all ecosites associated with water. Determined based on identifying significant amphibian breeding habitat (wetland).	Identified after Amphibian Breeding Habitat - Wetland is confirmed. Movement corridors should be considered when amphibian breeding habitat is confirmed as SWH from Amphibian Breeding Habitat (Wetland).	No significant amphibian breeding habitat was present within the Study Area. Therefore, no amphibian movement corridors are present within the Study Area.

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