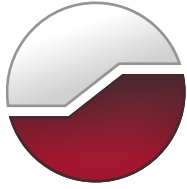




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**Environmental Impact Statement
Proposed Subdivision Plan
38 Carss Street, Almonte
Municipality of Mississippi Mills
Lanark County, Ontario**



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**Environmental Impact Statement
Proposed Subdivision Plan
38 Carss Street, Almonte
Municipality of Mississippi Mills
Lanark County, Ontario**

March 18, 2022
Project: 100227.014 - V3

EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained Westview Projects Inc. to complete an Environmental Impact Statement (EIS) for the property located on 38 Carss Street, Almonte, in the Municipality of Mississippi Mills, Lanark County, Ontario. This EIS has been completed in support of a proposed plan of subdivision to permit the development of a 139-lot (94 without condos) subdivision and was completed in accordance with all provincial and municipal policies and guidelines, as applicable.

In support of this EIS a desktop review and numerous field investigations were completed to identify the presence or absence of natural heritage features and species at risk (SAR) on-site. Field investigations were completed throughout spring and summer 2021. The focus of the site investigations was to describe, in general, the natural and physical setting of the subject property with a focus on confirming the presence or absence of natural heritage features and potential SAR or their habitat as identified in the desktop review.

Following completion of the desktop review and site investigations the following natural heritage features were identified on-site or within the study area: significant woodlands, significant wildlife habitat for reptile hibernaculum (*candidate*), turtle wintering area (*confirmed*), woodland amphibian breeding habitat (*confirmed*), wetland amphibian breeding habitat (*confirmed*), special concern and rare wildlife habitat (eastern wood-pewee, wood thrush, red-headed woodpecker, eastern musk turtle, northern map turtle, snapping turtle, and river redhorse), and fish habitat.

The following SAR and their habitat were identified as having a potential to occur on-site: eastern small-foot myotis, little brown myotis, tri-colored bat, Blanding's turtle, American eel, and rapids clubtail. No regulated Category 1, 2 or 3 habitat was identified on-site for Blanding's turtle. No SAR species were identified during site investigations.

Potential impacts to the natural heritage features were primarily associated with the loss of woodland habitat, and indirect impacts to significant wildlife habitat and fish habitat. Impacts to significant wildlife habitat and fish habitat are primarily associated with alterations to water quality through increased nutrient and sediment loading, and loss of and encroachment onto significant woodlands. Impacts to Blanding's turtles are limited to transient turtles, no regulated habitat was identified on-site.

Potential impacts to natural heritage features on-site are likely to be mitigated through the implementation of the recommended Erosion Hazard Limit. An Erosion Hazard Limit of 3.3 m has been recommend from the top of the western slope to ensure slope stability safety for the proposed developments, as per the Slope Stability Evaluation Assessment of Slope Stability and Limit of Hazard Lands Setback report, (Kollaard Associates Engineers, 2021).

To provide additional protection to potential SAR and their habitat on-site, reptile and amphibian exclusion fencing should be installed around all future construction areas prior to any development or site alteration, to prevent the immigration of SAR turtles and other wildlife into the construction area. Should any SAR be discovered throughout the course of any development on-site, operations should stop and the species at risk biologist with the local MECP district should be contacted immediately for further direction. Furthermore, to ensure compliance with applicable legislation, all best management practices and adherence to vegetation clearing for birds and bats, outlined in Section 7 should be followed to ensure no negative impacts occur to natural heritage features on-site.

The proposed plan of subdivision complies with the natural heritage policies of the Provincial Policy Statement and the Lanark County Official Plan. No negative impacts to identified natural heritage features or their ecological functions are anticipated as a result of the proposed development as long as all mitigation measures in Section 7 are enacted and best management practices followed.

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Westview Projects Incorporated to complete an Environmental Impact Statement (EIS) for the property located at 38 Carss Street, Almonte, in the Municipality of Mississippi Mills, Lanark County, Ontario, (hereafter referred to as “the subject property”). The general location of the subject property is illustrated on Figure A.1 in Appendix A.

1.1 Purpose

The proponent is seeking to develop the existing approximately 9 hectare (ha) property into a 139-lot residential subdivision. Based on Section 5 of the Lanark County Official Plan (Lanark County, 2012), an EIS is required showing that the project will not negatively impact any potential natural heritage features which may be present within the study area. The study area is defined as the property boundary and the adjacent lands encompassing an area of 120 m beyond the property boundary. The subject project and the extents of the study area are illustrated on Figure A.2.

1.2 Objective

The 2020 Provincial Policy Statement (MMAH, 2020) issued under Section 3 of the Planning Act states that “development and site alteration shall not be permitted in: habitats of species at risk, significant wetlands, significant woodlands and significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.” Similarly, the 2020 Provincial Policy Statement dictates that ‘development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.”

The objective of the work presented herein is twofold; 1) to identify and evaluate the significance of any natural heritage features, as defined in the Provincial Policy Statement (MMAH, 2020), on the subject property and within the broader study area and; 2) to assess the potential impacts from the proposed plan of subdivision on any natural heritage features identified and to recommend appropriate and defensible mitigation measures to ensure the long-term protection of any natural heritage features identified.

To meet these objectives, the EIS presented herein has been completed in accordance with the following provincial and municipal regulations, policies and guidelines:

- Provincial Policy Statement (MMAH, 2014);
- Endangered Species Act (Ontario, 2007);
- Conservation Authorities Act (Ontario, 1990);
- Natural Heritage Reference Manual (OMNR, 2010); and
- Lanark County Official Plan (Lanark County, 2012).

1.3 Physical Setting

The subject property is located on part of Lot 17, Concession 9, in the Geographic Township of Mississippi Mills, Lanark County, municipally addressed as 38 Carss Street, in the town of Town of Almonte, Ontario. The approximately 9 ha site is comprised of open cultural meadows, mixed-wooded forests, and steep slopes leading down to a waterfront along the Mississippi River. The subject property is bound to the northeast by a gravel pedestrian foot path and to the northwest the site is bound by the neighbouring property of part of Lot 18, Concession 9. To the southeast the site is bound by Carss Street and the rear yards of properties fronting to Carss Street on part of Lot 17 Concession 9. The entire western extent of the subject property is bounded by the Mississippi River.

1.4 Land Use Context

The subject property is situated within a larger residential area. The existing land use designation from the Lanark County OP is settlement area. The land-use from the Mississippi Mills Official Plan is residential. The zoning by-law from the municipality for the majority of the property is development (D) while the shores of the property along the Mississippi River are zoned as environmental hazard (EH).

2.0 METHODOLOGY

2.1 Desktop Review

A desktop information gathering exercise was completed to aid in the scoping of field investigations and to gather information relating to natural heritage features which may be present on the subject project or within 1 km of the subject property. An additional component of the desktop review was to assess the potential presence of SAR to occur on the subject property or within the study boundary based on a review of publicly accessible occurrence records, and review of SAR habitat requirements and range maps.

Information regarding the potential presence of natural heritage features and SAR within the vicinity of the site was obtained from the following sources:

- Make A Map: Natural Heritage Areas (OMNRF, 2014a);
- Land Information Ontario (OMNR, 2011b);
- Lanark County Official Plan (Lanark, 2012);
- Lanark County Geoportal (County of Lanark Community Map, undated);
- Mississippi Valley Conservation Authority (MVCA Portal, Undated);
- Mississippi Mills Official Plan (Municipality of Mississippi Mills Community Map);
- Ontario Geological Survey (OGS, 2019);
- Fisheries and Oceans Canada SAR Maps (DFO, 2019);
- Natural Heritage Information Centre Biodiversity Explorer (OMNRF, 2013);
- Breeding Bird Atlas of Ontario (Cadman et al., 2007)
- Atlas of Mammals of Ontario (Dobbyn, 1994);
- Ontario Herpetofaunal Atlas (Oldham and Weller, 2000); and
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019).

2.2 Field Investigations

Field investigations were undertaken to describe in general, the natural and physical setting of the subject property with a focus on natural heritage features and to identify any potential SAR or their habitat that may exist at the subject property.

Field investigations completed in support of this EIS are outlined in Table 2.2 below. Photographs of site features taken during field investigations are provided in Appendix B.

Table 2.1 Summary of Field Investigations

Date	Time	Weather	Purpose
April 7, 2021	08:00-11:10	3°C, ~20% cloud cover, Beaufort 0, no precipitation	Ecological Land Classification, Bat Maternity Roost Survey, Turtle Basking Survey
April 8, 2021	08:00-16:10	6°C, ~0% cloud cover, Beaufort 0, no precipitation	Ecological Land Classification, Bat Maternity Roost Survey
April 13, 2021	12:30-14:00	15°C, ~30% cloud cover, Beaufort 1, no precipitation	Turtle Basking Survey
April 14, 2021	21:45-22:15	13°C, ~30% cloud cover, Beaufort 0, no precipitation	Amphibian Breeding Survey
April 26, 2021	12:15-13:15	7°C, ~0% cloud cover, Beaufort 3, no precipitation	Turtle Basking Survey
May 6, 2021	09:10-09:50	6°C, ~5% cloud cover, Beaufort 1, no precipitation	Turtle Basking Survey
May 14, 2021	10:30-12:00	22°C, ~0% cloud cover, Beaufort 1, no precipitation	Turtle Basking Survey
May 17, 2021	22:00-22:45	18°C, ~90% cloud cover, Beaufort 2, no precipitation	Amphibian Breeding Survey
May 26, 2021	22:30-23:00	19°C, ~40% cloud cover, Beaufort 3, no precipitation	Whip-poor-will Breeding Survey
June 1, 2021	02:20-03:00	12°C, ~10% cloud cover, Beaufort 1, no precipitation	Whip-poor-will Breeding Survey
June 8, 2021	07:10-08:00	22°C, overcast with ~80% cloud cover, Beaufort 0, no precipitation	Breeding Bird Survey
June 23, 2021	22:45-23:15	16°C, ~10% cloud cover, Beaufort 1, no precipitation	Whip-poor-will Breeding Survey, Bat Roosting Survey
June 24, 2021	07:45-08:30	13°C, ~20% cloud cover, Beaufort 2, no precipitation	Breeding Bird Survey
July 6, 2021	22:34-23:15	23°C, ~0% cloud cover, Beaufort 1, no precipitation	Amphibian Breeding Survey
July 9, 2021	06:00-07:00	13°C, ~100% cloud cover, Beaufort 0, no precipitation	Breeding Bird Survey

2.2.1 Ecological Land Classification

Vegetation communities on the subject property were delineated during the desktop review stage of this EIS using publicly available air photos and confirmed in the field on April 7/8, 2021, following the Ecological Land Classification System for Southern Ontario (Lee et al., 2008). Vegetation communities were confirmed in the field by employing the random meander methodology while documenting dominant vegetation species within the various vegetation community forms.

2.2.2 Breeding Bird Surveys

Breeding bird surveys were conducted on three occasions at two point count locations; breeding bird survey locations are provided on Figure A.2 in Appendix A. Breeding bird surveys followed protocols from the Canadian Breeding Bird Surveys (Downes and Collins, 2003) and the Ontario Breeding Bird Atlas (Cadman et al., 2007). Surveys were conducted no earlier than 30 minutes before sunrise and were completed within 5 hours of sunrise, to encompass peak song bird activity. Breeding bird surveys consisted of 5 minutes of passive listening in which all birds heard or seen within the survey period were recorded, including species, sex and breeding behaviour, if possible.

A list of all avian species identified on-site is provided in Table C.1 in Appendix C.

2.2.3 Basking Turtle Surveys

In order to address the potential for the site to provide turtle overwintering habitat and to assess the presence or absence of Blanding's turtle, a species at risk, a series of five turtle basking surveys were completed following the approved protocol for Blanding's turtles established by the MNRF (2015).

2.2.4 Amphibian Breeding Surveys

Amphibian breeding surveys were conducted on three occasions at two point count locations; breeding amphibian survey locations are provide on Figure A.2. Breeding amphibian surveys followed protocols from the Marsh Monitoring Program (Bird Studies Canada, 2008). Surveys were conducted no earlier than 30 minutes after sunset and were completed by midnight, to encompass peak amphibian calling activity. Breeding amphibian surveys consisted of 3 minutes of passive listening in which all amphibians calling during the survey period were recorded, along with their call code. A list of all amphibian species identified on-site is provided in Table C.1 in Appendix C.

2.2.5 Nocturnal Whip-Poor-Will Surveys

Nocturnal whip-poor-will surveys were conducted on three occasions at two point count locations; whip-poor-will survey locations are provided on Figure A.2. Whip-poor-will surveys followed protocols from the MNRF (MNRF, 2014). Surveys were completed on May 26, June 1 and 23, 2021.

2.2.6 Bat Maternity Roost Surveys

Potential bat maternity roosting sites were surveyed for in each forested ecosite on-site on April 7/8 and June 23, 2021, following the protocol for identifying candidate maternity roosts outlined in the OMNR (2011a) Bats and Bat Habitats: Guidelines for Wind Power Projects.

2.3 Data Analysis

An evaluation of the significance of natural heritage features, the sensitivity of identified flora and fauna and the potential impacts posed by the proposed development was undertaken through an analysis of desktop and field investigation data using the approaches and criteria outlined in the following documents:

- Natural Heritage Reference Manual (OMNR, 2010);
- Significant Wildlife Habitat Technical Guide (OMNR, 2000);
- Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015); and
- Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014b).

3.0 EXISTING ENVIRONMENT

3.1 Ecoregion

The site is situated Ecoregion 6E-11 (Lake Simcoe-Rideau), which extends from Lake Huron in the west to the Ottawa River in the east. The climate of Ecoregion 6E is categorized as humid, high to moderate temperate ecoclimate with a mean annual temperature range between 4.9°C to 7.8°C and an annual precipitation ranging between 759 mm to 1,087 mm (Crins et al., 2009).

The eastern portion of the Ecoregion, which the subject property is located, is underlain by glaciomarine deposits as a result of the brief post-glacial incursion of salt water from the Champlain Sea along the St. Lawrence Valley. This Ecoregion falls with Rowe's (1972) Great Lakes-St. Lawrence Forest Region, including its Huron-Ontario and Upper St. Lawrence sections, and a small part of the Middle Ottawa Forest section (Crins et al., 2009).

3.2 Study Area Land Use

A review of aerial photographs indicates that the subject property and surrounding area is mainly residential and agricultural land (Figure 1). Historical aerial imagery depicts the town of Almonte expanding to the north since 1985.

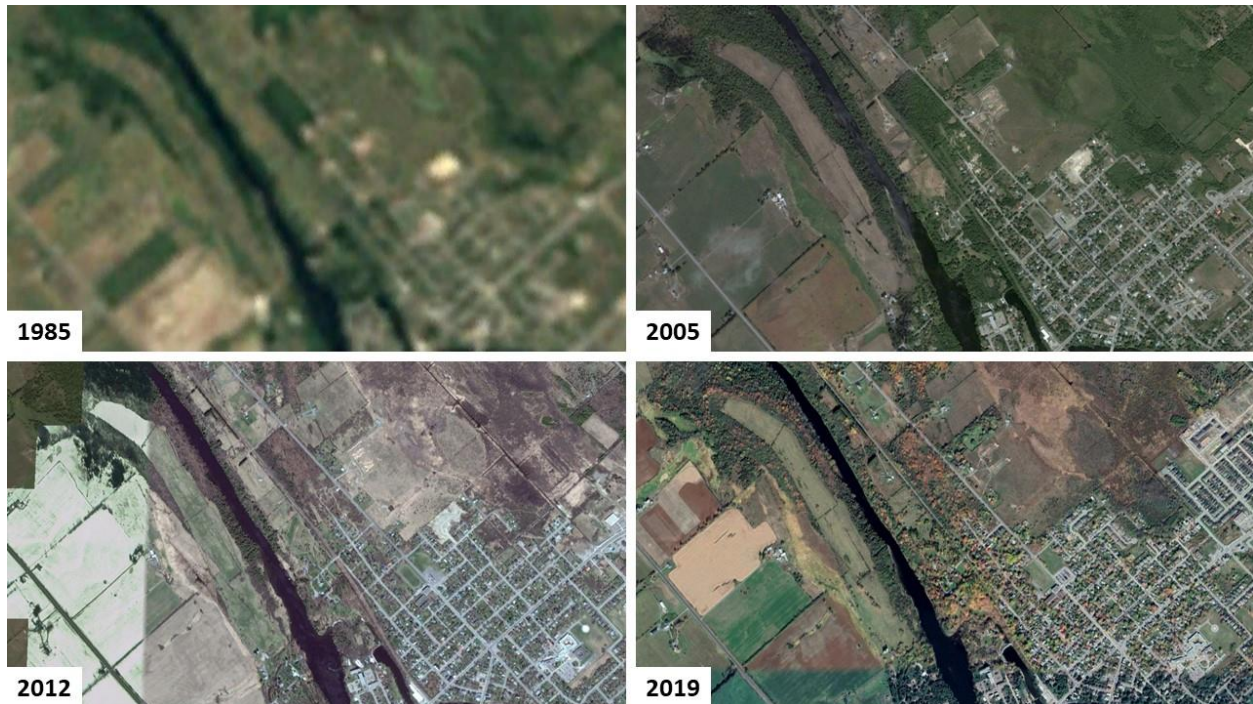


Figure 1. Temporal Changes in Land Use

3.3 Landforms, Soils and Bedrock Geology

The topography of the site slopes downward from east to west from a topographical high of 129 mASL to a topographical low of 108 mASL on the banks of the Mississippi River.

A single topographical landform, as mapped by Chapman and Putnam (1984) is described on the subject property, the clay plains of the Ottawa Valley Clay Plains physiographic region.

The Ontario Geological Survey (OGS, 2019) identifies two surficial soil units on the subject property, the largest of which is fine-textured glaciomarine deposits comprised of silt, clay, minor sand and gravel. Glaciomarine deposits occur on almost the entire property. There is a small area of Paleozoic bedrock in the southeast corner of the site.

Bedrock at the site, is described by OGS (2019) the Beekmantown Group comprised of dolostone and sandstone.

3.4 Surface Water, Groundwater and Fish Habitat

Surface water features on the subject property consisted of a single ephemeral watercourse, and various seeps and springs along the shore of the Mississippi River.

The ephemeral watercourse originates approximately 230 m east of the subject property. It enters the site in the central area of the eastern property line, flows south for approximately 200 m at which point it redirects westward where it continues to flow off-site and eventually discharges into the Mississippi River approximately 50 m downstream of the subject property. The ephemeral watercourse was observed to be flowing on April 7, 2021, but was dry during all other subsequent site visits.

A fisheries assessment was not conducted as part of this EIS; however, due in part to the lack of suitable water depth, habitat availability and seasonality availability of surface flows, the ephemeral watercourse is not considered to provide fish habitat. The Mississippi River is known to provide habitat for a variety of small and large bodied species of fish.

Three seeps were identified on the western slope of the subject property. Groundwater was observed to be discharging from the fissures in the exposed bedrock along the toe slope of the embankment, flowing downgradient towards the Mississippi River. These seeps do not meet defining use criteria based on OMNRF (2015) in that they do not contribute to the headwaters of the Mississippi River, and as such do not contribute to the ecological value of the site, and do not provide significant wildlife habitat. Accordingly, seeps and spring are not discussed further within this EIS.

Groundwater investigations were not completed in support of this EIS.

3.5 Vegetation Communities

Vegetation communities on-site were confirmed by GEMTEC in 2021, following protocols utilized in the Southern Ontario Ecological Land Classification System (Lee et al., 2008). Vegetation at the site represents a mosaic of mixed forests, cultural thickets, and cultural meadows. Table 3.1 below provides a summary of the various vegetation communities identified on-site while Figure A.3 in Appendix A provides an illustration of the various vegetation communities.

Table 3.1 Vegetation Communities On-site

ELC Type	Description	Size (ha)
Dry – Fresh White Pine – Sugar Maple Mixed Forest Type (FOMM2-2)	<p>This community was located mostly along most of the western extents of the subject property, along the slopes facing down towards the Mississippi River. Smaller areas of this community also extended towards the southeastern area of the subject property.</p> <p>This community was dominated by eastern white pine (<i>Pinus strobus</i>), with sugar maple (<i>Acer saccharum</i>) being the second most prominent species.</p> <p>Other tree species include eastern hemlock (<i>Tsuga canadensis</i>), red oak (<i>Quercus rubra</i>), large tooth aspen (<i>Populus grandidentata</i>), eastern white cedar (<i>Thuja occidentalis</i>), and basswood (<i>Tilia americana</i>).</p> <p>Shrub layer was dominated by prickly ash (<i>Zanthoxylum americanum</i>) and European buckthorn (<i>Rhamnus cathartica</i>).</p>	2.14
Graminoid Meadow (MEG)	<p>This community spans the entire site, occupying the majority of the northern and central areas of the subject property. This community was dominated by mostly grasses (<i>Poaceae sp.</i>) with some herbaceous growth, dotted with trees and small tree lines. Graminoid and herbaceous growth consisted of red clover (<i>Trifolium pratense</i>), cow vetch (<i>Vicia cracca</i>), switch grass (<i>Panicum virgatum</i>), brome (<i>Bromus sp.</i>), fescue (<i>Festuca sp.</i>), and dandelion (<i>Taraxacum officinale</i>). Trees and shrubs were scattered and consisted of hawthorn (<i>Crataegus sp.</i>), European buckthorn, sugar maple, eastern white cedar, red oak, bur oak (<i>Quercus macrocarpa</i>), black walnut (<i>Juglans nigra</i>), horse chestnut (<i>Aesculus hippocastanum</i>) and white spruce (<i>Picea glauca</i>).</p>	5.24

3.6 Wildlife

Wildlife observed on-site and within the study area during field investigations completed in 2021 are summarized in Table C.1 in Appendix C.

4.0 NATURAL HERITAGE FEATURES

Natural heritage features are defined in the PPS as “features and area, including *significant wetlands, significant coastal wetlands, fish habitat, significant woodlands south and east of the Canadian Shield, significant valleylands south and east of the Canadian shield, significant habitats of endangered species and threatened species, significant wildlife habitat and significant areas of natural and scientific interest*, which are important for their environmental and social values as a legacy of the natural landscape of an area”.

4.1 Significant Wetlands

As described in the Natural Heritage Reference Manual (OMNR, 2010), wetlands “mean lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface.” While *significant* in regards to wetlands means “an area identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the Province, as amended from time to time.”

No significant wetlands were identified on-site or within the study area during the desktop review or any of the site investigations. As no significant wetlands occur on-site or within the study area, significant wetlands are not evaluated or discussed further in this EIS.

4.2 Significant Woodlands

Significant woodlands are defined in the natural heritage reference manual (OMNR, 2010) as “an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history.”

At the local scale, significant woodlands are defined and designated by the local planning authority. Generally, most planning authorities have defined significant woodlands as any woodland that contains any of the four criteria listed in Section 7.2 of the natural heritage reference manual (OMNR, 2010), including: woodland size, ecological functions, uncommon characteristics and economic and social functional values.

Table C.2 in Appendix C, presents the screening rationale for significant woodlands applied in this EIS. For comparison of woodland criteria used in Table C.2, the woodland coverage within the planning area is between less than about 5% of the land area, therefore the minimum woodland size for determining significance is 2 ha or greater, based on the guidance outlined in the natural heritage reference manual (OMNR, 2010).

Based on the results of the significant woodland screening presented in Table C.2, significant woodlands are present on-site due to their size, proximity and protection to fish habitat. Furthermore, the on-site woodlands have been designated as significant by the Township of

Mississippi Mills as per the Municipality of Mississippi Mills Community Map (undated). Significant woodlands are illustrated on Figure A.4 in relation to other site features. Impacts to significant woodlands from the proposed development are discussed in Section 6.

4.3 Significant Valleylands

Valleylands are defined in the natural heritage reference manual (OMNR, 2010) as ‘a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of time’. The identification and evaluation of significant valleys lands in Ontario is based on the recommended criteria from the MNRF and is the responsibility of local planning authorities.

In Southern Ontario, conservation authorities have identified valleylands as part of their regulation mapping (i.e., floodplain mapping); however, where valleys lands have not been defined, their physical boundaries are generally determined as the ‘top-of-bank’ or ‘top-of-slope’ associated with a watercourse. For less well-defined valleys, the physical boundary may be defined by riparian vegetation, flooding hazard limits, ordinary high water marks or the width of the stream meander belt (OMNR, 2010).

As discussed in Section 3.2, the site is relatively flat with the exception of the ridge along the Mississippi River, accordingly no valleylands have been identified on-site and as such, are not discussed or evaluated further in this EIS.

4.4 Significant Areas of Natural and Scientific Interest

The MNRF identifies two types of areas of natural and scientific interest (ANSI) in Ontario: life sciences ANSIs typically represent significant segments of Ontario’s biodiversity and natural landscapes, while earth science ANSIs typically represent significant examples of bedrock, fossils or landforms in Ontario (OMNR, 2010).

No ANSI have been identified on-site or adjacent to the site during the desktop review or during site investigations. Therefore, ANSI are not discussed or evaluated further in this EIS.

4.5 Significant Wildlife Habitat

The natural heritage reference manual (OMNR, 2010), in combination with the significant wildlife habitat technical guide (OMNR, 2000) and the significant wildlife habitat ecoregion criterion schedules (OMNRF, 2015) were used to identify and evaluated potential significant wildlife habitat on-site. The significant wildlife habitat is broadly categorized as habitats of seasonal concentration of animals, rare vegetation communities, specialized habitats for wildlife, habitats of species of conservation concern and animal movement corridors. With the exception of rare vegetation communities, Tables C.3, C.4, C.5 and C.6 in Appendix C, provide the screening rationale for each category of significant wildlife habitat, respectively.

4.5.1 Habitats of Seasonal Concentrations of Animals

Seasonal concentration areas are habitats where large numbers of species congregate at one particular time of the year. The significant wildlife habitat technical guides (OMNR, 2000) and significant wildlife habitat ecoregion criterion schedules (OMNRF, 2015) identify 12 types of seasonal concentration habitats that may be considered significant wildlife habitat. These 12 types of seasonal habitat are presented in Table C.3 in Appendix C, including a brief description of the rationale as to why or why they are not assessed further in this EIS.

Following review of Table C.3 in Appendix C, one *candidate* habitat of seasonal concentration of animals is present on-site, reptile hibernaculum. Furthermore, one *confirmed* habitat of seasonal concentration of animals is present on-site, turtle wintering areas. The *candidate* and *confirmed* SWH are discussed in detail in the subsections below.

4.5.1.1 Reptile Hibernaculum

Candidate reptile hibernacula SWH was identified on-site within fissured rock piles and exposed bedrock outcrops on the slopes within the wooded areas.

Specific reptile hibernaculum investigations were not conducted as they were outside of the scope of this EIS. However, a single indicator species, eastern gartersnake, was observed on-site during site investigations, outside of key emerging periods.

The defining criteria for confirmed reptile hibernaculum SWH is the presence of snake hibernacula used by or congregations of a minimum of five individuals of a snake species or; individuals of two or more snake species near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) (OMNRF, 2015a).

The subject property contains a mix of suitable reptile hibernaculum habitat including rock piles and slopes with crevices, areas of broken and fissured rock, and mixed forests with rock outcrops. As such, it is possible that subject site provides suitable reptile hibernacula habitat.

Impacts to *candidate* reptile hibernacula habitat from the proposed development are discussed in Section 6.

4.5.1.2 Turtle Wintering Area

Confirmed turtle wintering areas SWH was identified within the study area within the Mississippi River.

To evaluate the potential for the Mississippi River to provide turtle wintering area SWH, a series of turtle basking surveys were conducted. Turtle wintering areas provide protection for turtle species from winter element and typically consist of permanent water bodies, large wetlands, bogs or fens, with adequate dissolved oxygen, soft substrates and deep water. The defining criteria for confirmed turtle wintering area SWH is the presence of 5 over-wintering midland

painted turtles, one or more northern map turtle or one or more snapping turtle within a wetland (OMNRF, 2015a).

Wintering areas may be identified by searching basking areas for congregations of turtles on warm, sunny days during the spring or fall (OMNRF, 2015a). A total of five basking turtle surveys were conducted for the subject property. Table 4.1 below provides a summary of the basking turtle survey results.

Table 4.1 Summary of Turtle Basking Surveys

Location	Species / Highest Number Observed / Date	Confirmed SWH
Mississippi River	Midland painted turtle / 2 / April 7, 2021	Yes
	*Midland painted turtle / 9 / April 13, 2021	
	Midland painted turtle / 3 / May 6, 2021	
	Midland painted turtle / 4 / May 14, 2021	
	*Snapping turtle / 1 / May 14, 2021	

Impacts to *confirmed* turtle overwintering area SWH from the proposed development are discussed in Section 6.

4.5.2 Rare Vegetation Communities

Rare vegetation communities in the province are described generally as those with an S1 to S3 ranking by the NHIC, and typically include communities such as sand barrens, alvars, old growth forests, savannahs and tallgrass prairies.

The vegetation communities identified on-site and described in Section 3.4 of this report are not ranked by the NHIC as S1, S2 or S3 and are therefore not considered to be rare vegetation communities. As such, rare vegetation communities are not discussed or evaluated further in this EIS.

4.5.3 Specialized Habitats for Wildlife

Specialized wildlife habitats are microhabitats that provide a critical resource to some groups of wildlife. The significant wildlife habitat technical guide (OMNR, 2000), defines eight specialized habitats that may constitute significant wildlife habitat, these eight types of specialized wild habitat are evaluated in Table C.4 in Appendix C.

Following review of Table C.4 in Appendix C, two *confirmed* specialized habitat for wildlife is present on-site: woodland amphibian breeding habitat and wetland amphibian breeding habitat. The *confirmed* SWH are discussed in detail in the subsection below.

4.5.3.1 Confirmed Amphibian Breeding Habitat

Confirmed woodland amphibian breeding habitat was identified on-site within the forested area adjacent to the Mississippi River. *Confirmed* wetland amphibian breeding habitat was identified on-site within the open water of the Mississippi River and its shorelines. To evaluate the potential for the habitats on-site to provide amphibian breeding habitat, a series of amphibian breeding surveys were conducted.

Table 4.2 below summarizes the results of the amphibian breeding surveys described in Section 2 of this report. Figure A.2 in Appendix A illustrates the survey locations.

Table 4.2 Summary of Amphibian Breeding Call Surveys

Survey Location	Breeding Habitat	Species / Highest Call Code / Date	Confirmed SWH
1	Wetland	CHFR / 2-5 / April 14, 2021	Yes
		SPPE / 3* / April 14, 2021 and May 17	
		AMTO / 3* / May 17, 2021	
		GRTR / 2-5 / May 17, 2021	
		BULL / 1-2* / July 6, 2021	
		GRFR / 1-1 / July 6, 2021	
2	Wetland	SPPE / 3* / April 14, 2021	Yes
		NLFR / 1-2 / April 14, 2021	
		AMTO / 3* / May 17, 2021	
		GRTR / 1-2 / May 17, 2021	
		BULL / 1-3* / July 6, 2021	
		GRFR 1-3 / July 6, 2021	

Notes: SPPE = Spring Peeper, GRTR = Gray Treefrog, GRFR = Green Frog, NLFR = Northern Leopard Frog, AMTO = American Toad, WCF = Western Chorus Frog. Call Codes: the first number indicates the call code where: (1) number of individuals can be accurately counted, (2) individuals can be readily estimated, (3) calls are continuous and overlapping, such that estimates of individuals are not reliable. The second number identifies the number of individuals calling. Call codes of 3 do not have a second number, as individual estimates are not possible.

*Species abundance number was not recorded during the survey.

Though not directly observed during amphibian breeding surveys, gray treefrog (GRTR) were observed as an incidental during an eastern whip-poor-will survey on May 26, 2021, to have a call code of 3 from within the woodlands adjacent to the Mississippi River. As such, based on the presence of both spring peeper and gray treefrog with call code of 3, the woodlands on-site have *confirmed* woodland amphibian breeding SWH.

4.5.3.2 *Confirmed* Woodland Amphibian Breeding SWH

Confirmed woodland amphibian breeding habitat was identified on-site within the woodlands adjacent to the Mississippi River. To evaluate the potential for the habitats on-site to provide amphibian breeding habitat, a series of amphibian breeding surveys were conducted.

Woodland amphibian breeding habitat provides critically important breeding habitat for the following wildlife species: eastern newt, blue-spotted salamander, spotted salamander, gray treefrog, spring peeper, western chorus frog and wood frog. Woodland amphibian breeding habitat can be located in all forested ecosites. Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians (OMNRF, 2015a).

The defining use criteria for confirmed woodland amphibian breeding SWH is the presence of breeding populations of one or more listed newt/salamander species, two or more of the listed frog/toad species with at least 20 individuals, or two or more of the listed frog/toad species with a call level code 3.

Based on review of Table 4.2 above and the incidental observation of gray treefrog, woodland habitat on-site does meet the defining use criteria for *confirmed* woodland amphibian breeding SWH, for stations 1 and 2, which are located within the white pine – sugar maple mixed forest (ELC Code: FOMM2-2) immediately adjacent to the open water (ELC Code: OAO) of the Mississippi River. Based on the description provided in the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015a), woodland amphibian habitat is considered to be the wetland or waterbody, plus a 230 m radius of surrounding woodland area.

Confirmed woodland amphibian breeding habitat is illustrated on Figure A.4 in Appendix A. Impacts to *confirmed* woodland amphibian breeding habitat from the proposed development is discussed in Section 6.

4.5.3.3 *Confirmed* Wetland Amphibian Breeding SWH

Confirmed wetland amphibian breeding habitat was identified on-site along the shorelines of the Mississippi River adjacent to the on-site wooded area at the base of the western slope. To evaluate the potential for the habitats on-site to provide amphibian breeding habitat, a series of amphibian breeding surveys were conducted.

Wetland amphibian breeding habitat provides critically important breeding habitat for the following wildlife species: eastern newt, American toad, spotted salamander, four-toed salamander, blue-spotted salamander, gray treefrog, western chorus frog, northern leopard frog, pickerel frog, green frog, mink frog, and bullfrog. Wetland amphibian breeding habitat can be located in all ecosites associated with swamps, marshes, fens, bogs, open water and shallow water. Typically these

wetland ecosites will be isolated (greater than 120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. bull frog) may be adjacent to woodlands.

The defining criteria for confirmed wetland amphibian breeding SWH is the presence of breeding populations of one or more listed newt/salamander species, two or more of the listed frog/toad species with at least 20 individuals, or two or more of the listed frog/toad species with a call level code 3, or with confirmed breeding bullfrogs.

Based on review of Table 4.2 above, wetland habitat on-site does meet the defining use criteria for *confirmed* wetland amphibian breeding SWH, for stations 1 and 2, which are immediately adjacent to the open water (ELC Code: OAO) of the Mississippi River. Based on the description provided in the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015a), wetland amphibian habitat is considered to be the wetland area and the shoreline.

Confirmed wetland amphibian breeding habitat is illustrated on Figure A.4 in Appendix A. Impacts to *confirmed* wetland amphibian breeding habitat from the proposed development is discussed in Section 6.

4.5.4 Habitats of Species of Conservation Concern

Provincial rankings are used by the Natural Heritage Information Centre to set protection priorities for rare species, similar to those described in Section 4.5.2 above for vegetation communities. Provincial rankings (S-ranks), are not legal designations such as those used to define the various protection statuses of species at risk, they are only intended to consider factors within the political boundaries of Ontario that might influence a particular species abundance, distribution or population trend.

Based on the guidance provided in the Significant Wildlife Habitat Ecoregion Criterion Schedules (MNRF, 2015), when a plant or animal element occurrence is recorded for any species with an S-rank of S1 (extremely rare), S2 (very rare), S3 (rare to uncommon) or SH (historically present), the corresponding vegetation ecosite is considered to provide *candidate* habitat for species of conservation concern and further consideration within the EIS is warranted.

The Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015), provides five general habitat types known to support a wide range of species of conservation concern in Ontario. The five general habitat types for Ecoregion 6E-11 are provided in Table C.5 in Appendix C, including a brief rationale as to why they are or are not considered further in this EIS. Following review of Table C.5 in Appendix C, one *candidate* habitat of species of conservation concern has been identified on-site, habitat for special concern and rare wildlife species for eastern musk turtle, northern map turtle, river redhorse, red-headed woodpecker. Additionally, one *confirmed* habitat of species of conservation concern has been identified on-site, habitat for special concern and rare wildlife species for eastern wood-pewee, wood thrush, and snapping turtle.

The *candidate* and *confirmed* SWH are discussed in detail in the subsections below.

4.5.4.1 Special Concern and Rare Wildlife Species SWH

Based on observation data from the field investigations, three species of special concern has been identified on-site or within the broader study area; eastern wood-pewee, wood thrush and snapping turtle. Based on research from the desktop search as discussed in Section 2.1, four species of special concern have been identified on-site or within the broader study area; eastern musk turtle, northern map turtle, river redhorse, red-headed woodpecker. No other species of special concern or rare wildlife species were identified on-site or within the broader study area. Potential impacts to all *candidate* and *confirmed* species at risk from the proposed development are discussed in Section 6.

The eastern wood-pewee is a small flycatcher bird with an S-rank of S4 (uncommon but not rare) and is listed as a species of special concern in Ontario. Eastern wood-pewee was identified on-site during the site investigations. Eastern wood-pewee is a woodland species that is often found near clearings and edges and they were observed calling on-site during the site investigations. Given the mosaic of woodland and open habitat for eastern wood-pewee on-site, there is a high potential for eastern wood-pewee and their habitat to occur on-site.

The wood thrush is a medium-sized songbird with an S-rank of S4 (uncommon but not rare) and is listed as a species of special concern in Ontario. The most recent Ontario Breeding Bird Atlas indicated that the wood thrush populations in Ontario have shown a significant annual increase of 4.4% between the first and second atlas (Cadman et al., 2007). The NHIC has identified historic observations within 1km of the subject property. The species was also observed calling from site during field investigations. Wood thrush is a woodland species often found in moist, deciduous hardwood or mixed forests stands, with dense deciduous undergrowth and tall trees.

The snapping turtle is a highly aquatic turtle species with an S-rank of S3 (rare to uncommon) and is listed as a species of special concern in Ontario. The NHIC has not identified snapping turtle as having occurred within 1 km of the site. Data from the Ontario Herp and Reptile Atlas indicates the presence of snapping turtle within the 10km² that encompasses the site. Snapping turtle was observed within the Mississippi River during field investigations. Snapping turtles are aquatic generalists, found in a variety of wetlands, water bodies and watercourses. Given the availability of potentially suitable aquatic habitat on-site and observation within the water, there is a high potential for snapping turtle and its habitat to occur on-site.

Eastern musk turtle is a highly aquatic turtle species with an S-rank of S3 (rare to uncommon) and is listed as a species of special concern in Ontario. The NHIC identified eastern musk turtle as having occurred within 1 km of the site. Species was not observed during field investigations. Eastern musk turtle prefer permanent ponds, lake, marshes and rivers. Given the availability of

potentially suitable aquatic on-site, there is a moderate potential for eastern musk turtle and its habitat to occur on-site.

The northern map turtle inhabits rivers and lakeshores where it basks on emergent rocks and fallen trees. In winter, the turtles hibernate on the bottom of deep, slow-moving sections of river. The northern map turtle is of special concern and ranked as S3 (rare to uncommon) in Ontario. Data occurrence from the Ontario Herp and Reptile Atlas indicates the species occurring within the 10km² that encompasses the site, and are likely associated with the Mississippi River. Given the availability of potentially suitable aquatic on-site, there is a moderate potential for northern map turtle and its habitat to occur on-site.

The river redhorse inhabits medium to large-size rivers that have substantial flows. In May and June, adults migrate from deeper, slower moving pools and run habitats to shallow riffle-run habitats having coarse substrate and moderate to swift flow. The river redhorse is of special concern and ranked as S2 (very rare) in Ontario. Data occurrence through the NHIC shows the species occurring within 1km of the site, while data from the Fisheries and Oceans Canada SAR Maps (DFO, 2019) indicates the species to be present with the Mississippi River adjacent to the subject property. Given the presence of suitable aquatic habitat and historical occurrence records, it is possible that the study area may provide habitat for river redhorse.

The red-headed woodpecker lives in open woodland and woodland edges, and is often found in parks, golf courses and cemeteries. These areas typically have many dead trees, which the bird uses for nesting and perching. The red-headed woodpecker is of special concern and ranked as S4B (common to apparently secure) in Ontario. Data occurrence through the NHIC shows the species occurring within 1km of the site. Given the presence of woodland edges along the western slope of the property, it is possible that the site may provide habitat for red-headed woodpecker.

4.5.5 Animal Movement Corridors

Animal movement corridors are elongated areas used by wildlife to move from one habitat to another and allow for the seasonal migration of animals (OMNRF, 2015). The Significant Wildlife Habitat Ecoregion Criterion Schedules for Ecoregion 6E-11 (OMNRF, 2015), identifies two types of animal movement corridor: amphibian movement corridors and deer movement corridors. As per guidance presented in MNRF, 2015, animal movement corridors should only be identified as significant wildlife habitat when a *confirmed or candidate* significant wildlife habitat has been identified by the MNRF district office or by the regional planning authority.

Following review of Table C.6 in Appendix C, no animal movement corridors have been identified on-site. Furthermore, the MNRF has not identified any animal movement corridors on the publicly available data sets for wildlife values area (OMNRF, 2020a) or wildlife values site (OMNRF, 2020b). As such, animal movement corridors are not discussed or evaluated further in this EIS.

4.6 Fish Habitat

The protection of fish and fish habitat is a federal responsibility and is administered by the Department of Fisheries and Oceans Canada (DFO). Fish habitat as defined in the Fisheries Act (Canada, 1985) means, “spawning grounds and nursery, rearing food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.”

When development is unable to avoid resulting in the harmful alteration, disturbance or destruction of fish habitat from typical project impacts such as temperature change, sedimentation, infilling, reduction of nutrient and food supply, etc., an authorization under the Fisheries Act is required for the project to proceed.

A fisheries assessment was not conducted as part of this EIS, until such time that a fisheries assessment is completed, the Mississippi River along the western property boundary is assumed to provide fish habitat for small and large bodied fish species.

As discussed in Section 3.4, no fish SAR or critical habitat have been identified within the on-site ephemeral watercourse. Aquatic SAR, as described in Section 4.5.4 and Table 7, have the potential to occur within the Mississippi River.

4.7 Species at Risk

The probability of occurrence for species at risk to occur on-site and within the broader study area was determined through the desktop review stage of this EIS, as described in Section 2.1, and through the site specific surveys conducted as part of this EIS, outlined in Section 2.2.

Table C.7 in Appendix C, provides a summary of all species at risk which were determined to have the potential to occur on-site or within the broader study area, their protection status under the provincial Endangered Species Act (Ontario, 2007), their probability of occurrence and a brief rationale of that probability. Impacts to endangered or threatened SAR determined to have a moderate or high potential to occur on-site or within the broader study area are discussed further in Section 6.

5.0 PROPOSED PROJECT

The proposed project assessed for potential impacts on the natural heritage features determined to be present within the broader study area is a plan of subdivision application for part of Lot 17, Concession 9, in the Geographic Township of Mississippi Mills, Lanark County, municipally addressed as 38 Carss Street, in the town of Town of Almonte, Ontario.

The proposed plan of subdivision includes the creation of a 139-lot residential subdivision on an approximately 7.5-hectare property. All lots will be on municipal services. Access to the proposed subdivision will be from Carss Street. The proposed plan of subdivision is provided on Figure A.4.

Future components of the proposed project considered in the impact assessment presented in Section 6 include: tree clearing and vegetation grubbing, fill placement and elevation grading, road construction, laneway construction, excavation and pouring of foundations, construction of single family dwellings, all on municipal services, general landscaping activities and the creation of stormwater management (SWM) features.

Future SWM generated on-site is intended to be primarily directed towards the Mississippi River with a small portion of the site directed south, towards Carss Street through a roadside ditch and the ultimately to the Mississippi River. At the time of report preparation, conceptual SWM management plans were not available for review; however, future the future SWM management plan for the development will include the following components:

- Design of roadside ditches to promote infiltration and attenuate peak storm events flows;
- Design of roadside ditches and lot-side swales to maintain suitable vegetation to support reduction of total suspended solids;
- Direction of the majority of roadside ditches towards a Stormceptor or similar CDS treatment unit within the park block located along the western portion of the site to achieve quality treatment prior to discharge through open ditches to the Mississippi River.

The timeline for the proposed project, from lot creation to completion of residential construction is currently unknown. For the purpose of assessing impacts to natural heritage features, it is assumed in this EIS that the creation of individual residential lots will happen in the near-term and will not result in any physical alterations to the natural environment of the site and the broader study area. Future construction of single family residential homes on each of the subdivision lots is assumed to occur over a several year period, and that the construction of any one residential home will be completed such that the duration of any potential impacts on the natural environment during construction will be approximately six months.

6.0 IMPACT ASSESSMENT

Potential impacts to natural heritage features on-site and within the broader study area are assessed for direct, indirect and cumulative effects based on the proposed project outlined in Section 5. Natural heritage features identified in Section 4 of this report as present or likely to be present are discussed in the subsections below.

Potential effects to the natural environment from the proposed development outlined in Section 5 include: vegetation removal, disturbance of the native soil mantle, increased noise generation, increased human disturbance, increase storm water generation and potentially increased nutrient loading to adjacent surface water features.

6.1 Significant Woodlands

As discussed in Section 4.2, woodlands on-site are considered significant due to their size, proximity to surface water features and protection of fish habitat.

The proposed plan of development is anticipated to result in a loss of significant woodland cover on-site. Conceptual site plan drawings show some of the proposed lots extending into the significant woodlands resulting in potential loss of 0.1 ha (2.6%) of significant woodlands. The on-site significant woodlands are limited to the western slope and small patches that extend past the crest and into the flatter area slated for development. It is worth noting that the proposed development will only impact significant woodlands on the exterior fringe. Furthermore, the majority of the significant woodlands are limited to the steep slopes along the western property boundary, an area that is not anticipated to be utilized for development for safety reasons.

Based on the Slope Stability Evaluation Assessment of Slope Stability and Limit of Hazard Lands Setback report, (Kollaard Associates Engineers, 2021) an Erosion Hazard Limit has been established for the subject property. This limit constitutes a safe setback for any proposed development at the site with respect to slope stability. The report determined that the Erosion Hazard Limit for the western slope of the subject property will be about 3.3 metres from the top of the slope.

Potential direct impacts may include loss significant woodlands, limited to along the exterior fringe where the future residential developments abuts the woodlands. Potential indirect impacts may include encroachment, increased disturbance and increased human-wildlife interactions.

Mitigation measures to reduce impacts to significant woodlands are outlined in Section 7.

6.2 Significant Wildlife Habitat

The potential presence of significant wildlife habitat on-site and within the study area was evaluated in Section 4.5, as a result of this assessment four types of significant wildlife habitat were determined to be present on-site or within the study area: *candidate* reptile hibernaculum,

confirmed turtle wintering area SWH, *confirmed* wetland amphibian breeding habitat and habitats of special concern and rare wildlife species.

Potential impacts to significant wildlife habitats are discussed in greater detail in the following subsections, while mitigation measures intended to prevent such impacts are presented in Section 7.

6.2.1 Candidate Reptile Hibernaculum

Candidate reptile hibernaculum habitat can be found along the western slope of the subject property as it contains a mix of suitable reptile hibernaculum habitat including rock piles and slopes with crevices, areas of broken and fissured rock, and mixed forests.

Potential direct impacts to *candidate* reptile hibernaculum habitat are associated with direct loss of habitat structures, and habitat disturbances resulting in changes to the thermal regime and microclimates. Potential indirect impacts to *candidate* reptile hibernaculum include habitat fragmentation, increased human presence, increased human and wildlife interaction and disturbances, and increased noise levels.

Given the nature of the proposed project, and that no reptile hibernaculum were confirmed through the NHIC database or field visits, impacts to *candidate* reptile hibernaculum habitat are not anticipated. However, mitigation measures intended to protect potential hibernaculum sites are provided in Section 7.

6.2.2 Confirmed Turtle Wintering Habitat

Confirmed turtle wintering habitat can be found within the Mississippi River as it contains open water with sufficient depths and substrate ideal for turtle overwintering.

As no in-water work is proposed for the development, the greatest potential impacts to turtle overwintering areas are alterations to water quality. Potential indirect impacts to surface water features resulting from construction activities and from increased runoff following construction may include: alterations to water quality, increased storm water runoff, overland flow and concomitant sediment transport caused by an increase in impervious surface area and vegetation loss, as well as increased nutrient loading through both overland and subsurface pathways, and landscaping practices.

Mitigation measures to protect the turtle overwintering areas within the Mississippi River are provided in Section 7.

6.2.3 Confirmed Woodland Amphibian Breeding Habitat

Confirmed woodland amphibian breeding habitat has been identified within the white pine – sugar maple mixed forest (FOMM2-2) along the western slope, adjacent to the Mississippi River.

Based on the habitat description outlined in the Significant Wildlife Habitat Criteria Schedule (OMNRF, 2015) habitat for woodland breeding amphibians is the wetland area plus a 230 m radius of woodland area.

As no in-water work is proposed as part of the development, and as some woodlands are anticipated to be removed during the construction process, potential impacts to *confirmed* woodland amphibian breeding SWH are anticipated to be both indirect and direct in nature.

Potential indirect impacts to surface water features resulting from construction activities and from increased runoff following construction may include: alterations to water quality, increased storm water runoff, overland flow and concomitant sediment transport caused by an increase in impervious surface area and vegetation loss, as well as increased nutrient loading through both overland and subsurface pathways, and landscaping practices.

Potential direct impacts may include a loss of forest habitat, increased fragmentation, encroachment and increased human-wildlife interactions. However, if total buildout of the proposed development within the significant woodlands were to occur, a total of 0.1 ha (2.6%) of on-site woodlands would be removed. Although when considering the amount of suitable woodland habitat available within closer proximity to the Mississippi River compared to the development area, impacts to *confirmed* woodland amphibian SWH are anticipated to be minimal.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement, and long-term human disturbance such as noise generation, dumping of refuse and trampling.

Mitigation measures to reduce impacts to *confirmed* woodland amphibian breeding habitat SWH are provided in Section 7.

6.2.4 *Confirmed* Wetland Amphibian Breeding Habitat

Confirmed wetland amphibian breeding habitat has been identified with the Mississippi River and along its shorelines adjacent to the white pine – sugar maple mixed forest (FOMM2-2).

Based on the habitat description outlined in the Significant Wildlife Habitat Criteria Schedule (OMNRF, 2015) habitat for wetland breeding amphibians is the wetland area and the shoreline.

As no in-water work is proposed for the development, the greatest potential impacts to wetland amphibian breeding habitat are alterations to water quality. Potential indirect impacts to surface water features resulting from construction activities and from increased runoff following construction may include: alterations to water quality, increased storm water runoff, overland flow and concomitant sediment transport caused by an increase in impervious surface area and vegetation loss, as well as increased nutrient loading through both overland and subsurface pathways, and landscaping practices.

Mitigation measures to reduce impacts to *confirmed* wetland amphibian breeding habitat SWH are provided in Section 7.

6.2.5 Habitats of Special Concern and Rare Wildlife Species SWH

Eastern Musk Turtle

Eastern musk turtle is a highly aquatic, small freshwater turtle found throughout the southern edge of the Canadian Shield, approximately 98% of the Canadian range of this species is in Ontario (COSEWIC, 2012a). The eastern musk turtle has a narrow, domed carapace and a large head with a pointed snout. The carapace is smooth and can be grey, brown or black and may be streaked or spotted with dark pigment. The plastron is small and cross-shaped with a yellowish or brownish hue and a single hinge. Two yellow/white stripes extend from the nose and below the eyes and along the sides of the head and neck but may not always be apparent on older individuals. In Ontario, the eastern musk turtle is listed as a species of special concern.

Eastern musk turtle typical inhabit littoral zones and shallow waterways such as rivers, lakes, bays, streams, ponds, canals and swamps with slow currents and soft bottoms. They prefer shallow water with abundant floating and submerged vegetation.

In Canada, the two major threats to eastern musk turtle are fisheries by-catch and habitat destruction and alteration. Additional threats to eastern musk turtle are primarily related to their life-history; their low recruitment, late maturity, long lifespan and reliance on low adult mortality, make them vulnerable to a variety of anthropogenic impacts. Cool and relatively short active seasons in Canada also limit reproductive success.

As no in-water work is proposed for the development, the greatest potential impacts to eastern musk turtle habitat are alterations to water quality. Potential indirect impacts to surface water features resulting from construction activities and from increased runoff following construction may include: alterations to water quality, increased storm water runoff, overland flow and concomitant sediment transport caused by an increase in impervious surface area and vegetation loss, as well as increased nutrient loading through both overland and subsurface pathways, and landscaping practices.

Mitigation measures to protect eastern musk turtle and their habitat from the proposed development are presented in Section 7.

Northern Map Turtle

The Northern map turtle gets its name from the lines on the upper shell, or carapace, that resemble contour lines on a map (Ontario, 2019c). The lines on the carapace are shades of yellow, tan, or orange and are surrounded by dark borders (Ontario, 2019c). There is a yellow spot behind the eyes, and both the head and legs have an intricate pattern of bright yellow lines (Ontario, 2019c).

Habitat loss and degradation due to shoreline development and decline in water quality threaten the northern map turtle in Ontario (Ontario, 2019c). The spread of invasive species such as zebra mussels also poses a potential threat to this species. It is also vulnerable to mortality on roadways and injury from boat propellers (Ontario, 2019c). Additionally, the female northern map turtles may take more than 10 years to reach maturity (Ontario, 2019c). The illegal pet trade may be contributing to declines of this species in the United States and Canada (Ontario, 2019c).

As no in-water work is proposed for the development, the greatest potential impacts to northern map turtle habitat are alterations to water quality. Potential indirect impacts to surface water features resulting from construction activities and from increased runoff following construction may include: alterations to water quality, increased storm water runoff, overland flow and concomitant sediment transport caused by an increase in impervious surface area and vegetation loss, as well as increased nutrient loading through both overland and subsurface pathways, and landscaping practices.

Mitigation measures intended to prevent negative impacts to northern map turtle are presented in Section 7.

River Redhorse

The river redhorse is a large, thick-bodied sucker, reaching a maximum length of 80 cm (2019e). River redhorse have a white belly, brown to olive back and sides that are brassy, yellowish-green or coppery (Ontario, 2019e). In Ontario, river redhorse are listed as a species of special concern.

River redhorse are found in medium to large-sized rivers with substantial flow. River redhorse are sensitive to degradation and require clear, unpolluted water. Activities that increase siltation and turbidity, such as agriculture and urban development are the main limiting factors (2019e).

As no in-water work is proposed for the development, the greatest potential impacts to river redhorse habitat are alterations to water quality. Potential indirect impacts to surface water features resulting from construction activities and from increased runoff following construction may include: alterations to water quality, increased storm water runoff, overland flow and concomitant sediment transport caused by an increase in impervious surface area and vegetation loss, as well as increased nutrient loading through both overland and subsurface pathways, and landscaping practices.

Mitigation measures intended to prevent negative impacts to river redhorse are presented in Section 7.

Red-Headed Woodpecker

The red-headed woodpecker (*Melanerpes erythrocephalus*) is a medium-sized bird – about 20 centimetres long – easily recognized for its vivid red head, neck and breast. The rest of the bird is black and white, mostly white underneath and black on top (Ontario, 2021b).

In Ontario, the species' distribution is discontinuous in the southern part of the province, with many gaps between occurrences. It occurs uncommonly at sites on the southern Canadian Shield, near large urban centres, such as Toronto and Hamilton, and in certain intensively farmed areas. The species is a regular breeder, albeit in small numbers, in northwestern Ontario (i.e., Lake of the Woods area) and eastern Ontario, along the Ottawa River Valley. The Canada Breeding Bird Survey (BBS) shows a significant long-term annual rate of decline of -1.88% per year between 1970 and 2016 for red-headed woodpecker in Canada. Declines have been steepest in Ontario, with a significant decline of -3.42% per year between 1970 and 2016, or -79.8% in total (COSWEIC, 2018). The red-headed woodpecker is listed as a species of special concern in Ontario.

The main threats to Red-headed Woodpecker are habitat degradation and ecosystem modifications, particularly the loss of standing dead wood critical for nesting, flycatching, and food caching. This is primarily due to suppression of disturbances that may lead to the creation of standing dead wood such as fire, dead wood removal for aesthetic reasons, or through harvesting activities, and other human-driven modifications to the ecosystem that reduce standing dead wood (COSEWIC, 2018).

Impacts to red-headed woodpecker and their habitat on-site from the proposed development are limited to the forest habitat on-site (ELC code FOMM2-2 on Figure A.3), which may provide suitable nesting and foraging habitat. However, as the on-site forest habitat is not anticipated to be removed or altered as part of the development, impacts to red-headed woodpecker are likely to be indirect in nature. Furthermore, these indirect impacts from increased human presence are anticipated to be negligible given the existing development surrounding the subject property and availability of suitable habitat within the greater study area.

NHIC indicates the presence of red-headed woodpecker within 1km of site. Red-headed woodpecker were not detected during on-site breeding bird surveys, nor any other site investigations.

Mitigation measures intended to prevent negative impacts to nesting and foraging red-headed woodpecker are presented in Section 7.

Eastern Wood-Pewee

Eastern wood-pewee (*Contopus virens*) is a small, avian insectivore that lives in a variety of deciduous, mixed, and to a lesser extent, coniferous woodland habitat (COSEWIC, 2012b). Adult eastern wood-pewee are grey-olive with pale wing-bars, the breast and sides are slightly darker green than the wings. It is best identified by its three-phrased song, often paraphrased as a whistled 'pee-ah-wee' (COSEWIC, 2012b). In Ontario, the eastern wood-pewee is listed as a species of special concern.

Threats to eastern wood-pewee are not well understood however, loss of suitable forest habitat does not appear to be a significant issue across their Canadian breeding range (COSEWIC, 2012a). Furthermore, research indicates that the species is not very sensitive to forest fragmentation effects or forest size (COSEWIC, 2012b). Eastern wood-pewee may be sensitive to human habitation, in Ontario they occur less frequently in woods with surrounding development than those without houses (COSEWIC, 2012b). Other threats to eastern wood-pewee may include changes in the availability of aerial insects, mortality during migration and/or wintering, nest predation and habitat changes due to white-tailed deer browsing (COSEWIC, 2012b).

NHIC database did not indicate eastern wood-pewee to be present on-site or within the study area, however, they were identified to be on-site during the breeding bird surveys.

Impacts to eastern wood-pewee and their habitat on-site from the proposed development is limited to the forested habitat on-site (ELC Code FOMM2-2 on Figure A.3 in Appendix A), which may provide suitable nesting and foraging habitat. Impacts to eastern wood-pewee habitat may include loss of forest habitat and increased human presence and disturbance.

However, as the on-site forest habitat is not anticipated to be removed or altered as part of the development, impacts to eastern wood-pewee are likely to be indirect in nature. Furthermore, these indirect impacts from increased human presence are anticipated to be negligible given the existing development surrounding the subject property and availability of suitable habitat within the greater study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging eastern wood-pewee are presented in Section 7.

Wood Thrush

The wood thrush (*Hylocichla mustelina*) is a medium-sized songbird, similar in shape to an American robin, but slightly smaller. Generally wood thrush plumage is distinct from other thrush species, with rusty-brown upper parts, white underparts and large blackish spots on the breast and sides.

In Ontario, the wood thrush breeding range extends from southern Ontario north to northern Georgian Bay and eastern Lake Superior (COSEWIC, 2012c). While wood thrush populations have declined over most of its North American range, between 1981 and 2005, breeding bird data indicates populations in Ontario have increased by 4%, likely due to increases in woodland cover south of the Canadian Shield (Cadman et al., 2007). The probability of occurrence in Ontario however, has decreased by 15% between the first and second breeding bird atlas (Cadman et al., 2007). The wood thrush is listed as a species of special concern in Ontario.

During the breeding season, the wood thrush is found in moist, deciduous hardwood or mixed forest stands, often in previously disturbed sites with dense, deciduous undergrowth and tall trees

that are used as singing perches (COSEWIC, 2012c). For wood thrush, habitat selection is based more on the structure of the forest, preferring sites with lower elevations, trees taller than 16 m, closed canopy (>70%), with a high variety of deciduous species, moist soil and decaying leaf litter (COSEWIC, 2012c).

Wood thrush were identified to be on-site during the breeding bird surveys, as well as within 1 km of site through the NHIC database.

Impacts to eastern wood thrush and their habitat on-site from the proposed development is limited to the forested habitat on-site (ELC Code FOMM2-2 on Figure A.3 in Appendix A), which may provide suitable nesting and foraging habitat. Impacts to wood thrush habitat may include loss of forest habitat and increased human presence and disturbance.

However, as the on-site forest habitat is not anticipated to be removed or altered as part of the development, impacts to wood thrush are likely to be indirect in nature. Furthermore, these indirect impacts from increased human presence are anticipated to be negligible given the existing development surrounding the subject property and availability of suitable habitat within the greater study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging wood thrush are presented in Section 7.

Snapping Turtle

Snapping turtle is the largest freshwater turtle found in Canada; in central Ontario males average 32 cm in carapace length and have an average mass of 9.3 kg (COSEWIC, 2008). The carapace is keeled and can be brown, black or olive in colour (COSEWIC, 2008). The plastron is cross-shaped and is small, leaving the limbs and sides of the body exposed (COSEWIC, 2008). The head of a snapping turtle is large with a hooked upper jaw, relatively long neck and tail that can be as long as the carapace (COSEWIC, 2008). In Ontario the snapping turtle is listed as a species of special concern.

Threats to snapping turtle are primarily related to their life-history, their slow recruitment, late maturity, long lifespan and high adult survival make them extremely vulnerable to a variety of anthropogenic impacts (COSEWIC, 2008). Short, cool summers also reduce hatching success. In Canada, snapping turtles are most impacted by events that increase adult mortality, such as harvesting of adults, persecution and road mortality (COSEWIC, 2008). Other threats include loss of habitat, environmental contamination and nest predation (COSEWIC, 2008).

As no in-water work is proposed for the development, the greatest potential impacts to snapping turtle habitat are alterations to water quality. Potential indirect impacts to surface water features resulting from construction activities and from increased runoff following construction may include: alterations to water quality, increased storm water runoff, overland flow and concomitant sediment

transport caused by an increase in impervious surface area and vegetation loss, as well as increased nutrient loading through both overland and subsurface pathways, and landscaping practices.

Mitigation measures to protect snapping turtle and their habitat from the proposed development are presented in Section 7.

6.3 Fish Habitat

According to the Provincial Policy Statement (MMAH, 2020), “development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.” Fish habitat as defined in the Fisheries Act (Canada, 1985) means “spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.”

In 2019, changes were made to the Fisheries Act, broadening the protection for fish and fish habitat. Under the new Fisheries Act, protection is afforded to all fish and fish habitat, not just those that support either a recreational, commercial or Aboriginal fishery. Under the Fisheries Act, work that is conducted in or near waterbodies must avoid “the death of fish, other than by fishing” (Canada, 1985). Furthermore, the new Fisheries Act states that work must avoid “the harmful alteration, disruption or destruction (HADD) of fish habitat” (Canada, 1985).

When activities are unable to avoid or mitigate harm to fish or fish habitat from typical project impacts such as temperature change, sedimentation, infilling, reduction of nutrient and food supply, etc., an authorization under Subsection 35 (2) of the Fisheries Act is required for the project to proceed without contravening the Act.

As no in-water work is proposed for the development, the greatest potential impacts to fish and fish habitat are indirect alterations to water quality. Potential indirect impacts to surface water features resulting from construction activities and from increased runoff following construction may include: alterations to water quality, increased storm water runoff, overland flow and concomitant sediment transport caused by an increase in impervious surface area and vegetation loss, as well as increased nutrient loading through both overland and subsurface pathways, and landscaping practices.

Mitigation measures intended to protect fish and fish habitat from negative impacts are discussed in Section 7.

6.4 Species at Risk

As outlined in the Endangered Species Act (Ontario, 2007), only species listed as threatened or endangered and their general habitat receive automatic protection. When a species-specific recovery strategy is developed, a specific habitat regulation will be established, which eventually

replaces the automatic habitat protection. Species of special concern and their habitat do not receive protection under the ESA.

Potential impacts associated with the proposed project to threatened or endangered species identified as having a moderate or high potential to occur on-site in Section 4.7, are discussed on a species-by-species basis in subsections below.

6.4.1 Eastern Small-footed Myotis

Eastern small-footed Myotis (*Myotis leibii*) is the smallest (typically 3-5 g), insectivorous bat found in Ontario. The fur of an eastern small-footed Myotis is golden-brown in colour, with a distinct black mask across the face. The eastern small-footed Myotis is very similar in appearance to the little brown Myotis, and is distinguishable by their small foot and keeled calcar (Fraser, MacKenzie & Davy, 2007).

The eastern small-footed Myotis is found throughout eastern North America. In Ontario the species has been observed in the areas south of Lake Superior across to the Ontario-Quebec border (Humphrey, 2017).

Eastern small-footed Myotis overwinter primarily in caves and abandoned mines with low humidity and temperatures and stable microclimates (Humphrey, 2017). In comparison to other Ontario bat species, they are able to tolerate much colder temperatures, drier conditions and draftier locations for hibernating (Humphrey, 2017). During the spring and summer months, they utilize a variety of habitats for roosting, including under rocks or rock outcrops, in buildings, under bridges, or in caves, mines or hollow trees (Ontario, 2019a).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for eastern small-footed Myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to eastern small-footed Myotis are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect eastern small-footed Myotis from impacts of the proposed development are discussed in Section 7.

6.4.2 Little Brown Myotis

Little brown Myotis (*Myotis lucifugus*) is a small (typically 4-11 g), insectivorous bat. The fur of a little brown Myotis is bi-coloured; fur is a glossy brown with a darker coloured base. The tragus of the Little Brown Myotis is long and thin, with a rounded tip (Fraser, MacKenzie & Davy, 2007).

In Canada, little brown Myotis occur throughout all of the provinces and territories (except Nunavut), with its range extending south through the majority of the United States as well. In Ontario, the little brown Myotis is widespread in southern Ontario and has been found as far north as Moose Factory and Favourable Lake (Ontario, 2019b).

Little brown Myotis overwinter in caves and abandoned mines, they require highly humid conditions and temperatures that remain above the freezing mark (Ontario, 2019b). During the summer months, maternity colonies are often located in buildings or large-diameter trees. Little brown Myotis roost in trees and buildings. Foraging occurs over water and along waterways, forest edges and in gaps in the forest. Open fields and clearcuts are not typically utilized for foraging (COSEWIC, 2013).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for little brown Myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to little brown Myotis are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect little brown Myotis from impacts of the proposed development are discussed in Section 7.

6.4.3 Tri-Colored Bat

Tri-colored bat (*Perimyotis subflavus*) is a small (typically 5-7 g), insectivorous bat. The fur is uniformly coloured on the ventral and dorsal sides, however when parted fur shows three distinct colour bands. The base of the hair is blackish, with a blonde middle and brownish tip. The snout of the tri-coloured bat is also distinct, with swollen bulbous glands present (Fraser, MacKenzie & Davy, 2007).

In Canada, the tri-colored bat has only been recorded in southern parts of Nova Scotia, New Brunswick, Quebec and central Ontario. In Ontario it occurs primarily from the southern edge of Lake Superior across to the Ontario-Quebec border and south (COSEWIC, 2013).

Tri-colored bat overwinter in in caves or mines, and have very rigid habitat requirements; they typically roosting the deepest parts where temperatures are the least variable, and have the strongest correlation with humidity levels and warmer temperatures (COSEWIC, 2013). In the spring and summer, tri-colored bat utilize trees, rock crevices and buildings for maternity colonies. Foraging is mainly done over watercourses and streamside vegetation (COSEWIC, 2013).

Although the woodlands on-site do not meet minimum snag density requirements to support bat maternity colony habitat, given the availability of habitat on-site there is a potential for tri-colored bat to occur on the property, primarily for foraging or non-maternal roosting. Impacts to tri-colored bat are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect tri-colored bat from impacts of the proposed development are discussed in Section 7.

6.4.4 Blanding's Turtle

Blanding's turtles (*Emydoidea blandingii*) have a highly domed, smooth black carapace with small, irregular tan or yellow flecking. The most distinctive characteristic of this species is the bright

yellow chin and throat. Their hinged plastron is yellow with a large dark blotch in the corner of each scute, but may also be entirely black (Oldham and Weller, 2000).

In Canada, Blanding's turtles are found throughout southern and south-central Ontario from south of Manitoulin Island to western Quebec. In Ontario, Blanding's turtles are often observed utilizing eutrophic habitats with clear water (COSEWIC, 2005). This turtle species occurs primarily in shallow water; adults are generally found in open or partially vegetated sites, where as juveniles prefer areas that contain thick aquatic vegetation. Blanding's turtles are known to make large overland journeys between connected lakes, rivers, streams, marshes or ponds, upwards of 6 km in a single active season. Overwintering occurs in permanent pools that average about one metre in depth, or slow flowing streams (COSEWIC, 2005).

A series of turtle basking surveys were undertaken to determine the presence or absence of Blanding's turtles on-site. During the site investigations, Blanding's turtles were not detected on-site. However, the site has the potential for Blanding's to occur on-site in a transient nature but no category 1, 2 or 3 habitat has been confirmed for the site. Ontario Herp and Reptile Atlas has indicated the presence of Blanding's turtle within the 10km² grid that encompasses the site, with occurrences likely associated with the Mississippi River.

As no in-water work is proposed as part of the development plan, potential impacts to Blanding's turtles are anticipated to be indirect in nature. Impacts to Blanding's turtles and their habitat may include changes in water quality due to increases in imperviousness and storm water runoff, as well as increased human disturbance, increased wildlife and human interaction, and encroachment during construction.

Avoidance and mitigation measures intended to prevent harm to Blanding's turtles who have the potential to occur on-site are present in Section 7.

6.4.5 American Eel

American eel (*Anguilla rostrata*) is an elongated, cylindrical fish and is the only freshwater eel in North America. The mouth is filled with little teeth, the lower jaw extends past the upper jaw, and a single gill opening is located just before the pectoral fin. The American eel grows to a maximum size of 1 m and lacks any pelvic fins. The long dorsal and anal fins are continuous with the tail fin. Immature eels range in colour from yellow to green to olive-brown. Eels reaching maturity are silvery and sexually mature eels have a metallic brown or black back (Holm, Mandrak & Burrige, 2009).

The American eel uses both freshwater and marine habitats throughout its life. Sexually mature eels migrate from freshwater habitats to marine habitats, spawning occurs in the Sargasso Sea, south of Bermuda. Young larval stages remain in salt water until they undergo metamorphosis, after which juveniles begin migrations to fresh water habitats where they remain until reaching sexual maturity. American eels are widespread in Eastern Canada, and preferred habitat in the

freshwaters of Canada includes lakes, rivers and all waters extending from the high-water mark down to at least 10 m depth. Growing eels frequently use a variety of substrate (rock, sand, mud), woody debris and submerged vegetation to provide protection and cover, particularly during daylight hours. In fresh water environments, the generation time for American Eels can be as high as 22 years (Holm, Mandrak & Burrige, 2009).

A fisheries assessment was not completed as part of this EIS. Occurrence data from the NHIC indicates that American eel have been observed within 1 km of the site, likely within the Mississippi River.

American eel habitat within the study area is limited to Mississippi River. As no in-water work is proposed as part of the development plan, impacts to American eel are anticipated to be indirect in nature. Impacts to American eel and their habitat may include changes in water quality due to increases in imperviousness and storm water runoff, as well as increased human disturbance, increased wildlife and human interaction, and encroachment during construction.

Avoidance and mitigation measures intended to prevent harm to American eel who have the potential to occur on-site are present in Section 7.

6.4.6 Rapids Clubtail

The rapids clubtail is a relatively small, 42 to 45 millimetre-long and brightly coloured dragonfly. Its eyes are bluish-green, with a light yellowish-green face that is striped with two dark lines, a brownish-black and yellowish-green striped body and transparent wings. Like all dragonflies, the rapids clubtail begins its life as an aquatic larva and transforms into a winged adult during the summer (Ontario, 2021).

The rapids clubtail is typically found in clear, cool medium-to-large rivers with gravel shallows and muddy pools, with the larvae occupying quiet muddy pools. Adult males perch on exposed rocks and other projections in the rapids. Males are quite territorial and make short flights over the water, repeatedly returning to the same perch. Adult females typically inhabit forests along riverbanks, and only visit shallows and pools when they are ready to mate and lay eggs (Ontario, 2021)

In Ontario, the rapids clubtail has only been found in four rivers in southern and eastern Ontario: the Thames, Humber, Credit and Mississippi (Ontario, 2021). The primary threat to the rapids clubtail is the degradation of river habitats. Activities which impede or alter the quantity and quality of water in the rivers, such as dams and pollution pose threats. (Ontario, 2021).

Occurrence data from the NHIC indicates that rapids clubtail has been observed within 1 km of the site, likely within the Mississippi River. Rapids clubtail was not observed during site investigations.

Rapids clubtail habitat within the study area is limited to Mississippi River. As no in-water work is proposed as part of the development plan, impacts to rapids clubtail are anticipated to be indirect in nature. Impacts to rapids clubtail and their habitat may include changes in water quality due to increases in imperviousness and storm water runoff, as well as increased human disturbance, increased wildlife and human interaction, and encroachment during construction.

Avoidance and mitigation measures intended to prevent harm to rapids clubtail who have the potential to occur on-site are present in Section 7.

6.5 Cumulative Impacts

Potential cumulative impacts associated with the proposed project include an increase in storm water generation, increases in nutrient loading to aquatic features, and the loss of forest and meadow habitat, primarily for avian species.

Cumulative impacts to the natural environment at the site due to increased human presence, increased wildlife and human interaction and increased noise, are expected to be negligible given the existing residential and agricultural land use in the surrounding project area.

Cumulative impacts such as those listed above can be mitigated by implementing the proposed setbacks and recommended mitigation measures outlined in Section 7 below.

7.0 RECOMMENDED AVOIDANCE AND MITIGATION MEASURES

The following avoidance and mitigation measures have been recommended by GEMTEC in order to minimize or eliminate potential environmental impacts identified in Section 6. As such, the following avoidance and mitigation measures should be enforced throughout the development through application of Site Plan Controls.

For the purpose of this report, a setback is defined as the minimum required distance between any structure, development or disturbance and a specified line. A buffer, for the purpose of this report, is defined as the area located between a natural heritage feature and the prescribed setback. For the purpose of the following subsections, buffers should be located between natural heritage features and lands subject to development or alteration, be permanently vegetated by native or non-invasive, self-sustaining vegetation and protect the natural heritage feature against the impact of the adjacent land use.

Vegetated buffers, particularly buffers that are vegetated with a mix of grassy herbaceous vegetation and shrubby or woody vegetation are most effective in mitigating impacts associated with anthropogenic activities in adjacent lands (Beacon, 2012). Buffers recommended in the following subsections and illustrated on Figure A.5, are done so within the context of the existing environmental disturbances but also to promote reasonable natural rehabilitation. In the subsections below, where possible, literature references for studies used as the basis of the recommended buffer widths are provided.

Based on the Slope Stability Evaluation Assessment of Slope Stability and Limit of Hazard Lands Setback report, (Kollaard Associates Engineers, 2021) an Erosion Hazard Limit has been established for the subject property. This limit constitutes a safe setback for any proposed development at the site with respect to slope stability. The report determined that the Erosion Hazard Limit for the western slope of the subject property will be about 3.3 metres from the top of the slope.

Mitigation measures solely for the protection of natural heritage features are well established and commonplace for development projects. However, the nature of the project and physical geography of the site bring forth concerns of slope stability and safety to human life. As such, all setbacks recommended from herein will default to either the Erosion Hazard Limit or standard ecological mitigation measures, whichever is greater.

7.1 Significant Woodlands

The Erosion Hazard Limit of 3.3 m, as recommended through the Slope Stability Evaluation Assessment of Slope Stability and Limit of Hazard Lands Setback report, (Kollaard Associates Engineers, 2021) in Section 6.1, is sufficient to protect significant woodlands on-site. To further protect significant woodlands situated within the lots beyond the hazard line, covenants are to be registered on title to prohibit tree clearing beyond the hazard line.

Impacts to on-site significant woodlands are anticipated to be negligible. No negative impacts on the ecological function of the significant woodlands are anticipated as a result of this project if all mitigation measures and best management practices recommended in Section 7 are adhered to.

7.2 Significant Wildlife Habitat

7.2.1 Candidate Reptile Hibernaculum, Confirmed Turtle Wintering Habitat, Confirmed Woodland Amphibian Breeding Habitat and Confirmed Wetland Amphibian Breeding Habitat

The 3.3 m Erosion Hazard Limit from the top of slope is sufficient for the protection of the *candidate* reptile hibernaculum, *confirmed* turtle wintering SWH, *confirmed* woodland amphibian breeding habitat, and the *confirmed* wetland amphibian breeding habitat.

Furthermore, the 3.3 m setback ensures that the core forest cover and surrounding summer habitat is maintained, which is important for amphibians moving between habitats throughout the year.

7.2.2 Habitats of Special Concern and Rare Wildlife Species – Eastern Wood Pewee, Wood Thrush, and Red-headed Woodpecker

Impacts to eastern wood-pewee, wood thrush and red-headed woodpecker primarily concern habitat loss and increased fragmentation. The development envelopes presented above to protect significant woodlands on-site is sufficient to protect special concern and rare wildlife habitat (eastern wood-pewee, wood thrush and red-headed woodpecker) from large amounts of habitat loss and fragmentation.

To further minimize the impact of the proposed development on eastern wood-pewee, wood thrush and red-headed woodpecker habitat, vegetation removal should occur outside the key breeding bird period (typically April 15 to August 15) as identified by Environment Canada for the protection of nesting and foraging eastern wood-pewee and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest survey shall be conducted by a qualified professional.

7.2.3 Habitats of Special Concern and Rare Wildlife Species – Eastern Musk Turtle, Northern Map Turtle and Snapping Turtle

The 3.3 m Erosion Hazard Limit from the top of slope, is sufficient to protect special concern and rare wildlife habitat (eastern musk turtle, northern map turtle, and snapping turtle). Furthermore, the 3.3m setback ensures that forest cover and surrounding summer habitat is maintained, which is important for wetland amphibians and reptiles moving between habitats throughout the year.

7.2.4 Habitats of Special Concern and Rare Wildlife Species – River Redhorse

The 3.3 m Erosion Hazard Limit from the top of slope, is sufficient to protect special concern and rare wildlife habitat (river redhorse). Furthermore, 3.3m setback ensures that forest cover is

maintained, which is important for the significant woodlands ecological functions of proximity to and protection of fish habitat.

7.3 Fish Habitat

No negative impacts on fish habitat are anticipated as a result of this project if all mitigation measures recommended below are enacted and best management practices followed.

The 3.3 m Erosion Hazard Limit from the top of slope as established to protect aquatic SWH from development impacts, is sufficient to protect fish habitat within the Mississippi River. Furthermore, the 3.3 m Erosion Hazard Limit ensures that forest cover is maintained, which is important for the significant woodlands ecological functions of proximity to and protection of fish habitat.

No negative impacts on fish habitat are anticipated as a result of this project if all mitigation measures recommended below are enacted and best management practices followed. Watercourses on-site can be protected against potential impacts of the proposed development through the implementation of a construction setback.

Beacon Environmental Review of Ecological Buffers (2012), provides a range for buffer widths to protect various natural heritage features based on the current science. The buffers are presented in a way that determines the risk of not achieving the desired buffer function (i.e. high, moderate and low). The functions analysed include water quantity, water quality, screening or human disturbance/changes in land use, hazard mitigation zone and core habitat protection. Impacts to the Mississippi River were identified to include potential impacts to water quality and human disturbance. Watercourse buffer widths have a low risk of not providing adequate mitigation for water quality impacts, and for human disturbance/land use change impacts at widths equal to or greater than 31 m.

The distance from the water's edge to the development area is approximately 68 m or greater. As such, in consideration of the Mississippi River, the 3.3 m Erosion Hazard Limit from the top slope, which is greater than the 31 m recommended buffer, provides sufficient protection for mitigating water quality impacts and human disturbances.

General mitigation measures recommended for the protection of water quality and fish habitat include:

- Buffers should be comprised of a mixture of native and non-invasive, self-sustaining trees, shrubs and tall grasses.
- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182 and OPSS 805.

- Culverts should be installed such that it is imbedded in the streambed, ensuring the culvert remains passable (i.e. does not become perched).
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks to prevent machinery encroachment and sediment transport.
- Install and maintain effective sediment and erosion control measures before starting work.
- Schedule work to avoid wet, windy and rainy periods.
- When native soil is exposed, sediment and erosion control work in the form of heavy-duty sediment fencing shall be positioned along the down gradient edge of any construction envelopes adjacent to waterbodies.
- A storm water management plan should be prepared by a qualified engineer with the purpose of reducing suspended sediment in roadside ditches, to achieve a reduction of 80% TSS prior to discharge, if applicable.
- The development plan should include lot-side swales and/or road side ditches designed to promote infiltration.
- Downspouts should be directed towards lot-side swales that are in turn directed to road side ditches and not adjacent surface water features. Rain gardens or infiltration trenches should be utilized in areas of difficult topography.
- In order to protect fish habitat from contamination, it is recommended that all machinery be maintained in good working condition and that all machinery be fueled a minimum of 30 m from the high water mark.
- Any temporary storage of aggregate material shall be set back from the water's edge by no less than 40 m and be contained by heavy-duty silt fencing.
- Maintain as much permeable surface area as possible in future development plans to limit the generation of stormwater runoff.
- Stormwater generated from the proposed development is to be managed on-site such that dewatering discharge during construction and discharge to watercourse post-development, are both equal to pre-development discharge rates. Site stormwater management should also be treated to achieve a reduction of 80% TSS prior to discharge.

7.4 Species at Risk

7.4.1 Eastern Small-footed Myotis, Little Brown Myotis, and Tri-Colored Bat

To protect roosting and foraging bats, tree removal where required should take place outside of the spring and summer active season (typically May 1 to September 1), when bats are more likely to be using forest habitat. If vegetation clearing must be conducted during the spring and summer timing window than a roost survey should be conducted by a qualified professional.

7.4.2 Blanding's Turtle

As indicated in Section 6.4, Blanding's turtles, a reptilian species at risk, has the potential to occur on-site, primarily in a transient nature. To protect Blanding's turtles that may transit the site, on-

site reptile exclusion fencing should be installed around the entire construction zone and be maintained for the duration of the project, to prevent Blanding's turtle from entering the construction zone. Reptile exclusion fencing should follow guidelines established in *Species at Risk Branch Best Practices Technical Note – Reptile and Amphibian Exclusion Fencing* (OMNRF, 2013b).

7.4.3 American Eel and Rapids Clubtail

The 3.3 m Erosion Hazard Limit from the top of slope, as established to protect fish habitat and aquatic SWH from development impacts is sufficient to protect American eel and rapids clubtail habitat within the Mississippi River.

7.5 Wildlife

The following avoidance and mitigation measures are provided in effort to minimize impacts to on-site and off-site wildlife:

- Vegetation removal should occur outside the key breeding bird period (typically April 15 to August 15) as identified by Environment Canada for the protection of migratory birds and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest survey shall be conducted by a qualified professional.
- Installation of silt fence barriers around the entire construction envelope of each future residential dwelling to prohibit the emigration of wildlife into the construction area.
- Cover all stock piled material with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.
- Perform daily pre-work sweeps of the construction area to ensure no species at risk are present and to remove any wildlife from inside the construction area.
- Should any species at risk be discovered throughout the course of the proposed works, the species at risk biologist with the local MECP district should be contacted immediately and operations modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by the MECP.

7.6 Best Practice Measures for Mitigation of Cumulative Impacts

The following best management practice measures are provided for the mitigation of cumulative impacts resulting from general construction and development activities;

- To protect trees identified to be retained during construction, the Critical Root Zone (CRZ) should be identified and fenced. The CRZ is defined as 10 cm from the base of the tree for every centimetre in diameter of the tree trunk measured at breast height.
- Maintain as much permeable surface as possible in future development plans to minimize the generation of storm water runoff.

- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks and to prevent machinery encroachment and sediment transport.
- Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized.
- In effort to offset the effect of vegetation clearing, consideration should be given to landscape planting with native tree species indicative of the Great Lakes – St. Lawrence Forest Region, such as white cedar, white spruce, red maple and red oak.

8.0 CONCLUSIONS

The proposed project supported by this EIS is the creation of a 139-lot residential subdivision on an existing approximately 7.5 ha property.

Based on the results of the impact analysis, impacts to the natural environment are anticipated to be minimal. Provided that mitigation measures recommended in Section 7 are implemented as proposed, no significant residual impacts are anticipated from the proposed development.

Following review of the information pertaining to the natural heritage features of the site, the following general conclusions are provided by GEMTEC in regards to the Environmental Impact Statement.

- No significant impacts to natural heritage features identified on-site, including fish habitat, significant wildlife habitat or habitats of species at risk are anticipated as a result of future residential development.
- The proposed project complies with the natural heritage policies of the Provincial Policy Statement.
- The proposed development complies with the natural heritage policies of the Lanark County Official Plan.

9.0 LIMITATION OF LIABILITY

This report and the work referred to within it have been undertaken by GEMTEC Consulting Engineers and Scientists Ltd (GEMTEC), and prepared for Westview Projects Inc. and is intended for the exclusive use of Westview Projects Inc. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and Westview Projects Inc. Nothing in this report is intended to provide a legal opinion.

The investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared.

This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, or portions of the site that were unavailable for direct investigation.

Should new information become available during future work, including excavations, borings or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.



Adam Alaimo, B.Sc.
Biologist



Drew Paulusse, B.Sc.
Senior Biologist

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APPENDIX A

Report Figures

Figure A.1 – Site Location

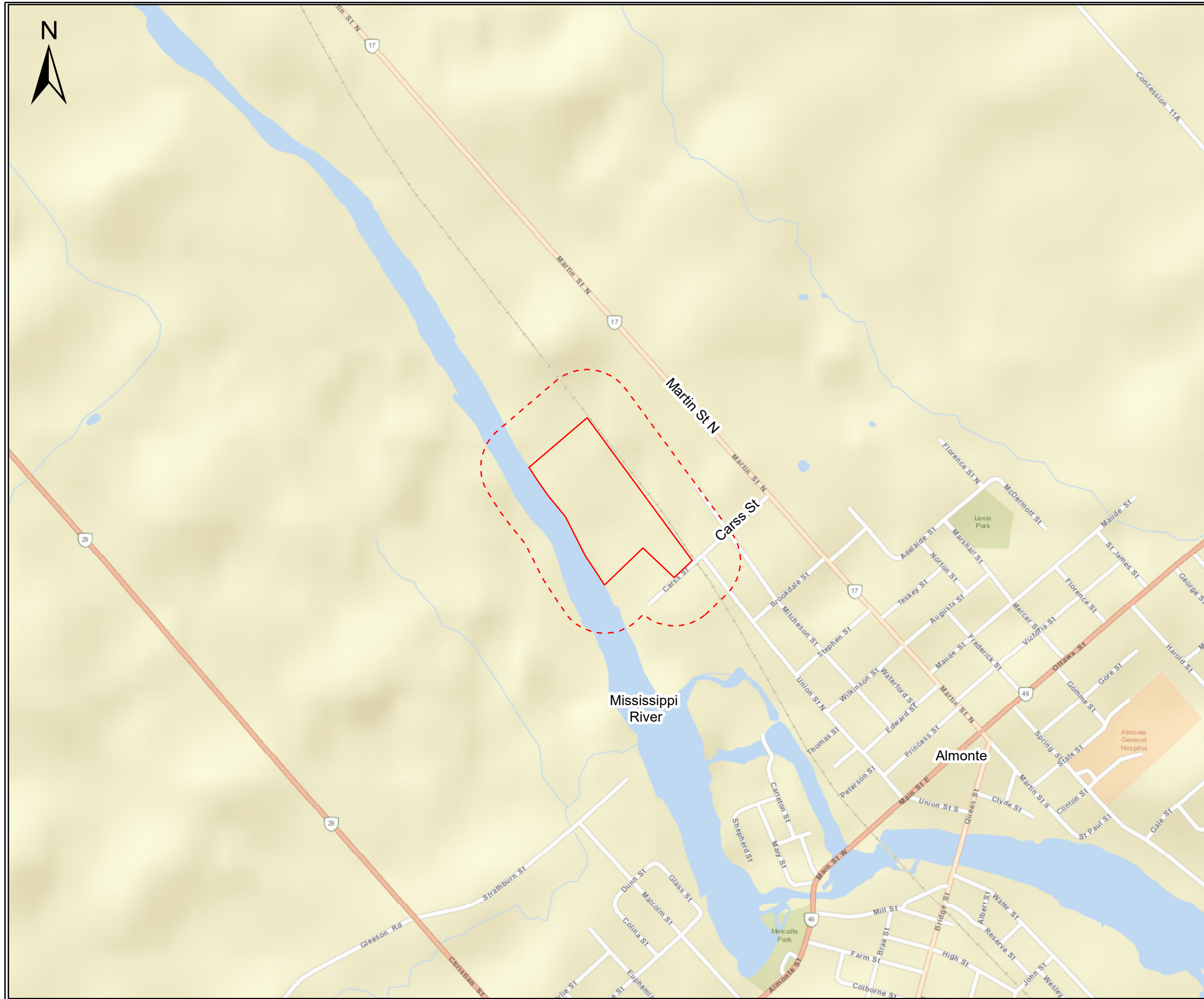
Figure A.2 – Site Layout

Figure A.3 – Vegetation Communities

Figure A.4 – Proposed Development Plan

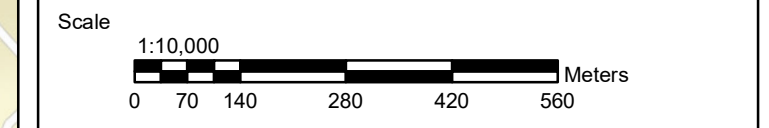
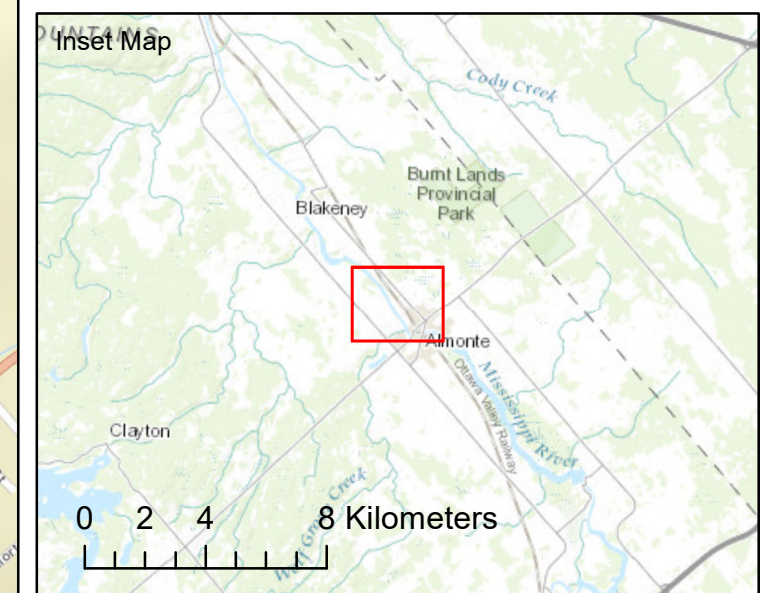
Figure A.5 – Natural Heritage Features

Figure A.6 – Mitigation Measures



Legend

- Property Boundary
- Study Area



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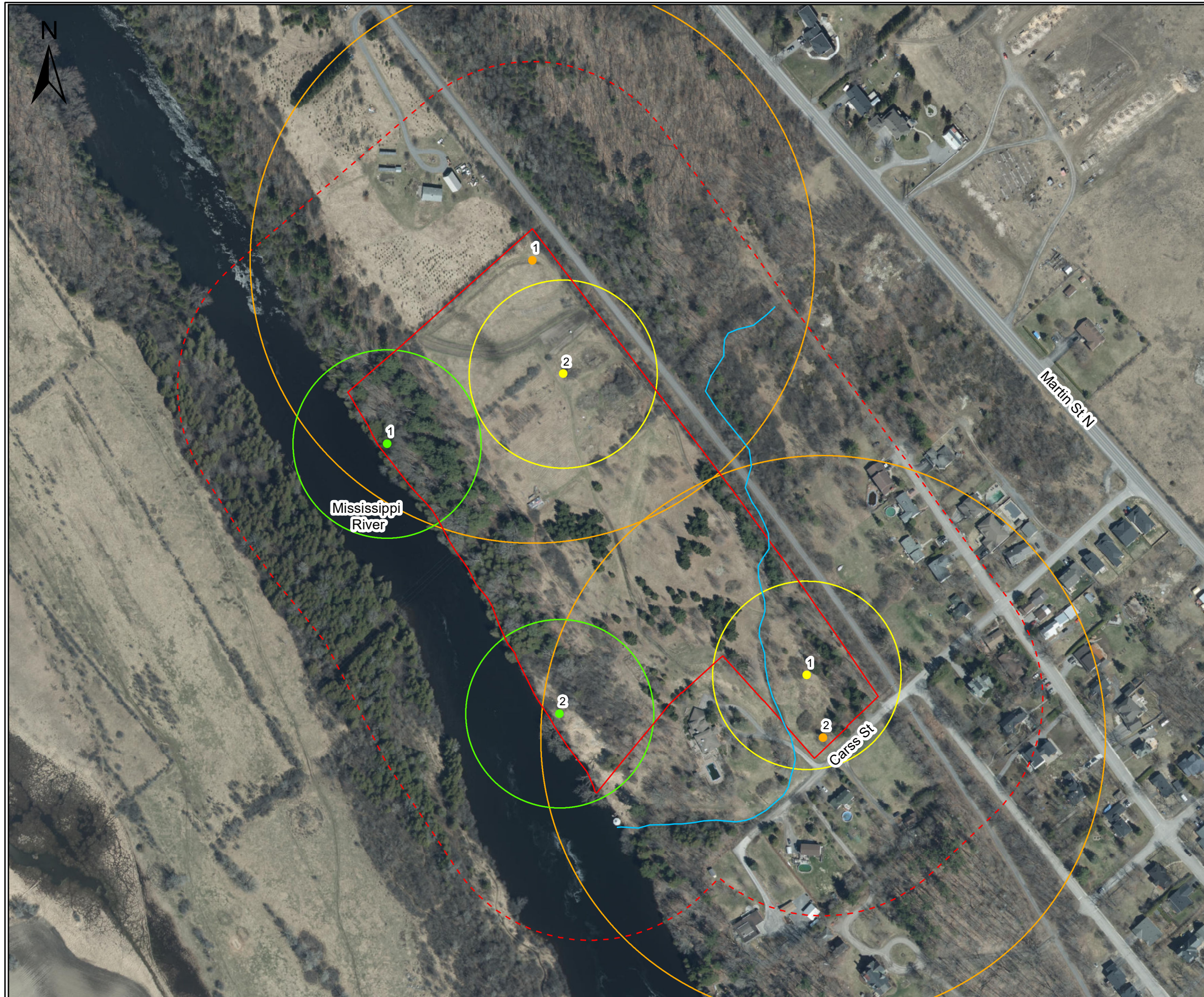
Client: Westview Projects Inc.	Project: 100227.014
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Location
38 Carss St, Town of Almonte,
Municipality of Mississippi Mills,
Lanark County, Ontario

Drwn By: JD	Chkd By: DP	Site Location
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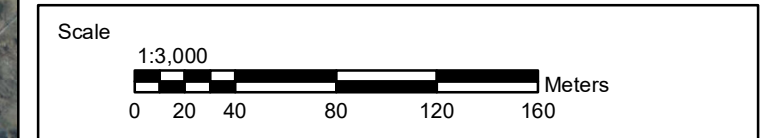
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 Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Legend

- Property Boundary
- Study Area
- Watercourse
- Amphibian Breeding Survey (100 m radius)
- Breeding Bird Survey (100 m radius)
- Whip-poor-will Breeding Survey (300 m radius)



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Location **38 Carss St, Town of Almonte,
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Drwn By: JD	Chkd By: DP	Site Layout
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Date: March 2022	Rev. 0	Figure A.2
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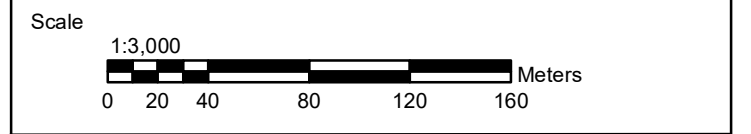
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Legend

- Property Boundary
- Study Area
- Vegetation Community

FOMM2-2 = Dry - Fresh White Pine - Sugar Maple Mixed Forest
 MEG = Graminoid Meadow



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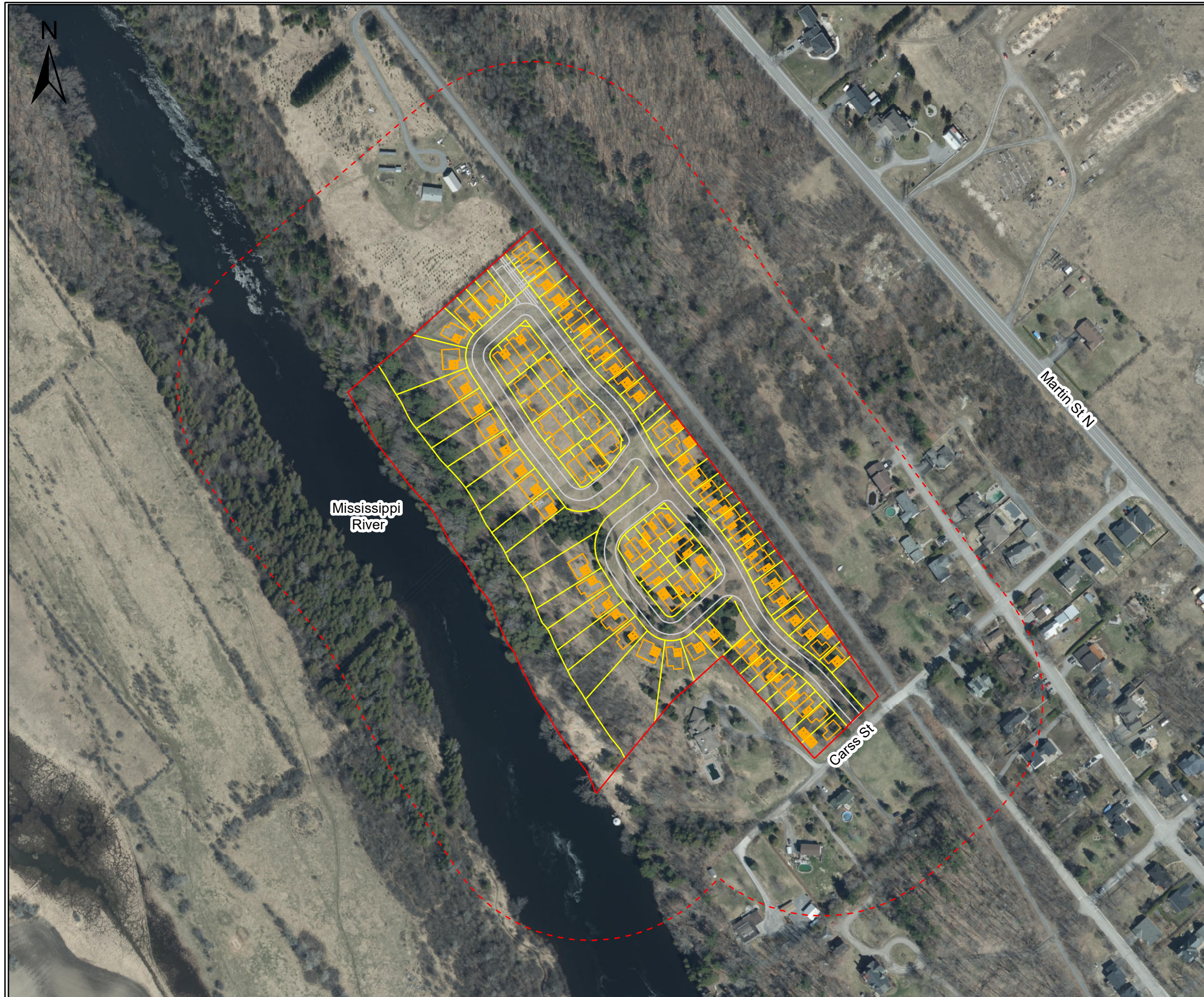
Client:	Westview Projects Inc.	Project:	100227.014
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Location: 38 Carss St, Town of Almonte,
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Drwn By:	JD	Chkd By:	DP	Vegetation Communities
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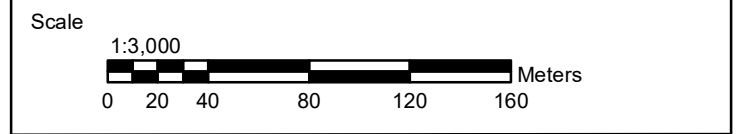
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Legend

- Property Boundary
- Study Area
- Proposed Lot Lines
- Proposed Road
- Proposed Dwellings



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Location **38 Carss St, Town of Almonte,
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Drwn By: JD	Chkd By: DP	Development Concept
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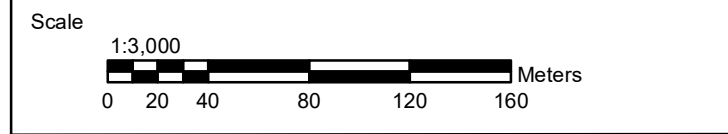
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 Rideau Valley Conservation Authority (RVCA)



Legend

- Property Boundary
- Study Area
- Proposed Development
- Watercourse
- Significant Woodlands
- Confirmed Wetland Amphibian Breeding Habitat
- Confirmed Woodland Amphibian Breeding Habitat
- Candidate Snag Tree
- Candidate Reptile Hibernacula



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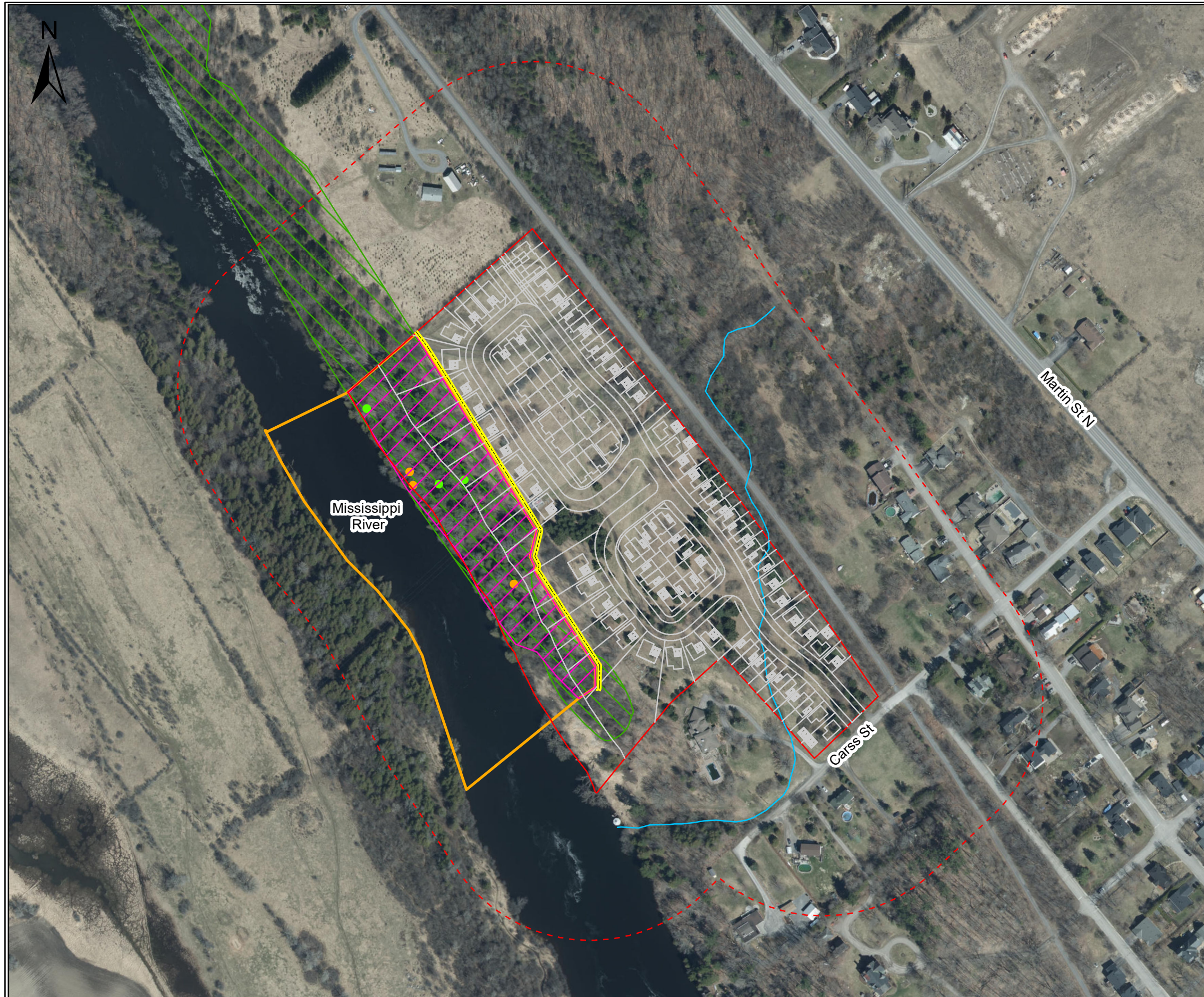
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Location **38 Carss St, Town of Almonte,
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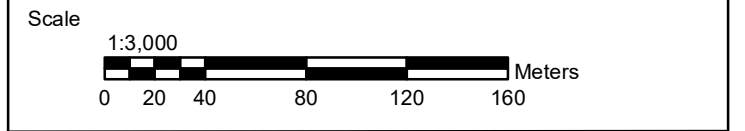
Drwn By: JD	Chkd By: DP	Natural Heritage Features
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Date: March 2022	Rev. 0	Figure A.5
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Legend

- Property Boundary
- Study Area
- Proposed Development
- Watercourse
- Significant Woodlands
- Confirmed Wetland Amphibian Breeding Habitat
- Confirmed Woodland Amphibian Breeding Habitat
- Candidate Snag Tree
- Candidate Reptile Hibernacula
- Hazard Land Setback



Client: Westview Projects Inc.	Project: 100227.014
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Location **38 Carss St, Town of Almonte,
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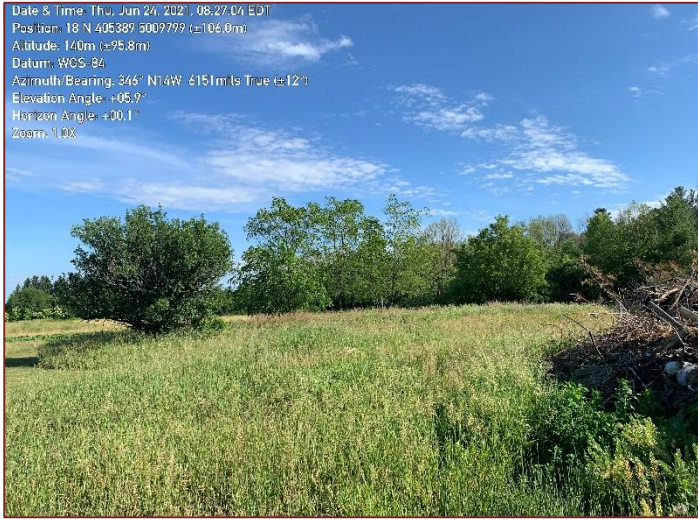
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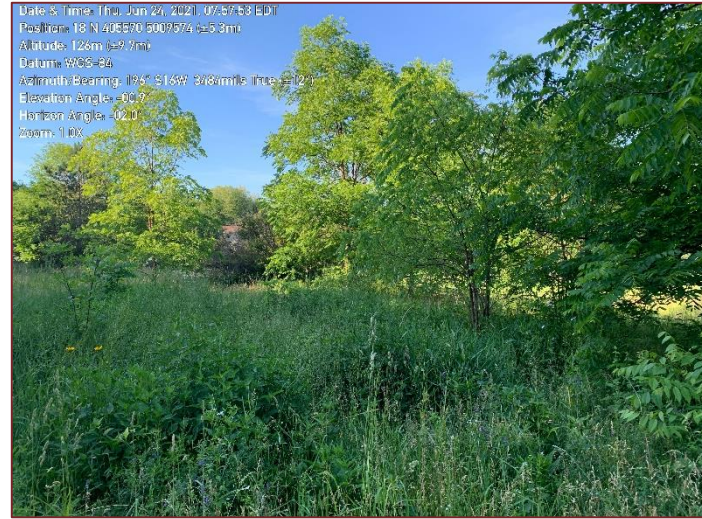


APPENDIX B

Site Photographs



Site Photograph 1 – Example of open graminoid meadow (MEG).



Site Photograph 2 – Example of open graminoid meadow (MEG).



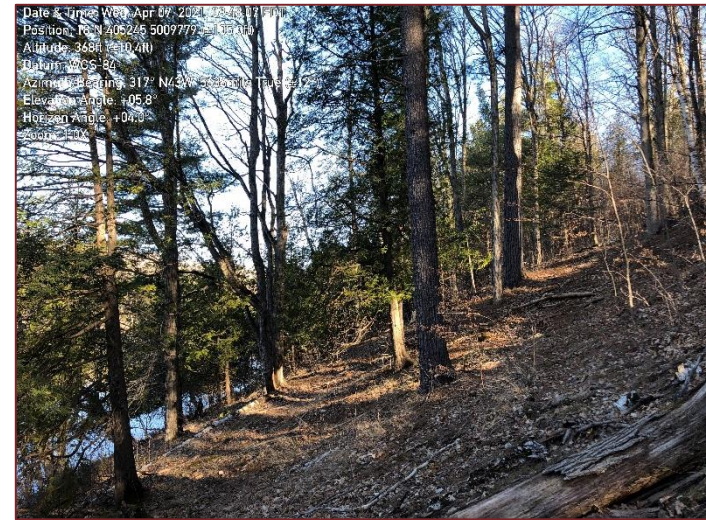
Site Photograph 3 – Example of expose rock along slope, with seep/spring.



Site Photograph 4 – Example of one of the identified seeps/springs.



Site Photograph 5 – Example of the ephemeral watercourse on-site during spring freshet.



Site Photograph 6 – Mixedwood forest (FOMM 2-2) on western slope.



Site Photograph 7 – Example of exposed rock formation along western slope.



Site Photograph 8 – Open water of Mississippi River, view from property shoreline.



APPENDIX C

Report Summary Tables

**TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJACENT TO SITE**

Common Name	Scientific Name	S-Rank	Evidence
Avian Species			
American crow	<i>Corvus brachyrhynchos</i>	S5B	Heard calling
American goldfinch	<i>Spinu tristis</i>	S5B	Heard calling
American robin	<i>Turdus migratorius</i>	S5B	Heard calling, observed foraging
Baltimore oriole	<i>Icterus galbula</i>	S4B	Heard calling, observed perched
Belted kingfisher	<i>Megaceryle alcyon</i>	S4B	Observed on-site
Black-capped chickadee	<i>Poecile atricapillus</i>	S5	Heard calling
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	S3B, S3N	Observed on-site
Blue jay	<i>Cyanocitta cristata</i>	S5	Heard calling
Brown creeper	<i>Certhia americana</i>	S5B	Observed foraging
Canada goose	<i>Branta canadensis</i>	S5	Heard calling
Chipping sparrow	<i>Spizella passerina</i>	S5B	Heard calling
Common grackle	<i>Quiscalus quiscula</i>	S5B	Heard calling
Downy woodpecker	<i>Picoides pubescens</i>	S5	Heard calling
Eastern bluebird	<i>Sialia sialis</i>	S5B	Heard calling
Eastern phoebe	<i>Sayornis phoebe</i>	S5B	Heard calling
Eastern towhee	<i>Pipilo erythrophthalmus</i>	S4B	Heard calling
Eastern wood-pewee	<i>Contopus virens</i>	S4B	Heard calling
European starling	<i>Sturnus vulgaris</i>	SNA	Heard calling
Gray catbird	<i>Dumetella carolinensis</i>	S4B	Heard calling
Great blue heron	<i>Ardea herodias</i>	S4	Observed foraging
House wren	<i>Troglodytes aedon</i>	S5B	Heard calling
Mallard	<i>Anas platyrhynchos</i>	S5	Heard calling, observed swimming
Mourning dove	<i>Senaida macroura</i>	S5	Heard calling
Northern cardinal	<i>Cardinalis cardinalis</i>	S5	Heard calling
Northern flicker	<i>Colaptes auratus</i>	S4B	Heard calling, observed foraging
Pileated woodpecker	<i>Dryocopus pileatus</i>	S5	Observed on-site
Red-breasted nuthatch	<i>Sitta canadensis</i>	S5	Heard calling
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B	Heard calling
Red-tailed hawk	<i>Buteo jamaicensis</i>	S5	Heard calling, observed active nest
Ring-billed gull	<i>Larus delawarensis</i>	S5B, S4N	Observed on-site
Savannah sparrow	<i>Passerculus sandwichensis</i>	S4B	Heard calling
Song sparrow	<i>Melospiza melodia</i>	S5B	Heard calling
Tree swallow	<i>Tachycineta bicolor</i>	S4B	Heard calling
White-breasted nuthatch	<i>Sitta carolinensis</i>	S5	Heard calling
Wood thrush	<i>Hylocichla mustelina</i>	S4B	Heard calling
Mammalian Species			
Red fox	<i>Vulpes vulpes</i>	S5	Observed on-site
White-tailed deer	<i>Odocoileus virginianus</i>	S5	Observed on-site
Amphibian Species			
American bullfrog	<i>Lithobates catesbeianus</i>	S4	Heard calling
American toad	<i>Anaxyrus americanus</i>	S5	Heard calling
Gray treefrog	<i>Hyla versicolor</i>	S5	Heard calling
Green frog	<i>Lithobates clamitans</i>	S5	Heard calling
Northern leopard frog	<i>Lithobates pipiens</i>	S5	Heard calling
Spring peeper	<i>Pseudacris crucifer</i>	S5	Heard calling
Western chorus frog	<i>Pseudacris triseriata</i>	S4	Heard calling
Reptilian Species			
Eastern gartersnake	<i>Thamnophis sirtalis sirtalis</i>	S5	Observed on-site
Midland painted turtle	<i>Chrysemys picta marginata</i>	S4	Observed on-site
Snapping Turtle	<i>Chelydra serpentina</i>	S3	Observed on-site

Notes:

Subnational Conservation Status Ranks:

S1 - Critically Imperilled, at very high risk of extirpation, very few populations or occurrences or very steep population decline

S2 - Imperilled, at high risk of extirpation, few populations or occurrences or steep population decline

S3 - Vulnerable, at moderate risk of extirpation, relatively few populations or occurrences, recent and widespread population decline

S4 - Apparently Secure, at a family low risk of extirpation, many populations or occurrences, some concern for local population decline

S5 - Secure, at very low or no risk of extirpation, abundant populations or occurrences, little to no concern for population decline

Qualifiers:

S#B - Conservation status refers to the breeding population of the species

S#N -Conservation status refers to the non-breeding population of the species

**TABLE C.2
SCREENING RATIONALE FOR SIGNIFICANT WOODLANDS**

Woodland Criteria	Further Considered in EIS	Rationale
Woodland Size	Yes	Contiguous woodlands on-site meet the minimum size requirement for the planning area (> 2 ha).
Ecological Functions		
a) Woodland Interior	No	Interior woodlands on-site does not meet the minimum size requirement for the planning area (> 8 ha).
b) Proximity	Yes	Woodlands on-site are proximal to fish habitat.
c) Linkages	No	Woodlands on-site do not provide linkages to other natural heritage features.
d) Water Protection	Yes	Woodlands on-site are proximal to fish habitat.
e) Diversity	No	Species composition within the on-site woodland is well represented on the landscape and no rare species communities were observed on-site.
Uncommon Characteristics	No	The woodlands on-site do not have a unique species composition, vegetation communities with a ranking of S1, S2 or S3, or a mature size structure.
Economical and Social Functional Values	No	The woodlands on-site do not contain high productivity in terms of economically valuable products, high social value such as recreational use, identified historical cultural or educational values.

**TABLE C.3
SCREENING RATIONALE FOR HABITATS OF SEASONAL CONCENTRATION AREAS**

Wildlife Habitat	Further Considered in EIS	Rationale
Winter Deer Yard	No	While there are stands of coniferous woodlands on-site, as outlined in the the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015) winter deer yards and deer management are an MNRF responsibility. Based on review of publically available data from the OMNRF on Land Information Ontario Geo-hub, no Stratum I deer yards, Stratum II deer yards, or winter congregation areas have been identified on-site or within the broader study area. The closest deer yard to site is a patch of Stratum I deer yard located approximately 5 km to the east.
Colonial Bird Nesting Habitat	No	No suitable habitat located on-site or within the study area to support colonial bird nesting.
Waterfowl Stopover and Staging Areas	No	Open water of the Mississippi River may provide suitable conditions for waterfowl stopover and staging areas (aquatic) in the study area. Aggregations of defining criteria species not observed. Aquatic and terrestrial stopover and staging areas habitat are not present on-site.
Shorebird Migratory Stopover Area	No	Shorebird stopover sites are typically well-known and have a long history of use. The site does not contain suitable shoreline habitat for shorebird foraging.
Raptor Wintering Area	No	While the site contains both forest and upland habitat, it does not meet the candidate habitat criteria as the forest and upland habitat for FOMM and MEG habitat on-site does not meet the minimum size criteria of greater than 20 ha.
Bat Hibernacula	No	Cave and crevice habitat is not present on-site or within the study area.
Bat Maternity Colonies	No	Woodlands on-site do not meet minimum snag density (>10 snags/hectare) requirement to be considered SWH for bat maternity colonies.
Turtle Wintering Area	Yes	Mississippi River may provide suitable open water with sufficient depths to provide turtle wintering habtiat.
Reptile Hibernaculum	Yes	Structures such as large rock piles, bedrock outcrops, and cervices have been identified on-site.
Migratory Butterfly Stopover Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.
Landbird Migratory Stopover Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.

**TABLE C.4
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS**

Specialized Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Nesting Area	No	Upland habitat is not present adjacent to suitable wetland habitats.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	Suitable forest habitat on-site FOMM is located directly adjacent to the open water of the Mississippi River, which may support foraging bald eagles or osprey. However, no nests were observed on-site, and neither species were observed during investigations. Nesting sites for these species are uncommon in Ecoregion 6E (MNR, 2012).
Woodland Nesting Raptor Habitat	No	Nesting may occur in any ecosite and species preference is towards mature forest stands >30 ha with >10 ha of interior habitat with a 200 m buffer. Contiguous forest stands of >30 ha and interior forest are not present and does not meet the minimum size criteria. No sticks nests were observed on-site.
Turtle Nesting Habitat	No	No suitable habitat (exposed mineral soil with minimal vegetation cover) is present within 100 m of the Mississippi River, on-site.
Seeps and Springs	No	Seeps were identified on-site within the wooded area on the western slope. However, as outlined in the SWH Criteria Schedules seeps and springs are considered candidate SWH when they occur within any forested ecosite with less than 25% meadow, field or pasture habitat, within the headwaters of a stream or river system. As the seeps identified on-site are not within the headwaters of the Mississippi River, the identified seeps do not meet defining use criteria to provide SWH on-site.
Woodland Amphibian Breeding Habitat	Yes	Suitable habitat adjacent the woodlands are present to support woodland amphibian breeding SWH.
Wetland Amphibian Breeding Habitat	Yes	Suitable habitat along the shores of the Mississippi River adjacent to the woodlands occurs on-site and may support wetland amphibian breeding habitat.
Woodland Area-Sensitive Bird Breeding Habitat	No	Woodland area-sensitive birds require interior forest habitat located >200 m from the forest edge in large (>30 ha) forest stands. Woodlands on-site and adjacent to the site do not meet the defining criteria.

**TABLE C.5
SCREENING RATIONALE FOR HABITAT FOR SPECIES OF CONSERVATION CONCERN**

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Marsh Breeding Bird Habitat	No	Potentially suitable marsh habitat is not present on-site to support marsh breeding bird habitat.
Open Country Breeding Bird Habitat	No	No suitable meadow habitat on-site to support open country bird breeding due to recent (< 5 years) agricultural disturbances.
Shrub/Early Successional Breeding Bird Habitat	No	Candidate early successional breeding bird habitat typically includes fallow fields transitioning to early successional forest habitats that are > 10 ha but have not been actively used for farming. The cultural thickets on-site are not considered SWH due to recent (< 5 years) agricultural disturbances.
Terrestrial Crayfish Habitat	No	Terrestrial crayfish are only found within southwestern Ontario (MNRF, 2012).
Special Concern and Rare Wildlife Species	Yes	The following species of special concern were identified on-site during the site investigation: eastern wood-pewee, wood thrush, and snapping turtle. Occurrence data for the NHIC also indicates the following species of special concern to have occurred on-site and/or the surrounding area: eastern musk turtle, northern map turtle, snapping turtle, river redhorse, red-headed woodpecker, and wood thrush.

**TABLE C.6
SCREENING RATIONALE FOR ANIMAL MOVEMENT CORRIDORS**

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Amphibian Movement Corridor	No	No <i>confirmed</i> wetland amphibian breeding habitat has been identified on-site.
Deer Movement Corridor	No	No winter deer yards have been identified on-site by the OMNRF.

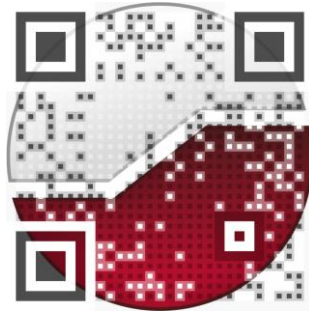
**TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA**

Species	ESA Status	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Avian				
Barn Swallow	Threatened	Nests in barns and other semi-open structures. Forages over open fields and meadows.	Low	Site lacks suitable habitat for species.
Black Tern	Special Concern	Breeds in loose colonies in shallow marshes, particularly cattails.	Low	Species not observed on-site. Site lacks suitable habitat to support species.
Bobolink	Threatened	Nests in dense tall grass fields and meadows, low tolerance for woody vegetation.	Low	Suitable grassland habitat not available on-site or within study area. NHIC indicates species within 1km of site, likely associated with agricultural fields west of site.
Cerulean Warbler	Threatened	Prefers mature, deciduous forests	Low	Woodlands on-site do not provide preferred habitat.
Chimney Swift	Threatened	Nests in traditional-style open brick chimneys.	Low	No suitable nesting structures within the broader study area.
Eastern Meadowlark	Threatened	Nests and forages in dense tall grass fields and meadows, higher tolerance to woody vegetation.	Low	Suitable grassland habitat not available on-site or within study area. NHIC indicates species within 1km of site, likely associated with agricultural fields west of site.
Eastern Whip-poor-will	Threatened	Nests on the ground in open deciduous or mixed woodlands with little underbrush, and bedrock outcrops.	Low	Site lacks suitable habitat for species. Species not observed on-site during targeted surveys.
Eastern Wood-pewee	Special Concern	Woodland species, often found near clearings and edges.	High	Eastern wood-pewee was observed on-site during site investigations.
Henslow's Sparrow	Endangered	Prefers open, moist tallgrass fields.	Low	No suitable grassland habitat to support Henslow's sparrow nesting on-site.
Red-headed Woodpecker	Special Concern	Open woodland and woodland edges, and is often found in parks, golf courses and cemeteries. These areas typically have many dead trees, which the bird uses for nesting and perching.	Moderate	Woodlands and edge habitat may provide suitable habitat for species. NHIC records indicate species within 1km of site. Species not observed during field investigations.
Wood Thrush	Special Concern	Prefers deciduous or mixed woodlands	High	Wood Thrush was observed on-site during site investigations.
Mammalian				
Eastern Small-footed Myotis	Endangered	Roosts in rock crevices, barns and sheds. Overwinters in abandoned mines. Summer habitats are poorly understood in Ontario, elsewhere prefers to roost in open, sunny rocky habitat and occasionally in buildings (Humphrey, 2017).	Moderate	Potentially suitable anthropogenic structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Little Brown Myotis	Endangered	Maternal colonies known to use buildings, may also roost in trees during summer. Affinity towards anthropogenic structures for summer roosting habitat and exhibit high site fidelity (Environment Canada, 2015).	Moderate	Potentially suitable anthropogenic structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Northern myotis (Northern Long-eared Bat)	Endangered	Occurs throughout eastern North America in associated with Boreal forests. Roosts mainly in trees, occasionally anthropogenic structures during summer (Environment Canada, 2015). Overwinters in caves and abandoned mines.	Low	Species affinity is for Boreal forests and rarely roosts in anthropogenic structures.
Tri-colored Bat	Endangered	Roosts in trees, rock crevices and occasionally buildings during summer. Overwinters in caves and mines.	Moderate	Potentially suitable anthropogenic structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Reptilian				
Blanding's Turtle	Threatened	Inhabits quiet lakes, streams and wetlands with abundant emergent vegetation. Frequently occurs in adjacent upland forests.	Moderate	Based on data obtained from the Herp Atlas (Ontario Nature, 2019), Blanding's turtle have been observed ten times between 1986 and 2019 within the 10 km ² grid square that encompass the site. However NHIC data does not indicate any known occurrences for Blanding's turtles on-site. Observation data from iNaturalist indicates Blanding's turtles in the general area, mostly associated with the Mississippi River. The site does provide potentially suitable aquatic habitat for Blanding's turtle.
Eastern Musk Turtle	Special Concern	Permanent ponds, lakes, marshes and rivers.	Moderate	Based on data obtained from the Herp Atlas (Ontario Nature, 2019), eastern musk turtle have been observed eight times between 2011 and 2017 within the 10 km ² grid square that encompass the site. NHIC data does further indicates known occurrences for eastern musk turtles within 1km of site. Historical occurrences likely associated with the Mississippi River, and not terrestrial habitat of the study area. Species was not observed during field investigations. The site does provide potentially suitable aquatic habitat for eastern musk turtle.
Gray Ratsnake	Threatened	On the Frontenac Axis, preference to a mosaic of forest and open habitats (fields; bedrock outcrops) with a high amount of edge habitat. In summer, seeks shelter in standing snags, hollow logs, and rock crevices. Nesting occurs inside standing snags, logs, stumps, compost piles. Overwinters in below ground hibernacula.	Low	Historic occurrence data for the species within 1 km of the site (NHIC), according to Herp Atlas data, the observations provided in the NHIC was observed in 1976; no present day observations for the north grid square that encompasses the north half of the site. Gray ratsnake have been observed in the 10 km ² grid square that encompasses the southern half of the property 24 times between 2019 and 1979, however, no NHIC observations are provided for Gray ratsnake on-site or within 3 km of the site to the south. Based on present day occurrence data (post-1996), the current range maps for gray ratsnake does not include the subject property (COSEWIC, 2018).
Northern Map Turtle	Special Concern	Highly aquatic species found only in lakes and large rivers. Ottawa River, Rideau River and South Nation River.	Moderate	Based on data obtained from the Herp Atlas (Ontario Nature, 2019), northern map turtle have been observed 2 times in 2015 within the 10 km ² grid square that encompass the site. However NHIC data does not indicate any known occurrences for northern map turtles on-site. Observation data likely associated with the Mississippi River and not the terrestrial habitat on-site. The site does provide potentially suitable aquatic habitat for northern map turtle.
Snapping Turtle	Special Concern	Highly aquatic species, found in a wide variety of permanent ponds, lakes, marshes and rivers.	Moderate	Based on data obtained from the Herp Atlas (Ontario Nature, 2019), snapping turtle have been observed 16 times between 1979 and 2019 within the 10 km ² grid square that encompass the site. However NHIC data does not indicate any known occurrences for snapping turtles on-site. Occurrence records likely associated with the Mississippi River and not terrestrial habitat found on-site. The site does provide potentially suitable aquatic habitat for snapping turtle. Species observed in the Mississippi River during field investigations.
Plants				

**TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA**

American Ginseng	Endangered	Grows in rich, moist but well-drained and relatively mature, deciduous woodlands dominated by sugar maple, white ash and American basswood.	Low	Woodlands on-site are mixed and are unlikely to support habitat requirements for American ginseng growth.
Butternut	Endangered	Inhabits a wide range of habitats including upland and lowland deciduous and mixed forests.	Low	Large portions of the site are open and in a regenerative state. NHIC indicates species within 1km of site. Species was observed on-site during the site investigations.
Insects				
Bogbean Buckmoth	Endangered	Preferred food plant is bog bean, present in a variety of wetlands including bogs, swamps and fens.	Low	Preferred wetland habitat is not present on-site.
Gypsy Cuckoo Bumble Bee	Endangered	Inhabits a wide range of habitats: open meadows, agricultural and urban areas, boreal forests and woodlands.	Low	Currently the only known Ontario population occurs in Pinery Provincial Park.
Monarch Butterfly	Special Concern	Caterpillars required milkweed plants that are confined to meadows and open areas. Adult butterflies use more diverse habitats with a variety of wildflowers.	Moderate	Potentially suitable foraging vegetation available for Monarch on-site.
Mottled Duskywing	Endangered	Larval food plant, New Jersey Tea, is found in sandy areas and alvars.	Low	Preferred habitat of sandy areas and alvars not present in the study area.
Nine-spotted Lady Beetle	Endangered	Habitat generalist	Low	No recent occurrence reports in the area, thought to be locally extirpated.
Rapids Clubtail	Endangered	Distribution in Ottawa not know. Occurs along Mississippi River in Blakeney/Pakenham area upstream of City. One of two extant populations in Ontario (and Canada).	Moderate	Suitable aquatic habitat in study area is limited to the Mississippi River. NHIC indicates presence of species within 1km of site.
Rusty-patched Bumble Bee	Endangered	Habitat generalist	Low	Currently the only known Ontario population occurs in Pinery Provincial Park.
Traverse Lady Beetle	Endangered	Habitat generalist	Low	No new records in Ontario, species thought to be absent in former habitats.
West Virginia White Butterfly	Special Concern	Requires mature moist, deciduous woods, with larval host plant, toothwort.	Low	Necessary vegetation and toothwort plant are not present on-site or within study area.
Yellow-banded Bumble Bee	Special Concern	Habitat generalist: mixed woodlands, variety of open habitat.	Moderate	Potentially suitable foraging habitat available for yellow-banded bumble bee on-site.
Fish				
American Eel	Endangered	Ottawa, Mississippi, Carp (including Poole Creek), South Nation and Rideau Rivers (including Rideau Canal)	Moderate	Suitable habitat in study area limited to Mississippi River. Species not observed on-site.
River Redhorse	Special Concern	Medium to large-size rivers that have substantial flows	Moderate	Suitable habitat in study area limited to Mississippi River. Species not observed on-site.

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