URBANDALE CORPORATION

Environmental Impact Statement Update

Phase 12

January 2021 - 14-9919

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Executive Summary

Dillon Consulting Limited was retained by Urbandale Corporation to complete a separate Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) for the proposed Phase 12 development, located at 708 River Road, in the City of Ottawa. The original report was finalized in September 2016. Since that time an additional parcel (720 River Road) to the south of 708 River Road was acquired and has added to the Phase 12 development plan. In addition, the property located at 750 River Road (previously referred to as Phase 15A) has been added to the Phase 12 project for the purpose of development approvals. The western portion of the original Study Area for the 750 River Road property has since been developed as a stormwater management (SWM) facility following an agreement entered with the City of Ottawa in order to accommodate the immediate need for development in the area and in particular, the Phase 15 lands on the eastern side of River Road. As a result, this EIS update will focus on the eastern portions of 750 River Road property within the Study Area scoped down to the current proposed development area.

The primary objective of the EIS and TCR update is to combine the properties located at 708, 720 and 750 River Road into the Phase 12 project, and confirm and update findings regarding the evaluation of potential environmental impacts that may be associated with the proposed residential development.

Surveys from the original field program occurred in 2014 and 2015 and consisted of Ecological Land Classification, Headwater Drainage Feature Assessment, diurnal breeding bird surveys, crepuscular breeding bird surveys, amphibian breeding surveys, and a Tree Inventory. The 2020-2021 field program consisted of confirmatory studies and Butternut Health Assessments. The following paragraphs summarize the findings of these studies.

1) The Study Area contains Significant Valleylands associated with the Rideau River and Significant Wildlife Habitat for Amphibian Breeding Habitat within wetlands within the Study Area; both occur west of the development area.
2) The Study Area is not located within or adjacent to any Provincially Significant Wetlands, Significant Woodlands, or Areas of Natural and Scientific Interest.
3) Impacts of development may include erosion and sedimentation, and disturbance to breeding birds associated with the removal of vegetation and headwater drainage features within the Study Area. With the implementation of proper mitigation measures, impacts may be avoided and no residual effects are anticipated.
4) Survey results identified Bobolink, Butternut, Barn Swallow, Blanding's Turtle, and the potential for Species at Risk (SAR) bats within or adjacent to the Study Area. However, due to the agricultural fields not meeting size requirements and the lack of nesting structures, suitable habitat is not present for Bobolink or Barn Swallow respectively. Blanding's Turtle habitat was determined to be limited to the river corridor within the valleylands, and Butternut trees will be registered with the MECP, as necessary. In addition, mitigation measures have been

recommended to avoid potential impacts to bats through construction. No other specific SAR or SAR habitat was identified within the Study Area.

5) Headwater Drainage Features (HDF) surveys identified four HDFs located within the current Study Area. The assessment determined that two of these features at 708 River Road had limited functions and therefore they were assigned a management recommendation of "No Management Required"; while the one feature within the current Study Area extent at 750 River Road was assigned a management recommendation of "Mitigation". The 2020-2021 field studies revealed a fifth HDF feature at 720 River Road that occurs in similar nature to those at 708 River Road. Based on observations made of the fourth feature, a management recommendation of "No Management Required" would also apply to this feature. As the feature within the 750 River Road property has been previously disturbed due to the construction of the SWM pond, the management recommendation of "Mitigation" no longer applies.

The mitigation and compensation measures proposed in this report have been developed to avoid negative impacts associated with development on the natural environment. Overall, residual negative impacts as a result of this development are not anticipated provided appropriate mitigation measures are applied.

1.0 Introduction

1.1 Purpose

Dillon Consulting Limited was retained by Urbandale Corporation to complete a separate Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) for the proposed Phase 12 development, located at 708 River Road, in the City of Ottawa. The original report was finalized in September 2016. Since that time an additional parcel (720 River Road) to the south of 708 River Road was acquired and has added to the Phase 12 development plan. In addition, the property located at 750 River Road (previously referred to as Phase 15A) has been added to the Phase 12 project for the purpose of development approvals. These properties are referred to collectively as the Study Area, herein (**Figure 1**). Please note that the western portion of the original Study Area for the 750 River Road property has since been developed as a stormwater management (SWM) facility following an agreement entered with the City of Ottawa in order to accommodate the immediate need for development in the area and in particular, the Phase 15 lands on the eastern side of River Road. As a result, this EIS update will focus on the eastern portions of 750 River Road property within the Study Area scoped down to the current proposed development area.

The objective of this EIS and TCR Update is to confirm findings of the original 2016 EIS report and include any relevant updates based on recent confirmatory studies in 2020 and 2021. Furthermore, this EIS and TCR update provides an evaluation of potential environmental impacts that may be associated with the proposed residential development and offers recommended mitigation measures to offset those impacts.

URBANDALE CORPORATION

Phase 12
Proposed Residential Development

Figure 1:
Study Area and Existing Natural Heritage Features

Study Area
750 Civic Road Number
Road
Watercourse (MNRF LIO, 2020)
Waterbody (MNRF LIO, 2020)
Wetland (MNRF LIO, 2020)
Wooded Area (MNRF LIO, 2020)
RVCA Regulation Limit
Prior Developed Area for Stormwater Management as per Agreement with City of Ottawa

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, RIDEAU VALLEY CONSERVATION AUTHORITY, CITY OF OTTAWA

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 18N

N W E S

0 50 100 200 300
Metres

PROJECT: 14-9918 STATUS: DRAFT DATE: 2021-01-27

FILE LOCATION: \\30dillon\cad\CAD\2014\149919\MXD\EIS\January2021\Fig1_StudyArea_NatFeatures.mxd

1.2 Property Information

Owner:	Riverside South Development Corporation
Address:	708, 720 and 750 River Road, Gloucester-South Nepean Ward
Lot and concession:	Part Lot 20, 21 and 22, Concession 1
Property Identification Number(s):	708 River Road: 045891836 720 River Road: 045890419 750 River Road: 045891866
Zoning:	Development Reserve Zone
OP designation:	General Urban Area, Major Open Space, Developing Community

Location

The Study Area is located in the community of Riverside South; bounded by Earl Armstrong Road to the North, Rideau Road to the east, and the Rideau River to the west.

Land Use and Zoning

The Study Area falls within the Riverside South CDP. The City of Ottawa's Official Plan has designated the Study Area as a Developing Community containing General Urban Area with a small portion of Major Open Space in the northwest corner along the Rideau River. The Study Area is zoned as Development Reserve (DR) and Development Reserve Subzone (DR1). The Study Area is also partially located within the floodplain boundary of the Rideau Valley Conservation Authority (RVCA) and The City of Ottawa's Section 58 – Flood Plain Overlay of the Official Plan in association with the Rideau River.

Policy Framework

Various regulatory agencies and legislative authorities have established a number of governing policies relevant to the Ottawa area in an effort to protect ecological features and functions. **Table 1** lists the relevant policies and legislation that apply to the protection of natural heritage features within the Ottawa area and supporting guidance documents and resources respective to each policy. This table also includes additional background information sources used to help identify and define natural heritage features within the province of Ontario, and Ecoregion 6E specifically. This section is not intended to constitute a complete land use planning assessment as it focuses on the relevant environmental policies and regulations only. The documents referenced below can be read in their entirety for a more detailed understanding of the land use policy framework applicable to the Study Area.

Table 1: Policies, Legislation and Background Resources Searched

POLICY / REGULATIONS	GUIDELINES AND SUPPORTING DOCUMENTS
FEDERAL GOVERNMENT OF CANADA	
Species at Risk Act (2002)	Federal Species at Risk Public Registry, accessed (accessed October 2020)
	Fisheries and Oceans Canada (DFO) • Aquatic Species at Risk Map (September, 2019), accessed October 2020
PROVINCE OF ONTARIO	
Planning Act, 1990: Provincial Policy Statement (2020)	Policies within Section 2.1 and 2.2 related to natural heritage features
	Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC) Squares # 18VR4413, # 18VR4513, # 18VR4412, # 18VR4512 • *Species of Conservation Concern;* • *Species at Risk; and* • *Natural heritage features*.
	Ministry of Natural Resources and Forestry (MNRF) Kemptville District Office, Contact: Erin Seabert, Fish and Wildlife Technical Specialist • Records requested from MNRF Kemptville District relating to natural features and wildlife species (**Appendix A)**
	Ecological Land Classification for Southern Ontario, Second Approximation, 2008
	Natural Heritage Reference Manual, Second Edition, March 2010
	MNRF Significant Wildlife Habitat Technical Guide (2000) • Significant Wildlife Habitat Eco-region 6E Criterion Schedules, 2015
	Ontario Breeding Birds Atlas (OBBA) Square #18VR6103
	Ontario Reptile and Amphibian Atlas - online data accessed October 2020
	Ontario Butterfly Atlas - online data accessed October 2020
	Atlas of the Mammals of Ontario , 1994
Endangered Species Act (2007)	Ministry of the Environment, Conservation and Parks (MECP) Species at Risk (SAR) in Ontario (SARO) List (O. Reg. 230/08), August 2019
	MNRF's Land Information Ontario (LIO) Database (MNRF, 2019) NHIC Squares # 18VR4413, # 18VR4513, # 18VR4412, # 18VR4512 SAR occurrence records.
	MNRF Natural Heritage Information Centre (NHIC) • *SAR occurrence records*
	OBBA (Data obtained in 2020)
	Ontario Reptile and Amphibian Atlas (Data obtained in 2020)
CITY OF OTTAWA	
City of Ottawa Official Plan (2003)	Schedules B, K, and L3 City of Ottawa's "geoOttawa" online mapping service
	Protocol for Wildlife Protection During Construction (2015)

POLICY / REGULATIONS	GUIDELINES AND SUPPORTING DOCUMENTS
CONSERVATION AUTHORITY	
Conservation Authorities Act, Ontario Regulation 170/06	Rideau Valley Conservation Authority • Regulation Limit mapping • *Lower Rideau Subwatershed Report* (2012)

2.0 Description of the Natural Environment

A desktop review of the Study Area indicates that the land is predominantly agricultural in nature used for cultivation of hay. There are a few patches of trees within the Study Area and more densely treed areas along the Rideau River associated with the Study Area's western boundary and the 750 River Road property (**Figure 2**). A review of available historic aerial photography indicates that the majority of the Study Area has been used for agricultural purposes since at least 1976. The surrounding area was also historically agricultural with recent development to the north along Earl Armstrong Road and recent development to the east along River Road.

Figure 2: Land Use Changes Over Time

The following section provides a brief summary of the existing environmental conditions within the Study Area. This information provides the background information upon which the EIS and TCR is based.

2.1 Landforms, Soils and Geology

The Study Area lies over Lower Ordovician bedrock consisting of dolostone and sandstone (Ministry of Northern Development and Mines 1991). The physiography of the area is described as clay plains with scattered drumlins (MNRF 1984). Soils within the Study Area are comprised of medium to slightly acidic, moderately coarse to medium textured, marine estuary veneer, overlying neutral, moderately fine to fine textured marine material. They also include fluvium in abandoned river channel floors and terraces (Canada Department of Agriculture 1976).

2.2 Aquatic Environment

2.2.1 Watershed Summary

The Study Area lies within the Lower Rideau Subwatershed, which flows north into the Ottawa River (RVCA, 2012). The watershed has been widely studied by the City of Ottawa and Conservation Authority due to development pressure within the Lower Rideau Subwatershed. Studies include the *Lower Rideau Subwatershed Report* (RVCA, 2012), and associated catchment reports, including the Rideau River-Hog's Back catchment in which the Study Area is located.

2.2.2 Fish Habitat

The Study Area is located adjacent to the Rideau River. In addition, background mapping suggests that there may be agricultural ditches within the Study Area that discharge into the Rideau River which may provide fish habitat. Furthermore, large portions of the Study Area occur within RVCA's Regulation Limit as shown on **Figure 1**.

2.3 Terrestrial Environment

2.3.1 Wetlands

No designated PSWs were identified within or adjacent to the Study Area. Based on MNRF LIO mapping, patches of unevaluated wetland occur along the Rideau River as well as along the northern boundary of 750 River Road. Wetlands have been considered further and are discussed in subsequent sections.

2.3.2 Woodlands

No designated Significant Woodlands were identified within or adjacent to the Study Area. However, a review of available aerial imagery indicates woodlands occur along the banks of the Rideau River and in small isolated tracts within the interior of the Study Area at 708 River Road and within the northern portion of 750 River Road. These woodlands have been brought forward for evaluation to determine significance.

2.3.3 Significant Valleylands

No designated Significant Valleylands were identified within or adjacent to the Study Area. However, the City's OP mapping indicates that there are unstable slopes along the banks of the Rideau River. The Rideau River valley has been brought forward for evaluation to determine significance.

2.3.4 Areas of Natural and Scientific Interest

No ANSIs were identified within or adjacent to the Study Area.

2.3.5 Significant Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (MNRF, 2000) defines Species of Conservation Concern (SCC) as globally, nationally, provincially, regionally, or locally rare (S-Rank of S1 - S3), and federally endangered or threatened species; but do not include SAR (listed as endangered or threatened under the ESA, 2007). A review of background data suggests that several SCC have the potential to occur within or adjacent to the Study Area (**Table 2**).

Table 2: Species of Conservation Concern Identified Within the Vicinity of the Study Area

SCIENTIFIC NAME	COMMON NAME	SARA[1]	ESA[2]	S-RANK[3]	INFORMATION SOURCE[4]
BIRDS					
Chlidonias niger	Black Tern	---	SC	S3B	MECP
Contopus virens	Eastern Wood-Pewee	---	SC	S4B	MECP, OBBA
Ammodramus savannarum	Grasshopper Sparrow	SC	SC	S4B	OBBA
Falco peregrinus	Peregrine Falcon	SC	SC	S3B	MECP
Asio flammeus	Short-eared Owl	SC	SC	S2N, S4B	MECP, OBBA
Hylocichla mustelina	Wood Thrush	THR	SC	S4B	MECP, OBBA
Coturnicops noveboracensis	Yellow Rail	SC	SC	S4B	MECP
HERPETOZOA					
Chelydra serpentina	Snapping Turtle	SC	SC	S3	MECP, ON
Sternotherus odoratus	Eastern Musk Turtle	SC	SC	S3	MECP, ON
Graptemys geographica	Northern Map Turtle	SC	SC	S3	MECP, ON
Thamnophis sauritus septentrionalis	Eastern Ribbonsnake	SC	---	S3	MECP
Lampropeltis triangulum	Milksnake	SC	Not at Risk	S3	MECP, ON
Pseudacris triseriata pop. 1	Western Chorus Frog (Great Lakes/ St. Lawrence- Canadian Shield Population)	THR	---	S3	ON

SCIENTIFIC NAME	COMMON NAME	SARA[1]	ESA[2]	S-RANK[3]	INFORMATION SOURCE[4]
LEPIDOPTERA					
Danaus plexippus	Monarch	SC	SC	S2N, S4B	MECP, OBA
ODONATA					
Stylurus notatus	Elusive Clubtail	---	---	S2	NHIC

[1]Federal Species at Risk Act, 2002 (SC= Special Concern; THR = *Threatened*); [2]Ontario Endangered Species Act, 2007 (SC= Special Concern); [3]Ontario SRank; S4= apparently secure; S3 = vulnerable; S2 = imperiled; N= non-breeding population; B= breeding population; ?= inexact or uncertain; [4]Information sources include: OBBA = Ontario Breeding Bird Atlas; NHIC = Natural Heritage Information Centre; OBA = Lepidoptera by Municipality; OHA = Ontario Reptiles and Amphibians Atlas; MECP = MECP SAR in Area; --- denotes no information.

Based on background review of the habitat communities available and species with the potential to occur within the vicinity of the Study Area, the following types of Significant Wildlife Habitat may be present within or adjacent to the Study Area:

- Amphibian Breeding Habitat (wetlands and woodlands);
- Bat Maternity Colonies;
- Turtle Nesting Areas; and,
- Habitat for Special Concern and Rare Wildlife Species.

These have all been considered further and are discussed in subsequent sections.

2.3.6 Species at Risk

A number of Species at Risk (SAR) listed as *Endangered* and *Threatened* under the ESA have been identified as potentially occurring within the vicinity of the Study Area (see **Table 3**).

Table 3: Species at Risk Identified as Potentially Occurring within the Vicinity of the Study Area

SCIENTIFIC NAME	COMMON NAME	SARA[1]	ESA[2]	S-RANK[3]	INFORMATION SOURCE[4]
VASCULAR PLANTS					
Juglans cinerea	Butternut	END	END	S3?	TOC
Platanthera leucophaea	Eastern Prairie Fringed Orchid	END	END	S2	MECP
BIRDS					
Riparia riparia	Bank Swallow	THR	THR	S4B	MECP, OBBA
Hirundo rustica	Barn Swallow	THR	THR	S4B	MECP, OBBA
Dolichonyx oryzivorus	Bobolink	THR	THR	S4B	MECP, NHIC, OBBA
Chaetura pelagica	Chimney Swift	THR	THR	S4B, S4N	MECP
Sturnella magna	Eastern Meadowlark	THR	THR	S4B	MECP, OBBA

SCIENTIFIC NAME	COMMON NAME	SARA[1]	ESA[2]	S-RANK[3]	INFORMATION SOURCE[4]
Ixobrychus exilis	Least Bittern	THR	THR	S4B	MECP
Lanius ludovicianus	Loggerhead Shrike	END	END	S2B	MECP
Caprimulgus vociferus	Eastern Whip-poor-will	THR	THR	S4B	MECP
MAMMALS					
Myotis lucifugus	Little Brown Myotis	END	END	S4	MECP
HERPETOZOA					
Emydoidea blandingii	Blanding's Turtle	THR	THR	S3	MECP, OHA

[1]Federal Species at Risk Act, 2002 (END = *Endangered*, THR = *Threatened*); [2]Ontario Endangered Species Act, 2007 (END = *Endangered*, THR = *Threatened*); [3]Ontario SRank; S4= apparently secure; S3 = vulnerable; S2 = imperiled; N= non-breeding population; B= breeding population; ?= inexact or uncertain; [4]Information sources include: OBBA = Ontario Breeding Bird Atlas; NHIC = Natural Heritage Information Centre; OHA = Ontario Reptiles and Amphibians Atlas; TOC = Trees of Canada; MECP = MECP SAR in Area; --- denotes no information.

A review of aerial photos of the property was used to identify candidate SAR habitat based on habitat requirements defined by the MECP. The woodlands, meadows, and the Rideau River within the Study Area may provide habitat for:

- Little Brown Bat;
- Blanding's Turtle;
- Bobolink and Eastern Meadowlark;
- Barn Swallow; and,
- Butternut.

The SAR habitat identified above is consistent with those identified in the MNRF's response to the Information Request (***Appendix A***). This information request and the response received was completed prior to the transition of the administration of the Endangered Species Act, 2007 (ESA) responsibility from the MNRF to the Ministry of the Environment, Conservation and Parks (MECP) in April 2019.

3.0 Methodology

3.1 Fieldwork

Fieldwork conducted for the EIS and TCR took place between September 2014 and August 2015; with additional work completed in June to August 2020 and January 2021 when weather conditions and timing were deemed suitable based on the survey protocols being implemented (**Table 4**). Fieldwork consisted of ELC of vegetation communities, Tree Inventory, HDF Assessment, diurnal breeding bird surveys, crepuscular breeding bird surveys, amphibian breeding surveys, Butternut Health Assessment, and confirmatory ELC. Any incidental wildlife observations made during the surveys were also documented. The following sub-sections outline the survey methodologies used in the EIS and TCR.

Table 4: Dates and Times of Field Surveys

Date	Time of Visit	Personnel	Property Location within Study Area	Weather Conditions	Air Temp (°C)	Purpose of visit
2014						
Sept 23, 2014	08:00	M. Seabert	750 River Road	Clear, light wind, no precipitation	12.0	ELC and Tree Inventory
Sept. 24, 2014	08:00	M. Seabert	708 River Road	Clear, light wind, no precipitation	22.3	ELC and Tree Inventory
Sept. 25, 2014	08:30	M. Seabert	708 River Road	Clear, light wind, no precipitation	24.3	ELC and Tree Inventory
Oct. 3, 2014	08:30	M. Seabert	708 River Road	Clear, light wind, no precipitation	16.4	Set Wildlife Cam
Oct. 7, 2014	08:30	M. Seabert	708 River Road	Clear, light wind, no precipitation	8.5	Collect Wildlife Cam
Oct. 16, 2014	09:00	M. Seabert	708 River Road	Mostly Cloudy, light precipitation	19.9	Tree Inventory
2015						
April 28, 2015	08:00	W. Moore; K. McLean	708 River Road	Sunny, Clear, light wind, no precipitation	12.5	HDF Assessment #1
April 29, 2015	8:00	W. Moore; K. McLean	750 River Road	Clear, light wind, no precipitation	12.5	Headwater Stream Assessment #1
May 7, 2015	20:45	K. Robinson	708 and 750 River Road	Mostly Clear, light wind, no precipitation	18	Amphibian Survey #1, Incidental Wildlife
May 26, 2015	08:28	J. Harris	708 River Road	Cloudy, light wind, no precipitation	22	Breeding Bird Survey #1, Incidental Wildlife

Date	Time of Visit	Personnel	Property Location within Study Area	Weather Conditions	Air Temp (°C)	Purpose of visit
May 27, 2015	05:55	J. Harris	750 River Road	Partially Cloudy, light breeze, no precipitation	21	Breeding Bird Survey #1, Incidental Wildlife
May 27, 2015	22:50	K. Robinson	708 and 750 River Road	Mostly clear, light cloud cover, no precipitation	24	Amphibian Survey #2, Incidental Wildlife
June 17, 2015	06:58	J. Harris	708 River Road	Cloudy, light wind, no precipitation	12	Breeding Bird Survey #2, Incidental Wildlife
June 18, 2015	05:45	J. Harris	750 River Road	Cloudy, light breeze, no precipitation	13	BreWeding Bird Survey #2, Incidental Wildlife
June 24, 2015	21:30	W. Moore; K. Robinson	708 and 750 River Road	Mostly clear, light cloud cover, no precipitation	18.8	Amphibian Survey #3, Whip-poor-will Survey #1, Incidental Wildlife
July 3, 2015	14:00	W. Moore; B. Gottfried	708 and 750 River Road	Sunny, slight wind	16.9	Electrofishing
July 9, 2015	02:00	W. Moore; K. Robinson	708 and 750 River Road	Clear, slight wind, no precipitation	13.5	Whip-poor-will Survey #2
July 28, 2015	13:30	W. Moore; K. Robinson	708 River Road	Sunny, no precipitation	25.3	HDF Assessment #2
Aug. 11, 2015	09:45	M. Wolosinecky	708 and 750 River Road	Cloudy, slight wind, heavy precipitation	19.2	Tree Survey
2020						
June 15, 2020	8:20	C. Edington	708 River Road	Sunny, slight wind, no precipitation	17.0	Site reconnaissance, Breeding Bird Survey #2, Incidental Wildlife
July 2, 2020	7:50	C. Edington	708 River Road	Sunny, light breeze, no precipitation	24.0	Breeding Bird Survey #2, Incidental Wildlife
Aug. 31, 2020	10:20	C. Edington	708 and 720 River Road	Sunny, no precipitation	18.0	Confirmatory ELC, Butternut Health Assessment, Incidental Wildlife

Date	Time of Visit	Personnel	Property Location within Study Area	Weather Conditions	Air Temp (°C)	Purpose of visit
2021						
Jan. 15, 2021	9:30	C. Edington	750 River Road	Overcast, slight wind, no precipitation	0.0	Site reconnaissance, Confirmatory ELC, Incidental Wildlife

3.2 Aquatic Environment

3.2.1 Headwater Assessment

An HDF Assessment was conducted within Study Area based on requirements from the RVCA. This assessment was completed in conjunction with the EIS and has been included in ***Appendix B***. Please note that due to the construction of the SWM facility at 750 River Road, the HDF Assessment completed for that property is no longer applicable and has not been appended to this report.

In addition, a high-level aquatic habitat assessment was conducted in 2020 for the 720 River Road property. Results are outlined in **Section 4.1.1.**

3.3 Terrestrial Environment

3.3.1 Ecological Land Classification

Vegetation was characterized using the ELC System for Southern Ontario, using the second approximation (Lee et al., 1998; Lee, 2008) in order to classify and map ecological communities to the vegetation level. The ecological community boundaries were determined through the review of aerial photography and then further refined by means of on-site vegetation surveys. In addition to the vegetation survey, a basic soil assessment was conducted to identify the soil moisture class within the ecosystem.

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

Results are discussed in **Section 4.2.1**.

3.3.2 Tree Inventory

Within the Study Area trees greater than 10 cm Diameter at Breast Height (DBH) were surveyed following the City of Ottawa's TCR guidelines. Large stands of trees were assessed as a whole based on species composition and basal area as per standard ELC protocol. All Distinctive Trees (50 cm DBH or greater), were surveyed by an approved professional as outlined in the City of Ottawa's guidelines. The survey for

all Distinctive Trees included the identification of species, DBH, condition, and location. Trees measuring less than 50 cm DBH were estimated based on their density, average size, and overall health.

Results are discussed in **Section 4.2.3.1.**

3.3.3 Significant Wildlife Habitat

Although the potential for Significant Wildlife Habitat for Turtle Nesting Areas was identified specific surveys were not completed as these areas will be protected from development following the aquatic setbacks established by the City of Ottawa guidelines (Section 4.7.3, Official Plan (2003) and the Zoning By-law 2008-250 Consolidation - Section 69). The potential for Significant Wildlife Habitat for bats was assessed as part of the terrestrial field surveys and species specific surveys were not conducted. The results are discussed in **Section 4.2.5**.

Surveys specific to breeding birds and bats are outlined below.

3.3.3.1 Breeding Bird Survey

Diurnal breeding bird surveys conducted within the Study Area generally followed the methods outlined in the Ontario Breeding Bird Atlas Guide for Participants (Cadman et al 2007), and were completed in late May and early July of 2015 (two surveys) and again in June and July of 2020 (two surveys). Specifically, breeding bird surveys consisted of ten minute point counts that were used to establish quantitative estimates of bird abundance in habitat types within the Study Area. To supplement the surveys, area searches of the habitat were completed using binoculars to observe species presence and breeding activity. Area searches involved noting all individual bird species and their corresponding breeding evidence while traversing the habitat on foot.

Results are discussed in **Section 4.2.5.1**.

3.3.3.2 Amphibian Breeding Survey

Amphibian monitoring followed the Marsh Monitoring Program protocol (Bird Studies Canada, 2009). In accordance with the protocol, three different surveys were conducted between April 1 and June 30, with at least two weeks between each survey. Surveys began at least one half hour after sunset during evenings with a minimum night temperature of 5^{o}C, 10^{o}C, and 17^{o}C for each of the three respective surveys. Survey points aligned with the wetland feature along the Rideau River at the western boundary of the Study Area.

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

Code 1: Calls not simultaneous, number of individual can be accurately counted;
Code 2: Some calls simultaneous, number of individuals can be reliably estimated; and,

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

In areas were appropriate habitat exists vernal pools were also visually examined for egg masses and amphibian larvae in conjunction with other field surveys. These searches occurred between April and June when amphibians were concentrated around suitable breeding habitat.

Results are discussed in **Section 4.2.5.2**.

3.3.4 Species at Risk

Several SAR have been identified with potential to occur within the general vicinity of the Study Area. Due to the fact that potential habitat for grassland breeding birds is limited to the agricultural portions of the Study Area, the size does not meet the size criteria outlined in the general habitat description or recovery strategy for Bobolink (≥ 5 ha) (MNRF, 2013). As a result, surveys for Bobolink and Eastern Meadowlark were completed in conjunction with diurnal breeding bird surveys outlined above, and not specifically following the survey protocol for grassland breeding birds. In addition, due to the low likelihood of impacts to bats (no mature woodlands, only sparsely treed areas), surveys specific to bats were not conducted, and mitigation will be implemented to avoid bats and other SAR through the construction phase.

Surveys for Eastern Whip-poor-will were conducted at the request of the City of Ottawa. Due to the known presence of Butternut trees within the Study Area from field surveys in 2015, a Butternut Health Assessment was undertaken in 2020 to search for and assess the health of any Butternut trees that may occur within the Study Area. These surveys are outlined below.

3.3.4.1 Crepuscular Bird Surveys

Crepuscular bird breeding surveys were undertaken over two site visits in June and early July during periods with at least 50% lunar illumination and low cloud cover. These surveys followed the Nightjar Monitoring Protocol provided by the MNRF (2011) and generally consisted of point counts where suitable habitat for target species occur and were accessible.

Results are discussed in **Section 4.2.6.1**.

3.3.4.2 Butternut Health Assessment

A search for Butternut within the Study Area and Butternut Health Assessments (BHAs) were conducted on August 31, 2020 during the Butternut leaf-on season by a certified Butternut Health Assessor (BHA # 730) in accordance with guidelines outlined in the Butternut Health Assessment Guidelines - Assessment of the Butternut Tree Health for the Purposes of the Endangered Species Act, 2007 (MNRF, 2014).

Results are discussed in **Section 4.2.6.5**.

3.3.5 Incidental Wildlife

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

Results are discussed in **Section 4.2.7**.

4.0 Results

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

4.1 Aquatic Environment

4.1.1 Headwater Assessment

Four headwater drainage features were identified within the the Study Area during the HDF Assessments conducted in 2015 (see ***Appendix B***). An additional ephermeral feature was identified in 2020 during the watercourse survey in the 720 River Road parcel. Drainage features within the Study Area were observed to consist of ditches and swales associated with the low points of the agricultural fields.

Drainage within the Study Area travels north and west towards the Rideau River. Watercourses within the Study Area are believed to convey surface water flow only during freshet and heavy precipitation events.

Full results from the HDF Assessment are outlined in ***Appendix B***. The two tributaries within 708 River Road were assessed to have contributing functions with a management recommendation of "No Management Required". Based on the similar nature of the tributaries observed within the 708 and 720 River Road within the Study Area, it is proposed that these features can be removed with no specific mitigation or compensation required. Due to the function of the feature located at 750 River Road, surface water drainage, and general amphibian breeding habitat, a management recommendation of "Mitigation" was assigned; however, since that time the drainage at 750 River Road has been altered to accommodate the SWM pond and therefore, mitigation is no longer required.

Impacts to surface water within the Study Area is discussed in **Section 6.1**.

4.1.2 Fish Habitat

The Study Area was evaluated for potential fish habitat during the HDF Assessments conducted in 2015. The assessment determined that no fish habitat is present within the Study Area. This is due to the ephemeral nature of the features which also lack upstream habitat and connectivity to the Rideau River (steep slopes). The fourth tributary assessed in 2020 was similar in form and function to the three original tributaries.

4.2 Terrestrial Environment

4.2.1 Ecological Land Classification

A total of 13 vegetation communities were observed within the Study Area during the ELC survey, nine of which are considered natural vegetation communities. The major land use within the Study Area is agriculture with small areas of woodland and wetland concentrated along the banks of the Rideau River. The location, type, and boundaries of these communities are delineated in **Figure 3**. All vegetation communities surveyed within the Study Area are considered common in Ontario. **Table 5** outlines the communities documented during ELC surveys and summarizes the dominant vegetation cover. Reference photos for each of the plant communities observed can be found in ***Appendix C***. A list of plant species observed during the field studies is included in ***Appendix D***.

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Phase 12
Proposed Residential Development

Figure 3:
Survey Locations and Site Investigation

Study Area
Road
Watercourse
Ephemeral Headwater Stream
Prior Developed Area for Stormwater Management as per Agreement with City of Ottawa

Survey Location Points

Wildlife Camera (2014)
Crepuscular Bird Survey Point (2015)
Amphibian Breeding Survey Point (2015)
Breeding Bird Survey Point (2015)
Breeding Birds Survey Point (2020)

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MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, CITY OF OTTAWA
[1] COPYRIGHT © RIDEAU VALLEY CONSERVATION AUTHORITY

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 18N

N W E S

0 50 100 200
Metres

PROJECT: 14-9919 STATUS: DRAFT DATE: 2021-01-27

FILE LOCATION: \\30dillon\cad\CAD\2014\149919\MXD\EIS\January2021\Fig3_SiteInvestigation.mxd

Table 5: Ecological Land Classification

ELC CODE	CLASSIFICATION	SOILS	AREA (HA)	VEGETATION	COMMENTS	APPENDIX C, PHOTO #
OAGM2	Perennial Cover Crops	Fine Sand (A Horizon); Loam (B Horizon)	8.07	Grass species (*Grass sp*) is the dominant species with Grape sp (*Vitis sp*), Burdock sp (*Arctium sp*), Goldenrod sp (*Solidago sp*), Swamp Aster (*Symphyotrichum puniceum var. puniceum*), Common Yarrow (*Achillea millefolium*), Vetch species (*Vicia sp*), Canada Thistle (*Cirsium arvense*), and Butter-and-eggs (*Linaria vulgaris*) associates. Manitoba Maple (*Acer negundo*) and Black Walnut (*Juglans nigra*) were the tree species observed.	Polygon: 1	1
FODM4	Fresh-Moist Upland Deciduous Forest	Fine Sand	0.35	Silver Maple (*Acer saccharinum*) was the dominant tree species with Manitoba Maple (*Acer negundo*), Red Maple (*Acer rubrum*), Green Ash (*Fraxinus pennsylvanica*), and Black Walnut (*Juglans nigra*) associates. Shrub cover consisted of Common Buckthorn (*Rhamnus cathartica*) and Staghorn Sumac (*Rhus hirta*). Ground cover consisted of Virginia Creeper (*Parthenocissus quinquefolia*), Grape species (*Vitis sp*), Nettle species (*Urtica sp*), Moss species (*Moss sp*), Grass species (*Grass sp*), Clover species (*Trifolium sp*), Reed Canary Grass (*Phalaris arundinacea*), Goldenrod species (*Solidago sp*), Burdock species (*Arctium sp*), Swamp Aster (*Symphyotrichum puniceum var. puniceum*), and Currant species (*Ribes sp*).	Polygon: 2	2
FOCM2-2	Dry-Fresh White Cedar Coniferous Forest	Humic Soil (A Horizon); Sandy Loam (B Horizon)	0.66	Eastern White Cedar (*Thuja occidentalis*) was the dominant species observed with Scotch Pine (*Pinus sylvestris*), Green Ash (*Fraxinus pennsylvanica*), Balsam Poplar (*Populus balsamifera*), Paper Birch (*Betula papyrifera*), and Crack Willow (*Salix fragilis*) associates. Shrub cover consisted of Common Buckthorn (*Rhamnus cathartica*). Ground cover consisted of Aster species (*Symphyotrichum sp*), Creeping Jennie (*Lysimachia nummularia*), Grape species (*Vitis sp*), Canada Wild-ginger (*Asarum canadense*), Sensitive Fern (*Onoclea sensibilis*), Virginia Creeper (*Parthenocissus quinquefolia*), Swamp Aster (*Symphyotrichum puniceum var. puniceum*), Common Yarrow (*Achillea millefolium*), Wild Carrot (*Daucus carota*) and Goldenrod species (*Solidago sp*).	Polygon: 3	3
MEF (Disturbed)	Disturbed Forb Meadow	N/A	1.72	This area is dominated by forbs and was observed to be disturbed based on soil piles and uneven rutting that formed the community's landscape.	Polygon: 4	4
MEF	Forb Meadow	N/A	0.40	Ground cover was dominated by forbs with rare to occasional occurrences of graminoid species. Some mature trees occurred in rare abundance in the northern portion of property at 750 River Road such as Silver Maple (*Acer saccharinum*), Sugar Maple (*Acer saccharum*) and Manitoba Maple (*Acer negundo*) and Green Ash (*Fraxinus pennsylvanica*).	Polygon: 5	5, 6
MEMM3	Dry-Fresh Mixed Meadow	Silty Sand (A Horizon); Sandy Loam (B Horizon)	1.22	Ground cover was dominated by Grass species (*Grass sp*) and Goldenrod species (*Solidago sp*) with Swamp Aster (*Symphyotrichum puniceum var. puniceum*), Annual Ragweed (*Ambrosia artemisiifolia*), Canada Thistle (*Cirsium arvense*), Wild Carrot (*Daucus carota*), Milkweed species (*Asclepias sp*), Aster species (*Symphyotrichum sp*), Grape species (*Vitis sp*), Reed Canary Grass (*Phalaris arundinacea*), Burreed species (*Sparganium sp*), Common Yarrow (*Achillea millefolium*), and Narrow-leaved Cattail (*Typha angustifolia*) associates. Tree species observed were Manitoba Maple (*Acer negundo*), Scotch Pine (*Pinus sylvestris*), Willow species (*Salix sp*), and Green Ash (*Fraxinus pennsylvanica*). Shrub cover consisted of Ground Juniper (*Juniperus communis*).	Polygon: 6	7
WODM4	Dry-Fresh Deciduous Woodland (WODM4)	Fine Sand	0.91	Manitoba Maple (*Acer negundo*) was the dominant tree species with American Basswood (*Tilia americana*), Silver Maple (*Acer saccharinum*), and Black Walnut (*Juglans nigra*) associates. Shrub cover consisted of Staghorn Sumac (*Rhus hirta*), Honeysuckle species (*Lonicera sp*), and Common Buckthorn (*Rhamnus cathartica*). Ground cover consisted primarily of Reed Canary Grass (*Phalaris arundinacea*) and Grass species (*Grass sp*) with Burdock species (*Arctium sp*), Moss species (*Moss sp*), Grape species (*Vitis sp*), Nettle	Polygon: 7	8

ELC CODE	CLASSIFICATION	SOILS	AREA (HA)	VEGETATION	COMMENTS	APPENDIX C, PHOTO #
				species (*Urtica sp*), Creeping Jennie (*Lysimachia nummularia*), Aster species (*Symphyotrichum sp*), and Common Dandelion (*Taraxacum officinale*).		
FODM7	Fresh-Moist Lowland Deciduous Forest	Fine Sand	1.65	Manitoba Maple (*Acer negundo*), Green Ash (*Fraxinus pennsylvanica*), and American Elm (*Ulmus americana*) were the dominant tree species with Crack Willow (*Salix fragilis*), Butternut (*Juglans cinerea*), American Basswood (*Tilia americana*), Bur Oak (*Quercus macrocarpa*), and Northern Red Oak (*Quercus rubra*) associates. Shrub cover consisted of Common Buckthorn (*Rhamnus cathartica*). Ground cover was dominated by Aster species (*Symphyotrichum sp*), Moss species (*Moss sp*), Canada Wild-ginger (*Asarum canadense*), Virginia Creeper, and Sedge species (*Carex sp*) with Grape species (*Vitis sp*), Grass species (*Grass sp*), Currant species (*Ribes sp*), Burdock species (*Arctium sp*), Nettle speicies (*Urtica sp*), Goldenrod species (*Solidago sp*), Eastern Marsh Fern (*Thelypteris palustris*), and Horsetail species (*Equisetum sp*) associates.	Polygon: 8	9
FODM7-7	Fresh - Moist Manitoba Maple Lowland Deciduous Forest	Loamy fine Sand	0.37	Manitoba Maple (*Acer negundo*) was the dominant tree species with Sugar Maple (*Acer saccharum*), Silver Maple (*Acer saccharinum*), Bur Oak (*Quercus macrocarpa*), White Spruce (*Picea glauca*) and Norway Spruce (*Picea abies*) associates. Shrub cover consists of Staghorn Sumac (*Rhus hirta*). Ground cover was primarily Moss species (*Moss sp*) and Canada Wild-ginger (*Asarum canadense*) with Currant species (*Ribes sp*), Nettle species (*Urtica sp*), Burdock species (*Arctium sp*), Goldenrod species (*Solidago sp*), and Wild Red Raspberry (*Rubus sachalinensis var. sachalinensis*).	Polygon: 9	10, 11
MASM1-1	Cattail Mineral Shallow Marsh	Humic Soils (A Horizon); Silty Clay (B Horizon)	0.97	Narrow-leaved Cattail (*Typha angustifolia*) was the dominant ground cover species with Burreed species (*Sparganium sp*), Grass species (*Grass sp*), Sensitive Fern (*Onoclea sensibilis*), and Broad-leaved Arrowhead (*Sagittaria latifolia*) associates. Crack Willow (*Salix fragilis*) and Northern Red Maple (*Quercus rubra*) were the tree species observed.	Polygon: 10	12
TAGM5	Fencerow	N/A	0.48	Manitoba Maple (*Acer negundo*) was the dominant tree species observed with Green Ash (*Fraxinus pennsylvanica*), Bur Oak (*Quercus macrocarpa*), and Black Walnut (*Juglans nigra*) associates. Ground cover consisted of Virginia Creeper (*Parthenocissus quinquefolia*), Grass species (*Grass sp*), and Moss species (*Moss sp*).	Polygon: 11	13
CVR_3	Single Family Residential	Sand	2.08	For the communities observed within 708 and 720 River Road the following species were observed: Green Ash (*Fraxinus pennsylvanica*), Black Walnut (*Juglans nigra*), Crack Willow (*Salix fragilis*) and Manitoba Maple (*Acer negundo*) were the tree species observed. Shrub cover consisted of Common Buckthorn (*Rhamnus cathartica*). Ground cover consisted of Virginia Creeper (*Parthenocissus quinquefolia*), Grape species (*Vitis sp*), Moss species (*Moss sp*), Grass species (*Grass sp*), Horsetail species (*Equisetum sp*), and Goldenrod species (*Solidago sp*). For the communities observed within 750 River Road the following species were observed: Grass species (*Grass sp*) was the dominant species present with Goldenrod species (*Solidago sp*), Swamp Aster (*Symphyotrichum puniceum var. puniceum*), Nettle species (*Urtica sp*), Canada Thistle (*Cirsium arvense*), Milkweed species (*Asclepias sp*), and Vetch species (*Vicia sp*) associates. Trembling Aspen (*Populus tremuloides*) was the dominant tree species with Manitoba Maple (*Acer negundo*) and Green Ash (*Fraxinus pennsylvanica*) associates.	Polygon: 12	14
OA	Open Water	N/A	0.31	Occasional to rare Narrow-leaved Cattail (*Typha angustifolia*) and Burreed species (*Sparganium sp*) were observed within and along the shoreline with occasional Reed Canary Grass (*Phalaris arundinacea*) and Grass species (*Grass sp*).	Polygon: 13	15

4.2.2 Wetlands

A few small pockets of Narrow-leaved Cattail marsh were identified along the banks of the Rideau River within the Study Area during site investigations; however, due to their size and lack of adjacent/ connected wetlands they would not likely warrant a PSW designation.

Potential impacts to wetlands are discussed in **Section 6.2.1**.

4.2.3 Woodlands

In accordance with City of Ottawa's Official Plan Amendment #179, and the subsequent Draft Significant Woodlands: Guidelines for Identification, Evaluation, and Impact Assessment (City of Ottawa, 2018), Significant Woodlands within the urban area are defined as the following:

i. Any trees area meeting the definition of woodlands in the Forestry Act, R.S.O. 1990, c. F. 26 or forest in the ELC for Southern Ontario; and,
ii. In the urban area, any area 0.8 hectares in size or larger, supporting woodland 60 years of age and older at the time of evaluation.

The woodlands within the Study Area are small in size and do not contain any interior habitat. In addition, based on field observations and a review of aerial photography (**Figure 2**) most trees within the woodlands are relatively young and would not constitute mature stands of trees 60 years of age or older.

Potential impacts to woodlands are discussed in **Section 6.2.1**.

4.2.3.1 Trees

With the exception to Butternut which is listed as *Endangered* under the ESA, 2007, all trees identified during the inventory are considered common to the Ottawa area no additional SAR trees were observed. **Table 6** below outlines the tree species that were identified within the Study Area. Of notable mention were two distinctly large trees located at 750 River Road. Both trees were in good to excellent condition, and may be considered for retention. The first is a Silver Maple tree measuring 125 cm DBH, located in the meadow area within the northeast portion of 750 River Road. The second, is a Norway Spruce measuring 75 cm DBH and is an exceptional specimen that occurs central and along the northern border of 750 River Road portion of the Study Area. **Figure 4** illustrates the location of trees within the Study Area.

Table 6: Tree Species within the Study Area

SCIENTIFIC NAME	COMMON NAME	NOTES
Acer negundo	Manitoba Maple	Found throughout property
Acer rubrum	Red Maple	Found within forest and marsh
Acer saccharinum	Silver Maple	Found within woodland and meadow area
Acer x freemanii	Freeman's Maple	Found within woodland
Betula papyrifera	Paper Birch	Found within forest
Fraxinus pennsylvanica	Green Ash	Found throughout property
Juglans cinerea	Butternut	Found within forest
Juglans nigra	Black Walnut	Found throughout property
Picea abies	Norway Spruce	Found within forest
Picea glauca	White Spruce	Found within forest
Pinus sylvestris	Scotch Pine	Found within forest and meadow
Populus balsamifera	Balsam Poplar	Found within forest
Quercus macrocarpa	Bur Oak	Found within forest and fencerow
Quercus rubra	Northern Red Oak	Found within forest
Salix fragilis	Crack Willow	Found throughout property
Salix sp	Willow Species	Found within meadow
Tilia americana	American Basswood	Found within forest and woodland
Ulmus americana	American Elm	Found within forest

Potential impacts to trees are discussed in **Section 6.2.2**.

URBANDALE CORPORATION

Phase 12
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Figure 4:
Tree Inventory

Study Area
Road
Watercourse
Ephemeral Headwater Stream
Waterbody
Prior Developed Area for Stormwater Management as per Agreement with City of Ottawa

Butternut
Live Butternut
Dead Butternut

Distinctive Trees (DBH >50cm)
American Basswood
Black Walnut
Manitoba Maple
Crack Willow
Freeman's Maple
Norway Spruce
Silver Maple

Treed Areas
Forest (approx. 3.03 ha)
Woodland (approx. 0.91 ha)
Fencerow (approx. 0.48 ha)

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MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 18N

0 50 100 200
Metres

PROJECT: 14-9919 STATUS: DRAFT DATE: 2021-01-27

FILE LOCATION: \\30dillon\cad\CAD\2014\149919\MXD\EIS\January2021\Fig4_Trees.mxd

4.2.4 Significant Valleylands

Site visits identified valleylands along the banks of the Rideau River. According to the City of Ottawa's OP, Significant Valleylands are defined as valleylands with slopes greater than 15% and a length of more than 50 m.

According to the Paterson Group Inc. (Paterson) (2014), the eastern bank of the Rideau River along this section has slopes greater than 15%. Therefore, this area is considered to be a Significant Valleyland. The Top of Slope reported by Paterson (2014) was used to identify the eastern extent of the Significant Valleyland and is shown on **Figure 5**.

Potential impacts to Significant Valleylands are discussed in **Section 6.2.3**.

4.2.5 Significant Wildlife Habitat

As species specific surveys were not conducted for turtles within the Study Area, areas within the Significant Valleylands have been considered Candidate Significant Wildlife Habitat for turtle nesting based on the steep slopes and potential for open areas conductive to turtle nesting (**Figure 5**). Due to the limited size of woodlands and lack of snags ideal for bat roosting habitat (snag density less than 10/ ha based on the size and health of the wooded areas), Significant Wildlife Habitat for Bat Maternity Colonies was not identified within the Study Area.

4.2.5.1 Breeding Bird Surveys

Breeding bird surveys were conducted by point count in proximity to woodland and grassland habitat within the Study Area. **Table 7** lists species observed during breeding bird surveys in 2015. Confirmatory surveys were conducted in 2020 with an extra station added to capture the additional lands. With the exception of Bobolink and Barn Swallow which are both listed as *Threatened* under the ESA, all species observed are considered common within the Ottawa area. SAR are discussed further in **Section 4.2.6**.

Table 7: 2015 and 2020 Breeding Bird Survey Results

SCIENTIFIC NAME	COMMON NAME	SARA[1]	ESA[2]	SRank[3]
2015				
Agelaius phoeniceus	Red-winged Blackbird	---	---	S4
Bombycilla cedrorum	Cedar Waxwing	---	---	S5B
Branta canadensis	Canada Goose	---	---	S5B
Carduelis tristis	American Goldfinch	---	---	S5B
Carpodacus mexicanus	House Finch	---	---	SNA
Colaptes auratus	Northern Flicker	---	---	S4B
Cyanocitta cristata	Blue Jay	---	---	S4B

SCIENTIFIC NAME	COMMON NAME	SARA[1]	ESA[2]	SRank[3]
Dolichonyx oryzivorus	Bobolink	THR	THR	S4B
Dumetella carolinensis	Gray Catbird	---	---	S5B
Geothlypis trichas	Common Yellowthroat	---	---	S5B
Hirundo rustica	Barn Swallow	THR	THR	S4B
Icterus galbula	Baltimore Oriole	---	---	S4B
Melospiza melodia	Song Sparrow	---	---	S5B
Passerculus sandwichensis	Savannah Sparrow	---	---	S4B
Picoides villosus	Hairy Woodpecker	---	---	S5
Poecile atricapillus	Black-capped Chickadee	---	---	S4B
Quiscalus quiscula	Common Grackle	---	---	S5B
Sayornis phoebe	Eastern Phoebe	---	---	S5B
Setophaga pensylvanica	Chestnut-sided Warbler	---	---	S5B
Setophaga petechia	Yellow Warbler	---	---	S5B
Spizella passerina	Chipping Sparrow	---	---	S5B
Sturnus vulgaris	European Starling	---	---	SNA
Turdus migratorius	American Robin	---	---	S5B
Tyrannus tyrannus	Eastern Kingbird	---	---	S4B
Vireo gilvus	Warbling Vireo	---	---	S5B
2020				
Agelaius phoeniceus	Red-winged Blackbird	---	---	S4
Bombycilla cedrorum	Cedar Waxwing	---	---	S5B
Cardinalis cardinalis	Northern Cardinal	---	---	S5
Carduelis tristis	American Goldfinch	---	---	S5B
Charadrius vociferus	Killdeer	---	---	S5B,S5N
Columba livia	Rock Pigeon	---	---	SNA
Dolichonyx oryzivorus	Bobolink	THR	THR	S4B
Geothlypis trichas	Common Yellowthroat	---	---	S5B
Hirundo rustica	Barn Swallow	THR	THR	S4B
Icterus galbula	Baltimore Oriole	---	---	S4B
Larus delawarensis	Ring-billed Gull	---	---	S5B,S4N
Melospiza melodia	Song Sparrow	---	---	S5B
Poecile atricapillus	Black-capped Chickadee	---	---	S5

SCIENTIFIC NAME	COMMON NAME	SARA[1]	ESA[2]	SRank[3]
Sayornis phoebe	Eastern Phoebe	---	---	S5B
Setophaga petechia	Yellow Warbler	---	---	S5B
Sturnus vulgaris	European Starling	---	---	SNA
Turdus migratorius	American Robin	---	---	S5B
Tyrannus tyrannus	Eastern Kingbird	---	---	S4B
Vireo gilvus	Warbling Vireo	---	---	S5B
Zenaida macroura	Mourning Dove	---	---	S5

[1]Federal Species at Risk Act, 2002 (THR = *Threatened*); [2]Ontario Endangered Species Act, 2007 (THR = *Threatened*); [3]Ontario SRank; S5= secure; S4= apparently secure; SNA =Not Applicable – a conservation status rank is not applicable because the species is not a suitable target for conservation activities; N= non-breeding population; B= breeding population.

4.2.5.2 Amphibian Breeding Habitat Survey

Potential amphibian breeding habitat was identified within woodland and wetland eco-sites along the Rideau River and one of the interior woodlands in the southern portion of the Study Area. **Table 8** lists the three amphibian species observed within 100 m of point counts during amphibian breeding surveys in 2015.

Table 8: Amphibian Species Observed

SCIENTIFIC NAME	COMMON NAME	NUMBER OF OBSERVATIONS	SARA	ESA 2007	S-RANK
708 River Road					
Anaxyrus americanus	American Toad	Call Code 3	---	---	S5
Hyla versicolor	Gray Treefrog	Call Code 3	---	---	S5
Pseudacris crucifer	Spring Peeper	Call Code 3	---	---	S5
750 River Road					
Anaxyrus americanus	American Toad	Call Code 3	---	---	S5
Hyla versicolor	Gray Treefrog	Call Code 3	---	---	S5

Each of the three species observed at 708 River Road are common within the Ottawa area. In accordance with the Ecoregion 6E Criterion Schedule (MNRF 2015), this portion of the Study Area was considered under potential amphibian breeding wetland habitat, as the areas surveyed were associated with open water (Rideau River). The two species observed at 750 River Road are also common within the Ottawa area. In accordance with the Ecoregion 6E Criterion Schedule (MNRF 2015), this portion of the Study Area was considered under amphibian breeding woodland habitat, as the areas surveyed consist of vernal pools within woodland polygons or within 120 of woodland polygons.

Breeding habitats must contain at least two of the listed frog species with at least 20 individuals (adults or egg masses) of each species; or at least two of the listed frog species with Call Code 3 in order for the habitat to be significant. Gray Treefrog is listed under amphibian breeding woodland habitat, but American Toad is not. Therefore, the portion of the Study Area at 750 River Road was not considered significant amphibian breeding habitat. However, both American Toad and Gray Treefrog are considered under amphibian breeding wetland habitat, and were each recorded with a Call Code of 3. As a result, the areas described at 708 River Road are considered Significant Wildlife Habitat for Amphibian Breeding (wetlands) (**Figure 5**).

Potential impacts to amphibians and amphibian breeding habitat are detailed in **Section 6.2.4**.

MION COURT
CORTLEIGH DRIVE
CHESTERMERE CRESCENT
WILLOW CREEK CIRCLE
WOODROFFE AVENUE
LODGE ROAD
PRINCE OF WALES DRIVE
STRANDHERD DRIVE
SHORELINE DRIVE
WILD SHORE CRESCENT
EARL ARMSTRONG ROAD
BALLINVILLE CIRCLE
MATTINGLY WAY
TENNANT WAY
VISION STREET
RIVER ROAD
DAVE SMITH CRESCENT
GOLDEN SPRINGS DRIVE
NIGHTFALL STREET
ARDMORE STREET
BRIAN GOODAVENUE
ROSINA WAY
BORBRIDGE AVENUE
MARETH WAY
GUERNSEY PLACE
CAPRICORN CIRCLE
BIG DIPPER STREET
STARGAZER CRESCENT

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Phase 12
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Figure 5:
Significant Natural Heritage Features

Study Area
Road
Top of Slope *
Significant Valleylands *
• Candidate Significant Wildlife Habitat for Turtle Nesting Areas
Significant Wildlife Habitat for Amphibian Breeding Habitat
Prior Developed Area for Stormwater Management as per Agreement with City of Ottawa

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MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 18N

N W E S

0 50 100 200
Metres

* Approximated from Supplemental Geotechnical Investigation Report, Patterson (2014)

PROJECT: 14-9918 STATUS: DRAFT DATE: 2021-01-27

FILE LOCATION: \\30dillon\cad\CAD\2014\149919\MXD\EIS\January2021\Fig5_SigNHF.mxd

4.2.6 Species at Risk

4.2.6.1 Eastern Whip-poor-will

No Eastern Whip-poor-wills were observed calling during the evening field surveys. According to the *General Habitat Description for the Eastern Whip-poor-will (Caprimulgus vociferous)* (MNRF 2013), Whip-poor-will habitat consists of a mix of open and half treed areas within large woodlands. Defended Whip-poor-will habitats are approximately 9 ha in size. Woodland habitat of this size is not present within the Study Area as the total amount of woodland within the Study Area is 6.4 ha and the polygons are non-contiguous and contain no interior habitat.

4.2.6.2 Bobolink

Bobolink were observed during breeding bird surveys conducted in 2015 and 2020, indicating potential Bobolink nesting; however based on habitat requirements outlined in the Bobolink General Habitat Description (MECP, 2019) and the Bobolink & Eastern Meadowlark in Ontario, Ontario Recovery Strategy Series (MNRF, 2013) neither fields meet the minimum area requirements to support breeding habitat for the species (i.e. 5 ha).

4.2.6.3 Barn Swallow

One Barn Swallow was observed as a flyover in 2015 while numerous Barn Swallow were observed foraging in 2020 during breeding bird surveys. A desktop review and field investigation of the Study Area did not identify any suitable structures for nesting (e.g. barns/farm buildings) as the area mainly consists natural communities and an occupied residential property. Due to the lack of suitable structures for Barn Swallow nesting, no Barn Swallow breeding habitat is present within the Study Area.

4.2.6.4 Blanding's Turtle

Wildlife trail cameras set within Open Aquatic (OA) bay area along the Rideau River captured a Blanding's Turtle in early October of 2014 (see ***Appendix C***). As a result the wetlands and shoreline along the Rideau River would be considered Category 2 and the remaining portions of the Study Area would be considered Category 3 habitat for Blanding's Turtle.

4.2.6.5 Butternut

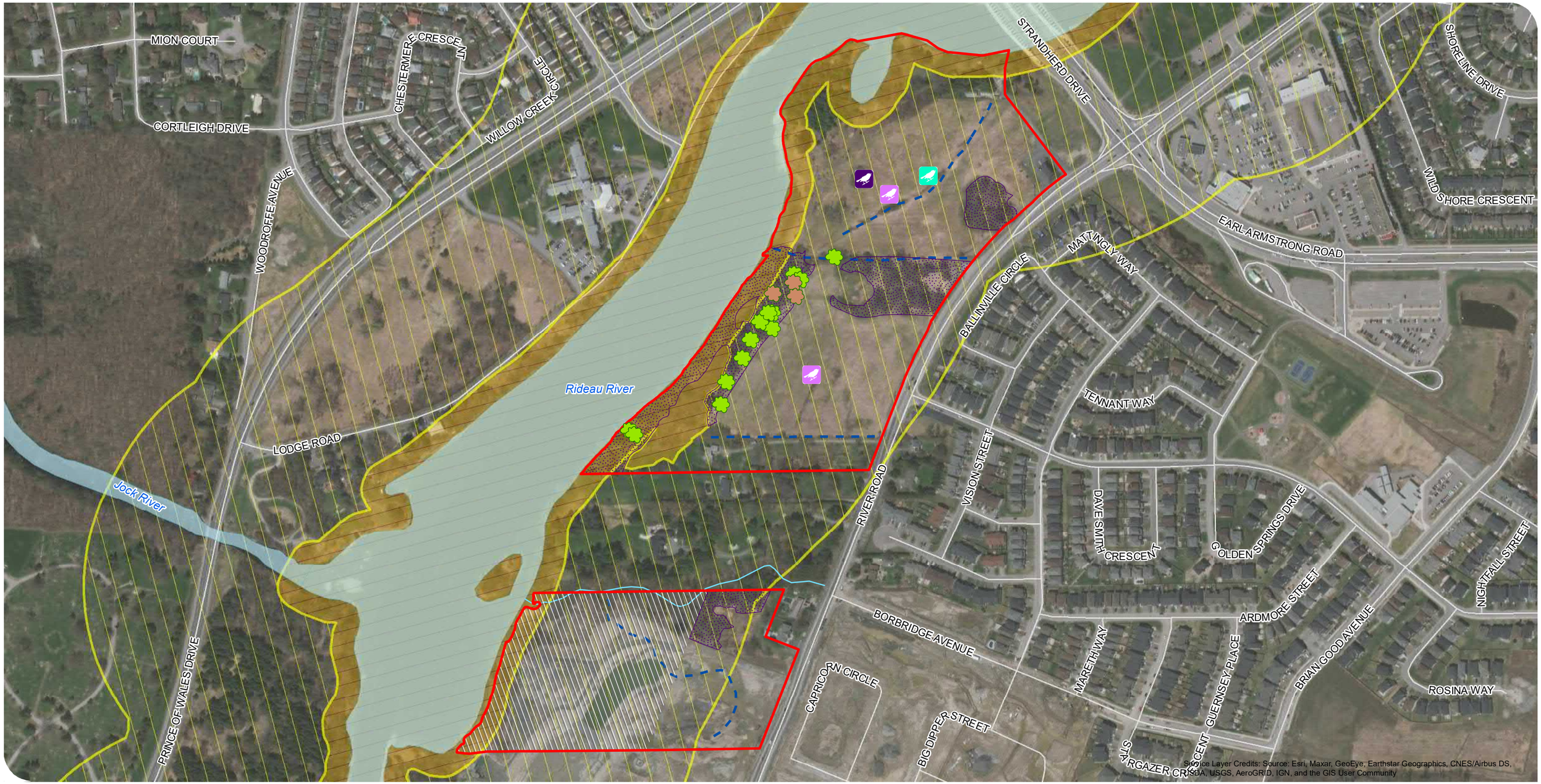
Thirteen (13) Butternut trees were identified during the BHA on August 31, 2020 in association with the Fresh-Dry Upland Deciduous Forest (FODM4). Of the live 13 Butternut observed, five were assessed as retainable (Category 2 or 3) and eight were assessed as non-retainable (Category 1). Of the five Butternut assessed as retainable, one was assessed as archivable (Category 3) and the remaining four were assessed as retainable (Category 2).

Next steps will involve submitting A Notice of Butternut Impact Form to the MECP Registry for confirmation prior to any activities that may impact protected Butternut (i.e. Category 2 and Category 3).

4.2.6.6 SAR Bats

No SAR bats were observed during field surveys conducted from 2015 to 2021; and although the woodlands would not likely meet the criteria to be considered Significant Wildlife Habitat for bats, there is the potential for SAR bats to be utilizing specific trees for maternal roosting.

Locations of all observed SAR and SAR habitat within the Study Area are illustrated on **Figure 6**. Potential impacts to SAR and SAR habitat are detailed in **Section 6.2.5**.



URBANDALE CORPORATION

Phase 12
Proposed Residential Development

Figure 6:
Species at Risk

Study Area
Road
Watercourse
Ephemeral Headwater Stream
Waterbody
Prior Developed Area for Stormwater Management as per Agreement with City of Ottawa

Species at Risk Constraints

Barn Swallow Observation (2020)
Bobolink Observation (2020)
Bobolink Observation (2015)
Live Butternut (2020)
Dead Butternut (2020)
Potential SAR Bat Habitat
Blandings Turtle - Category 2 Habitat
Blandings Turtle - Category 3 Habitat

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 18N

N W E S

0 50 100 200
Metres

PROJECT: 14-9919 STATUS: DRAFT DATE: 2021-01-27

FILE LOCATION: \\30dillon\cad\CAD\2014\149919\MXD\EIS\January2021\Fig6_SAR.mxd

4.2.7 Incidental Wildlife

Incidental wildlife species observed in the property are listed in **Table 9** below. With the exception of Blanding's Turtle which is a SAR, the incidental; species observed are common in the Ottawa area and have an S-Rank of S4 or S5.

Table 9: Incidental Wildlife Species Observed within the Study Area

Scientific Name	Common Name	Resident/Visitor	Evidence
2014 – 2015			
BIRDS			
Agelaius phoeniceus	Red-winged Blackbird	Visitor	Visual observation
Anas platyrhynchos	Mallard	Visitor	Visual observation/Wildlife Camera
Ardea herodias	Great Blue Heron	Visitor	Visual observation
Branta canadensis	Canada Goose	Visitor	Visual observation
Corvus brachyrhynchos	American Crow	Resident	Visual Observation
Cyanocitta cristata	Blue Jay	Resident	Visual observation
Poecile atricapillus	Black-capped Chickadee	Resident	Visual observation
Sitta canadensis	Red-breasted Nuthatch	Resident	Visual observation
Turdus migratorius	American Robin	Resident	Visual observation
MAMMALS			
Castor canadensis	Beaver	Resident	Wildlife Camera
Sciurus carolinensis	Eastern Gray Squirrel	Resident	Visual observation
Tamiasciurus hudsonicus	Red Squirrel	Resident	Visual observation
HERPTILES			
Emydoidea blandingii	Blanding's Turtle	Resident	Wildlife Camera
Lithobates pipiens	Northern Leopard Frog	Resident	Heard
2020			
BIRDS			
Cyanocitta cristata	Blue Jay	Resident	Visual observation
Toxostoma rufum	Brown Thrasher	Resident	Visual observation
MAMMALS			
Odocoileus virginianus	White-tailed Deer	Visitor	Visual observation
Tamiasciurus hudsonicus	Red Squirrel	Resident	Visual observation
Tamias striatus	Eastern Chipmunk	Resident	Visual observation
LEPIDOPTERA			
Danaus plexippus	Monarch	Resident	Visual observation

Scientific Name	Common Name	Resident/Visitor	Evidence
2021			
BIRDS			
Anas platyrhynchos	Mallard	Resident	Visual observation
Buteo jamaicensis	Red-tailed Hawk	Visitor	Visual observation
Carduelis tristis	American Goldfinch	Resident	Visual observation
Cyanocitta cristata	Blue Jay	Resident	Visual observation
Passer domesticus	House Sparrow	Resident	Visual observation

Potential impacts to common wildlife in the area and their habitat are detailed in **Section 6.2.4**.

5.0 Description of the Proposed Project

Figure 7 illustrates the draft concept plan for this community, consisting of mixed use residential.

The development of this property will include the following major project components:

- Surveying and staking out the development;
- Clearing and grading property to accommodate construction;
- Installation of storm water drainage network and related infrastructure;
- Excavation to accommodate underground utilities including water, sewer, gas, and hydro;
- Paving roadways;
- Excavation and construction of houses;
- Landscaping and fencing; and,
- On-going usage and maintenance.

Potential impacts of the development and recommended mitigation measures are described in the sections following. It should be noted that there is a potential recreational trail proposed within the valleylands as required by the City. Because the details of this trail (i.e., extent, location) are currently unknown we haven't addressed impacts or mitigation measures specific to the trail. This will be confirmed though detailed design of the development and in consultation with the City.

URBANDALE CORPORATION

Phase 12
Proposed Residential Development

Figure 7:
Development Footprint and Environmental Impacts

- Study Area
- Road
- Proposed Development Plan
- Consolidated Constraint Boundary
- Approximate Development Area
- Prior Developed Area for Stormwater Management as per Agreement with City of Ottawa

Site Features

- Butternut to be Retained
- Watercourse
- Ephemeral Headwater Stream
- Normal Highwater Mark 30 m Setback *
- Top of Slope *
- Existing Top of Slope 15 m Setback
- Significant Wildlife Habitat for Amphibian Breeding Habitat
- Potential SAR Bat Habitat
- Significant Valleylands *
  - Candidate Significant Wildlife Habitat for Turtle Nesting Areas
- Waterbody
- The 100-year Floodplain Overlay

Impacts

- Butternut to be Removed
- Removed Ephemeral Headwater Stream
- Area of Encroachment (approx. 0.12 ha)
- Removed Treed Habitat (approx. 1.8 ha)

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, CITY OF OTTAWA

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 18N

N W E S

0 50 100 200
Metres

*Approximated from Supplemental Geotechnical Investigation Report, Patterson (2014)

PROJECT: 14-9919 STATUS: DRAFT DATE: 2021-01-27

FILE LOCATION: \\30dillon\cad\CAD\2014\149919\MXD\EIS\January2021\Fig7_Impacts.mxd

6.0 Impact Assessment and Mitigation

The following sections outline general measures that should be considered to mitigate impacts associated with the development of the Study Area (**Figure 7**). This includes both construction related mitigation measures and mitigation measures to address impacts related to impacts associated with the occupation of the development.

6.1 Aquatic Environment

6.1.1 Impacts

Although fish habitat was not identified within the Study Area, impacts to the aquatic resources (surface water drainage) within the Study Area are possible where surface water features are being removed for development purposes. The details of these potential impacts have been identified and evaluated as part of the HDF Assessment (***Appendix B***) and are summarized below. The fourth tributary observed in 2020 was observed to contain similar form and function as the two features at 708 River Road assessed in 2015 as part of the HDF assessment. Therefore, based on the findings of the original HDF, no additional impacts are anticipated as the result of removing the fourth tributary. In addition, drainage has been altered to accommodate the SWM pond at 750 River Road since the time of the original HDF assessment and therefore, mitigation is no longer required.

Due to the general proximity of the development to the Rideau River a Supplemental Geotechnical Investigation was conducted by Paterson in 2014 in order to establish appropriate setbacks in accordance with the City of Ottawa's Zoning By-law 2008-250 Consolidation - Section 69 - Setback from Watercourses as well as Section 4.7.3 - Erosion Prevention and Protection of Surface Water of the City of Ottawa OP. Results from this investigation were used to identify appropriate setbacks.

With the exception of a small portion of encroachment into the consolidated buffer limit (**Figure 7**) the 30 m setback from the high water mark and 15 m from the top of the slope will be applied to the extent possible in accordance with the City of Ottawa's aquatic setbacks (Section 4.7.3, Official Plan (2003) and the Zoning By-law 2008-250 Consolidation - Section 69). As a result, impacts to the Rideau River are not anticipated.

However, there are potential for impacts to surface water features if left unmitigated, which may include, but are not limited to:

- Loss of HDFs with limited functions (minimal flow);
- Reduction in seasonal water flow into the Rideau River and water storage potential within the Study Area; and,
- Reduction in water quality within the Study Area and within the Rideau River.

Mitigation measures have been incorporated into the design of the site to eliminate or avoid potential impacts to the storage capacity of the watershed (i.e., SWM, enhancement of existing water features etc.). These are discussed in **Section 6.1.2**.

6.1.2 Mitigation

Mitigation during construction

- The limit of development shall respect both a 15 m setback from top of slope and a 30 m setback from the high water mark from the Rideau River as required by both the City of Ottawa's Zoning By-law 2008-250 Consolidation - Section 69 and Section 4.7.3 of the City of Ottawa, to the extent possible. In addition, in respect of Section 4.8.1 of the City of Ottawa OP the development shall not occur within designated flood plains. City of Ottawa's aquatic setbacks as described above is show on **Figure 7** as a consolidated setback line showing whichever setback is greatest and the flood plain overlay has been included on **Figure 7** as defined by the Zoning By-law 2008-250 Consolidation - Section 58 - Flood Plain Overlay.
- Heavy duty silt fencing (OPSD 219.130) and/ or other equivalent erosion and sediment control measures should be installed around the perimeter of the work area to clearly demarcate the development area and prevent erosion and sedimentation into adjacent habitats. Erosion and sediment control measures should be monitored regularly to ensure they are functioning properly and if issues are identified should be dealt with promptly;
- Stockpiling of excavated material should not occur outside the delineated work area. If stockpiling is to occur outside of this area, silt fencing should be used to contain any spoil piles to prevent sedimentation into adjacent areas. Further, stockpiling of excavated materials will not occur within 30 m of the Rideau River;
- A spill response plan should be developed and implemented as required;
- It is recommended that dewatering ponds (OPSD219.240) or similar standards should be implemented to avoid sedimentation and erosion in adjacent areas. If dewatering requires more than 50,000 L of water to be pumped per day, appropriate permits must be obtained from the MECP prior to the dewatering; and,
- Develop and implement and stormwater management plan which maintain pre-development surface water flows to adjacent lands (quantity, quality, infiltrations, conveyance patterns, and seasonality of water flow).

A detailed stormwater management and erosion and sedimentation control plan was developed for the Riverside South Community by IBI Group (2020) that includes the lands identified within the Phase 12 Study Area. The plan includes SWM strategies focused on utilizing a dual drainage system with features a combination of both on-site detention (surface ponding) with inlet control devices and direct conveyance with no ponding. It is designed to accommodate both minor and major stormwater runoff. In addition, the report identifies the final erosion and sedimentation control plan will be developed and implemented by the Owner's general contractor, but suggests industry standard measures and includes a potential plan appended to the report. For detailed information on SWM and erosion and sedimentation control plan

for the development of the Study Area please refer to Assessment of Adequacy of Public Services – Riverside South Phase 12 Lands – Riverside South Community Rideau River Area by IBI Group, 2019 (Updated in 2020).

6.2 Terrestrial Environment

6.2.1 Vegetation Communities

The following are the potential impacts and recommended mitigation measures to avoid impacts to adjacent terrestrial vegetation communities associated with the clearing of the forest communities within the Study Area.

6.2.1.1 Impacts

Potential impacts to vegetation communities as a result of development include the following:

- Loss of 1.8 ha of terrestrial communities (forest and woodland) (**Figure 7**);
- Accidental damage or loss of trees as a result of site alteration or construction activities;
- Erosion and sedimentation into adjacent vegetation communities; and,
- Loss of native diversity due to increased presence of non-native invasive species after development.

6.2.1.2 Mitigation

Mitigation during construction

The installation and maintenance of standard erosion and sediment control measures should be implemented to protect the terrestrial environment outside of the development area, including the following:

- Standard duty silt fencing (OPSD 219.110) and/ or other equivalent should be installed around the perimeter of the work area to clearly delineate the development from the adjacent habitat. This will prevent encroachment into natural features and minimize the likelihood of animals entering the construction area. Erosion and sediment control measures should be monitored regularly to ensure they are functioning properly and if issues are identified should be dealt with promptly;
- Stockpiling of excavated material should not occur outside the delineated work area. If stockpiling is to occur outside of this area, silt fencing should be used to contain any spoil piles to prevent sedimentation into adjacent areas;
- It is recommended that dewatering ponds (OPSD219.240) or similar standards should be implemented to avoid sedimentation and erosion in adjacent areas. If dewatering requires more than 50,000 L of water to be pumped per day, appropriate permits must be obtained from the MECP prior to the dewatering; and,
- All construction equipment should enter the site clean and free of debris, and should be visually inspected upon entry for evidence of plant material to prevent the spread of invasive species to the site.

Mitigation after occupation

- Provide new homeowners with lists of locally appropriate native species for use in landscaping, along with information on the negative impacts of non-native species.

6.2.2 Trees

6.2.2.1 Distinctive Trees

A review of the proposed site plan indicates that approximately 19 Distinctive Trees will likely be removed to accommodate the proposed development. In general, trees within the Study Area are healthy specimens.

6.2.2.2 Impacts

The following are impacts associated with the removal of Distinctive Trees;

- Reduction in the number of specimen trees within the area;
- Loss of genetic diversity for healthy mature trees;
- Loss of most productive trees;
- Loss of general wildlife habitat (e.g. song birds, small mammals, etc.); and,
- Accidental damage or loss of trees as a result of site alteration or construction activities.

6.2.2.3 Mitigation

Mitigation during construction

The mitigation measures outlined below should be implemented to minimize the potential negative impacts to mature trees and otherwise retainable trees. Mitigation requirements outlined by the City of Ottawa only apply to Distinctive Trees within the Urban Area and should be applied to all retainable trees where possible. These mitigation measures include the following:

- A tree protection fence should be constructed around all retainable trees. The tree protection fence should be constructed at the Critical Root Zone (CRZ) boundary. This boundary is defined by the City of Ottawa's tree conservation by-law as the DBH (in cm) multiplied by 10.
- Tree protection fence can be constructed around more than one tree provided the CRZ is protected.
- The existing grading around all retainable trees must be maintained. It is not permissible to add fill or otherwise alter the grading within the CRZ.

Tree Protection Fence

- Ensure exhaust fumes from construction equipment is not directed towards the canopy of any trees.
- Do not attach any signs or notices to any tree.

- Do not place any material or equipment within the tree protection zone.

The following measures should apply to all trees that will be cut down:

- It is recommended that an effort be made to incorporate mature trees into the proposed development (i.e., parkland etc.).
- Planted trees should only include species that are consistent with the City of Ottawa's TCR Guidelines.
- All Green Ash trees removed should be treated as infected by the Emerald Ash Borer beetle and appropriately disposed of so not to infect other areas of the City.

6.2.3 Significant Valleylands

A Significant Valleyland is located along the western limit of development. The following are potential impacts and recommended mitigation measures to avoid impacts to the Significant Valleyland within the Study Area.

6.2.3.1 Impacts

Minimal encroachments are proposed within the Significant Valleyland buffers (**Figure 7**). In addition, a recreational trail is proposed within the valley although details are currently unknown, and will be confirmed through consultation with the City at detailed design. Additional negative impacts to the valleyand may include the following if left unmitigated:

- Erosion and sedimentation into the feature;
- Encroachment into feature during construction;
- Loss of native biodiversity due to increased presence of non-native species after development; and,
- Degradation resulting from increased recreational usage, illicit dumping and encroachment by residential landowners into natural areas and setbacks or buffers following development.

6.2.3.2 Mitigation

Mitigation during construction

- The limits of development shall respect a 15 m setback from the Significant Valleyland, the extent as identified by the existing top of slope by Paterson (2014) and illustrated in **Figure 7** to the extent possible;
- Standard duty silt fencing (OPSD 219.110) and/ or other equivalent erosion and sediment controls should be installed around the perimeter of the work area to clearly demarcate the development area and prevent erosion and sedimentation into adjacent habitats. Erosion and sediment control measures should be monitored regularly to ensure they are functioning properly and if issues are identified should be dealt with promptly;
- Stockpiling of excavated material should not occur outside the delineated work area. If stockpiling is to occur outside of this area, silt fencing should be used to contain any spoil piles

to prevent sedimentation into adjacent areas. Further, stockpiling of excavated materials will not occur within 30 m of the Rideau River;
- A spill response plan should be developed and implemented as required; and,
- If dewatering is required, use of silt socks, dewatering ponds, etc. should be implemented to avoid sedimentation and erosion in adjacent areas. If dewatering requires more than 50,000 L of water to be pumped per day, appropriate permits must be obtained from the MECP prior to the dewatering.

Mitigation during occupation

- Provide Owner Awareness Package to all new residents, to encourage responsible stewardship of the natural features.

6.2.4 Significant Wildlife Habitat and General Wildlife

Significant Wildlife Habitat for Amphibian Breeding Habitat Candidate Significant Wildlife Habitat for Turtle Nesting Areas was identified within the Rideau River Valley; however, as these areas are part of the Rideau River Floodplain and valleyland areas, they will be protected from development following aquatic setbacks as per City of Ottawa guidelines (Section 4.7.3, Official Plan (2003) and the Zoning By-law 2008-250 Consolidation - Section 69).

However, some inadvertent impacts on local wildlife may be associated with construction activities for this development, as described below.

6.2.4.1 Impacts

Potential impacts to wildlife as a result of the development include the following:

- Displacement, injury, or death resulting from contact with heavy equipment during clearing and grading activities;
- Disturbance to wildlife as a result of noise associated with construction activities, particularly during breeding periods; and,
- Conflict between wildlife and humans or domestic pets following development, including predation, mortality from vehicles, and poisoning.

6.2.4.2 Mitigation

Mitigation during construction

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

- Avoid vegetation clearing during sensitive times of year for local wildlife (i.e., spring and early summer) Specifically vegetation clearing should be conducted:

  - Outside of the breeding bird active season (active season: April 1 – August 31) to avoid impact to potential Bobolink or Barn Swallow that may by utilizing the area for foraging and/or nesting. Should any clearing be required during the breeding bird season, nest searches conducted by a qualified person must be completed 48 hours prior to clearing activities. If nests are found, work within 10 m of the tree should cease until the nest has fledged. If no nests are present, clearing may occur. This is in accordance with the federal Migratory Birds Convention Act;
  - Outside of the active bat season (active season: May 1 – October 1) to avoid impacts to potential SAR bat that could be utilizing the woodlands for maternity roosting.
- Clear trees outside of the bat active window (May through October) to avoid impacts to roosting bats;
- Pre-stress the area on a regular basis leading up to construction to encourage wildlife to leave the area before construction starts. Other recommendations for pre-stressing are outlined in the *Protocol for Wildlife Protection during Construction* (City of Ottawa , 2015)
- Orange snow fencing should be installed around the perimeter of the work area to clearly demarcate the development area and prevent wildlife from entering the construction zone. Fencing should be monitored regularly to ensure they are functioning properly and if issues are identified should be dealt with promptly;
- Wildlife located within the construction area will be re-located to an area outside of the development into an area of appropriate habitat, as necessary;
- Construction crews working on site should be educated on local wildlife and take appropriate measures for avoiding wildlife; and,
- Should an animal be injured or found injured during construction they should be transported to an appropriate wildlife rehabilitation center for care with a small donation of money to help pay for the care (a local facility is the Rideau Valley Wildlife Sanctuary).

Mitigation after occupation

- Provide Owner Awareness Package to all new residents. This information could include;
  - Impacts of cat predation on bird populations and the importance of keeping household cats indoors;
  - Legal restrictions of uncontrolled pets;
  - The risks of feeding wildlife; and,
  - Mitigation options for reducing the potential bird strikes with windows (i.e., falcon silhouette stickers for windows).

6.2.5 Species at Risk

The following are potential impacts and recommended mitigation measures to avoid impacts specific to potential SAR and SAR habitat within the Study Area.

6.2.5.1 Impacts

Potential impacts to Species at Risk within the development area include the following:

- Encroachment into Category 3 Blanding's Turtle Habitat;
- Removal of one Category 2 Butternut that occurs within the development footprint; and,
- Incidental injury or death to incidental SAR birds and/ or bats that could be utilizing the trees and agricultural fields (i.e. Bobolink and Barn Swallow) as a result of vegetation clearing and other activities associated with site alteration or development.

6.2.5.2 Mitigation

- Two of the five retainable trees not considered for removal occur <50 m from the proposed development. The MECP typically identifies a 50 m protective buffer for Butternut assessed as Category 2 or 3 (retainable/ archivable) to prevent any unnecessary harm to the tree. The recommended 50 m protective buffer is based on the anticipated maximum reach of a mature Butternut species' Critical Root Zone (CRZ). The CRZ is generally defined as the minimum volume of roots necessary for tree health and stability (Tree Care Industry Association, 2012). This is calculated by multiple factors, including: the product of a predetermined number; the DBH and/or determined by the extent of the observed dripline. The City of Ottawa defines the CRZ as the DBH of a tree multiplied by 10 cm. The calculated CRZs of the two Butternut trees <50 m from the development following the City of Ottawa's calculation guidelines remain well outside of the development footprint. Furthermore based on tree root expansion behavior, as the location of the trees are within the valleyland area, the roots are not anticipated to reach the tablelands nearby the development. Therefore, as the trees to be retained and their CRZs will remain outside of the development footprint, protective buffers are not recommended at this time.
- Avoid vegetation clearing during sensitive times of year for local wildlife (i.e., spring and early summer) Specifically vegetation clearing should be conducted:
    - Outside of the breeding bird active season (active season: April 1 – August 31) to avoid impact to potential Bobolink or Barn Swallow that may by utilizing the area for foraging and/or nesting. Should any clearing be required during the breeding bird season, nest searches conducted by a qualified person must be completed 48 hours prior to clearing activities. If nests are found, work within 10 m of the tree should cease until the nest has fledged. If no nests are present, clearing may occur. This is in accordance with the federal Migratory Birds Convention Act;
    - Outside of the active bat season (active season: May 1 – October 1) to avoid impacts to potential SAR bat that could be utilizing the woodlands for maternity roosting.
- Conduct vegetation clearing such that existing connections to adjacent areas are maintained until the final stage of clearing, so wildlife can use these connections to leave the site;
- Ensure perimeter fencing does not prevent wildlife from leaving the site during clearing activities by clearing the area prior to installing the fence;

- Contractors and other on-site workers should be briefed on appropriate measures to reduce human-wildlife conflict during work activities; and,
- If a SAR is observed, the MECP will be contacted as soon as possible to provide further direction if impacts are anticipated.

7.0 Cumulative Impacts

As the Phase 12 development is a part of a rapidly expanding area, cumulative impacts must also be considered in the context of the local environment. Since the Phase 12 Study Area had primarily been in active agriculture dating back to at least 1976, habitat features within the Study Area are limited, and the same is true for lands surrounding the development. Fragmentation and lack of connection between remnant vegetation communities and other natural features limits the potential for significant features and wildlife habitat within the local area.

In addition to the mitigation measures listed above which were developed in consideration of cumulative impacts, the following mitigation should be considered to address the cumulative impacts resulting from the proposed development. To mitigate the impacts associated with a net increase in impermeable surfaces, the following measures are recommended:

- Promote the use of rain capture systems (e.g. rain barrels);
- Promote the installation of green roofs;
- Promote the planting of native and adapted vegetation in place of lawns or ornamentals; and,
- Promote the use of permeable landscaping materials (e.g. interlock stone) during landscaping phase.

8.0 Summary and Conclusions

This report outlines the environmental impacts associated with the construction and long-term occupation of the Phase 12 development, located 708, 720 and 750 River Road, in the City of Ottawa (**Figure 1**).

Given that the proposed development will respect the City of Ottawa's aquatic setbacks of 30 m from the high water mark and 15 m from the top of the bank and no development will occur within the Significant Valleyland and Significant Wildlife Habitat for amphibian breeding habitat (**Figure 7**), negative impacts are not anticipated as a result of the proposed development of this property. Potential impacts that may occur as a result of development activities include the removal of mature trees and forest habitat, loss of local native vegetation, loss of HDFs, and loss of habitat for birds and other native wildlife. Mitigation measures proposed in this report have been developed to avoid these potential impacts associated with development on the natural environment. Overall, residual impacts are not anticipated as a result of this development provided appropriate mitigation measures are applied.

The occurrence of SAR and SAR habitat within the Study Area will be addressed by undertaking the appropriate steps in accordance with the ESA and in consultation with the MECP. Due to the location of the Regulation Limit within and adjacent to the western limit of the proposed development, permits from RVCA may be required.

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Appendix A

Agency Correspondence

Ministry of Natural Resources

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Thu. Oct 2, 2014

Alex Zeller
Dillon Consulting
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(613) 745-6338 ext 3011
azeller@dillon.ca

Attention: Alex Zeller

Subject: Information Request - Developments
Project Name: Proposed residential development at 708 River Rd (Riverside South- Phase 12)
Site Address:
Our File No. 2014_GLO-2804

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

The MNR works closely with partner agencies and local municipalities in order to establish concurrent approval process and to achieve streamlined and efficient service delivery. The MNR strongly encourages all proponents to contact partner agencies (e.g. MOE, Conservation Authority, etc.) and appropriate municipalities early on in the planning process. This provides the proponent with early knowledge regarding agency requirements and approval timelines.

Natural heritage features and values contribute to the province's rich biodiversity and provide habitat for a variety of species. The following Natural Heritage values were identified:

- Unevaluated Wetland (Not evaluated per OWES)

Municipal Official Plans contain additional information related to natural heritage features. Please see the local municipal Official Plan for more information such as specific policies and direction

pertaining to activities which may impact natural heritage features. For planning advice or Official Plan interpretation, please contact the local municipality.

Where natural values and natural hazards exist (e.g., floodplains), there may be additional approvals and permitting required from the local Conservation Authority. The MNR strongly recommends contacting the local Conservation Authority for further information and approvals. Please see the MNR Kemptville Information Guide (2012) for contact information pertaining to Conservation Authorities located within the Kemptville District area.

For additional information and online mapping tools, please see the Natural Heritage Information Centre (NHIC), where additional data and files can be downloaded in both list and digital format. In addition sensitive species information can be requested and accessed through the NHIC at NHICrequests@ontario.ca.

Water

Where the site is adjacent to or contains a watercourses or waterbodies, additional considerations apply. If any in-water works are to occur, there are timing restriction periods for which work in water can take place (see below). Appropriate measures should be taken to minimize and mitigate impact on water quality and fish habitat, including:

- including the installation of sediment and erosion control measures;
- avoiding removal alteration or covering of substrates used for fish spawning, feeding, over-wintering or nursery areas; and
- debris control measures should be put in place to manage falling debris (e.g. spalling).

A work permit from the MNR may be required pending further details regarding the proposed works. No encroachment on the bed or banks of the waterbody (e.g. abutments, embankments, etc.) is permitted until MNR approval and clearance has been issued. In order for MNR staff to determine when a work permit is required, additional information can include:

- Detailed drawings (existing and proposed)
- Location mapping
- Registered Plan survey
- Site photographs
- Public Lands Act Forms - application forms, ownership form and landowner notification form.

The MNR does not have any water quality or quantity data available. We recommend that the Ministry of the Environment be contacted for such data along with the local Conservation Authority. For further information regarding fish habitat and protocols, please refer to the following interagency, document, *Fish Habitat Referral Protocol for* Ontario at: http://www.mnr.gov.ca/264110.pdf

Timing restriction periods in MNR Kemptville District*:

Warmwater	→ March 15 – June 30
	→ March 15 – July 15 for St. Lawrence River & Ottawa River
Coldwater	→ October 1 – May 31
Mixed lakes	→ October 1 – June 30 (Big Rideau & Charleston)

** Please note: Additional timing restrictions may apply as it relates to Endangered and Threatened Species, including works in both water and wetland areas.*

	FISH SPECIES	TIMING WINDOW
Spring:	Walleye	March 15 to May 31
	Northern Pike	March 15 to May 31
	Lake Sturgeon	May 1 to June 30
	Muskellunge	March 15 to May 31
	Largemouth/Smallmouth Bass	May 1 to July 15
	Rainbow Trout	March 15 to June 15
	Other/Unknown Spring Spawning Species	March 15 to July 15

	FISH SPECIES	TIMING WINDOW
Fall:	Lake Trout	October 1 to May 31
	Brook Trout	October 1 to May 31
	Pacific Salmon	September 15 to May 31
	Lake Whitefish	October 15 to May 31
	Lake Herring	October 15 to May 31
	Other/Unknown Fall Spawning Species	October 1 to May 31

Additional approvals and permits may be required for the proposed works as it relates to the Fisheries Act. Please contact your local Conservation Authority and the Department of Fisheries and Oceans to determine requirements and next steps. Where the Fisheries Act is triggered and habitat compensation, mitigation measures or best management practices are being considered; as the MNR is charged with the management of Provincial fish populations, the MNR requests ongoing involvement in such discussions in order to ensure population conservation. Furthermore, local Conservation Authorities may also have additional approvals for works in and adjacent to water and wetland features. Finally, Transport Canada's Navigable Waters Protection Division may require review and approval of the proposed project. Please contact these local agencies directly for more information.

As per the Natural Heritage Reference Manual (Section 13; OMNR 2010) the MNR strongly recommends that an Ecological Site Assessment be carried out to more thoroughly determine the presence of natural heritage features, and Species at Risk and their habitat located on site. The MNR can provide survey methodology for particular species at risk and their habitats. In addition, the local planning authority may have more details pertaining to the requirements of the assessment process, which will result in allow for the municipality to make planning decisions which are consistent with the Provincial Policy Statement (2005).

Species at Risk

With the new Endangered Species Act (ESA, 2007) in effect, it is important to understand which species and habitats exist in the area and the implications of the legislation. A review of the Natural Heritage Information Centre (NHIC) and internal records and aerial photograph interpretation indicate that there is a potential for the following Threatened (THR) and/or Endangered (END) species on the site or in proximity to it:

- Butternut (END)

- Barn Swallow (THR)
- Blanding's Turtle (THR)
- Bobolink (THR)
- Eastern Meadowlark (THR)
- Little Brown Bat (END)

All Endangered and Threatened species receive individual protection under section 9 of the ESA and receive general habitat protection under Section 10 of the ESA, 2007. Thus any potential works should consider disturbance of possible important habitat (e.g. nesting sites). Please note that as of June 30, 2013 general habitat protection applies to all Threatened and Endangered species. The habitat of these listed species is protected from damage and destruction and certain activities may require authorization(s) under the ESA. Please keep this date in mind when planning any species and habitat surveys

Species receiving General Habitat protection:

- Barn Swallow (THR)
- Blanding's Turtle (THR)
- Bobolink (THR)
- Butternut (END)
- Eastern Meadowlark (THR)
- Eastern Musk Turtle (SC)
- Little Brown Bat (END)

If the proposed activity is known to have an impact on the species mentioned above or any other SAR, an authorization under the Endangered Species Act, 2007 (ESA) may be required. It is recommended that MNR Kemptville be contacted prior to any activities being carried out to discuss potential survey and mitigation measures to avoid contravention of the ESA.

Habitat has been identified within the project area that appears suitable for one or more species listed by SARO as Special Concern (SC). In Addition, one or more Special Concern species has been documented to occur either on the site or nearby. Species listed as Special Concern are not protected under the ESA, 2007. However, please note that some of these species may be protected under the Fish and Wildlife Conservation Act. Species of Special Concern for consideration:

- Snapping Turtle (SC)
- Eastern Musk Turtle (SC)
- Milksnake (SC)
- Monarch (SC)
- Short-eared Owl (SC)

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

Please note that information regarding species at risk is based on documented occurrences only and does not include an interpretation of potential habitat within or in proximity to the site in

question. Although this data represents the MNR's best current available information, it is important to note that a lack of information for a site does not mean that additional features and values are not present. i.e.: Species at Risk (SAR) or their habitat could still be present at the location or in the immediate area. It is the responsibility of the proponent to ensure that species at risk are not killed, harmed, or harassed; or their habitat is not damaged or destroyed through the activities carried out on the site. The MNR continues to strongly encourage ecological site assessments to determine the potential for SAR habitat and occurrences. When a SAR or potential habitat for a SAR does occur on a site, it is recommended that the proponent contact the MNR for technical advice and to discuss what activities can occur without contravention of the Act. If an activity is proposed that will contravene the ESA (such as Section 9 or 10), the proponent must contact the MNR to discuss the potential for a permit (Section 17). For specific questions regarding the Endangered Species Act (2007) or SAR, please contact a district Species at Risk Biologist at sar.kemptville@ontario.ca. For more information regarding the ESA (2007), please see attached ESA Information Sheet.

As of July 1, 2013, the approvals processes for a number of activities that have the potential to impact SAR or their habitat were changed in an effort to streamline approvals processes while continuing to protect and sustainably manage Ontario's natural resources. For those activities that require registration with the Ministry, businesses and individuals will be able to do so through a new online system. The online system will also include information to help guide individuals and businesses through the new processes. For further information on which activities are authorized through this new online registration process and how to apply, please refer to the following website: http://www.mnr.gov.on.ca/en/About/2ColumnSubPage/STDPROD_104342.html. General inquiries may be directed towards Kemptville District MNR, while questions and comments involving the new online forms can be directed to the Registry Approvals Service Centre (RASC) at 1-855-613-4256 or mnr.rasc@ontario.ca.

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

- The Committee on the Status of Species at Risk in Ontario (COSSARO) re-assesses the status of the above-named species OR adds a species to the SARO List such that the section 9 and/or 10 protection provisions apply to those species.
- Additional occurrences of species are discovered.
- Habitat protection comes into force for one of the above-mentioned species through the creation of a habitat regulation (see general habitat protection above).

This letter is valid until: Fri. Oct 2, 2015

MNR is streamlining and automating its approvals processes for natural resource-related activities. Some activities that may otherwise contravene the ESA may be eligible to proceed without a permit from MNR provided that regulatory conditions are met for the ongoing protection of species at risk and their habitats. There are regulatory provisions for projects that have attained a specified level of approval prior to, or shortly after, the specified species or its habitat became protected under the ESA. There requirements include registering the activity with the Ministry of Natural Resources, taking steps to immediately minimize adverse effects on species and habitat, and developing a mitigation plan. Anyone intending to use this regulatory provision is strongly advised to review

Ontario Regulation 242/08 under the Endangered Species Act, 2007 for the full legal requirements.

For more information please check out the following link http://www.ontario.ca/environment-and-energy/development-and-infrastructure-projects-and-endangered-or-threatened-species

The MNR would like to advise, by way of this letter, that we continue to be circulated on information with regards to this project. If you have any questions or require clarification please do not hesitate to contact me.

Sincerely,

Erin Seabert
Management Biologist
erin.seabert@ontario.ca

Encl.\
-ESA Infosheet
-NHIC/LIO Infosheet

Appendix B

Headwater Drainage Features Assessment

DILLON CONSULTING

RIVERSIDE SOUTH DEVELOPMENT CORPORATION

Headwater Drainage Features Assessment Report

Phase 12

Final – September 2016

September 2016 – 14-9919

Table of Contents

1.0 Purpose

Dillon Consulting Limited (Dillon) was retained by Riverside South Development Corporation (RSDC) to undertake a Headwater Drainage Feature (HDF) Assessment of a property located at 708 River Road, in the City of Ottawa, Ontario (the "Study Area")(**Figure 1**). This report was prepared to support the development application by RSDC and supplements the required Environmental Impact Study (EIS).

1.1 Scope

This report evaluates and classifies potential on-site HDFs following the *Evaluation, Classification, and Management of Headwater Drainage Features Guidelines* developed by the Toronto Region Conservation Authority (TRCA) and Credit Valley Conservation (CVC) in 2014, hereafter referred to as the "Guidance Document". These guidelines were adopted in spring 2015 by the Rideau Valley Conservation Authority (RVCA) for application to projects within RVCA jurisdiction. The evaluation also includes recommendations for post-development management strategies which are consistent with the Guidance Document for each of the classified HDFs, as applicable.

1.2 General Description of Site

The Study Area is located in the City of Ottawa, Ontario at 708 River Road. It is legally described as Part Lot 20 and 21, Concession 1, in the City of Ottawa. The area is primarily comprised of agricultural fields (row crop) with patches of forest and treed hedgerows.

1.3 Development Concept

The City of Ottawa has designated this land as Development Reserve Zone (DR) in the Official Plan (OP). Riverside is proposing to develop this site for residential use featuring single family homes and residential townhomes.

RIVERSIDE SOUTH DEVELOPMENT CORPORATION

Phase 12
Proposed Residential Development

Figure 1:
Study Area

Legend

- Boundary of Study Area
- Waterbodies (MNR LIO)
- Wetlands (MNR LIO)
- Watercourse
- Wooded Area (MNR LIO)
- City of Ottawa Natural Heritage Area

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: AZ
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 18N

N W E S

0 100 200 400 600 800
Meters

FILE LOCATION: FILE LOCATION:
Path: F:\ArcGIS_Working\149919\MXD\Headwaters\Ph12_Fig1_Study Area.mxd

PROJECT: 14-9919 STATUS: DRAFT DATE: 5/17/2016

2.0 Methodology

This study used a combination of desktop methods and field studies to identify potential impacts of the proposed development activities potential HDFs. The HDF Assessment was conducted using the methods outlined in the Guidance Document. The Dillon biologists who completed the HDF assessment component of the field work received training by a Conservation Authority in the HDF assessment protocol prior to the start of field studies.

2.1 Secondary Source Background Review

Background information was examined to help determine what features are present and where sampling should occur. Documents were also reviewed for fisheries information and other information relating to this catchment area relevant to the HDF Assessment.

Background resources searched included the following:

- Ministry of Natural Resources and Forestry (MNRF)
    - Land Information Ontario (LIO)
- City of Ottawa
    - Google Earth layers
    - Official Plan mapping (GeoOttawa)
- Rideau Valley Conservation Authority (RVCA)
    - *Lower Rideau Subwatershed Report* (2012)
        - *Rideau River-Hogs Back Catchment*
- Niblett Environmental Associates Inc. (NEA)
    - *Riverside South Community Design Plan Fisheries Compensation Plan (2007)*
- Fisheries and Oceans Canada
    - Aquatic Species at Risk Mapping
- ArcGIS
- Google Earth satellite/ aerial photo interpretation

Based on this information, sample locations were determined and are presented in **Figure 2**.

RIVERSIDE SOUTH DEVELOPMENT CORPORATION

Phase 12
Proposed Residential Development

Figure 2:
Sampling Locations

- Boundary of Study Area
- Waterbodies (MNR LIO)
- Ephemeral Headwater Streams
- Sampling Location (FIeld Visit #1)

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: AZ
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 18N

N W E S

0 0.03 0.06 0.12 0.18 0.24
Kilometers

FILE LOCATION: FILE LOCATION:
Path: F:\ArcGIS_Working\149919\MXD\Headwaters\Ph12_Fig2_Sampling.mxd

PROJECT: 14-9919 STATUS: DRAFT DATE: 5/17/2016

2.2 Field Sampling

The assessment was conducted following the 'Standard Methods' as defined by the Guidance Document. This included various site visits throughout the spring and summer of 2015 as detailed in **Table 1**. Ecological Land Classification (ELC) was also completed by Dillon in 2014. Survey dates and weather conditions for each site visit are listed in **Table 1**.

TABLE 1: SITE VISIT DATES AND WEATHER CONDITIONS

DATE (2015)	TIME	PERSONNEL	WEATHER CONDITIONS	AIR TEMP (°C)*	PURPOSE
APRIL 28	08:00	W. MOORE K. MCLEAN	SUNNY, CLEAR	12.5	HDF SITE VISIT #1
MAY 7	20:45	K. ROBINSON	MOSTLY CLEAR	18.3	AMPHIBIAN SURVEY #1
MAY 27	21:00	K. ROBINSON	MOSTLY CLEAR WITH LIGHT CLOUD COVER	23.1	AMPHIBIAN SURVEY #2
JUNE 24	21:30	K. ROBINSON W. MOORE	MOSTLY CLEAR WITH LIGHT CLOUD COVER	18.8	AMPHIBIAN SURVEY #3
JULY 3	14:00	W. MOORE B. GOTTFRIED	SUNNY	16.9	ELECTROFISHING
JULY 28	13:30	W. MOORE K. ROBINSON	SUNNY	25.3	HDF SITE VISIT #2

*Mean daily temperatures as reported from Ottawa Macdonald-Cartier International Airport (Environment Canada)

The first headwaters site visit occurred April 28th of 2015 and the second headwaters site visit occurred on July 28th of 2015. Three amphibian surveys were also conducted following the Marsh Monitoring Protocol. No precipitation occurred on any of the survey dates.

The site was walked to inventory and assess any watercourses present within the property boundaries during the first site visit. The purpose of the second site visit was to confirm features surveyed during the first assessment and evaluate if surface flow was present in order to determine the hydroperiod. Field data was collected regarding the flow, channel form, aquatic habitat, and vegetation of potential HDFs within the Study Area.

These assessments were completed within defined channel segments, based on modifiers within the reach (i.e., culverts, changes in flow type or vegetation). Photos of each HDF segment are included in ***Appendix A.***

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2.3 Classification

Using the information collected in the Evaluation phase (both desktop and field observations) the following attributes of the HDFs were classified:

1. Hydrology
2. Riparian Habitat
3. Fish and Fish Habitat
4. Terrestrial Habitat

3.0 Evaluation

The following sections detail the results of the background review and site assessments for the Study Area.

3.1 Secondary Sources

General Conditions

The Study Area lies within the Lower Rideau Subwatershed, which is part of the larger Rideau River Watershed. There are six catchment areas that form the Lower Rideau Subwatershed and the Study Area lies within the Rideau River-Hogs Back catchment area. The site drains directly into the Rideau River.

The Rideau River-Hogs Back catchment drains an area of 38 km^2 which makes up 4.9% of the Lower Rideau Subwatershed and 0.9% of the Rideau Valley Watershed (RVCA). A summary of information from the *Lower Rideau Subwatershed Report* (RVCA 2012) is included below:

- *The catchment contains many tributaries, including Nepean, Hunt Club, Black Rapids, Barrhaven, Mosquito and Mud Creeks, as well as the Jock River;*
- *This reach is under shoreline development pressure and is intensively used for boating;*
- *Dominant land cover is settlement (44%), followed by crop and pastureland (23%), woodland (13%), transportation (11%), water (6%), grassland (2%) and wetland (1%);*
- *Contains a warm/cool water recreational and baitfish fishery with 40 fish species;*
- *Riparian buffer is comprised of woodland (33%), settlement (30%), crop and pastureland (29%), transportation (6%), wetland (2%) and grassland (1%);*
- *Water quality rating along the Rideau River is fair at the Strandherd Bridge, directly north of the Study Area; and,*
- *Woodland cover has increased by 2.4% over a 6 year period.*

Fisheries Resources

As mentioned above, the overall characterization of the Rideau River-Hogs Back catchment in the subwatershed study is cool/warm water recreational and baitfish fishery with over 40 species observed. These species are listed in **Table 2**.

TABLE 2: FISH SPECIES RECORDED WITHIN THE RIDEAU RIVER-HOGS BACK CATCHMENT

SCIENTIFIC NAME	COMMON NAME	SRANK[1]	SARA[2]	ESA[3]
FUNDULUS DIAPHANUS	BANDED KILLIFISH	S5	---	---
POMOXIS NIGROMACULATUS	BLACK CRAPPIE	S4	---	---
NOTROPIS HETERODON	BLACKCHIN SHINER	S4	---	---
NOTROPIS HETEROLEPIS	BLACKNOSE SHINER	S5	---	---
LEPOMIS MACROCHIRUS	BLUEGILL	S5	---	---
PIMEPHALES NOTATUS	BLUNTNOSE MINNOW	S5	---	---
LABIDESTHES SICCULUS	BROOK SILVERSIDE	S4	---	---
CULAEA INCONSTANS	BROOK STICKLEBACK	S5	---	---
AMEIURUS NEBULOSUS	BROWN BULLHEAD	S5	---	---
UMBRA LIMI	CENTRAL MUDMINNOW	S5	---	---
ICTALURUS PUNCTATUS	CHANNEL CATFISH	S4	---	---
CYPRINUS CARPIO	COMMON CARP	SNA	---	---
LUXILUS CORNUTUS	COMMON SHINER	S5	---	---
HYBOGNATHUS REGIUS	EASTERN SILVERY MINNOW	S2	---	---
NOTROPIS ATHERINOIDES	EMERALD SHINER	S5	---	---
SEMOTILUS CORPORALIS	FALLFISH	S4	---	---
NOTEMIGONUS CRYSOLEUCAS	GOLDEN SHINER	S5	---	---
ETHEOSTOMA NIGRUM	JOHNNY DARTER	S5	---	---
MICROPTERUS SALMOIDES	LARGEMOUTH BASS	S5	---	---
PERCINA CAPRODES	LOGPERCH	S5	---	---
NOTROPIS VOLUCELLUS	MIMIC SHINER	S5	---	---
COTTUS BAIRDI	MOTTLED SCULPIN	S5	---	---
ESOX MASQUINONGY	MUSKELLUNGE	S4	---	---
ESOX LUCIUS	NORTHERN PIKE	S5	---	---
LEPOMIS GIBBOSUS	PUMPKINSEED	S5	---	---
AMBLOPLITES RUPESTRIS	ROCK BASS	S5	---	---
MOXOSTOMA MACROLEPIDOTUM	SHORTHEAD REDHORSE SUCKER	S5	---	---
MOXOSTOMA ANISURUM	SILVER REDHORSE SUCKER	S4	---	---
MICROPTERUS DOLOMIEU	SMALLMOUTH BASS	S5	---	---
NOTROPIS HUDSONIUS	SPOTTAIL SHINER	S5	---	---
NOTURUS GYRINUS	TADPOLE MADTOM	S4	---	---
ETHEOSTOMA OLMSTEDI	TESSELLATED DARTER	S4	---	---
ESOX MASQUINONGY X ESOX LUCIUS	TIGER MUSKELLUNGE	---	---	---
SANDER VITREUS VITREUS	WALLEYE	S5	---	---
CATOSTOMUS COMMERSONI	WHITE SUCKER	S5	---	---
AMEIURUS NATALIS	YELLOW BULLHEAD	S4	---	---
PERCA FLAVESCENS	YELLOW PERCH	S5	---	---

[1] Provincial (Subnational) Rank; [2]Federal *Species at Risk Act*; [3]Ontario *Endangered Species Act* (2007).

The *Lower Rideau Subwatershed Report* (2012) classifies the Rideau River as fair on the water quality scale within this section of the river. This suggests this reach of the river as well as its tributaries may provide suitable habitat for a wide variety of fish species. No aquatic Species at Risk (fish or mussels) have been identified within the Rideau River-Hogs Back catchment in the *Lower Rideau Subwatershed Report* (2012), although one Species of Conservation Concern was identified; Eastern Silvery Minnow (S2). In addition, no Species at Risk were identified within the Rideau River-Hogs Back catchment in available DFO mapping. Further, the NHIC database was searched as a cross-reference exercise, and likewise did not contain records of aquatic Species at Risk within the general vicinity of the Study Area, but did contain a record for Greater Redhorse, a Species of Conservation Concern (S3).

Previous Studies

NEA conducted a study of the tributaries in Riverside South as part of the Riverside South Community Design Plan Fisheries Compensation Plan (2007). The results of the study indicated that tributaries that were to be 'filled' or left in a 'natural state'. Based on this, and correspondence from the RVCA (Jennifer Lamoureux personal communication June 18, 2016), any tributaries within Riverside South mapped as "filled" can be assessed as either "Mitigation" or "No Management Required". Other tributaries shown as being left in a natural state can be assessed based on the results of the HDF assessment.

3.2 Field Observations

Two tributaries to the Rideau River are present within the Study Area.

Note that tributaries were assessed in segments based on modifiers within the channels but have been grouped for evaluation purposes. Results of the HDF Assessment are detailed in **Table 3**. Photo documentation taken during surveys has been included in ***Appendix A***.

The naming of the tributaries is consistent with nomenclature used in mapping created by Niblett Environmental Associates Inc. (NEA) in 2007, and used in the *Riverside South Community Design Plan Fisheries Compensation Plan* (NEA 2010). For those that were not included in NEA mapping, tributary names were created to follow a similar format, or to make them distinguishable from other tributaries within Riverside South.

Tributary 12-1

Within the northern section of the Study Area, Tributary 1 flows north near the centre of the Study Area before entering a residential property and draining into the Rideau River (**Figure 2**). The tributary originates within a gully, or depression in an agricultural field, and collects overland flow from spring thaw and rain events. At the northern boundary of the Study Area,

the channel crosses a chain link fence and enters a residential property located on the Rideau River.

During the first site visit Tributary 1 was observed to have minimal flow with downstream segments flowing but upstream segments stagnant. At RID001-03 where the pond was located, flow ran in both directions out of the pond downstream towards RID001-02, and into RID001-04. This is because the slope of the property drops on either side of the feature toward the Rideau River and so overflow from the ponding area is collecting within the swale at RID001-04. The majority of the flow out of the pond is directed 'downstream' through RID001-02 and RID001-01.

During subsequent site visits conducted in July, the tributary was completely dry and tilled up.

Tributary 12-2

Tributary 2 bisects the Study Area by crossing the property in an east-west direction, from River Road to the Rideau River (**Figure 2**). This tributary originates as a roadside ditch at River Road and travels along what appeared to be a former laneway across the Study Area, within a ditch consisting of shrubs and large boulders. The tributary then conveys flow down slope toward the river, and enters a wooded area where the channel was observed to be less defined with flow becoming more diffuse.

During the first site visit this tributary was observed conveying water from roadside ditches along River Road across the Study Area to the Rideau River. During subsequent site visits conducted in July, this tributary was completely dry and overgrown with meadow grasses and shrubs.

TABLE 3: DETAILS OF SITE ASSESSMENTS

DRAINAGE FEATURE	SITE VISIT	DATE OF FIELD WORK	FLOW ASSESSMENT	VEGETATION ASSESSMENT		CHANNEL FORM				SEDIMENT TRANSPORT		COMMENTS	PHOTO REFERENCES
			FLOW INFLUENCE (FI)/ CONDITION (FC)/ TYPE (FT)	RIPARIAN	TERRESTRIAL	AVERAGE WETTED WIDTH (m)	AVERAGE DEPTH (m)	AVERAGE BANKFULL WIDTH (m)	SUBSTRATES	SEDIMENT TRANS.	SEDIMENT DEP.		
TRIBUTARY 12-1													
RID001-01	1	28-Apr-15	**Flow observed** FI: Baseflow (3) FC: Subs. Flow (5) FT: Defined Natural Channel (2)	Meadow (4)	Meadow (4)	0.23	0.01	0.28	Si, Sa	Rills, Instream Bank Erosion	Substantial	- Natural channel/ rill running through gully in agricultural field conveying overflow from standing water within field - Flows through chain link fence into a culvert or spillway beneath residential driveway before outletting at the Rideau River (barrier to fish migration)	1, 2
	2	28-Jul-15	No flow observed during 2nd site assessment.									- Channel dry and not evident- entire field tilled.	5
RID001-02	1	28-Apr-15	**Flow observed** FI: Base flow (3) FC: Standing Water (2) FT: Swale (7)	Meadow (4)	Meadow (4)	3.77	0.05	N/A	Si, Sa	Sheet Erosion	Minimal	- Swale upstream of RID001-01	3, 4
	2	28-Jul-15	No flow observed during 2nd site assessment.									- Channel dry and not evident- entire field tilled.	5
RID001-03	1	28-Apr-15	**Flow observed** FI: Base flow (3) FC: Standing Water (2) FT: Pond (9)	Meadow (4)	Meadow (4)	15	0.23	20	Si, Sa	Sheet Erosion	Moderate	- Pond within agricultural field upstream of RID001-02 - Contained wetland/pond vegetation and amphibians (frogs) - Exists due to slope of surrounding land - No amphibians heard within this tributary during amphibian surveys (feature was dry and grown with meadow grass during last amphibian survey)	6, 7
	2	28-Jul-15	No flow observed during 2nd site assessment.									- Pond dry and not evident- entire field tilled.	11
RID001-04	1	28-Apr-15	**Flow observed** FI: Base flow (3) FC: Standing Water (2) FT: Swale (7)	Meadow (4)	Meadow (4)	0.7	0.90	N/A	Si, Sa	Sheet Erosion	Moderate	- Swale/ pooled water upstream of pond, no flow - There is a rill running through an area of mowed grass travelling down the slope from this feature to the Rideau River. This rill was dry at the time and likely conveys overflow from the field during rain events and Spring freshet (similar to RID001-01)- can be seen on aerials	8, 9, 10
	2	28-Jul-15	No flow observed during 2nd site assessment.									- Dry and not evident- entire field tilled up	11
TRIBUTARY 12-2													
RID002-01	1	28-Apr-15	**Flow observed** FI: Base flow (3) FC: Minimal Flow (4) FT: Channelized (2)	Scrubland (5)	Meadow (4)	0.24	0.04	0.66	Si, Sa	Instream Bank Erosion	Substantial	- Channel flowing down slope within an old fencerow towards the river - Banks are heavily eroded - At the bottom of slope, the channel opens up and water flows overland within a wooded are into the River - No amphibians recorded in this tributary during amphibian surveys	12, 14
	2	28-Jul-15	No flow observed during 2nd site assessment.									- Channel dry and overgrown with scrubland vegetation	13, 15
RID002-02	1	28-Apr-15	**Flow observed** FI: Base flow (3) FC: Standing Water (2) FT: Channelized (2)	Scrubland (5)	Meadow (4)	---	---	2.59	Si, Sa	Instream Bank Erosion	Minimal	- Difficult to take measurements due to dead meadow grass and cattails - Upstream side of ditch running along old laneway meets a section of boulders where the slope begins down to RID002-01	16, 18
	2	28-Jul-15	No flow observed during 2nd site assessment.									- Channel dry and overgrown with dense meadow grasses	17, 19

*Clay= Cl, Silt= Si, Sand= Sa; **Minimal= <5mm, Moderate= 5-30 mm, Substantial= 31-80 mm, Extensive= >80 mm

4.0 Classification

The condition of the tributaries are described above in **Section 3.2** and summarized in **Table 3**. Based on the observations made during site visits, the features have been classified and subsequently, management recommendations have been made for each branch according to the Guidance Document , as well as the previous study completed by NEA (2007) and personal communication with the RVCA (June 2016)(see **Table 4**). The management recommendations listed below have also been depicted on **Figure 3**.

Within the Study Area, both Tributary 1 and Tributary 2 have been classified as having Limited Function, with a recommendation of No Management Required.

Tributary 12-1: Limited Functions (No Management Required)

Tributary 12-1 has been classified as having Limited Function with a management recommendation of "No Management Required"; as this tributary only collects flow from the slope of the field and has little flowing water in the spring. In addition, there is no direct surface connectivity to the Rideau River, and a fish passage barrier exists downstream at the residential property. Further, this feature does not have any riparian or terrestrial function as it is located within an agricultural field and is tilled and planted.

Tributary 12-2: Limited Functions (No Management Required)

Tributary 12-2 has been classified as having Limited Function with a management recommendation of "No Management Required". This tributary originates as a roadside ditch at River Road and runs within an old ditch down toward the Rideau River with no direct channel connection.

TABLE 4: CLASSIFICATION SUMMARY

Feature and Segment	STEP 1		STEP 2	STEP 3	STEP 4	Results per Segment	Management Recommendation Based on Guidance Document	Overall Management Recommendation Based on NEA, 2007
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat			
TRIBUTARY 12-1								
RID001-01	Contributing Function: Ephemeral	Chain link fence crossing onto residential property downstream, agricultural field	Limited Function: Agricultural, tilled	Contributing Function: Mainly for transport of allochthonous materials to downstream fish bearing reaches	Limited Function: No terrestrial habitat present	No Management Required: Limited Functions	**NO MANAGEMENT REQUIRED**	**NO MANAGEMENT REQUIRED**
RID001-02	Recharge Function: Standing Water	Agricultural field	Limited Function: Agricultural, tilled	Contributing Function: Mainly for transport of allochthonous materials to downstream fish bearing reaches	Limited Function: No terrestrial habitat present	No Management Required: Limited Functions		
RID001-03	Recharge Function: Standing Water	Agricultural field	Limited Function: Agricultural, tilled	Contributing Function: Mainly for transport of allochthonous materials to downstream fish bearing reaches	Limited Function: No terrestrial habitat present	No Management Required: Limited Functions		
RID001-04	Recharge Function: Standing Water	Agricultural field	Limited Function: Agricultural, tilled	Contributing Function: Mainly for transport of allochthonous materials to downstream fish bearing reaches	Limited Function: No terrestrial habitat present	No Management Required: Limited Functions		
TRIBUTARY 12-2								
RID002-01	Contributing Function: Ephemeral	N/A	Valued: Meadow/ Scrubland	Limited Function: No fish habitat present due to lack of connection to river.	Limited Function: No terrestrial habitat present	No Management Required: Limited Functions	**NO MANAGEMENT REQUIRED**	**NO MANAGEMENT REQUIRED**
RID002-02	Recharge Function: Standing Water	N/A	Valued: Meadow/ Scrubland	Limited Function: No fish habitat present due to lack of connection to river.	Limited Function: No terrestrial habitat present	No Management Required: Limited Functions		

RIVERSIDE SOUTH DEVELOPMENT CORPORATION

Phase 12
Proposed Residential Development

Figure 3:
Management Recommendations

Legend

- Boundary of Study Area
- Development Area
- Waterbodies (MNR LIO)

Management Recomendations

- No Management Required

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MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: AZ
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 18N

0 25 50 100 150 200
Meters

FILE LOCATION: FILE LOCATION:
Path: F:\ArcGIS_Working\149919\MXD\Headwaters\Ph12_Fig3_Managment.mxd

PROJECT: 14-9919 STATUS: DRAFT DATE: 5/17/2016

5.0 Management Recommendations

In accordance with the Guidance Document, the following management recommendations are available for HDFs classified as Limited Function:

No Management Required (Limited Functions) (***Tributary 12-1 and Tributary 12-2***)

- *This feature has been field verified to confirm that no functions associated with HDFs are present on the ground and there is no connection downstream.*

6.0 Conclusion

As a result of the HDF Assessment completed at the property at 708 River Road, management recommendations were determined based on classification of HDFs within the Study Area. The results are detailed in **Table 4** and **Figure 3**. Since both tributaries have been classified as having Limited Function with No Management Required, these features should not impede development of this property.

Appendix A

Site Photos

RIVERSIDE SOUTH DEVELOPMENT CORPORATION

Phase 12
Proposed Residential Development

Figure A:
Headwater Photo Locations

Legend

- Boundary of Study Area
- Headwater Drainage Feature
- Waterbodies (MNR LIO)

Field Observations

- Photo Location

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: AZ
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 18N

N W E S

0 25 50 100 150 200
Meters

FILE LOCATION: FILE LOCATION:
Path: F:\ArcGIS_Working\149919\MXD\Headwaters\Ph12_FigA_Photos.mxd

PROJECT: 14-9919 STATUS: DRAFT DATE: 5/17/2016

TRIBUTARY 12-1	
Photo 1 April 28, 2015 Notes: Tributary 12-1 Site Visit #1 RID001-01 Looking upstream	
Photo 2 April 28, 2015 Notes: Tributary 12-1 Site Visit #1 RID001-01 Looking downstream where stream enters residential property	

Photo 3 April 28, 2015 Notes: Tributary 12-1 Site Visit #1 RID001-02 Looking upstream	
Photo 4 April 28, 2015 Notes: Tributary 12-1 Site Visit #1 RID001-02 Looking downstream	

Photo 5 July 28, 2015 Notes: Tributary 12-1 Site Visit #2 RID001-01/RID001-02 Looking downstream showing entire feature dry and tilled	
Photo 6 April 28, 2015 Notes: Tributary 12-1 Site Visit #1 RID001-03 Looking upstream at pond area	

Photo 7 April 28, 2015 Notes: Tributary 12-1 Site Visit #1 RID001-03 Looking downstream at pond area	
Photo 8 April 28, 2015 Notes: Tributary 12-1 Site Visit #1 RID001-04 Looking upstream	

Photo 9 April 28, 2015 Notes: Tributary 12-1 Site Visit #1 RID001-04 Looking upstream	
Photo 10 April 28, 2015 Notes: Tributary 12-1 Site Visit #1 Rill toward wetland at the river at the upstream end of Tributary 1 (slopes down toward river, likely conveys overflow)	

Photo 11 July 28, 2015 Notes: Tributary 12-1 Site Visit #2 RID001-03/RID001-04 Looking across the field showing entire feature is dry and tilled.	
TRIBUTARY 12-2	
Photo 12 April 28, 2015 Notes: Tributary 12-2 Site Visit #1 RID002-01 Looking upstream	

Photo 13 July 28, 2015 Notes: Tributary 12-2 Site Visit #2 RID002-01 Looking upstream	
Photo 14 April 28, 2015 Notes: Tributary 12-2 Site Visit #1 RID002-01 Looking downstream	
Photo 15 July 28, 2015 Notes: Tributary 12-2 Site Visit #2 RID002-01 Looking downstream	

Photo 16 April 28, 2015 Notes: Tributary 12-2 Site Visit #1 RID002-02 Looking upstream	
Photo 17 July 28, 2015 Notes: Tributary 12-2 Site Visit #2 RID002-02 Looking upstream	
Photo 18 April 28, 2015 Notes: Tributary 12-2 Site Visit #1 RID002-02 Looking downstream	

Photo 19 July 28, 2015 Notes: Tributary 12-2 Site Visit #2 RID002-02 Looking downstream	

References

GeoOttawa Mapping . City of Ottawa

Official Plans and Schedules. City of Ottawa, 2003.

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http://www.giscoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.html. Ontario Ministry of Natural Resources and Forestry. Land Information Ontario. Accessed July 2015.

http://nhic.mnr.gov.on.ca/. Accessed July 2015. Ontario Ministry of Natural Resources and Forestry. Natural Heritage Information Centre Database.

Significant Wildlife Habitat Ecoregion 6E Criterion Schedule. 41pp. Ontario Minitry of Natural Resources and Forestry, 2012.

Lower Rideau Subwatershed Report. Rideau Valley Conservation Authority, 2012.

Appendix C

Site Photos

Ecological Land Classification Photos

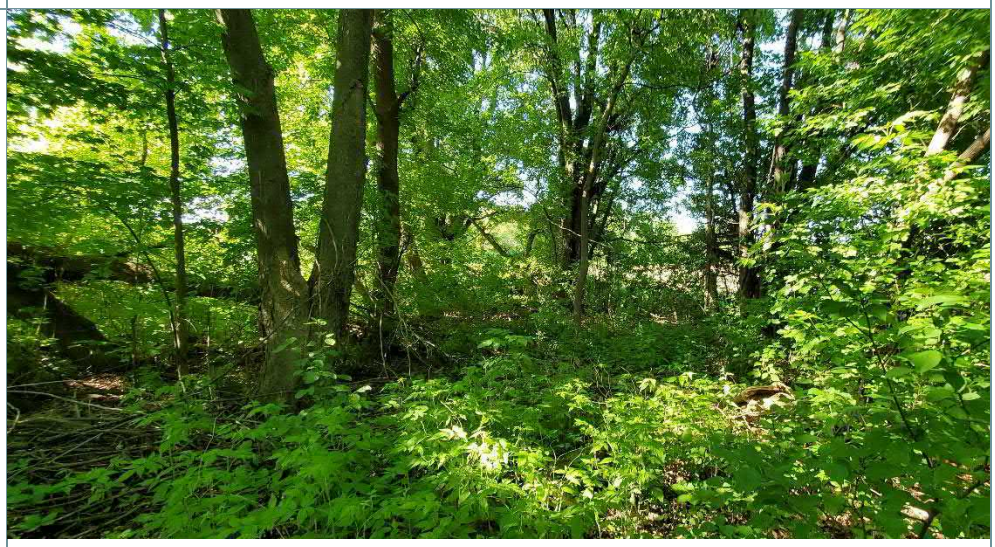
Photo 1 June 15, 2020 Notes: Perennial Cover Crops (OAGM2)	
Photo 2 June 15, 2020 Notes: Fresh-Dry Upland Deciduous Forest (FODM4)	

Photo 3 August 31, 2020 Notes: Dry-Fresh White Cedar Coniferous Forest (FOCM2-2)	
Photo 4 January 15, 2021 Notes: Disturbed Forb Meadow (MEF Disturbed)	

Photo 5 January 15, 2021 Notes: Forb Meadow (MEF)	
Photo 6 January 15, 2021 Notes: Forb Meadow (MEF) Distinctive tree (Silver Maple)	

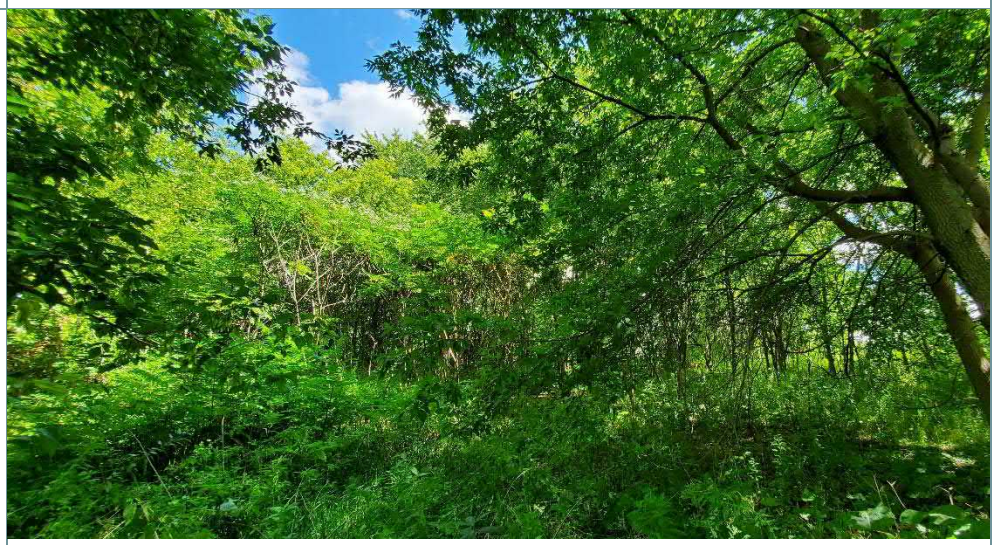
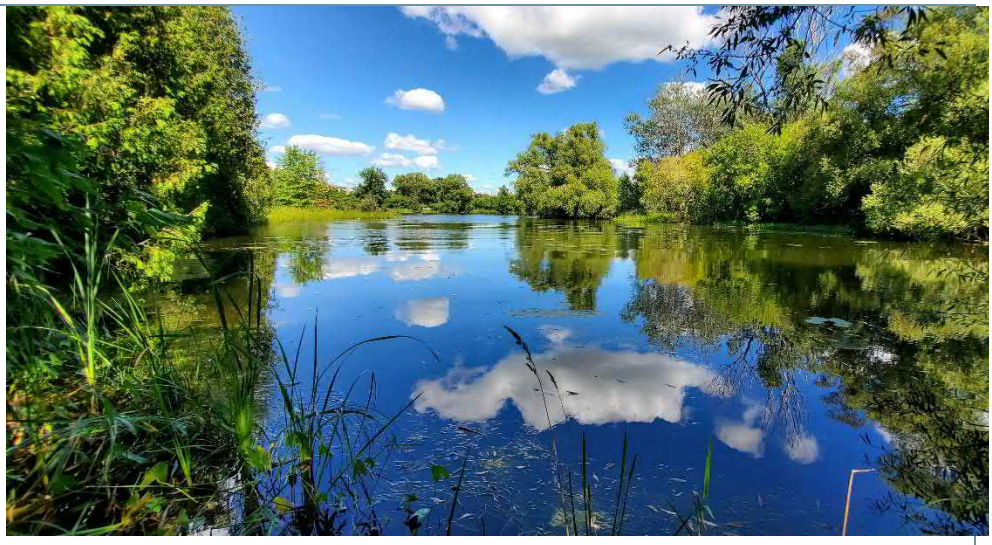
Photo 7 August 31, 2020 Notes: Dry-Fresh Mixed Meadow (MEMM3)	
Photo 8 August 31, 2020 Notes: Dry-Fresh Deciduous Woodland (WODM4)	

Photo 9 August 31, 2020 Notes: Fresh-Moist Lowland Deciduous Forest (FODM7)	
Photo 10 January 15, 2021 Notes: Fresh - Moist Manitoba Maple Lowland Deciduous Forest (FODM7-7)	

Photo 11 January 15, 2021 Notes: Fresh - Moist Manitoba Maple Lowland Deciduous Forest (FODM7-7 Distinctive tree (Norway Spruce)	
Photo 12 August 31, 2020 Notes: Cattail Mineral Shallow Marsh (MASM1-1)	

Photo 13 August 31, 2020 Notes: Fencerow (TAGM5)	
Photo 14 August 31, 2020 Notes: Single Family Residential (CVR_3)	

Photo 15 August 31, 2020 Notes: Open Aquatic (OA)	
Photo 16 October 05, 2014 Notes: Blanding's Turtle Observation via Wildlife Camera	

Appendix D

Vegetation Inventory

Scientific Name	Common Name	Srank	Coefficient Conservation	Coefficient Wetness
Acer negundo	Manitoba Maple	S5	0	-2
Acer rubrum	Red Maple	S5	4	0
Acer saccharum	Sugar Maple	S5	4	3
Acer saccharinum	Silver Maple	S5	5	-3
Acer x freemanii	Freeman's Maple	SNA	---	---
Achillea millefolium	Common Yarrow	SE	---	3
Ambrosia artemisiifolia	Annual Ragweed	S5	0	3
Arctium sp	Burdock Species	---	---	---
Asarum canadense	Canada Wild-ginger	S5	6	5
Asclepias sp	Milkweed Species	---	---	---
Asclepias syriaca	Common Milkweed	S5	0	5
Betula papyrifera	Paper Birch	S5	2	2
Carex sp	Sedge Species	---	---	---
Cirsium arvense	Canada Thistle	SNA	---	3
Dactylis glomerata	Orchard Grass	SNA	---	3
Daucus carota	Wild Carrot	SNA	---	5
Dryopteris sp	Wood Fern Species	---	---	---
Equisetum sp	Horsetail Species	---	---	---
Fraxinus pennsylvanica	Green Ash	S4	3	-3
Grass sp	Grass Species	---	---	---
Juglans cinerea	Butternut	S3?	6	2
Juglans nigra	Black Walnut	S4	5	3
Juniperus communis	Ground Juniper	S5	4	3
Linaria vulgaris	Butter-and-eggs	SNA	---	5
Lonicera sp	Honeysuckle Species	---	---	---
Lysimachia nummularia	Creeping Jennie	SNA	---	-4
Moss sp	Moss Species	---	---	---
Onoclea sensibilis	Sensitive Fern	S5	4	-3
Parthenocissus quinquefolia	Virginia Creeper	S4?	6	1
Phalaris arundinacea	Reed Canary Grass	S5	0	-4
Phleum pratense	Common Timothy	SNA	---	3
Picea abies	Norway Spruce	SNA	---	5
Picea glauca	White Spruce	S5	6	3
Pinus sylvestris	Scotch Pine	SNA	---	5
Poa pratensis ssp. *pratensis*	Kentucky Bluegrass	S5	0	1
Populus balsamifera	Balsam Poplar	S5	4	-3

Scientific Name	Common Name	Srank	Coefficient Conservation	Coefficient Wetness
Quercus macrocarpa	Bur Oak	S5	5	1
Quercus rubra	Northern Red Oak	S5	6	3
Rhamnus cathartica	Common Buckthorn	SNA	---	3
Rhus hirta	Staghorn Sumac	S5	1	5
Ribes sp	Currant Species	---	---	---
Sagittaria latifolia	Broad-leaved Arrowhead	S5	4	-5
Salix fragilis	Crack Willow	S4?	---	-1
Salix sp	Willow Species	---	---	---
Salix x fragilis	(Salix alba X Salix euxina)	SNA	---	---
Solidago sp	Goldenrod Species	---	---	---
Sparganium sp	Burreed Species	---	---	---
Symphyotrichum novae-angliae	New England Aster	S5	2	-3
Symphyotrichum puniceum var. *puniceum*	Swamp Aster	S5	6	-5
Symphyotrichum sp	Aster Species	---	---	---
Taraxacum officinale	Common Dandelion	SNA	---	3
Thelypteris palustris	Eastern Marsh Fern	S5	5	-4
Thuja occidentalis	Eastern White Cedar	S5	4	-3
Tilia americana	American Basswood	S5	4	3
Trifolium sp	Clover Species	---	---	---
Typha angustifolia	Narrow-leaved Cattail	SNA	3	-5
Ulmus americana	American Elm	S5	3	-2
Urtica sp	Nettle Species	---	---	---
Vicia sp	Vetch Species	---	---	---
Vitis sp	Grape Species	---	---	---