Appendix E ENVIRONMENTAL IMPACT ASSESSMENT

Bass Pro Mills Drive Extension (between Highway 400 and Weston Road) Schedule C MCEA Study – Limited Environmental Impact Study

FINAL REPORT

August 12, 2022

File No. 160540006

Prepared for:

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Sign-off Sheet

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Abbreviations

ANSI	Areas of Natural and Scientific Interest
CA	Conservation Authority
CAA	*Conservation Authorities Act*, 1990
CC	Coefficient of Conservatism
CEA	Class Environmental Assessment
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Study
ELC	Ecological Land Classification
ESA	*Endangered Species Act,* 2007
FWCA	*Fish and Wildlife Conservation Act,* 1997
GIS	Geographic Information System
LIO	Land Information Ontario
HADD	Harmful alteration, disruption or destruction (to fish and fish habitat)
HDF	Headwater Drainage Feature
TRCA	Toronto and Region Conservation Authority
m	metres
MBCA	*Migratory Birds Convention Act*, 1994
MECP	Ministry of the Environment, Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry; formerly Ministry of Natural Resources (MNR)
MOEE	Ministry of Energy and Environment

NHIC	Natural Heritage Information Centre
PSW	Provincially Significant Wetland
PPS	Provincial Policy Statement
ROW	Right-of-Way
SAR	Species at Risk
SARA	*Species at Risk Act*, 2002
SARO	Species at Risk in Ontario (List)
SOCC	Species of Conservation Concern
SWH	Significant Wildlife Habitat
TOR	Terms of Reference

1.0 Introduction

Stantec Consulting Ltd. (Stantec) was retained by the City of Vaughan (the City) to complete a Schedule 'C' Municipal Class Environmental Assessment (EA) Study for the extension of Bass Pro Mills Drive between Highway 400 and Weston Road. This limited Environmental Impact Study (EIS) was prepared to support this study.

The purpose of this limited EIS report is to describe natural heritage features and ecosystem functions that could potentially be impacted by the extension of Bass Pro Mills Drive (the Project), evaluate conformance with applicable natural heritage legislation and policy requirements and recommend mitigation measures.

The Project is located within the City of Vaughan and within the administrative jurisdiction of the Toronto and Region Conservation Authority (TRCA). This limited EIS report was completed following the TRCA Environmental Impact Statement Guidelines (TRCA 2014a) and the *Environmental Management Guideline in support of the Vaughan Official Plan* (City of Vaughan 2013) and includes:

- A summary of legislation and policies related to natural heritage features and Species at Risk (SAR) that could apply to the Project
- A description of the methods used to describe the natural environment and assign significance to existing natural heritage features and SAR
- A description of the existing natural environment based on a review of available background data and field investigations conducted in 2021
- A preliminary impact assessment for existing natural heritage features and SAR
- Recommendations for standard and site-specific mitigation measures to protect natural heritage features, functions and SAR
- A summary of potential permitting requirements for the Project

The Study Area includes lands within 120 m of the proposed construction area (**Figure 1, Appendix A**).

2.0 Approach

Agency stakeholders were consulted regarding the proposed approach for the EIS at the outset of the project. A Terms of Reference (TOR) was circulated to the City and TRCA on February 19, 2020, which described the scope of the limited EIS report, including methods for the background review, field investigations and reporting. The TRCA responded on February 27, 2020 and confirmed their acceptance of the proposed work plan. In October 2020, Stantec was informed that would not be granted for this assignment permission to enter private properties to conduct field investigations. To address the lack of property access, the TOR were modified to complete field investigations from the existing road rights-of-way (ROW) and through desktop evaluations. The modified TOR was circulated to the City and TRCA on November 13, 2020. TRCA accepted the work plan with a caveat regarding the limitations on property access. Given that the seasonal site visits that are required to assess Headwater Drainage Features (HDFs) could not be completed, a conservative approach to management strategies was recommended and the precautionary principle should apply. TRCA correspondence is provided in **Appendix B**.

Stantec completed a review of background information and visited the Study Area (from the roadside) to characterize the natural heritage resources and functions. The Study Area extends approximately 200 m west of Weston Road and 230 m east of Highway 400. The northern boundary of the Study Area is approximately 370 m north of the proposed extension and the southern boundary is approximately 270 m south (**Figure 1, Appendix A**). Lands within the Study Area were included in the assessment to account for a review of Adjacent Lands as defined by municipal and provincial planning documents.

3.0 Natural Heritage and Hazard Policy Considerations

This section summarizes the legislation and policies that apply to natural heritage features and SAR for the Project. The summaries contained in this section are provided for information purposes only, and the reader should refer to the current legislation and policies for the complete text.

3.1 Migratory Birds Convention Act, 1994

The *Migratory Birds Convention Act*, 1994 (MBCA) prohibits the killing or capturing of migratory birds (S.4), as well as any damage, destruction, removal or disturbance of active nests (S. 6). It also allows the Canadian government to pass and enforce regulations to protect various species of migratory birds, as well as their habitats. Most species of birds in Canada are protected under the MBCA. Migratory birds are defined by Article I, which names the families and subfamilies of birds protected, and provides clarification of the species included.

No authorizations are available to permit incidental take. Instead, mitigation measures and best management practices must be applied to manage and reduce the risk of incidental take. Environment and Climate Change Canada (ECCC) provides information on the "general nesting periods" for migratory birds for Canada. The nesting periods vary depending on nesting zone and habitat type (i.e., forest, open, wetlands). Clearing activities should be conducted outside these nesting periods, but if this is not possible mitigation measures such as preclearing nest searches and identification of appropriate setbacks from confirmed or suspected nests should be applied.

3.2 Fisheries Act, 1985

The federal *Fisheries Act* (1985) defines fish habitat as "…waters frequented by fish and any other areas on which fish depend directly or indirectly in order to carry out their life processes including spawning grounds and nursery, rearing, food supply and migration areas." The fish and fish habitat protection provisions of the *Fisheries Act* apply to all fish and fish habitat in Canada. The Act prohibits activities that result in the death of fish or the harmful alteration, disruption or destruction (HADD) of fish habitat unless authorized by the Minister of Fisheries, Oceans and the Canadian Coast Guard. If it is determined that the death of fish or HADD of fish habitat is unavoidable as part of the Project, an authorization under the *Fisheries Act* may be required.

3.3 The Planning Act / Provincial Policy Statement (2020)

The Provincial Policy Statement (PPS; MMAH 2020) was issued under Section 3 of the *Planning Act*, 1990 (PA), which came into effect in 1996, and was last updated in May 2020. The PA requires that decisions made by planning authorities are consistent with the policy statements, such as the PPS, including policies on development and land use patterns, resources and public health and safety.

Section 2.1 of the PPS provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources and requires that natural heritage systems are identified in certain ecoregions. This includes Ecoregion 7E, where the Project is located as further detailed in Section 4.2.4.2 Wildlife Habitat Assessment for more information.

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

- significant woodlands
- significant valleylands
- significant wildlife habitat (SWH)
- significant Areas of Natural and Scientific Interest (ANSIs)
- coastal wetlands that are not subject to policy 2.1.4(b)

Further, development and site alteration are not permitted in the following features, except in accordance with provincial and federal requirements:

- significant habitat of endangered or threatened species
- sensitive surface water features
- fish habitat

Development and site alteration are not permitted on lands that are adjacent to the natural heritage features and areas identified above unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

3.4 Endangered Species Act, 2007

The *Endangered Species Act*, 2007 (ESA) came into effect on June 30, 2008. The ESA protects habitat and individuals of species that are designated as threatened, endangered, or extirpated in Ontario. Provincial SAR are identified and assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO). The ESA protects species listed as threatened, endangered, or extirpated in Ontario and their habitats by prohibiting anyone from killing, harming, harassing or possessing protected species, as well as prohibiting any damage or destruction to the habitat of the listed species. All listed species are provided with general habitat protection under the ESA, which is aimed at protecting areas that species depend on to carry out their life processes, such as reproduction, rearing, hibernation, migration or feeding. Some species are protected by detailed habitat regulations that go beyond the general habitat protection to specifically define the extent and character of protected habitats.

Activities that may impact a protected species or its habitat require the prior issuance of a permit from the MECP, unless the activities are exempted under Regulation. The current Ontario Regulation 242/08 identifies activities which are exempt from the permitting requirements of the Act subject to rigorous controls outside the permit process including registration of the activity and preparation of mitigation. Activities that are not exempt under O. Reg. 242/08 require a complete permit application process.

3.5 Toronto and Region Conservation Authority Ontario Regulation 166/06

The *Conservation Authorities Act* (CAA) grants each of Ontario's 36 Conservation Authorities (CA) the authority to make regulations within the areas under their respective jurisdictions (S. 28). The Study Area is in the jurisdiction of the TRCA. The TRCA operates under Ontario Regulation 166/06 to regulate the lands under its jurisdiction.

Under S.5 of their respective regulations, no person shall straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or change or interfere in any way with a wetland. Alterations may be granted though written authorization from the Conservation Authority, with or without conditions (S. 6). Proponents should consult with the Conservation Authorities to determine authorization requirements for work within a regulated area. For work that will alter a watercourse or wetland, a permit application must be submitted to the Conservation Authority to obtain written authorization prior to initiating the work.

3.6 TRCA Living City Policies for Planning and Development (2014)

The Living Cities Policies (LCP) (TRCA 2014b) contains the "principals, goals, objectives and policies approved by the TRCA Board for the administration of TRCA's legislated and delegated roles and responsibilities in the planning and development approvals process." According to LCP, the TRCA Regulatory test of "conservation of land" must be followed. This test must demonstrate that impacts from the project are minimized, then mitigated and outstanding impacts are compensated.

3.7 Environmental Assessment Act, 1990

The *Environmental Assessment Act* (EAA) S. 13 makes allowance for various classes of activities to be approved under the authority of a Class Environmental Assessment (CEA). The Class EA for Municipal Infrastructure Projects was approved by the Minister of the Environment (now the Minister of the Environment, Conservation and Parks) in 2000.

Schedule C projects have the potential for significant environmental effects and must proceed under the full planning and documentation procedures specified in this Class EA document. Schedule C projects require that an Environmental Study Report (ESR) be prepared and filed for review by the public and review agencies. The ESR should include a description of the natural existing environment. This limited EIS report was completed following the TRCA's *Environmental Impact Statement Guidelines* (TRCA

2014a) and the *Environmental Management Guideline in support of the Vaughan Official Plan* (City of Vaughan 2013).

3.8 Fish and Wildlife Conservation Act, 1997

The provincial *Fish and Wildlife Conservation Act,* 1997 (FWCA) provides protection of wildlife in Ontario including fish, furbearing mammals, game wildlife and specially protected wildlife through regulations for hunting, trapping, and fishing practices. Game and specially protected mammals, birds, reptiles, amphibians and invertebrates are listed on Schedules 1-11 of the FWCA. Definitions provided for hunting including capturing or harassing wildlife (Section 5) and would include activities that collect or handle wildlife for inventories or other scientific purposes, or to relocate wildlife out of harm's way (e.g., during construction activities), including individuals and eggs. Sections 7 and 8 also provide protection for nest and eggs of specified bird species including raptors, and dens of bears and furbearing animals, and beaver damns. Under the FWCA, the Minister has the authority to authorize activities that would otherwise be prohibited such as the safe capture of wildlife and removal of nests, dens and dams, and impose conditions on an authorization.

3.9 City of Vaughan Official Plan

The City of Vaughan Official Plan (OP) came into effect on September 7, 2010. Schedule 2 of the Vaughan OP designates the areas of the Natural Heritage Network including land identified as Core Features. The Vaughan OP Section C.3.2.3.1 defines Core Features as "the elements of the natural heritage network to be protected and enhanced". According to the Vaughan OP, Core Features include valley and stream corridors; woodlands; wetlands; fish and wildlife habitat; significant habitat of endangered and threatened species; and Environmentally Significant Areas and ANSIs. Core Features are the core elements of the Natural Heritage Network, which are to be protected and enhanced. Except as specifically set out in the OP, development and/or site alteration will not be permitted in such areas.

4.0 Methods

4.1 Background Review

Background documents and information sources reviewed for the limited EIS report are summarized below.

4.1.1 Terrestrial Resources

Stantec reviewed the following background information sources to identify natural heritage features and records of SAR within the Study Area:

- The Ministry of Natural Resources and Forestry's (MNRF) Natural Heritage Information Centre (NHIC) Biodiversity Explorer database (results summary for the following 1 km grid squares overlapping with the Study Area: 17PJ1652 and 17PJ1653) (MNRF 2021a)
- MNRF's Land Information Ontario (LIO) database (MNRF 2021b)
- Species at Risk in Ontario (SARO) List (MECP 2021)
- The MNRF's NHIC Ontario Plant Community and Vascular Plant Lists (MNRF 2021d)
- Atlas of the Mammals of Ontario (range maps visually scanned for overlap with the Study Area) (Dobbyn 1994)
- eBird (eBird 2021)
- iNaturalist (iNaturalist 2021)
- Atlas of the Breeding Birds of Ontario (atlas data summary for atlas square 17TPJ15) (Cadman et al. 2007)
- Ontario Reptile and Amphibian Atlas (atlas data summary for atlas square 17TPJ15) (Ontario Nature 2019)
- *Vaughan Official Plan*, 2010, including Natural Heritage Schedule 2 (City of Vaughan 2010)

The results of these searches were used to guide field investigations, and to identify potential SAR and species of conservation concern (SOCC) that have the potential to overlap with the Study Area. These resources generally do not note the exact locations of a species occurrence, with accuracy ranging from 1 km² (NHIC) to 10 km² (wildlife atlases), to municipal boundaries or watersheds. As such, they are used as an indicator of potential occurrence in the Study Area.

4.1.2 Fish and Fish Habitat / Headwater Drainage Features

Stantec reviewed the background information from the following sources:

- MNRF's LIO database (MNRF 2021e) – to determine the presence of a watercourse and, if available, watercourse thermal regime and fish community data
- MNRF's Constructed Drains digital dataset (MNRF 2021f) – to determine the presence of a constructed drain and, if applicable, the corresponding Fisheries and Oceans Canada (DFO) drain classification
- MNRF's NHIC Biodiversity Explorer database (MNRF 2021a) – to determine if provincially regulated fish or mussel species have been documented in the Study Area.
- DFO's online mapping tool of aquatic SAR – to determine if federally regulated fish or mussel SAR have been documented in the Study Area (DFO 2021a)
- TRCA's regulated areas (TRCA 2020) – to determine the extent of regulated areas
- Historical air photos from York Region (York Region 2021) – to facilitate the identification of potential HDFs

4.2 Field Investigations

Field Investigations completed for the Project are summarized below in **Table 1**. Field Investigations included surveys for vegetation, wildlife, aquatic habitat and fish, and are discussed under separate headers below. All field investigations were completed from the ROW.

Table 1: Field Investigation Summary

Type of Field Work	Date(s) of Field Work	Personnel
Vegetation Surveys		
Summer Botanical and Ecological Land Classification (ELC)	June 22, 2021	J. Ball
Wildlife Surveys		
Amphibian Call Surveys	April 8, 2021	J. Ball N. Burnett
	May 13, 2021	J. Ball N. Burnett
	June 10, 2021	L. Cymbaly L. Williams
Breeding Bird Surveys	June 4, 2021	J. Randall
	June 22, 2021	J. Ball
Wildlife Habitat Assessment	June 22, 2021	J. Ball

Table 1: Field Investigation Summary

Type of Field Work	Date(s) of Field Work	Personnel
Incidental Wildlife Observations	During all field visits	All Staff
Fish Habitat Surveys		
Aquatic Habitat Assessment	March 23, 2021 and August 24, 2021	A. Garrett/ T. Den Haas

4.2.1 Vegetation Surveys

Vegetation community mapping for the Study Area was completed following the Ecological Land Classification (ELC) system for southern Ontario (Lee et al. 1998) and where appropriate, the updated ELC Catalogue (2008). Vegetation communities were delineated based on satellite photographs and verified in the field from the edge of the Study Area because property access was not granted. Provincial significance of vegetation communities was based on the rankings assigned by the NHIC (MNRF 2021d).

A list of vascular plant species identified in the Study Area was compiled and provided in Appendix D. The nomenclature and provincial status of all plant species was based on a vascular plant species list provided by the NHIC (MNRF 2021d). Identification of potentially sensitive native plant species was based on their assigned coefficient of conservatism (CC) value, as determined by Oldham et al. (1995). This CC value, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to a specific natural habitat. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters.

4.2.2 Breeding Bird Surveys

Breeding bird surveys were conducted on June 4 and 22, 2021. Three point count stations were established along the boundary of the Study Area to target the natural features (**Figure 2, Appendix A**). Point count methods followed Environment and Climate Change Canada's (ECCC) Breeding Bird Survey (ECCC 2018a) except that the required 3-minute listening period was expanded to 10-minutes. A tally of each bird species was recorded during the 10-minute period that included an approximation of the location and direction of each bird observation within or just beyond a 100 m radius. A highest breeding evidence code as described by Cadman et al. (2007) was assigned to each of the species observed. All birds seen or heard in suitable habitat during the breeding season were assumed to be breeding.

Surveys were completed between a half an hour before sunrise and 10:00 a.m. Weather conditions (i.e., precipitation and visibility) were within the parameters required by monitoring programs such as Environment and Climate Change Canada (ECCC) Breeding Bird Survey (ECCC 2018a). Survey effort and weather is summarized in **Table 2**.

Table 2: Breeding Bird Survey Dates, Times, and Weather Conditions

Date	Time	Temp. (°C)	Wind (Beaufort)	Cloud (%)	Precipitation
June 4, 2021	05:31-06:36	14	1	60	None/None
June 22, 2022	07:02-08:35	13	2	80	None/Rain

4.2.3 Amphibians

Four amphibian call monitoring stations were established to target wetland habitat in the Study Area (**Figure 2, Appendix A**). The stations were surveyed in April, May, and June as per the Marsh Monitoring Program (Bird Studies Canada 2009). At each station, the observer recorded all calling toads and frogs over a three-minute period. Call levels were described using values of 1, 2, or 3. Level 1 indicated that individuals could be counted, and calls were not simultaneous. Level 2 indicated that calls were distinguishable with some simultaneous calling. Level 3 indicated a full chorus where calls were continuous and overlapping. The distance and direction for each individual or chorus detected was estimated and recorded. A summary of call survey dates, times and weather is provided in **Table 3**.

Table 3: Amphibian Call Count Survey Dates, Times, and Weather Conditions

Date	Time	Temp. (°C)	Wind (Beaufort)	Cloud (%)	Precipitation/ Precipitation in past 24 hrs
April 8, 2021	20:31-21:17	19	3	15	none/none
May 13, 2021	21:05-22:00	14-17	1	0	none/none
June 10, 2021	23:00-00:00	19	1	1	none/unknown

4.2.4 Wildlife and Wildlife Habitat

4.2.4.1 Incidental Wildlife Observations

Incidental wildlife observations were recorded during the field investigations. All wildlife species identified by sight, sound or distinctive signs during all surveys were recorded, as described in Section 5.2.5. and documented within Appendix E.

4.2.4.2 Wildlife Habitat Assessment

Wildlife habitat assessments were conducted concurrently with vegetation surveys to identify suitable for potential habitat for SAR and SWH, including candidate and confirmed SWH described by the *Significant Wildlife Habitat Technical Guide* (MNR 2000) and *Criteria Schedules for Ecoregion 7E* (MNRF 2015). Where applicable, a description of the attributes and location of wildlife habitat features were recorded, such as nests, dens, candidate hibernacula, vernal pools, crayfish burrows, and seeps. Assessment methods are further described in **Sections 6.1 - 6.3**.

4.2.5 Fish and Fish Habitat / Headwater Drainage Feature Assessment

Fish habitat and HDFs were not assessed within the Study Area limits due to access restrictions at the time of preparation of this report. The following field methods apply to surface water features accessible from adjacent roads.

4.2.5.1 Fish Habitat Assessment

Habitat information was collected on March 23 and August 24, 2021 at Black Creek north of the Study Area within the Weston Road municipal ROW. The following habitat characteristics were recorded, using definitions in the Ontario Stream Assessment Protocol (Stanfield 2010): channel dimensions, substrate, morphology, cover for fish and riparian conditions (e.g., vegetation). Water quality parameters were measured just below the water surface using a handheld Yellow Springs Instruments (YSI) water quality multiprobe. Photographs were taken to document aquatic ecological conditions at the time of the field investigation. Representative photos are included in Appendix F.

4.2.5.2 Headwater Drainage Feature Assessment

The data requirements for the *Evaluation, Classification and Management of Headwater Drainage Features Guideline* (HDF Guideline) (TRCA and CVC 2014) could not be obtained in full due to property access restrictions; therefore, field data regarding hydrology data and the presence of fish habitat were not collected. The assessment of a potential HDF was based on results of Stantec's vegetation survey (ELC data) and the amphibian call count surveys for the Study Area. The methods for these surveys are provided in **Sections 4.2.1** and **4.2.3**, respectively.

4.3 Natural Heritage Features and Functions

Following the TRCA Environmental Impact Statement Guidelines (TRCA 2014a) and the Environmental Management Guideline in support of the Vaughan Official Plan (City of Vaughan 2013), the following technical documents were used to describe terrestrial natural heritage features and assess their functions:

- PPS (MMAH 2020)
- Significant Wildlife Habitat Technical Guide (MNR 2000) and Ecoregion Criteria Schedule for 7E (MNRF 2015)
- Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement (MNR 2010)
- Significant Wildlife Habitat Mitigation Support Tool (MNR 2014)

4.3.1 Species at Risk

For this report, SAR are defined as:

- Endangered and threatened species that are on the SARO list and protected by the ESA
- Endangered and threatened aquatic species and migratory birds that are listed on Schedule 1 of the federal SARA
- Non-aquatic species or migratory birds on Schedule 1 of SARA are excluded because protection is generally not provided outside of federal lands

A list of potential SAR that may occur in the Study Area was created using the following criteria:

- Records of species occurrence in or near the Study Area from background sources listed in **Section 4.1.1**
- SAR with ranges that overlap with the Study Area and have suitable habitat in the Study Area

The presence of SAR was determined using targeted surveys for vegetation, breeding birds, bats and amphibians. For other species, habitat assessments were conducted to determine their likelihood of occurrence. SAR with suitable habitat and at least one (1) recent record and/or an overlapping range in the Study Area were considered to have a reasonable probability of occurring.

4.3.2 Species of Regional Concern

The TRCA assigns all fauna and flora species and vegetation communities recorded within the region a local rank (L-rank) that is partly on the ecological sensitivity of the species/community and partly on the population status within the TRCA jurisdiction (TRCA 2021). The L-rank has a value ranging from L1 to L5.

Species and communities that are ranked L1 to L3 are of regional conservation concern, which means that they are at risk within the entire TRCA jurisdiction over the long term. This species may not necessarily be rare at present, but are highly sensitive to habitat loss and disturbances associated with changes in the surrounding habitat matrix (i.e., matrix influences). Non-native species are indicated by L+.

Species recorded in the Study Area during field investigations were all assigned TRCA L-ranks (**Appendices D** and **E**).

4.3.3 Significant Wildlife Habitat

The PPS identifies wildlife habitat as:

> *"areas where plants, animals, and other organisms live and find adequate amounts of food, water, shelter, and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species."*

And identifies wildlife habitat as significant when:

> *"ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System… Criteria for determining significance may be recommended by the Province, but municipal approaches that achieve the same objective may also be used."*

The Significant Wildlife Habitat Technical Guide organizes SWH into four categories:

habitats of seasonal concentrations of animals

1. rare vegetation communities or specialized habitats for wildlife
2. habitats of Species of Conservation Concern
3. animal movement corridors

4.3.4 Species of Conservation Concern

The Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement defines SOCC as follows:

- Species that are rare or substantially declining, or have a high percentage of their global population in Ontario
- Special Concern species identified under the ESA on the SARO List
- Species identified as nationally endangered or threatened by the Committee on the Status of Endangered Wildlife in Canada or SARA, which are not protected in regulation under Ontario's ESA

Provincial ranks (S ranks) are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number of occurrences in Ontario and are not legal designations. Species with provincial ranks of S1 to S3 are tracked by the MNRF and considered SOCC. Provincial S ranks are defined as follows:

- S1: Critically imperiled; usually fewer than 5 occurrences
- S2: Imperiled; usually fewer than 20 occurrences
- S3: Vulnerable; usually fewer than 100 occurrences
- S4: Apparently secure; uncommon but not rare, usually more than 100 occurrences
- S5: Secure, common, widespread and abundant
- "?" beside an S-rank indicates some uncertainty with the ranking

Similar to the approach for SAR, the probability of each SOCC to be present in the Study Area was assessed using the following criteria:

- records of the species in the Study Area
- SOCC with ranges that overlap with the Study Area
- the presence of suitable habitat in the Study Area

SOCC with suitable habitat and at least one (1) existing record and/or an overlapping range in the Study Area were considered to have a reasonable probability of occurring. All features and habitats in the Study Area are evaluated against criteria outlined in the four (4) SWH guidance documents (**Section 4.3.2**). Any features or habitats that are found to meet the definition of SWH are considered significant.

4.3.5 Significant Wetlands

The PPS defines wetlands as:

> *"…lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case, the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs, and fens. Periodically soaked or wetlands being used for agricultural purposes which no longer exhibit wetland characteristics are not considered to be wetlands for the purposes of this definition."*

And defines wetlands as significant when:

> *"…identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time…"*

Provincially Significant Wetlands (PSWs) are natural areas designated by MNRF that are considered significant based on a range of high-value features and functions. PSWs were identified for the Study Area using LIO (MNRF 2021b). PSWs and locally significant wetlands are mapped as Core Features on Schedule 2 of the City of Vaughan Official Plan. However, not all wetlands have been evaluated for significance by MNRF or local agencies.

4.3.6 Significant Woodlands

According to the PPS, woodlands are defined as:

> *"treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels."*

And significant woodlands are defined as:

> *"…an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history;…"*

Section 3.3.3.3 of the City of Vaughan Official Plan provides criteria for identifying Significant Woodlands and maps them as Core Features on Schedule 2. Mapped woodlands, and woodlands that meet the criteria in the PPS and City of Vaughan Official Plan are considered significant.

4.3.7 Significant Valleylands

According to the PPS, a valleyland can be defined as:

> *"a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year."*

As it applies to valleylands, significant means:

> *"ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system; …*

Significant Valleylands are designated by Conservation Authorities, MNRF or municipalities. All designated valleylands overlapping the Study Area are considered significant.

4.3.8 Significant Areas of Natural and Scientific Interest

The PPS defines Areas of Natural and Scientific Interest (ANSI) as:

> *"…areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education."*

ANSIs are designated and delineated by MNRF and mapped in the LIO database (MNRF 2019b). They are also mapped in Schedule 3 of the City of Vaughan Official Plan. There are no ANSIs within the Study Area.

4.3.9 Fish and Fish Habitat

The *Fisheries Act* defines fish habitat as:

> *"…waters frequented by fish and any other areas on which fish depend directly or indirectly in order to carry out their life processes including spawning grounds and nursery, rearing, food supply and migration areas."*

The fish and fish habitat protection provisions of the *Fisheries Act* apply to all fish and fish habitat in Canada (DFO 2019b).

4.3.10 Headwater Drainage Features

Within the Study Area, a headwater drainage feature (HDF) was assessed using *The Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (TRCA and CVC 2014) as described in **Section 4.1.2**. As outlined in the HDF guidelines, the guidelines can be applied to a drainage feature that is:

- part of the drainage network (i.e., drainage channels that are identified from aerial photography, and/or drainage lines resulting from ArcHydro analysis); or
- a groundwater seepage area or spring; or
- a connected headwater wetland (a surface outlet connects to downstream); and
- not a mapped or known perennially flowing stream.

The HDF guidelines were developed to provide direction to practitioners for features that are not clearly covered by existing policy and legislation as are important eco-hydrological features (e.g., perennial streams and Provincially Significant Wetlands (PSW)), but which may contribute to overall watershed health (TRCA and CVC 2014).

The data and observations collected are used to inform a series of classifications of the feature in relation to its function with respect to hydrology, riparian characteristics, fish and fish habitat, and terrestrial habitat. These classifications are then used to navigate a flow chart that determines the most appropriate management approach for the feature. Management approaches can range from protection in situ to no management requirements (i.e., removal is possible), with interim management approaches that include replication of form and function or replication of function alone.

5.0 Existing Conditions

5.1 Background Review

5.1.1 Physiography

The Study Area is situated within Ecodistrict 7E-4 (Henson and Brodribb 2005), which extends from the Rouge River west to Bronte Creek. The geology and substrates of the Toronto Ecodistrict are characterized by glacial and modern deposits. Approximately 7% of the ecodistrict supports relatively natural cover (Wester et al. 2018).

5.1.2 Designated Natural Areas

The NHIC Biodiversity Explorer (MNRF 2021a), LIO database (MNRF 2021b; MNRF 2020e; MNRF 2020f), City of Vaughan OP (City of Vaughan 2010) and TRCA Regulated Areas and Wetlands mapping (TRCA 2021) were reviewed to identify natural heritage features in the Study Area. Black Creek is present on the west side of the Study Area and includes a short tributary that appears to start within the Study Area (**Section 5.1.3**). Within the Study Area, Black Creek is identified on Schedule 2 of the Vaughan OP as a feature that is 'under consideration for Core Feature addition, deletion, or classification as an Enhancement Area' (City of Vaughan 2010).

Black Creek and its associated tributary are regulated features on TRCA Regulated Areas Mapping (TRCA 2021). The wetlands present in the Study Area are not shown in mapping for the Vaughan Official Plan nor TRCA Regulated Area and Wetlands mapping (**Appendix B**). There are no significant woodlands, valleylands or ANSIs within the Study Area.

5.1.3 Fish and Fish Habitat / Headwater Drainage Features

Background data with respect to fish and fish habitat and headwater drainage features in the Study Area are presented by surface water feature, as per information available from the background data sources.

The Study Area is located in the Black Creek subwatershed of the Humber River watershed. Based on review of a recent aerial photograph and background information, the following surface water features are located within the Study Area:

- Black Creek (MNRF 2021e)
- A tributary to Black Creek, entering Black Creek from the east (further discussed as Headwater Drainage Feature A (HDF-A) (MNRF 2021e; TRCA 2021)
- A potential headwater drainage feature south of HDF-A. This feature is not mapped (MNRF 2021e; TRCA 2020) but is visible in 2020 aerial photographs (York Region 2021).

- A stormwater management pond near the east end of the Study Area within the Bass Pro Mills Drive West to Highway 400 South on-ramp

5.1.3.1 Black Creek

North of the Study Area, Black Creek is located parallel to Weston Road and is within the ROW on the east side of Weston Road (MNRF 2021e; York Region 2021). Approximately 45 m north of the Study Area, Black Creek turns to the east and away from Weston Road and a 300 m reach is located behind (east of) a commercial property. In the southern portion of the Study Area, the channel is located within an approximately 15 m wide allowance between commercial properties.

Within the Study Area, Black Creek is mapped as a watercourse with a permanent flow regime and a warmwater thermal regime (MNRF 2021e). It is also a regulated area (TRCA 2020) (Appendix B) and is not mapped as a classified drain (MNRF 2021f). Fish species occurrences for Black Creek as available from the LIO database are listed in Table 4. The fisheries data represent combined data collection locations, as available from the LIO database and the community includes species that occur in warmwater and coolwater habitats. There are no records of provincially or federally regulated aquatic SAR in the Study Area or downstream of the Study Area (DFO 2021; MNRF 2021a).

Table 4: Fish Species Captured in Black Creek (MNRF 2021b)

Common Name	Scientific Name	Thermal Class*
Brook Stickleback	*Culaea inconstans*	Cool
Common Carp	*Cyprinus carpio*	Warm
Common Shiner	*Luxilus cornutus*	Cool
Creek Chub	*Semotilus atromaculatus*	Cool
Golden Shiner	*Notemigonus crysoleucas*	Cool
Hornyhead Chub	*Nocomis biguttatus*	Cool
Pumpkinseed	*Lepomis gibbosus*	Warm
White Sucker	*Catostomus commersonii*	Cool
* Coker et al. 2001		

5.1.3.2 Headwater Drainage Feature A

When the TOR was prepared and approved, HDF-A was not within the TRCA's Regulated Area, as per data available from the Regulation Mapping Tool in 2019 and 2020. The Regulated Area mapping was updated in 2020 to include HDF-A is within TRCA's Regulated Area (TRCA 2020) (Appendix B). Despite the change, HDF-A is discussed in this report in the context of a headwater drainage feature. According to the LIO database, HDF-A is a tributary to Black Creek with a permanent flow regime and warmwater thermal regime (MNRF 2021e). It is not mapped as a classified drain (MNRF 2021f) and there are no fish community data available for this feature.

HDF-A is visible in aerial photographs from 2005 and 2020 (York Region 2021). The feature originates at a small (approximately 40 m x 10 m) ponded area in the approximate centre of the Study Area (HDF-A/ Reach 2). Downstream of Reach 2, Reach 1 is approximately 260 m long and drains in a southwest direction to Black Creek. The pond and the drainage features were constructed between 1999 and 2005, based on review of historical aerial photographs (York Region 2021).

5.1.3.3 Potential Headwater Drainage Feature

Using aerial photographs (e.g., York Region 2021), a potential HDF was identified in the southern part of the Study Area (**Figure 2, Appendix A**). The feature will not be impacted by the footprint of the proposed extension of Bass Pro Mills which will occur to the north of this feature. This feature is currently not regulated by the TRCA (TRCA 2020) and based on historical aerial photographs, the feature was not present in or prior to 2005 (York Region 2021). On recent (2020) aerial photographs the feature is visible adjacent to the wetland. The feature may provide a hydrologic connection between the wetland and Black Creek, although it is obscured or not visible in some sections on the 2020 aerial photograph.

5.1.3.4 Stormwater Management Pond

A stormwater management pond is located within the Bass Pro Mills Drive West to Highway 400 South on-ramp. The pond has a length of approximately 100 m and the banks are densely vegetated by tall invasive grasses (e.g., *Phragmites*). The pond was constructed between 2002 and 2005 based on review of historical aerial photographs (York Region 2021). The pond is surrounded by paved roads and does not have a surface connection to a watercourse.

5.1.4 Species at Risk and Species of Conservation Concern

The background review identified 18 terrestrial SAR and SOCC that may occur in the Study Area (**Appendix C**). The list includes one amphibian, four mammals, nine birds, one plant, two reptiles and one insect. Of these, nine are SAR and eight are SOCC. There are no records of provincially or federally regulated aquatic SAR in the Study Area or downstream of the Study Area (DFO 2021a; MNRF 2021a).

A SAR and SOCC habitat suitability assessment was completed (**Appendix C)** based on the results of field investigations. Results of the assessment are summarized in **Section 6.1**.

5.2 Field Investigations

5.2.1 Vegetation Communities

The Study Area is dominated by a culturally influenced mixed meadow. There is a large shallow marsh in the center of the Study Area and a shallow marsh associated with the Black Creek alignment.
A residential subdivision is present in the west side of the Study Area and Vaughan Mills Shopping Plaza is present in the east.

ELC community descriptions are provided in **Table 5** and community mapping is shown on **Figure 2, Appendix A**. The vegetation communities identified in the Study Area are common provincially and regionally based on the rankings assigned by the NHIC (MNRF 2021d) and TRCA (TRCA 2021).

Table 5: Ecological Land Classification (ELC) Vegetation Types

ELC Type	Community Description
Meadow Communities	
MEMM3 Dry-Fresh Mixed Meadow Ecosite	The Study Area is dominated by culturally influenced mixed meadow communities, much of which appears to be comprised of former agricultural lands. Meadow within the Highway 400 right of way appears to be regularly mown. Dominant species included Canada thistle (*Cirsium arvense*), goldenrod species (*Solidago* sp.), Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*) and bird's-foot trefoil (*Lotus corniculatus*).
Marsh Communities	
MASM1/MAMM1 Graminoid Mineral Shallow Marsh Ecosite/ Graminoid Mineral Meadow Marsh Ecosite	The MASM1/MAMM1 marsh community near the center of the Study Area is estimated to be approximately 3.6 ha in size. There is a berm that divides the community in half with a narrow connection in the center. The feature is dominated by both common reed (*Phragmites australis)* and narrow-leaved cattail (*Typha angustifolia*). There was a small amount of shallow standing water observed in the northern section of the wetland and it appeared that there was a larger area of permanent standing water in the southern section of the wetland. Headwater Drainage Feature A is connected to the northwest corner of the MASM1/MAMM1 wetland.
MASM1-1 Cattail Mineral Shallow Marsh	The MASM1-1 community is located on the west side of the Study Area. It was associated with Black Creek with some expanded areas of wetland in low-lying areas along the creek alignment. There is a patch of *Phragmites* at the north end of the feature.
Open Water Communities	
SA Shallow Water	The shallow water community consists of a stormwater management pond inside the on ramp to the southbound lanes of Highway 400. The pond is surrounded by dense, highly invasive *Phragmites*.
Constructed Communities	
CVC_1 Business Sector	The CVC_1 business community is located on the east side of the Study Area and consists of Vaughan Mills Shopping Center and various other commercial shopping buildings.
CVC_2 Light Industry	There are two CVC_2 industrial communities located east of Weston Road. A portion one of these communities occurs on the west side of the Project Location and consists of a Garden Center and Storage Facility.
CVI_1 Transportation	The CVI_1 transportation communities includes paved roads and highways in the Study Area including Highway 400, Bass Pro Mills Drive and Weston Road.
CVR_3 Single Family Residence	CVR_3 residential community consists of a large single family residential development west of Weston Road.

5.2.2 Vascular Plant Species

A list of vascular plant species observed during botanical field investigations is in **Appendix D**. Forty-seven (47) distinctive vascular plants were recorded in the Study Area, eight (8) of which were only identified to genus. Of the thirty-nine (39) plants that were identified to species, 14 (36%) were native. All of the native plants documented had a provincial rank of S4 or S5, indicating they are common in Ontario with the exception of honey locust (*Gleditsia triacanthos*; ranked S2?). Honey locust was observed as a young tree at the edge of the MEMM3 meadow. It is assumed that this tree was an escapee from a planted specimen in the adjacent residential subdivision or garden nursery. All of the recorded plant species had local ranks of L5 (secure) or L+ (non-native). No highly sensitive plant species (CC = 9-10) were documented during the botanical inventory.

Common reed (*Phragmites*), a highly invasive wetland plant, was observed in the Study Area. *Phragmites* was co-dominant with narrow-leaved cattail in the MASM1/MAMM1 community and abundant at the north end of the MASM1-1 community. *Phragmites* dominated the MASM1-12 community at the south end of the Study Area.

5.2.3 Breeding Birds

Twenty avian species were recorded during breeding bird surveys (**Appendix E**). All species, except for Ring-billed Gull, are presumed to be breeding in the Study Area.

American Woodcock, Mourning Dove and Virginia Rail were also observed in the Study Area as incidental observations outside of the breeding bird surveys. American Woodcock and Virginia Rail were observed calling in suitable breeding habitat during the May amphibian survey and are presumed to be breeding in the Study Area. Mourning Dove was observed during the summer botanical survey during the breeding bird survey window, and this species is also presumed to be breeding in the Study Area.

Barn Swallow, which was observed foraging over the Study Area during the June 22, 2021 breeding bird survey was the only SAR recorded during field investigations. Buildings within and near the Study Area may provide nesting habitat for this Threatened species.

Four of the bird species have a local ranking of L3, which indicates that they are of regional conservation concern (TRCA 2016). These species are: Virginia Rail, Alder Flycatcher, Marsh Wren and Vesper Sparrow. An additional six bird species are ranked as L4: Kildeer, Eastern Kingbird, Barn Swallow, Savannah Sparrow, Swamp Sparrow and Common Yellowthroat. L4 species are considered species of urban concern, which occur throughout the region but could show declines if urban impacts are not effectively mitigated (TRCA 2016).

5.2.4 Amphibians

There were no frogs or toads heard in the Study Area at any of the four amphibian survey stations. Traffic noise from Highway 400 was quite loud during the surveys, but survey locations were positioned to target the wetland features and it would have been possible to hear high amphibian calling activity. For this reason, the wetland features in the Study Area are unlikely to provide significant wildlife habitat for breeding amphibians.

5.2.5 Incidental Wildlife Observations

Wildlife recorded incidentally during field investigations included American Woodcock, Mourning Dove, Virginia Rail, Coyote, Muskrat, Striped Skunk and an unknown bat species. These species are included in the wildlife species list in **Appendix E**. It is not known whether the observed bat species was a SAR because it could not be positively identified. The other species observed incidentally are all ranked common and secure in Ontario and within the TRCA jurisdiction.

5.2.6 Fish and Fish Habitat / Headwater Drainage Features

Site conditions recorded during the Stantec's aquatic field investigations are described below. Photographs are provided in **Appendix F**.

5.2.6.1 Black Creek

Black Creek was assessed north of the Study Area within the ROW of Weston Road between Rutherford Road and 120 m north of Astona Boulevard. In this area Black Creek is located between the sidewalk on the east side of Weston Road and commercial developments to the east of the creek. Flow enters this reach from twin corrugated steel pipe culverts (CSP) under Weston Road. On August 24, 2021 the following conditions were observed. The riparian vegetation adjacent to the creek is 5 to 7 m wide. The banks of the creek are constructed, uniform and relatively steep (approximately 45°). The bankfull width is 4 m and the wetted width was 1.5 to 2.0 m; water was clear at the time of the field investigation. The mean water depth was between 0.1 and 0.4 m and the maximum depth was approximately 0.5 m. The bottom substrate was comprised of fines (i.e., muck and silt). Many sections of the channel were densely vegetated by tall grasses i.e. cattails. Cover for fish was minimal, provided by pools areas where deeper water was available (up to approximately 0.5 m deep). There are two culverts at driveways for access businesses on the east side of the creek. The southern culvert is a 12 m long 1.0 m diameter corrugated steel pipe (CSP). The northern culvert is a 20 m long round CSP. Both are embedded in the substate and not barriers to fish migration. Common Carp, Brook Stickleback and Creek Chub were observed during the field investigation; these species are common and widespread in Southern Ontario. In-situ water quality parameters are provided in **Table 6**. The high conductivity is a potential indicator of a high concentration of salt (i.e., road salt) and the lack of a vegetated buffer. Dissolved oxygen was low (<2.1 mg/l) at the time of the August 2021 field investigation. At a water temperature of 25°C, the Provincial Water Quality Objective for warmwater biota is 4 mg/l (MOEE 1994).

Table 6: Air Temperature and In-Situ Water Quality Measurements on August 24, 2021 at Black Creek between Rutherford Rd and Astona Blvd.

Parameter	Value
Air Temperature (°C)	23 - 25
Water Temperature (°C)	23.7 - 24.5
pH	7.0-7.1
Conductivity (µs/cm)	1676 - 1807
Dissolved Oxygen (mg/l)	1.1-2.1

The HDF Guidelines were developed to provide direction for features that are not covered by existing policy and legislation. Since Black Creek provides fish habitat and is regulated by the TRCA, an HDF assessment was not completed.

5.2.6.2 Headwater Drainage Feature A

The availability of fish habitat in HDF-A could not be determined due to limitations with respect to site access.

The HDF Assessment was completed using information from Stantec's terrestrial habitat field investigations and interpretation of aerial photographs. Based on available information, HDF-A/Reach 2 is within the limits of a small wetland (**Figure 2, Appendix A**) and is connected to Black Creek. Available information for the assessment of HDF-A is provided in **Table 7** using the classification categories in the HDF Guidelines (TRCA and CVC 2014). Management recommendations for HDF-A are presented in **Section 6.5.2**.

Table 7: Existing Conditions at HDF-A

Reach	Existing Conditions by HDF Classification Category			
	Hydrology[1]	Riparian[2]	Fish and Fish Habitat	Terrestrial[2]
HDF-A/ Reach 1	Flow Condition: Unknown - Further Study Required Feature Type: Swale	Meadow	Unknown - Further Study Required	No terrestrial habitat present.
HDF-A/ Reach 2	Flow Condition: Unknown - Further Study Required Feature Type: Wetland	Wetland	Unknown - Further Study Required	Wetland habitat occurs within the corridor, but no breeding amphibians are present

[1] Feature Type is estimated and based on interpretation of aerial photographs and ELC data

[2] Based on ELC data and amphibian call surveys

5.2.6.3 Potential HDF

This potential HDF was not included in the field investigations due to site access restrictions. It is located within a meadow community, as described in **Section 6.5.3** and is unlikely to provide fish habitat as it does not appear to be connected to Black Creek.

The hydrology classification and fish and fish habitat classification of this feature are not known and should be determined during subsequent phases of the project, if required. During detail design field surveys should be completed and the results used to determine if this potential HDF meets the definition of a headwater drainage feature under the Living City Policies (TRCA 2014).

5.2.6.4 Stormwater Management Pond

The pond is a constructed stormwater management pond; therefore, was not assessed with respect to fish and fish habitat.

6.0 Assessment of Key Features and Functions

The natural heritage features in the Study Area were assessed for significance based on the evaluation of significance criteria listed in **Section 3.3**. There were no woodlands or valleylands present on the OP mapping and there were no ANSIs on MNRF mapping. Therefore, these features were not included in the assessment below. Key natural heritage features summarized below include SAR, SOCC, species of regional concern, SWH, wetlands and fish and fish habitat.

6.1 Species at Risk

The ten (10) SAR identified as potentially occurring in the Study Area during the background review (**Section 5.1.4**) were evaluated using criteria outlined in **Section 4.3.1** to identify whether the SAR had a reasonable potential to be present in the Study Area. This assessment is detailed in **Appendix C**. Suitable habitat for Barn Swallow and bat SAR was identified in the Study Area. The results of the habitat suitability assessment for these species are presented in **Table 8**.

Table 8: SAR with potential to be present in the Study Area

Species	Habitat Suitability Assessment Results
Barn Swallow	Barn Swallow was observed foraging over the meadow in the Study Area as during the June 22, 2021 breeding bird survey. Buildings and the Bass Pro Mills Drive Highway 400 overpass have the potential to provide nesting habitat for Barn Swallow.
Bat SAR: Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-coloured Bat	There were no suitable bat roost trees identified in the Study Area; however, buildings in the Study Area have potential to support bat SAR.

6.2 Species of Regional Concern

There were no plant species or vegetation communities of conservation concern within the Study Area, but there were four bird species of regional conservation concern (L3) observed: Virginia Rail, Alder Flycatcher, Marsh Wren and Vesper Sparrow.

6.3 Significant Wildlife Habitat

A wildlife habitat assessment was completed to determine the if candidate and/or confirmed SWH was present in the Study Area. The assessment included the habitat features described in Ecoregion Criteria Schedules for 7E in the following categories:

- Habitats of Seasonal Concentrations of Animals
- Rare Vegetation Communities or Specialized Habitats for Wildlife
- Habitats of Species of Conservation Concern
- Animal Movement Corridors

Evaluation criteria and the results of the assessment are in **Appendix G.** A summary of the assessment is also provided below.

6.3.1 Seasonal Concentration Areas of Animals

Candidate habitat for turtle wintering areas was identified in the Study Area in the southern section of the MASM1/MAMM1 wetland. No other Candidate Seasonal Concentration Areas of Animals were identified in the Study Area. Although the stormwater management pond associated with the Bass Pro Mills Drive West to Highway 400 on-ramp could support overwintering turtles, human made ponds are not considered SWH.

6.3.2 Rare Vegetation Communities

There were no Candidate Rare Vegetation Communities in the Study Area.

6.3.3 Specialized Habitats for Wildlife

The MASM1/MAMM1 wetland communities are the only communities with the potential to provide specialized habitats for wildlife (marsh breeding bird habitat). There were two marsh breeding bird habitat indicator species observed during field investigations: Virginia Rail and Marsh Wren. Targeted callback surveys for marsh breeding birds were not completed during field investigations; however, it is recommended that surveys be completed during detail design to confirm whether marsh breeding bird habitat is present. No other Candidate Specialized Habitats for Wildlife were identified in the Study Area.

6.3.4 Habitats of Species of Conservation Concern

The eight (8) SOCC identified as potentially occurring in the Study Area during the background review (**Section 5.1.4**) were evaluated to determine whether the SOCC may be present in the Study Area (**Appendix C)**. Suitable habitat for Monarch, Eastern Milksnake and Snapping Turtle was identified in the Study Area. The results of the habitat suitability assessment for these species are presented in **Table 9**.

Table 9: SOCC with potential to occur in the Study Area

Species	Habitat Suitability Assessment Results
Monarch	Potential foraging habitat for Monarch is present in the Study Area throughout meadow communities. Occasional common milkweed plants (its larval host plant) were observed in the Study Area.
Eastern Milksnake	Potential habitat is present throughout the Study Area. Eastern Milksnake was not observed during field investigations; however, presence of Eastern Milksnake is difficult to detect without targeted coverboard surveys and there was no access to the Study Area.
Snapping Turtle	Potential habitat is present in the Study Area in the permanent standing water in the MASM1/MAMM1 wetland and the stormwater pond in the Bass Pro Mills Drive West to Highway 400 South on-ramp. Snapping Turtle was not observed during field investigations; however, Snapping Turtle is difficult to detect because the species does not tend to bask and standing water in the MASM1/MAMM1 wetland was difficult to observe without site access.

6.3.5 Animal Movement Corridors

No candidate animal movement corridors were identified in the Study Area.

6.4 Wetlands

There were no provincially significant wetlands or unevaluated wetlands identified in the Study Area on MNRF mapping, or on TRCA Regulation Mapping (MNRF 2021a, TRCA 2020).

There are two wetland communities present in the Study Area. The MASM1/MAMM1marsh community near the center of the Study Area is approximately 3.3 ha in size. There is a berm that divides the community in half with a narrow connection in the center. The feature is dominated by both common reed and narrow-leaved cattail. There was a small amount of shallow standing water observed in the northern section of the wetland and it appeared that there was a larger area of permanent standing water in the southern section of the wetland. Headwater Drainage Feature A is connected to the northwest corner of the MASM1/MAMM1 wetland.

Little is known about the hydrologic and ecological functions of the wetland. The functions of the wetland related to ground water recharge and discharge and water storage and release are unknown. The presence of fish and fish habitat is also not known (**Section 6.5**), and only limited information on terrestrial wildlife habitat is available due to land access restrictions. No amphibians were recorded during roadside call count surveys but calling individuals may have been missed due to traffic noise. The wetland is providing habitat for bird species, including those ranked as species of regional concern (Alder Flycatcher, Swamp Sparrow, Marsh Wren, Virginia Rail). The wetland is dominated by common and invasive plant species.

6.5 Fish and Fish Habitat / Headwater Drainage Features

6.5.1 Black Creek

Within the Study Area, Black Creek provides permanent warmwater fish habitat. Fish and fish habitat in Black Creek is regulated by the *Fisheries Act*.

6.5.2 Headwater Drainage Feature A

The presence of fish and fish habitat in HDF-A is not known and should be determined during subsequent phases of the project.

The two reaches of HDF-A were classified in accordance with the *HDF Guidelines* based on the results of the background information and field surveys from adjacent ROWs. The results of the classification are summarized in **Table 10**.

Table 10: HDF Functional Classifications

Watercourse	Classification Categories			
	Hydrology*	Riparian	Fish and Fish Habitat*	Terrestrial
HDF A/ Reach 1	Unknown	Valued	Unknown	Limited
HDF A/ Reach 2	Unknown	Important	Unknown	Valued

* Field data required

The results from the background information search and the terrestrial field observations were used to classify the reaches in the Study Area according to the HDF guidelines and determine the associated management recommendations.

With respect to Management Recommendations, a conservative approach was taken because field survey components of the HDF assessment could not be completed. Based on the results of the information available at the time of writing this limited EIS report, the following preliminary Management Recommendations were determined for HDF-A. The Management Recommendations may be revised during the detail design stage of the project, after field surveys have been completed.

- HDF-A/ Reach 1: Conservation
- HDF-A/ Reach 2: Conservation

The following actions are associated with the 'Conservation' Management Recommendation (TRCA and CVC 2014):

- Maintain, relocate, and/or enhance drainage feature and its riparian zone corridor
- If catchment drainage has been previously removed or will be removed due to diversion of stormwater flows, restore lost functions through enhanced lot level controls (i.e., restore original catchment using clean roof drainage), as feasible;
- Maintain or replace on-site flows using mitigation measures and/or wetland creation, if necessary;
- Maintain or replace external flows;
- Use natural channel design techniques to maintain or enhance overall productivity of the reach;
- Drainage feature must connect to downstream.

6.5.3 Potential Headwater Drainage Feature

A discontinuous surface water feature is visible on recent aerial photographs. This feature should be treated as a potential HDF as it may meet the definition of a headwater drainage feature under the Living City Policies (TRCA 2014), pending the collection of field data.

The presence of water (hydrology classification) and fish and fish habitat in this feature are not known and should be determined during subsequent phases of the project.

This feature will not be impacted by the footprint of the proposed extension of Bass Pro Mills which will occur to the north of this feature.

6.5.4 Stormwater Management Pond

The stormwater management pond near the east end of the Study Area is not connected to surface water features that support fish and fish habitat; therefore, it is not regulated by the *Fisheries Act*. The stormwater management pond is not an HDF.

6.6 Linkages and Corridors

The Study Area is surrounded by highways, municipal roads, residential and commercial development and the closest natural heritage features are more than 2 km from the Study Area. There are no woodlands or valleylands present and the wetlands in the Study Area are not connected to any other wetland features. Furthermore, the area north of the proposed road extension is slated for development, which will further reduce natural habitat. At present, there are no ecologically functional terrestrial linkages within the Study Area.

Approximately 500 m south of the Study Area, there is a vegetated riparian buffer (~75 m wide) along Black Creek, which continues for about 800 m downstream. Restoring the vegetated buffer on Black Creek in the Study Area and connecting it to the vegetated buffer on the reach to the south is an opportunity to improve ecological terrestrial linkage in the Study Area.

Within Black Creek two culverts along Weston Road as well as shallow water conditions and dense grasses in the channel create poor connectivity for fish but no complete barriers to fish migration. Black Creek has a open channel until approximately 600 m north of the study area. Further north of the study area Black Creek is piped underground.

7.0 Preliminary Impact Assessment

7.1 Proposed Works

The City of Vaughan is planning to extend Bass Pro Mills Drive from the existing Highway 400 bridge to Weston Road (**Figure 3, Appendix A**; also see **Appendix H**). The proposed road is 30 m wide and includes a new crossing of Black Creek, and installation of an equalizer culvert between the two portions of the MASM1/MAMM1 wetland that will be bisected by the proposed alignment (**Appendix H)**.

The proposed relocation and new crossing of Black Creek, the relocation of HDF-A, and proposed future road connections will be confirmed during detail design. Grading easements beyond the 30 m proposed ROW to toe of slopes will be established during detail design with adjacent owners and development.

7.1.1 Recommended Alignment

The recommended alignment shown on **Figure 3, Appendix A** was chosen as it posed the least impact to the technical, socio-economic, natural and cultural environments. A detailed evaluation of the alternative alignments will be provided in the Environmental Study Report (ESR).

7.2 Terrestrial Environment

7.2.1 Loss of Terrestrial Habitat

The proposed extension of Bass Pro Mills Drive will result in the permanent loss of vegetation. Based on the preliminary design, there is an anticipated loss of approximately 1.2 ha of marsh (1 ha of MASM1/ MAMM1; 0.2 ha of MASM1-1), and 3.4 ha of meadow. Temporary short-term disturbance to vegetation outside of the direct impacts may also occur during construction.

Potential indirect impacts to natural features that are adjacent to the proposed construction include vegetation disturbance, soil compaction, sedimentation, contamination from spills, noise and dust generation. These indirect impacts are associated with the construction phase of the Project will be mitigated through the application of appropriate construction techniques and mitigation measures.

7.2.2 Disturbance to Wetlands

The proposed road extension will bisect the MASM1/MAMM1 and MASM1-1 wetland communities, resulting in approximately 1.0 ha and 0.2 ha of wetland loss, respectively. Loss of the MASM1/MAMM1 wetland would include loss of candidate marsh breeding bird habitat and candidate habitat for turtle wintering areas (impacts discussed in **Section 7.2.4**). To reduce the likelihood of sedimentation, standard Sediment and Erosion Control (**Section 8.1**) and Vegetation Protection (**Section 8.2**) is recommended along this feature. Mitigation and compensation for wetlands is also discussed in **Section 8.2.**

7.2.3 Potential Interference with Bird Nests

Natural vegetation within the proposed construction area has potential to support nesting birds and any work near active bird nests has the potential to disturb nesting behavior or damage/destroy the nests. This includes any vegetation clearing within the proposed construction area during the active breeding bird window (i.e., April 1 to August 31). Measures to mitigate impacts to bird nests will be implemented as outlined in **Section 8.4**.

7.2.4 Potential Disturbance to Species of Conservation Concern and Significant Wildlife Habitat

The following SWH habitat features were identified in the Study Area:

- Candidate Habitat for Turtle Wintering Areas
- Candidate Marsh Breeding Bird Habitat
- Potential presence of SOCC:
  - Snapping Turtle
  - Eastern Milksnake
  - Monarch

Candidate habitat for turtle overwintering is discussed together with Snapping Turtle.

7.2.4.1 Candidate Marsh Breeding Bird Habitat

Candidate marsh breeding habitat was identified in the MASM1/MAMM1 wetland due the presence of two marsh breeding bird indicator species: Virginia Rail and Marsh Wren. The extension of Bass Pro Mills Drive will result in a loss of 1.0 ha of the MASM1/MAMM1 wetland, reducing the size of the wetland from approximately 3.3 ha to 2.3 ha. Candidate marsh breeding bird habitat has not been confirmed in the Study Area, and it is recommended that callback surveys for marsh breeding birds be completed during detail design to determine habitat presence. Measures to mitigate impacts to marsh breeding birds are outlined in **Section 8.6.1**.

7.2.4.2 Snapping Turtle

Snapping Turtle may use the southern section of the MASM1/MAMM1 wetland and/or the stormwater pond associated with the Bass Pro Mills Drive West to Highway 400 South on-ramp for overwintering and summer residence. The extension of Bass Pro Mills Drive will result in a loss of 1.2 ha of wetland habitat. The MASM1/MAMM1 wetland located near the center of the Study Area will be reduced in size to approximately 2.3 ha. The presence of Snapping Turtle has not been confirmed in the Study Area, but Snapping Turtles are known to be present in wetlands that are less than 1.0 ha and will also persist in

isolated remnant wetlands (Dupuis-Désormeaux et al. 2019). Therefore, we have assumed that Snapping Turtle may be present and recommended mitigation to reduce the likelihood of impacts in **Section 8.5**.

7.2.4.3 Eastern Milksnake

Candidate overwintering habitat features for Eastern Milksnake were not observed in the Study Area. However, there is potential for this species to be present and individual snakes could be inadvertently harmed during project activities. Eastern Milksnake is more likely to be encountered during the active season (generally April 1 to October 31). Mitigation is recommended in **Section 8.5** to reduce the likelihood of impacts to this species.

7.2.4.4 Monarch

Potential habitat for monarch is present in the cultural meadow (MEMM3). The proposed construction will directly remove approximately 2.8 ha of meadow. Mitigation to reduce the likelihood of impacts to monarch are discussed in **Section 8.5**.

7.2.5 Potential Disturbance to Species of Regional Conservation Concern

There were four species of regional conservation concern observed in the Study Area, three of which were observed in the MASM1/MAMM1 wetland community (Virginia Rail, Alder Flycatcher, Marsh Wren). The proposed road extension will remove 1.2 ha from the wetland, but the habitat may remain suitable to support these species. It is recommended that wetland compensation plans consider the habitat needs of these three species.

Vesper Sparrow was observed in the MEMM3 meadow community, outside of the proposed construction area. For this reason, no impacts to Vesper Sparrow are anticipated from this project.

7.2.6 Potential Disturbance to Species at Risk

Barn Swallow was the only SAR recorded in the Study Area, but no nest sites were documented. Bat habitat may be present in buildings in the Study Area but not within the area of proposed construction. No impacts to SAR are anticipated from the proposed construction.

7.3 Fish and Fish Habitat / Headwater Drainage Features

The extension of Bass Pro Mills Drive from the existing Highway 400 Bridge to Weston Road includes realignment of a section of Black Creek, a new culvert on Black Creek, and the realignment of HDF-A/ Reach 1. The following preliminary list of activities may be applicable to the project and have the potential to affect fish and fish habitat in the Study Area:

- Excavation
- Grading

- Use of industrial equipment
- The creation of impediments or barriers to fish passage
- Placement of materials or structures in water

Proposed works relevant to Black Creek and HDF-A are summarized below and mitigation measures to address potential effects of the above activities are provided in **Section 8.1**.

7.3.1 Black Creek

7.3.1.1 Realignment

A realignment of Black Creek is proposed as part of the project. The length of the proposed channel will be determined during detail design. Natural channel design techniques should be applied to the design of the realigned channel to reduce long-term effects on fish and fish habitat to the extent possible. The design and approvals process will follow TRCA's Channel Modification Design and Submission Requirements (TRCA 2007). Potential effects during construction include short-term impacts on fish passage and/or water quality due to the temporary isolation and dewatering of the work area. Mitigation measures to protect fish and fish habitat through project design and construction are provided in **Section 8.8**.

7.3.1.2 New Culvert Crossing

Rivers and streams are dynamic systems that can migrate across their floodplains over time, impacting infrastructure such as culverts. Therefore, it is important to recognize and account for natural hazards in association with watercourse crossings. Modifications to or replacement of existing crossings should consider fluvial geomorphological principles. The TRCA's *Crossings Guideline for Valley and Stream Corridors* (TRCA 2015) and the CVC's *Fish and Wildlife Crossing Guidelines* (CVC 2017) are standard and accepted approaches for crossing design and implementation in Southern Ontario.

Culvert construction is an activity for which impacts to fish and fish habitat can be reduced if measures to protect fish and fish habitat are implemented (**Section 8.7**). Potential effects during construction include short-term impacts on fish passage and/or water quality due to the temporary isolation and dewatering of the work area; however, effects can be mitigated through the implementation of mitigation measures summarized in **Section 8.1**.

7.3.2 Headwater Drainage Feature A

HDF-A is a surface water drainage feature that was constructed between 1999 and 2005 based on review of historical aerial photographs. HDF-A/ Reach 1 will be relocated to the north to accommodate the extension of Bass Pro Mills Drive. It will maintain its function as surface water connection between the wetland and Black Creek. The length of the channel may be reduced; however, the details will be determined during detail design of the project. During detail design, reduction in length of this constructed

HDF will be offset by natural channel design techniques to relocate and enhance the HDF and its riparian area. Final channel configuration will depend on the final assessment of the feature when field data are available. The activities associated with HDF-A/ Reach 1 are consistent with the 'Conservation' management recommendations described in the HDF Guidelines (TRCA and CVC 2014). For impacts deemed unavoidable, such as loss of channel length, compensation will be required. The Compensation requirements will be determined according to the TRCA Guideline for Determining Ecosystem Compensation (TRCA 2018).

HDF-A/ Reach 2 will be maintained, as the footprint of the extension of Bass Pro Mills Drive does not overlap with HDF-A/ Reach 2. HDF-A/ Reach 2 will continue to be connected to the downstream portion of the HDF.

Construction mitigation measures to protect downstream fish and fish habitat are included in **Section 8.1** and **Section 8.8**.

8.0 Mitigation Recommendations

Mitigation measures will be implemented to reduce the likelihood of impacts to the natural environment.

8.1 Erosion and Sediment Control

Mitigation measures for sedimentation, erosion, and dust control will be implemented to prevent sediment and dust from entering sensitive natural features. The primary principles associated with sedimentation and erosion protection measures are to:

(1) lessen the duration of soil exposure

(2) retain existing vegetation, where feasible

(3) encourage re-vegetation

(4) divert runoff away from exposed soils

(5) keep runoff velocities low

(6) trap sediment as close to the source as possible

To address these principles, the following mitigation measures are proposed:

- Silt fencing and/or barriers are recommended along Work Zones where there is potential for sedimentation of watercourses, or inadvertent encroachment of construction vehicles into natural areas
- Avoid entering any natural areas beyond the vegetation protection fencing with equipment and avoid excess vegetation removal
- Stabilize exposed soil areas (native seed mixes; sourced locally if possible) and re-vegetate through the placement of seed and mulching or seed and an erosion control blanket, promptly upon completion of construction activities
- Equipment will be re-fueled 30 m away from watercourses to avoid potential impacts, if an accidental spill occurs
- In addition to any specified requirements, additional silt fence will be available on site, prior to grading operations, to provide a contingency supply in the event of an emergency
- Monitor all sediment and erosion controls regularly and properly maintain, as required. Remove controls only after the soils of the construction area have been stabilized and adequately protected or until cover is re-established

- The limits of construction adjacent to natural features to be retained will be fenced prior to construction, and monitored during construction (along with sediment and erosion control measures) to maintain limits with respect to vehicular traffic and soil or equipment stockpiling
- Restore any disturbed natural areas to pre-construction conditions

Additional measures for protection of fish habitat are discussed in **Section 8.8**.

8.2 Wetland Protection and Compensation

The footprint of the Bass Pro Mills Drive extension will bisect two wetland communities, resulting in approximately 1.2 ha of wetland loss. The loss of wetland habitat will be addressed in consultation with TRCA following guidance in Guideline for Determining Ecosystem Compensation (TRCA 2018). The land base of the wetland and the ecosystem structure and functions must be replicated. The two wetlands will remain hydrologically connected by an equalizer culvert under Bass Pro Mills Drive and it is recommended that the equalizer culvert be sized to facilitate wildlife passage in accordance with best management practices by TRCA (2015) and CVC (2017).

The completion of a wetland evaluation following Ontario Wetland Evaluation System procedures is recommended during detail design. Results of the evaluation will provide additional information on wetland functions and can be used to inform wetland compensation, in consultation with TRCA. Marsh breeding bird surveys and turtle basking surveys are also recommended to be completed for the MASM1/MAMM1 wetland during detail design to confirm the presence/absence of significant wildlife habitat for marsh breeding birds and turtle wintering areas, which will assist with evaluating the wetland and determining appropriate compensation for the ecosystem structure and functions.

8.3 Vegetation Protection

Temporary removal of vegetation cover is mitigated using standard protection measures identified above, including use of construction barrier fencing along natural areas, and re-vegetation of all disturbed substrates using seed suitable for site conditions. Seed will be introduced to disturbed substrates as soon as feasible following construction and sediment fencing will remain in place until vegetation cover is re-established. Re-vegetation should include only native plants that are suitable to the site conditions and may include woody and herbaceous plant material if appropriate. Re-vegetation plans should be prepared to the satisfaction of TRCA and may be a requirement of a permit application under Ontario Regulation 166/06 of the CAA (see **Section 9.3**).

European reed, a highly invasive wetland plant, was observed in the Study Area. Development and implementation of a management plan is recommended to prevent the introduction of this species into work areas, including a plan to prevent seed from spreading to disturbed substrates, a clean equipment protocol to prevent spread through equipment transfer, and a monitoring plan to track and control new colonies.

8.4 Tree Protection

In addition to the mitigation measures outlined above for sediment and erosion control and vegetation protection, a detailed tree inventory documenting the species, size and health of the trees to be removed at this location should be completed during the detail design phase. A strategy that is consistent with municipal by-laws will be developed at the detail design phase to compensate for the removal of the trees, if any.

Trees to be removed must be clearly marked to prevent unnecessary clearing. Barrier fencing may be coincident with silt fencing used to control erosion and sediment transport in the Project Location. Native soil and seed bank retention, including avoidance of root grubbing along disturbed edges, and other edge management recommendations will be developed during the detail design phase.

8.5 Protection of Migratory Birds

The MBCA protects nests of migratory birds from damage while they are active, including nests in vegetation and on structures. For all migratory birds, the core nesting period is identified as April 1 to August 31 (ECCC 2018b). Vegetation clearing during nesting periods in migratory bird breeding habitat can destroy active nests and contravene the MBCA. Vegetation clearing is recommended to take place outside the core nesting period to eliminate the need for migratory bird nest searches. If work must take place during the core nesting period and the area is small enough to be effectively searched for nesting birds, then a nest search can be completed by a qualified biologist. The area where vegetation is to be removed must be searched within five days prior to the work commencing. If nests are located, then they will be protected with a buffer until the nest is no longer active.

If an active nest is observed during construction, a designated buffer will be delineated within which no activity will be allowed while the nest is active (i.e., with eggs or young). The radius of the buffer will be determined by a qualified professional. Once the nest is determined to be inactive (e.g., the young have fledged the nest), clearing and other activities in the area may proceed.

8.6 Wildlife Protection

The following environmental mitigation and protective measures for wildlife and wildlife habitat are recommended:

- Construction equipment and vehicles are to yield to wildlife
- Inform construction personnel to not threaten, harass, or injure wildlife
- If wildlife are encountered during construction, personnel are required to move away from the animal and wait for the animal to move off the construction site. If slow-moving wildlife (e.g., turtles, snakes) are observed on the road and in danger, and if safe to do so, they should be moved off the road by gently guiding the individual in the direction it was traveling. Handling of SAR is not permitted without ESA authorization

8.6.1 Candidate Marsh Breeding Bird Habitat

Marsh breeding bird surveys are recommended to be completed for the MASM1/MAMM1 wetland during detail design to confirm the presence/absence of significant wildlife habitat for marsh breeding birds. Mitigation measures to reduce impacts to migratory birds, which includes marsh breeding birds, are outlined in **Section 8.5**. This includes the implementation of construction timing windows and establishing buffers around nests and/or stopping work until the birds have fledged the nest.

8.6.2 Snapping Turtle and Eastern Milksnake

The proposed construction area is located adjacent to watercourses and wetland communities that may provide habitat for reptiles and amphibians. Protection of reptiles and amphibians is recommended to address potential interaction with SOCC (i.e., Snapping Turtle and Milksnake), as well as incidental encounters with other turtles, snakes, or amphibians. The following mitigation measures are recommended:

- To avoid interaction with turtle habitat, sediment fencing is recommended at the watercourse and wetland communities. If possible, installation of sediment fencing will occur before June 1 or after September 1 (i.e., outside of turtle nesting season) to define work zones and restrict the movement of nesting turtles into the working area. If installation of fencing occurs during the turtle nesting season, it is recommended that the area be searched for the presence of turtles or nests prior to installation of fencing. Fencing materials with plastic mesh will not be used due to risk of entanglement of snakes or other wildlife. Further specifications for reptile exclusion fencing should follow *Best Practices Technical Note – Reptile and Amphibian Exclusion Fencing* (MNR 2013) and *Best Management Practices for Mitigating the Effects of Road Mortality on Amphibian and Reptile Species at Risk in Ontario* (MNRF 2016). The exclusion fencing is to be maintained around the work area for the duration of the turtle nesting activity period and checked daily to identify any repairs that may be needed. Fencing should be repaired immediately if it is found to be deficient.

- A thorough visual search of the work zone by construction contractors is recommended before work commences each day. Visual searches should include inspection of machinery and equipment, prior to starting equipment, particularly during the peak reptile activity period from April 1 to November 1.

- If reptiles or amphibians are encountered during construction, they will be permitted reasonable time to leave the area. Individuals will not be handled, chased, or harassed. If reptiles do not leave the work area on their own, contact should be made with the MNRT or TRCA to obtain information about the species and direction on how to proceed. A qualified biologist may need to be retained to relocate the individuals.

- Disturbance to brush piles/logs will be avoided wherever possible. If a brush/log pile must be moved or disturbed, it will be inspected for reptiles and relocated within a few metres to retain the habitat feature.

- If in-water work is required when turtles are overwintering (generally November 1 to March 31), MNRF should be consulted to determine authorization and mitigation requirements under the FWCA.

8.6.3 Monarch

It is recommended that construction activities with the potential to harm monarch eggs, caterpillar or pupae (e.g., vegetation clearing in meadow areas) be avoided during the larval period which is approximately May 1 to September 30 (Mission Monarch 2020).

If vegetation clearing will proceed when monarch larvae may be present (May 1 to September 30), identification and inspection of milkweed plants is recommended to locate monarch larvae. If larvae are present, they may be moved to a location that is suitable and safe under the direction of a Qualified Professional. Monarch caterpillars may be moved to other milkweed plants; for other larval stages (i.e., eggs and chrysalis), entire milkweed plants should be transplanted.

Milkweed and nectar producing plants are recommended to be included in seed mixes for areas restored to meadow to provide habitat for monarch.

8.7 Wildlife Crossing

There are two culverts being proposed for the extension of Bass Pro Mills Drive – one at Black Creek and a second equalizer culvert, which will connect the two wetland sections of the MASM1/MAMM1 wetland.

TRCA's Crossings Guideline for Valley and Stream Corridors (TRCA 2015) and CVC's Fish and Wildlife Crossing Guideline (CVC 2017) should inform the requirements for the proposed crossings to provide passage for both fish and terrestrial wildlife, including mid-sized mammals. Where possible, the design should combine both aquatic and terrestrial wildlife passage in one larger culvert. CVC's Fish and Wildlife Crossing Guideline should inform the specific requirements for sizing and openness ratio for culverts that may be used by fish and terrestrial wildlife.

8.8 Protection of Fish and Fish Habitat

8.8.1 Design

Natural channel design principles should be applied to the design of the realigned channel to reduce effects on fish and fish habitat to the extent possible. With respect to Black Creek, the new culvert and channel should be designed to:

- reduce the permanent footprint below the high water mark to the extent possible;
- convey expected flows;
- include a low flow channel; and,

- maintain fish passage (embed closed bottom culverts by 10-20% into the substrate to avoid perched culverts).

The following best management practices were developed by TRCA (2015) and CVC (2017) for the design of new watercourse crossings to:

- avoid sensitive aquatic habitat features (e.g., critical spawning areas, important feeding or refuge areas for sensitive/locally rare/indicator species);
- minimize footprint impacts of crossings on important aquatic features and their ecological functions (e.g., groundwater upwellings and discharge areas, maintaining natural sediment transport) through site selection and design;
- maintain aquatic habitat and fish passage functions by avoiding the priority areas or by siting and designing crossings to permit fish passage;
- avoid channel realignment, hardening, or other modifications;
- maintain a natural stream gradient;
- follow the preferred hierarchy for crossing structures: i.e. clear span bridges, followed by open bottom box culverts, closed bottom box culverts and corrugated steel pipe culverts;
- embed closed bottom box and CSP culverts by 10-20% into the substrate to avoid perches. Bridges and open bottom box culverts maintain natural stream processes;
- backfill closed bottom culverts with native substrate that is consistent with the existing upstream substrate size and texture;
- vegetate banks to provide shading of the channel;
- construct pools upstream and downstream of the crossing; and,
- provide a low flow channel within the structure. Minimum water depth during low flow conditions should be 15-20 cm.

8.8.2 Construction

The following measures are recommended to protect fish and fish habitat during construction:

- implement the ESC Plan as outlined in **Section 8.1**;

- avoid in-water work during the restricted activity period for warmwater fish communities. In southern Ontario, the restricted activity period is from March 15 to July 15, inclusive. The Ontario Ministry of Northern Development Mining, Natural Resources and Forestry (MNDMNRF) has the responsibility for setting the restricted activity period. The dates are determined on a case-by-case basis according to the fish species that use the habitat and whether the community includes species that spawn in the spring or fall. The Aurora District MNDMNRF should be contacted to confirm the restricted activity period applicable to Black Creek;
- conduct instream work in isolation of flowing water;
- exclude fish from the work areas prior to in stream construction activity, by implementing a fish removal and relocation plan;
- monitor the five-day weather forecast on a daily basis to anticipate weather conditions and be prepared to leave the site in a stable and secure condition should water levels rise;
- screened all water intakes used to dewater area(s) that may contain fish to reduce the risk of the impingement and entrainment of fish as per DFO's Interim Code of Practice: End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater (DFO 2021b); and,
- direct water from dewatering and unwatering operations to a sediment control measure (bag or trap) and/or a vegetated discharge area at least 30 m away from surface water features (or as far as practical from the top of bank of any waterbody) prior to discharge to the natural environment. If a vegetated location is not available, a flow dissipating structure should be provided. No dewatering shall be sent directly to a sewer. These control measures shall be monitored for effectiveness and maintained or revised to meet the objective of reducing the risk of the entry of sediment into watercourses.

9.0 Potential Regulatory Approvals

9.1 *Fisheries Act*, 1985

In cases where impacts to fish and fish habitat cannot be avoided (following guidance and criteria provided on DFO's website regarding mitigation, waterbody types and codes of practice) proponents submit a request for review form to DFO. DFO will review the project to identify the potential risks of the project to the conservation and protection of fish and fish habitat and will work with the proponent to provide advice and guidance on how to comply with the *Fisheries Act*. If the death of fish and HADD of fish habitat cannot be avoided, proponents must apply for a *Fisheries Act* Authorization.

DFO review is not required for work in the following types of waterbodies (DFO 2021):

- artificial waterbodies that are not connected to a waterbody that contains fish at any time during any given year, such as:
  - roadside drainage ditches
  - irrigation ponds or channels
  - stormwater management ponds
  - agricultural drains and drainage ditches
- any other waterbody that:
  - does not contain fish at any time during any given year
  - is not connected to a waterbody that contains fish at any time during any given year

DFO review under the *Fisheries Act* (1985) will be required for the realignment of Black Creek, and the proposed culvert crossing of Black Creek. The need to include the realignment of HDF-A in the DFO review will be determined during detail design when the feature can be assessed with respect to the presence of fish and fish habitat.

Once the layout and details of the realignment and crossing are finalized, they should be submitted to DFO's for review though completion of the DFO Request for Review (RfR) Form. Based on Stantec's experience, channel realignments and new culverts typically require DFO review.

9.2 *Endangered Species Act*, 2007

The proposed design will not impact individual SAR or their habitat. If the detail design results in potential impacts to these species or their habitats, or other protected terrestrial species, authorization or registration may be needed through the ESA.

9.3 Conservation Authority Regulated Areas

Under Ontario Regulation 166/06 of the CAA, a permit will be required for proposed extension of Bass Pro Mills Drive because it includes development or interference with wetlands and alterations to shorelines and watercourses. Consultation with TRCA is recommended to determine permit requirements. Permit applications typically include the following information:

- Geographic Information System (GIS) – created location mapping on a topographic map base
- Cross section profiles of the watercourse channel
- Analysis showing that the bridge has been designed to convey flows as required by the TRCA
- Environmental data including in-water work timing windows (if required), temperature regime, fish species and fish habitat
- Maps and photographs showing the location of Project infrastructure relative to regulated environmental features
- Environmental mitigation measures for construction activity, including a restoration plan that details re-vegetation and other strategies
- Other site-specific data as required

9.4 *Fish and Wildlife Conservation Act*, 1997

If in-water work is proposed when turtles are overwintering (generally November 1 to March 31), MNRF should be consulted to determine authorization and mitigation requirements under the FWCA. If in-water work areas are determined to be suitable for overwintering turtles, a permit to handle and relocate turtles that are disturbed by the Project during hibernation may be required. During isolation of flow, fish recovery and transfer will need to be conducted in accordance with a Licence to Collect Fish for Scientific Purposes obtained from the MNRF.

10.0 Conclusions

Stantec was retained by the City to complete a Schedule 'C' Municipal Class Environmental Assessment (EA) Study for the extension of Bass Pro Mills Drive between Highway 400 and Weston Road. This limited EIS report provides a description of the natural heritage features and the ecosystem functions that could potentially be affected by the extension of Bass Pro Mills Drive. Natural heritage features documented for the Study Area included:

- SAR: Barn Swallow (no nesting habitat observed)
- Candidate Habitat for Turtle Wintering Areas
- Candidate Marsh Breeding Bird Habitat
- Potential presence of SOCC:
- Reptiles**:** Eastern Milksnake and Snapping Turtle
- Insects: Monarch
- Fish Habitat in Black Creek
- A Headwater Drainage Feature that connects a wetland with Black Creek

The footprint of the Bass Pro Mills Drive extension will bisect two wetland communities, resulting in an approximately 1.2 ha loss. The loss of wetland habitat will be addressed in consultation with TRCA following guidance in Guideline for Determining Ecosystem Compensation (TRCA 2018). The two wetlands will remain hydrologically connected by an equalizer culvert under Bass Pro Mills Drive. The equalizer culvert will be sized to facilitate wildlife passage in accordance with best management practises by TRCA (2015) and CVC (2017).

Realignment of Black Creek is proposed. The length of the proposed channel will be determined during detail design. If natural channel design techniques are applied to the design of the realigned channel long-term effects on fish and fish habitat are not anticipated.

A new watercourse crossing is proposed over Black Creek. With the implementation of best management practices developed by TRCA (2015) and CVC (2017) for the design of new watercourse crossing, long-term effects on fish and fish habitat and associated wildlife species are not anticipated. It is recommended that this culvert be sized to facilitate wildlife passage in accordance with recommendations in TRCA (2015) and CVC (2017).

Standard and site-specific mitigation measures are available to address construction phase impacts, potential interaction with wildlife species, aquatic species and habitat, revegetation of disturbed areas post-construction, and management for the spread and introduction of the invasive European reed.

However, the preliminary impact assessment and conclusions should be reviewed for relevancy and completeness following completion of final designs.

If recommended mitigation is applied, direct impacts to SAR and their habitat are not anticipated as a result of the Project, including avoiding interaction with reptile SAR, SOCC and species of regional conservation concern.

Potential regulatory approval requirements include:

- DFO review under the *Fisheries Act* will be required for the realignment of a section of Black Creek and the realignment of it's tributary (HDF-A) and for the new crossing if in water work is required only. With detail design information, a determination can be made following guidance and criteria provided on DFO's website regarding whether the in or near water work will require DFO review. If it is determined that DFO review is required, DFO's Request for Review Form submission is made once the layout is finalized.
- Under Ontario Regulation 166/06, a permit from the Conservation Authority will be required for development or interference with wetlands and alterations to shorelines and watercourses.
- If in-water work is required when turtles are overwintering (generally November 1 to March 31), MNRF should be consulted to determine authorization and mitigation requirements under the FWCA. During isolation of flow, fish recovery and transfer will need to be conducted in accordance with a Licence to Collect Fish for Scientific Purposes obtained from the MNRF.

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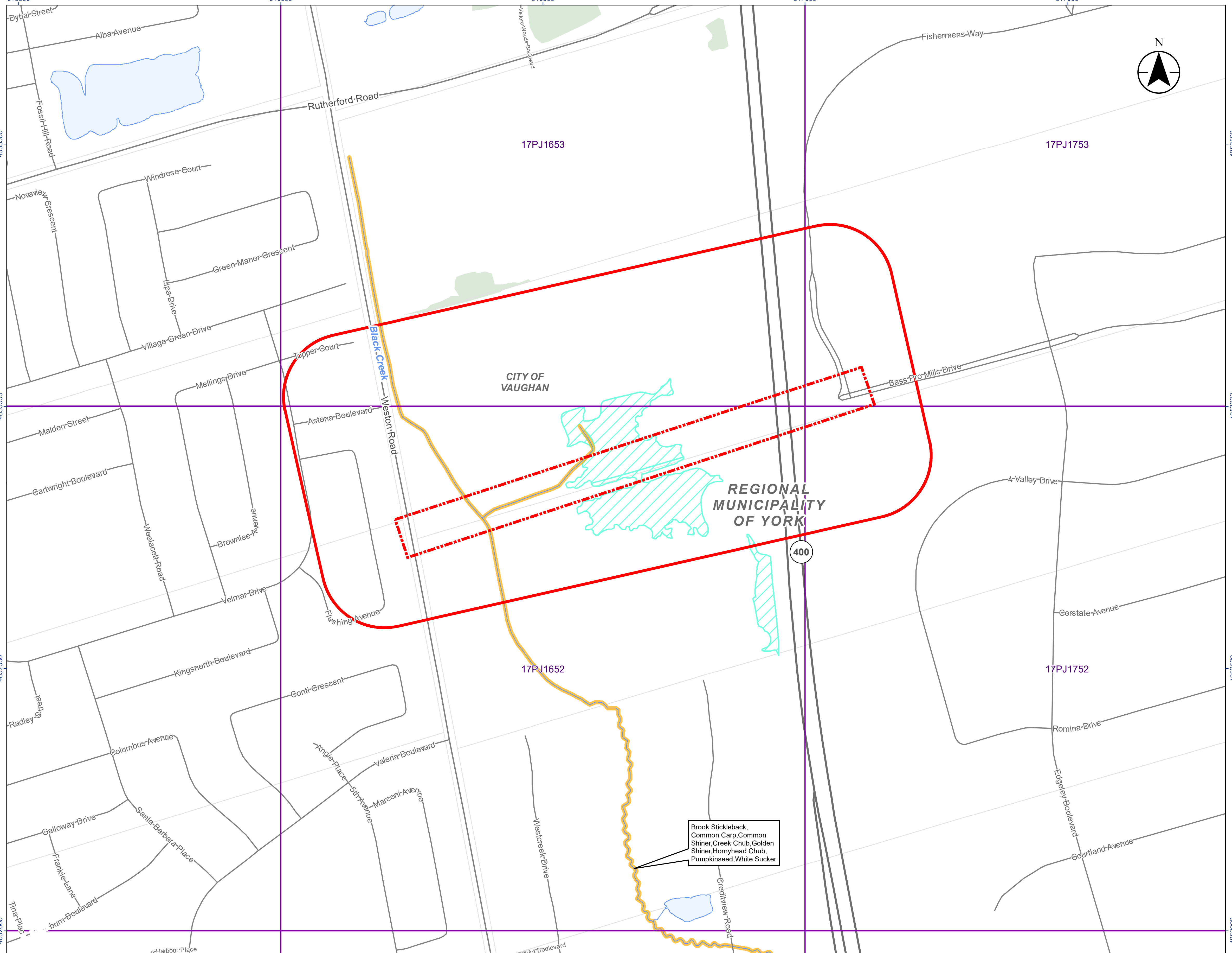
APPENDIX A
Figures



Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Stantec

Legend
- Study Area
- Proposed Construction Area
- Thermal Regime, Warm
- Watercourse (Permanent)
- Waterbody
- Wetland, Not evaluated per OWES
- Wooded Area
- Lot
- Municipal Boundary, Upper
- Municipal Boundary, Lower
- 1 km UTM Grid

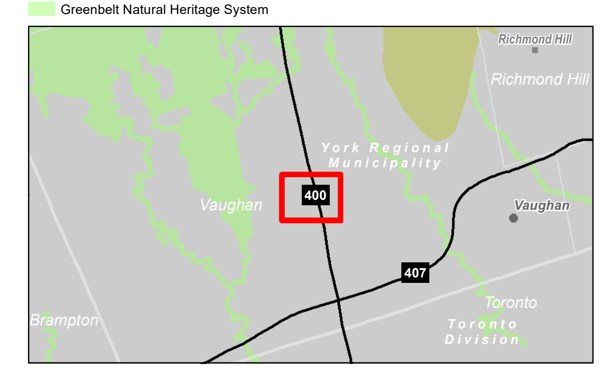
0 150 300 450 m

1:7,500 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2022.

Oak Ridges Moraine

Greenbelt Natural Heritage System



Project Location
City of Vaughan

160540006 REV4
Prepared by BCC on 2022-02-10
Technical Review by TD on 2021-06-23

Client/Project
CITY OF VAUGHAN
BASS PRO MILLS DRIVE EXTENSION

Figure No.
1

Title
Study Area Location and Background Review

Stantec

Legend

- Study Area
- Proposed Construction Area
- Thermal Regime, Warm
- Watercourse (Permanent)
- Wetland, Not evaluated per OWES
- Direction of Flow
- Reach Break
- Potential Headwater Drainage Feature[4]
- Amphibian Call Station
- Breeding Bird Survey Location
- ELC

ELC Description

MASM1-12 - Common Reed Mineral Shallow Marsh Type

MASM1-1 - Cattail Mineral Shallow Marsh Type

MASM1/MAMM1 - Graminoid Mineral Shallow Marsh Ecosite\Graminoid Mineral Meadow Marsh Ecosite

ME - Meadow

MEMM3 - Dry - Fresh Mixed Meadow Ecosite

SA - Shallow Water

CVC_1 - Business Sector

CVC_2 - Light Industry

CVR_3 - Single Family Residential

CVI_1 - Transportation

0 150 300 m

1:5,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2021.
3. Orthoimagery © First Base Solutions, 2021, imagery date 2020.
4. Potential Headwater Drainage Feature Source: Existing Conditions Storm Floodplain Mapping (York Region 2021) and 2018 Air Photo Interpretation (Google Earth).

- Oak Ridges Moraine
- Greenbelt Natural Heritage System

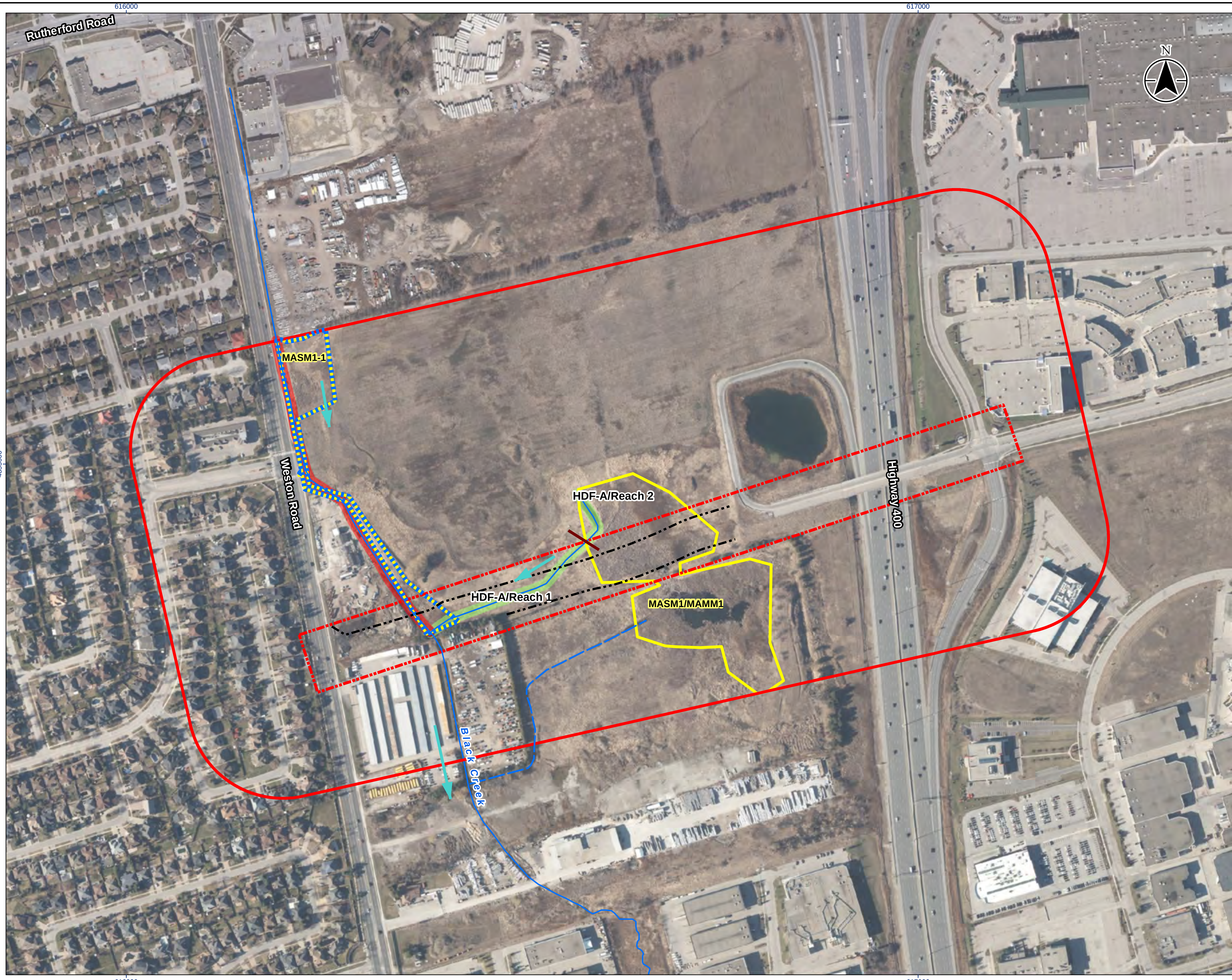
Project Location
City of Vaughan

160540006 REV4
Prepared by BCC on 2022-02-10
Technical Review by TD on 2021-06-23

Client/Project
CITY OF VAUGHAN
BASS PRO MILLS DRIVE EXTENSION

Figure No.
2

Title
Existing Natural Heritage Conditions and Survey Locations



Stantec

Legend
- Proposed Construction Area
- Grading Limit
- Direction of Flow
- Reach Break
- Watercourse (Permanent)
- Potential Headwater Drainage Feature[4]
- Wetland

Constraints
- HDF Management: Conservation
- Fish Habitat
- Potential Wetland Constraint

0 100 200 Meters

1:5,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2021.
3. Orthoimagery obtained from the ©First Base Solutions; Imagery date York Region 2020.
4. Potential Headwater Drainage Feature Source: Existing Conditions Storm Floodplain Mapping (York Region 2021) and 2018 Air Photo Interpretation (Google Earth).

Project Location
City of Vaughan

160540006 REV1
Prepared by SW on 2022-02-10

Client/Project
CITY OF VAUGHAN
BASS PRO MILLS DRIVE EXTENSION

Figure No.
3

Title
Constraints and Proposed Development

APPENDIX B
Correspondence and Background Data

From: Manirul Islam
To: Addley, Diana
Cc: Hilda Esedebe; Cholewa, Peter; Robinson, Jennifer; Alison MacLennan
Subject: RE: CFN 61893 Bass Pro Mills Municipal Class EA - EIS Work Plan_Revised work plan
Date: Monday, December 14, 2020 4:43:47 PM
Attachments:

HI Diana:
Good afternoon. Please find TRCA's opinion regarding the revised work plan:

Ecological work plan: The revised proposal seems acceptable. The only caveat staff would add is that because you can't do the field survey components of the Headwater Drainage Features, a conservative approach should be taken when recommending management strategies. The precautionary principle should apply.

The naturalization of the required buffers for the existing Natural Features will be required – this would include planting plan, maintenance schedule and monitoring plan.

Regarding fluvial geomorphology component – in this situation TRCA staff would be relied on professional judgment of the consultant's Water Resources Engineer (WRE). Under the circumstances of restricted access to the study sites consultant's WRE should have high comfort level, and should have suffice accurate information to justify their study. There may have ways to do that such as using similar reach in nearby areas, extrapolating data, etc. But we leave that up to the consultant's WRE and again, the precautionary principle should apply.

Should you have any question please contact me.

Thank you,
Manirul

Manirul Islam, MEnv.Sc, CAN-CISEC, PMP
Planner
Infrastructure Planning and Permits | Development and Engineering Services

T: (416) 661-6600 ext. 5715
C: (647) 241-6816
E: manirul.islam@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

From: Addley, Diana <Diana.Addley@stantec.com>
Sent: Thursday, December 10, 2020 8:05 AM
To: Manirul Islam <Manirul.Islam@trca.ca>
Cc: Esedebe, Hilda <Hilda.Esedebe@vaughan.ca>; Cholewa, Peter <Peter.Cholewa@stantec.com>; Robinson, Jennifer <Jennifer.Robinson@stantec.com>
Subject: RE: CFN 61893 Bass Pro Mills Municipal Class EA - EIS Work Plan

Good morning Manirul,

I just wanted to quickly follow up on our telephone call and message below/revised work plan to see if you and your team have had an opportunity to review and/or have any comments, questions or concerns.

Please do not hesitate to contact me if you would like to discuss anything further.

Kind regards,

Diana Addley
Senior Environmental Planner

Direct: 905 415-6401
Direct: 647 588-7112
Diana.Addley@stantec.com

From: Addley, Diana
Sent: Friday, November 13, 2020 12:53 PM
To: Manirul Islam <Manirul.Islam@trca.ca>
Cc: Esedebe, Hilda <Hilda.Esedebe@vaughan.ca>; Cholewa, Peter <Peter.Cholewa@stantec.com>; Robinson, Jennifer <Jennifer.Robinson@stantec.com>
Subject: RE: CFN 61893 Bass Pro Mills Municipal Class EA - EIS Work Plan

Hi Manirul,

Please find the revised ecological work plan for this study attached. As discussed, the work plan has been revised as access to private property has not been granted, and therefore the detailed surveys are proposed to be undertaken from publicly accessible areas surrounding the study area. With the exception of the bat and reptile surveys, all other surveys continue to be included within the work plan.

In addition, a fluvial geomorphological assessment is proposed as part of the study process to address the potential new crossing of the tributary to Black Creek. However, as site access is not available at this time, the field component of the assessment is also proposed to be completed from publicly accessible areas.

Could you kindly let us know if TRCA has any concerns with the attached revised ecological work plan and/or the amended approach to completing the fluvial geomorphological assessment as part of this study?

Thank you, and please do not hesitate to let us know if you have any questions or comments, and/or would like to schedule a call to discuss in more detail.

Kind regards,

Diana Addley
Senior Environmental Planner

Direct: 905 415-6401
Mobile: 647 588-7112
Diana.Addley@stantec.com

Stantec
150 - 1555 Wentworth Street
Whitby ON L1N 9T6

From: Manirul Islam <Manirul.Islam@trca.ca>
Sent: Thursday, February 27, 2020 9:30 AM
To: Addley, Diana <Diana.Addley@stantec.com>
Cc: Esedebe, Hilda <Hilda.Esedebe@vaughan.ca>; Giesbrecht, Debra <debbie.giesbrecht@stantec.com>; Faiella, Marc <marc.faiella@stantec.com>; Cholewa, Peter <Peter.Cholewa@stantec.com>
Subject: RE: CFN 61893 Bass Pro Mills Municipal Class EA - EIS Work Plan

Good morning Diana.
Staff has reviewed the study plan /dates listed for the biological surveys for above noted project. It has been confirmed that the listed dates for the biological surveys are correct.
Should you have any question please contact me.
Thank you,
Manirul

Manirul Islam, MEnv.Sc, CAN-CISEC, PMP
Planner
Infrastructure Planning and Permits | Development and Engineering Services

T: (416) 661-6600 ext. 5715
C: (647) 241-6816
E: manirul.islam@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

From: Addley, Diana <Diana.Addley@stantec.com>
Sent: Wednesday, February 19, 2020 9:04 AM
To: Manirul Islam <Manirul.Islam@trca.ca>
Cc: Esedebe, Hilda <Hilda.Esedebe@vaughan.ca>; Giesbrecht, Debra <debbie.giesbrecht@stantec.com>; Faiella, Marc <marc.faiella@stantec.com>; Cholewa, Peter <Peter.Cholewa@stantec.com>
Subject: CFN 61893 Bass Pro Mills Municipal Class EA - EIS Work Plan

Good morning,

Please find the Terms of Reference for the Environmental Impact Study for the Bass Pro Mill Municipal Class EA study attached for your review. Please do not hesitate to let us know if you have questions and/or comments.

Kind regards,

Diana Addley
Senior Environmental Planner

Direct: 905 415-6401
Mobile: 647 588-7112
Diana.Addley@stantec.com

Stantec
150 - 1555 Wentworth Street
Whitby ON L1N 9T6

Stantec Consulting Ltd.
200-835 Paramount Drive, Stoney Creek ON L8J 0B4

February 13, 2020
File: 160540006
IM-7212-10
CFN 61893

Attention: Manirul Islam
Toronto Region Conservation Authority (TRCA)
101 Exchange Avenue
Vaughan, Ontario
L4K 5R6
Manirul.Islam@trca.ca

Reference: Terms of Reference for Bass Pro Mills Drive Extension (Between Highway 400 and Weston Road) Schedule 'C' Municipal Class Environmental Assessment.

Stantec Consulting Ltd. (Stantec) was retained by the City of Vaughan to complete a Schedule 'C' Municipal Class Environmental Assessment to assess the need to extend Bass Pro Mills Drive, from Highway 400 to Weston Road (i.e., Study Area). A copy of the Study Area Location Plan is provided in Attachment 1. Our work will document the existing ecological (terrestrial and aquatic) features, assess the potential impacts to the natural environment, and identify appropriate measures to avoid or mitigate impacts where possible.

The purpose of this Terms of Reference (ToR) is to establish the level of effort that is required for the assessment. Our work plan (Table 1) was prepared in consideration of the TRCA *Environmental Impact Statement (EIS) Guidelines (2014)* and the *City of Vaughan Draft Environmental Management Guideline (2013)*. The proposed work plan and schedule is provided below (Table 1). The scope is based on the general open nature of the subject property and absence of major natural heritage feature determined from background review. In addition to the tasks below, we will be submitting an application for a *Licence to Collect Fish for Scientific Purposes* to the Ministry of Natural Resources and Forestry (MNRF) to sample fish for works that may be required in the SWM facility.

Table 1: Proposed Work Plan and Schedule

Task No.	Task Description	Completion Date
1. Site Investigations	• **Bat roost tree assessment (single visit)–** leaf-off assessment to identify potential maternity roost habitat for bat species at risk.	April 2020
	• **Vegetation surveys/wildlife habitat assessment (3 visits) –** vegetation community surveys using Ecological Land Classification for southern Ontario, two-season flora inventory, and identification of Significant Wildlife Habitat (SWH) and suitable habitat for species at risk and other species of conservation concern.	September 2020

Reference: **Terms of Reference for Bass Pro Mills Drive Extension (Between Highway 400 and Weston Road) Schedule 'C' Municipal Class Environmental Assessment.**

Table 1: Proposed Work Plan and Schedule

Task No.	Task Description	Completion Date
	• **Fish habitat assessment (2 visits) –** A headwater drainage assessment will be conducted of the Black Creek tributary using the 2014 *Evaluation, Classification and Management of Headwater Drainage Features Guidelines.* Assessments of the tributary will be conducted in spring and summer to classify the functions of the tributary (hydrology, fish and fish habitat).	April 2020
	• **Amphibian call surveys (3 visits) –** nocturnal call surveys conducted using the Marsh Monitoring Program Participant's Handbook (Bird Studies Canada, revised 2008) as a guide.	June 2020
	• **Breeding bird surveys (2 visits)** – point counts and area-searches using the Ontario Breeding Bird Atlas: Guide for Participants (Birds Ontario, 2001) as a guide, including nest searches for species protected by the *Endangered Species Act, 2007* and the *Migratory Birds Convention Act, 1994;* the first survey will occur between May 24th and June 15th and the second between June 16th and July 10th, allowing a minimum of 10 days between the 2 surveys.	July 2020
	• **Reptile surveys –** the presence of suitable habitat for reptiles will be addressed through basking surveys concurrent with other field surveys, habitat assessments and application of the Significant Wildlife Habitat Technical Guide (MNR 2000) and draft Eco-region Criteria (MNR 2012).	September 2020
2. Data Analysis	• **Evaluation of Significance -** Significant natural heritage features will be identified using definitions consistent with the Provincial Policy Statement, City of Vaughan Official Plan and city-wide natural heritage study, and relevant guidance documents, including Significant Wildlife Habitat Technical Guide (MNR 2000), Eco-Region Criteria (MNR 2015) the Natural Heritage Reference Manual (MNR 2010), the TRCA's Terrestrial Natural Heritage System, Land Inventory Ontario (MNRF 2019) and Natural Heritage Information Centre (MNRF 2019).	April 2021
3. Reporting	• **Environmental Impact Study – r**eport will be consistent with components of the Vaughan Draft Environmental Management Guideline (June 2013) and TRCA's *Environmental Impact Statement (EIS) Guideline* (2014). The EIS will include a summary of the background review, site description, ecological features and functions, evaluation of ecological impacts, recommendations for mitigation and identification of environmental permitting and approvals. • One draft of the Existing Condition report and one draft of the EIS will be provided to TRCA for review and comment. The two drafts will be provided as electronic submission only	June 2021

Reference: **Terms of Reference for Bass Pro Mills Drive Extension (Between Highway 400 and Weston Road) Schedule 'C' Municipal Class Environmental Assessment.**

BACKGROUND REVIEW

Stantec reviewed the MNRF's Natural Heritage Information Centre (NHIC) Biodiversity Explorer database to identify natural features and recent (1970+) records of species at risk and provincially rare species. Eastern Meadowlark was the only species with a record of occurrence in the vicinity of the Study Area. Additional species at risk that may also be present include butternut, barn swallow, snapping turtle and endangered bats.

We would appreciate confirmation that our proposed scope is appropriate for this assignment.

If you require any additional information regarding this project or have any questions, please contact the undersigned.

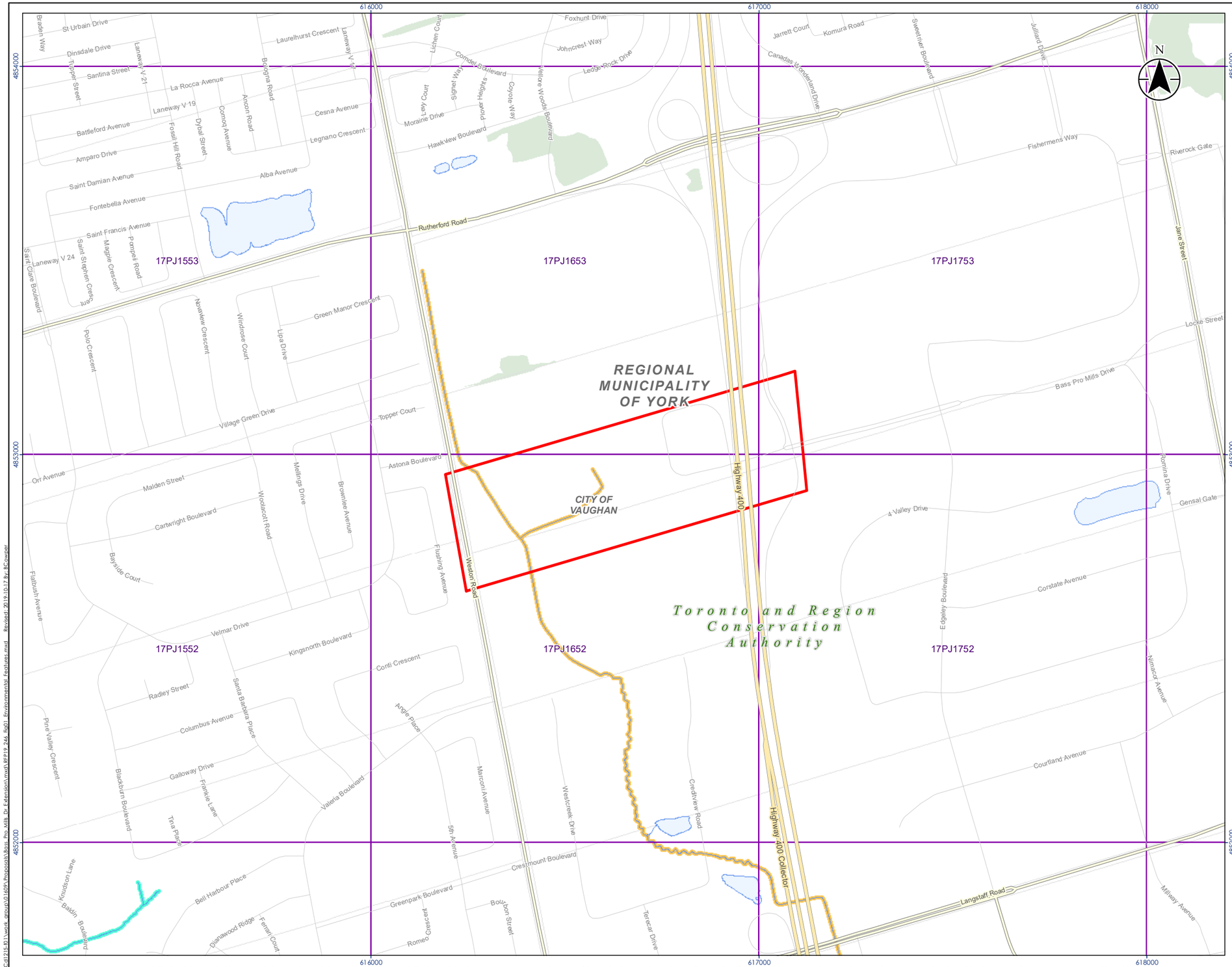
Regards,

Stantec Consulting Ltd.

Debbie Giesbrecht, M.Sc.
Senior Ecologist
Phone: 905-381-32140
Debbie.giesbrecht@stantec.com

Attachment: Figure 1 – Site Investigation Area

c. Hilda Esedebe, City of Vaughan
Marc Faiella, Stantec Consulting Ltd.
Diana Addley, Stantec Consulting Ltd.
Peter Cholewa, Stantec Consulting Ltd.



\\Cd1215-f01\work_group\V1609\Proposals\Bass Pro Mills Dr Extension\mxd\RFP19_246_Fig01_Environmental Features.mxd Revised: 2019-10-17 By: BCowper

Stantec

Legend

- Thermal Regime, Cool
- Thermal Regime, Warm
- Watercourse (Permanent)
- Conservation Area Administrative Boundary
- Waterbody
- Wooded Area
- Lot
- Municipal Boundary, Upper
- Municipal Boundary, Lower
- 1 km UTM Grid

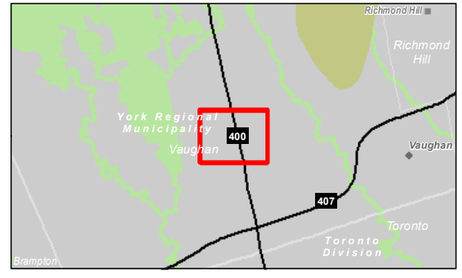
0 0.6 km

1:10,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.

- Oak Ridges Moraine
- Greenbelt Natural Heritage System



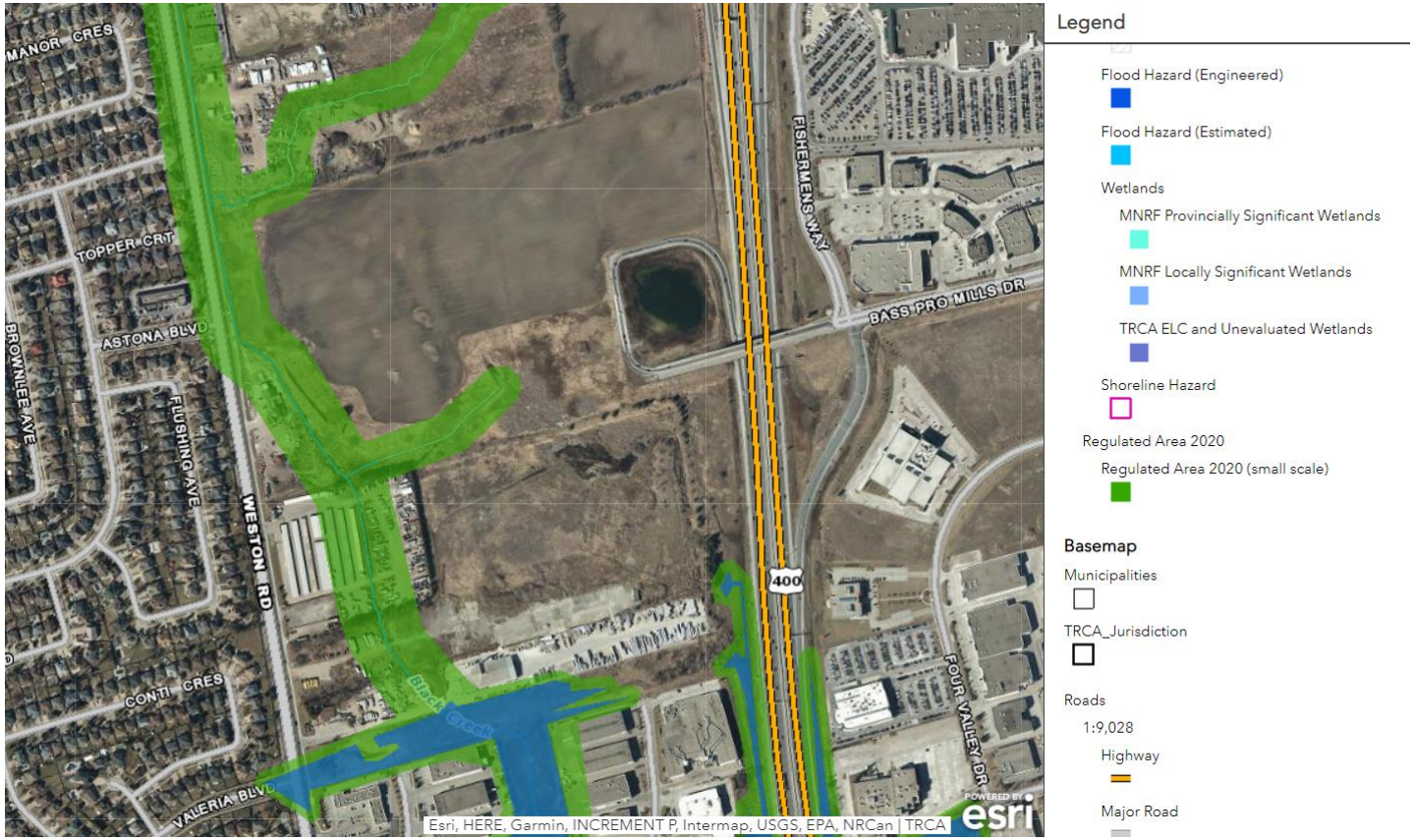
Project Location
Regional Municipality of York, ON

RFP19_246 REV4
Prepared by BCC on 2019-10-17
Technical Review by ABC on yyyy-mm-dd
Independent Review by ABC on yyyy-mm-dd

Client/Project
CITY OF VAUGHAN
BASS PRO MILLS EXTENSION

Figure No.
1

Title
Environmental Features



TRCA Regulated Area and Wetlands

Source:

https://camaps.maps.arcgis.com/apps/webappviewer/index.html?id=c11f5a41e3cc4ebab6909b1e0831b1d8 (accessed September 23, 2021)

Den Haas, Taco

From: Manirul Islam
Sent: Monday, December 14, 2020 4:44 PM
To: Addley, Diana
Cc: Hilda Esedebe; Cholewa, Peter; Robinson, Jennifer; Alison MacLennan
Subject: RE: CFN 61893 Bass Pro Mills Municipal Class EA - EIS Work Plan_Revised work plan

HI Diana:
Good afternoon. Please find TRCA's opinion regarding the revised work plan:

Ecological work plan: The revised proposal seems acceptable. The only caveat staff would add is that because you can't do the field survey components of the Headwater Drainage Features, a conservative approach should be taken when recommending management strategies. The precautionary principle should apply.

The naturalization of the required buffers for the existing Natural Features will be required – this would include planting plan, maintenance schedule and monitoring plan.

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Should you have any question please contact me.

Thank you,
Manirul

Manirul Islam, MEnv.Sc, CAN-CISEC, PMP
Planner
Infrastructure Planning and Permits | Development and Engineering Services

T: (416) 661-6600 ext. 5715
C: (647) 241-6816
E: manirul.islam@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

Toronto and Region Conservation Authority

From: Addley, Diana <Diana.Addley@stantec.com>
Sent: Thursday, December 10, 2020 8:05 AM
To: Manirul Islam <Manirul.Islam@trca.ca>
Cc: Esedebe, Hilda <Hilda.Esedebe@vaughan.ca>; Cholewa, Peter <Peter.Cholewa@stantec.com>; Robinson, Jennifer

<Jennifer.Robinson@stantec.com>
Subject: RE: CFN 61893 Bass Pro Mills Municipal Class EA - EIS Work Plan

Good morning Manirul,

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Please do not hesitate to contact me if you would like to discuss anything further.

Kind regards,

Diana Addley
Senior Environmental Planner

Direct: 905 415-6401
Direct: 647 588-7112
Diana.Addley@stantec.com

From: Addley, Diana
Sent: Friday, November 13, 2020 12:53 PM
To: Manirul Islam <Manirul.Islam@trca.ca>
Cc: Esedebe, Hilda <Hilda.Esedebe@vaughan.ca>; Cholewa, Peter <Peter.Cholewa@stantec.com>; Robinson, Jennifer <Jennifer.Robinson@stantec.com>
Subject: RE: CFN 61893 Bass Pro Mills Municipal Class EA - EIS Work Plan

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Could you kindly let us know if TRCA has any concerns with the attached revised ecological work plan and/or the amended approach to completing the fluvial geomorphological assessment as part of this study?

Thank you, and please do not hesitate to let us know if you have any questions or comments, and/or would like to schedule a call to discuss in more detail.

Kind regards,

Diana Addley
Senior Environmental Planner

Direct: 905 415-6401
Mobile: 647 588-7112
Diana.Addley@stantec.com

Stantec
150 - 1555 Wentworth Street
Whitby ON L1N 9T6

From: Manirul Islam <Manirul.Islam@trca.ca>
Sent: Thursday, February 27, 2020 9:30 AM
To: Addley, Diana <Diana.Addley@stantec.com>
Cc: Esedebe, Hilda <Hilda.Esedebe@vaughan.ca>; Giesbrecht, Debra <debbie.giesbrecht@stantec.com>; Faiella, Marc <marc.faiella@stantec.com>; Cholewa, Peter <Peter.Cholewa@stantec.com>
Subject: RE: CFN 61893 Bass Pro Mills Municipal Class EA - EIS Work Plan

Good morning Diana.
Staff has reviewed the study plan /dates listed for the biological surveys for above noted project. It has been confirmed that the listed dates for the biological surveys are correct.
Should you have any question please contact me.
Thank you,
Manirul

Manirul Islam, MEnv.Sc, CAN-CISEC, PMP
Planner
Infrastructure Planning and Permits | Development and Engineering Services

T: (416) 661-6600 ext. 5715
C: (647) 241-6816
E: manirul.islam@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

Toronto and Region Conservation Authority

From: Addley, Diana <Diana.Addley@stantec.com>
Sent: Wednesday, February 19, 2020 9:04 AM
To: Manirul Islam <Manirul.Islam@trca.ca>
Cc: Esedebe, Hilda <Hilda.Esedebe@vaughan.ca>; Giesbrecht, Debra <debbie.giesbrecht@stantec.com>; Faiella, Marc <marc.faiella@stantec.com>; Cholewa, Peter <Peter.Cholewa@stantec.com>
Subject: CFN 61893 Bass Pro Mills Municipal Class EA - EIS Work Plan

Good morning,

Please find the Terms of Reference for the Environmental Impact Study for the Bass Pro Mill Municipal Class EA study attached for your review. Please do not hesitate to let us know if you have questions and/or comments.

Kind regards,

Diana Addley
Senior Environmental Planner

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APPENDIX C
Potential SAR and SOCC

Group	Common Name	Scientific Name	COSSARO	COSEWIC	S-Rank	Source(s)	Habitat Description	Potential Presence in the Study Area (Y/N)
Birds	Bank Swallow	*Riparia riparia*	THR	THR	S4B	Cadman et al. 2007	The Bank Swallow breeds on a variety of sites with vertical banks, including riverbanks, bluffs, aggregate pits and stock piles of sand and soil. Sand-silt substrates are preferred. Nesting sites are often near open habitats used for aerial foraging . Large wetlands are used as communal roosts during post-breeding, migration, and wintering periods (COSEWIC 2013a).	N: No exposed soil piles or banks were observed during field investigations in the Study Area.
Birds	Barn Swallow	*Hirundo rustica*	THR	THR	S4B	Cadman et al. 2007	The Barn Swallow commonly nests on walls or ledges of barns, bridges, culverts or other man-made structures (Cadman et al. 2007). Where suitable nesting structures occur, Barn Swallow often form small colonies, sometimes mixed with other swallow species. The Barn Swallow feeds on aerial insects while foraging over a variety of open habitats such as pastures, lawns, meadows and fields (COSEWIC 2011a). It will also frequently forage in woodland clearings, over wetland habitats or open water where insect prey are abundant (Cadman et al. 2007).	**Y: Barn Swallow has the potential to nest on buildings in the Study Area.**
Birds	Bobolink	*Dolichonyx oryzivorus*	THR	THR	S4B	Cadman et al. 2007	Bobolink nest primarily in forage crops with a mixture of grasses and broad-leaved forbs, predominantly hayfields and pastures. Preferred ground cover species include grasses such as Timothy and Kentucky bluegrass and forbs such as clover and dandelion (COSEWIC 2010b). Bobolink is an area-sensitive species, with reported lower reproductive success in small habitat fragments (COSEWIC 2010b).	N: Bobolink was not observed during breeding bird surveys that targeted the meadow habitat in the Study Area.
Birds	Chimney Swift	*Chaetura pelagica*	THR	THR	S4B, S4N	Cadman et al. 2007	Chimney Swift uses chimneys for roosting and breeding, and less commonly, nest in large hollow trees (Cadman et al. 2007). Nesting sites typically have a constant ambient temperature (COSEWIC 2007). It is an aerial insectivore, and often forages near water (COSEWIC 2007a).	N: Chimney structures appear to be absent from the Study Area and trees were not suitable for nesting.
Birds	Eastern Meadowlark	*Sturnella magna*	THR	THR	S4B	Cadman et al. 2007	The Eastern Meadowlark is typically found in fields, meadows, golf courses, pastures, alfalfa fields, roadsides and other open areas (MNRF 2016). Older sites with moderately tall grass, a substantial litter layer, low forb and shrub cover and dense grass are preferred (COSEWIC 2011b). Larger patch sizes (>5 ha) are also generally preferred (COSEWIC 2011b).	N: Eastern Meadowlark was not observed during breeding bird surveys that targeted the meadow habitat in the Study Area.
Mammals	Eastern Small-footed Myotis	*Myotis leibii*	END	Not listed	S2S3	Dobbyn 1994	The Eastern Small-footed Myotis roosts in a variety of habitats, including hollow trees, under rocks or in rock outcrops, in buildings, caves, mines and under bridges. Different roosting sites may be selected each day. Hibernation occurs in abandoned mines and caves (MNRF 2020c).	**Y: Buildings in the Study Area have potential to support this species.**

Group	Common Name	Scientific Name	COSSARO	COSEWIC	S-Rank	Source(s)	Habitat Description	Potential Presence in the Study Area (Y/N)
Mammals	Little Brown Myotis	*Myotis lucifugus*	END	END	S4	Dobbyn 1994	The Little Brown Myotis roosts in tree cavities and abandoned buildings, and often forms roosting colonies in barns, attics and abandoned buildings (MNRF 2020c; COSEWIC 2013c). They have been found in a wide variety of deciduous and coniferous tree stands (COSEWIC 2013c). Hibernation typically occurs in caves and mines (MNRF 2020c).	**Y: Buildings in the Study Area have potential to support this species.**
Mammals	Northern Myotis	*Myotis septentrionalis*	END	END	S3?	Dobbyn 1994	The Northern Myotis roosts in colonies in tree cavities (COSEWIC 2013c) in a wide variety of deciduous and coniferous forest stands. Little is known about the effect of tree density on maternity roost selection for this species, but bats tend to avoid large open areas (COSEWIC 2013c). Small forest gaps, such as over streams or ponds, are used for foraging (COSEWIC 2013c).	**Y: Buildings in the Study Area have potential to support this species.**
Mammals	Tri-coloured Bat	*Perimyotis subflavus*	END	END	S3?	Dobbyn 1994	The Tri-coloured Bat prefers partly open habitat such as fields with large trees or woodland edges while avoiding both denser and more open areas. In the summer, Tri-coloured Bats roost in trees or dead clusters of leaves on trees. In the winter, they often hibernate in the deepest part of the caves where temperature is the least variable and the humidity is high. Maternity colonies are usually found either in tree cavities or man-made structures, but in at least parts of their range they have also been recorded in large clumps of arboreal lichen (COSEWIC 2013b).	**Y: Buildings in the Study Area have potential to support this species.**
Plants	Butternut	*Juglans cinerea*	END	END	S3?	MNRF 2020c	Butternut is commonly found in a variety of habitats throughout Southern Ontario, including woodlands and hedgerows ideal habitat includes rich, moist, and well-drained soils often found along streams, but may also be found on well-drained gravel sites, particularly those made of limestone (COSEWIC, 2003b). Butternut is intolerant of shade and occurs singly or in small groups with a variety of associates (Farrar, 1995).	N: Butternut was not observed during field investigations and it is considered absent from the Study Area.

REFERENCES:

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. (eds) Bird Studies Canada, Environment Conada, Ontario Field Ornithologists, Ontario Ministry of natural resources, and Ontario Nature, Toronto, xxii + 706pp

COSEWIC. 2010b. COSEWIC assessment and status report on the Bobolink Dolichonyx oryzivorus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 42 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2011a. COSEWIC assessment and status report on the Barn Swallow Hirundo rustica in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2013a. COSEWIC assessment and status report on the Bank Swallow Riparia riparia in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
COSEWIC. 2013c. COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
MNRF. 2020c. Species at Risk in Ontario List. Available Online: https://www.ontario.ca/environment-and-energy/species-risk-ontario-list

Group	Common Name	Scientific Name	COSSARO	COSEWIC	S-Rank	Source(s)	Habitat Description	Potential Presence in the Study Area (Y/N)
Amphibians	Western Chorus Frog (GLSL Pop.)	*Pseudacris triseriata*	NAR	THR-THR	S3	Ontario Nature 2019	The Western Chorus Frog prefers small, ephemeral wetlands disconnected from other water sources for breeding. The temporary nature of these wetlands leads to a reduction in predation pressure, but also makes entire populations susceptible to seasonal events such as premature drying due to climate conditions. The vegetation composition in breeding ponds is typically herbaceous with the presence of occasional shrubs or partially submerged trees forming a discontinuous or open canopy. Some populations may breed at the edges of closed-canopy habitats (Environment Canada 2015; COSEWIC 2008d).	N: Field investigations did not detect Western Chorus Frog.
Birds	Common Nighthawk	*Chordeiles minor*	SC	THR	S4B	Cadman et al. 2007	The Common Nighthawk is an aerial insectivore and forages at dawn and dusk. This species nests on the ground in open habitats with rocky or graveled substrate, and will even nest on gravel roofs in the city (Cadman et al. 2007). The regeneration or succession of forest clearings and the destruction of grassland habitats appear to play a major role in this species' decline along with the non-selective spraying for mosquitoes (Cadman et al. 2007).	N: Common Nighthawk was not observed during field investigations and habitat is not suitable.
Birds	Eastern Wood-Pewee	*Contopus virens*	SC	SC	S4B	Cadman et al. 2007	The Eastern Wood-Peewee is found in the mid-canopy layer of deciduous and mixedwood forests with open understories, and is commonly associated with edges and clearings (MNRF 2020c).	N: No deciduous or mixed forest communities in the Study Area.
Birds	Grasshopper Sparrow	*Ammodramus savannarum*	SC	SC-NS	S4B	Cadman et al. 2007	The Grasshopper Sparrow is found in large (>5 ha) sparsely vegetated grasslands, hay fields, pastures, prairies and alvars with well-drained, sandy soil (MNRF 2020c; COSEWIC 2013b). The nests are typically well hidden in grasses (MNRF 2020c).	N: Grasshopper Sparrow was not observed during breeding bird surveys that targeted the meadow habitat on the Subject Propertyand habitat is not suitable.
Birds	Red-headed Woodpecker	*Melanerpes erythrocephalus*	SC	THR	S4B	Cadman et al. 2007	The Red-headed Woodpecker prefers open woodlands and forest edges, and is often found in disturbed areas such as cemeteries, parks and golf courses (MNRF 2020c). This species shows a preference for dead or dying trees and at least a few snags or large dead limbs are necessary for its presence in more open habitats (Cadman et al. 2007).	N: No open woodlands or forest communities in the Study Area.
Invertebrates	Monarch	*Danaus plexippus*	SC	SC	S4B, S2N	MNRF 2020c	Found primarily wherever milkweed and wildflowers (including goldenrods, asters and purple loosestrife) exist (COSEWIC 2010f). The Larvae occur only where milkweed exists; adults are more generalized, feeding on a variety of wildflower nectar (MNR, 2014). This includes abandoned farmland, along roadsides, and other open spaces where these plants grow (COSEWIC 2010f).	**Y: Potential foraging habitat present in the Study Area throughout meadow communities. Occasional common milkweed plants were observed in the Study Area.**

Group	Common Name	Scientific Name	COSSARO	COSEWIC	S-Rank	Source(s)	Habitat Description	Potential Presence in the Study Area (Y/N)
Reptiles	Eastern Milksnake	Lampropeltis triangulum	NAR	SC	S3	Ontario Nature 2019	Frequently reported in and around buildings, especially old structures. However, it is found in a variety of habitats, including prairies, pastures, hayfields, rocky hillsides and a wide variety of forest types. Two important features of ideal habitat are proximity to water, and suitable locations for basking and egg-laying, nesting sites may include compost or manure piles, stumps, under boards, or in loose soil (COSEWIC 2002a).	**Y: Potential habitat occurs throughout the Study Area. Milksnake was not observed during field investigations; however, presence of Milksnake is difficult to detect without targeted coverboard surveys.**
Reptiles	Snapping Turtle	*Chelydra serpentina*	SC	SC	S3	Ontario Nature 2019	The Snapping Turtle inhabits ponds, sloughs, streams, rivers, and shallow bays that are characterized by slow moving water, aquatic vegetation, and soft bottoms (COSEWIC 2008b).	**Y: Potential habitat in the Study Area in the permanent standing water in the MASM1/MAMM1 wetland and the stormwater pond in the Bass Pro Mills Drive Highway 400 on-ramp. Snapping Turtle was not observed during field investigations; however, Snapping Turtle is difficult to detect since it does not bask and standing water in the MASM1 wetland was difficult to observe without site access.**

REFERENCES:

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. (eds) Bird Studies Canada, Environment Conada, Ontario Field Ornithologists, Ontario Ministry of natural resources, and Ontario Nature, Toronto, xxii + 706pp

COSEWIC 2002a. COSEWIC assessment and update status report on the Milksnake Lampropeltis tirangulum in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. . vi + 29 pp.

COSEWIC. 2008d. COSEWIC assessment and update status report on the Western Chorus Frog Pseudacris triseriata Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa.vii + 47 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010f. COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp

COSEWIC. 2013b. COSEWIC assessment and status report on the Grasshopper Sparrow pratensis subspecies Ammodramus savannarum pratensis in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 36 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

Environment Canada. 2015. Recovery strategy for the Western Chorus Frog (Pseudacris triseriata), Great Lakes/St. Lawrence – Canadian Shield population, in Canada. Species at Risk Act Recovery Strategy Series, Environment Canada, Ottawa. Vi+50 pp.

MNRF. 2020c. Species at Risk in Ontario List. Available Online: https://www.ontario.ca/environment-and-energy/species-risk-ontario-list

APPENDIX D
Vascular Plant Species List

SCIENTIFIC NAME	COMMON NAME		PROVINCIAL STATUS (S-RANK)	COSSARO STATUS	COSEWIC STATUS	COEFFICIENT OF CONSERVATISM	COEFFICIENT OF WETNESS
GYMNOSPERMS (Conifers)							
Pinus nigra	Austrian Pine	L+	SE3				5
ANGIOSPERMS (Dicots)							
Apocynum cannabinum	Hemp Dogbane	L5	S5			3	0
Arctium minus	Common Burdock	L+	SE5				3
Artemisia biennis	Biennial Wormwood	L+	SE5				-3
Asclepias syriaca	Common Milkweed	L5	S5			0	5
Cichorium intybus	Wild Chicory	L+	SE5				5
Cirsium arvense	Canada Thistle	L+	SE5				3
Cirsium vulgare	Bull Thistle	L+	SE5				3
Crataegus sp.	Hawthorn species		SNA				
Elaeagnus umbellata	Autumn Olive	L+	SE3				3
Erigeron annuus	Annual Fleabane	L5	S5			0	3
Euphorbia sp.	Spurge species		SNA				
Gleditsia triacanthos	Honey Locust	L+	S2?			8	0
Hesperis matronalis	Dame's Rocket	L+	SE5				3
Linaria vulgaris	Butter-and-eggs	L+	SE5				5
Lonicera tatarica	Tatarian Honeysuckle	L+	SE5				3
Lotus corniculatus	Garden Bird's-foot Trefoil	L+	SE5				3
Lythrum salicaria	Purple Loosestrife	L+	SE5				-5
Matricaria chamomilla	Wild Chamomile	L+	SE3				5
Nepeta cataria	Catnip	L+	SE5				3
Parthenocissus quinquefolia	Virginia Creeper	L5	S4?			6	3
Plantago major	Common Plantain	L+	SE5				3
Populus tremuloides	Trembling Aspen	L5	S5			2	0
Prunus sp.	Cherry species		SNA				
Rhamnus cathartica	European Buckthorn	L+	SE5				0
Rhus typhina	Staghorn Sumac	L5	S5			1	3
Ribes sp.	Currant species		SNA				
Rubus idaeus	Red Raspberry		S5			2	3
Rumex crispus	Curled Dock	L+	SE5				0
Salix sp.	Willow species	L+	SNA				
Salix x pendulina	(Salix babylonica X Salix euxina)		SNA				
Solanum dulcamara	Bittersweet Nightshade	L+	SE5				0
Solidago sp.	Goldenrod species		SNA				
Sonchus arvensis	Field Sow-thistle	L+	SE5				3
Symphyotrichum lanceolatum	Panicled Aster	L5	S5			3	-3
Symphyotrichum novae-angliae	New England Aster	L5	S5			2	-3
Taraxacum officinale	Common Dandelion	L+	SE5				3
Thlaspi arvense	Field Pennycress	L+	SE5				5
Ulmus americana	White Elm	L5	S5			3	-3
Verbascum thapsus	Common Mullein	L+	SE5				5
Vicia cracca	Tufted Vetch	L+	SE5				5
Vitis riparia	Riverbank Grape	L5	S5			0	0
ANGIOSPERMS (Monocots)							
Bromus inermis	Smooth Brome	L+	SE5				5
Phalaris arundinacea	Reed Canarygrass	L+?	S5			0	-3
Phragmites australis	Common Reed	L+	SU			0	-3
Poa pratensis	Kentucky Bluegrass	L+	S5			0	3
Typha angustifolia	Narrow-leaved Cattail	L+	SE5				-5

FLORISTIC SUMMARY		TOTAL
Total Species		47
Plant identified to Genus only or S-Rank not available (SNA)		7
Native Species		15
Introduced Species (SE)		25
Species at Risk (SAR) in Ontario (END, THR)		0
Special Conern in Ontario (SC)		0
Rare in Ontario (S1, S2 or S3)		1
Uncommon to common in Ontario (S4)		1
Common to very common in Ontario (S5)		12
Highly sensitive plant species with C value greater than 7		1

DEFINITIONS

COSSARO: Committee on the Status of Species at Risk in Ontario
COSEWIC: Committee on the Status of Endangered Wildlife in Canada
S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)
S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),
S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)
S4: Apparently Secure—Uncommon but not rare
S5: Secure—Common, widespread, and abundant in the province
SE#: Introduced species
SNA: Not applicable—Status rank not applicable; species is not a suitable target for conservation activities.
SU: Status unknown
?: Indicates uncertainty with the ranking
END: Endangered
THR: Threatened
SC: Special Concern

APPENDIX E
Wildlife Species List

Appendix E: Wildlife Species List

Wildlife recorded in the Bass Pro Mills Drive Extension Study Area during field investigations

COMMON NAME	SCIENTIFIC NAME	TRCA FAUNA LOCAL RANK	ONTARIO STATUS	COSSARO STATUS	COSEWIC STATUS
BIRDS					
Canada Goose	*Branta canadensis*	L5	S5		
Mallard	*Anas platyrhynchos*	L5	S5		
Mourning Dove	*Zenaida macroura*	L5	S5		
Virginia Rail	*Rallus limicola*	L3	S5B		
Killdeer	*Charadrius vociferus*	L4	S5B, S5N		
American Woodcock	*Scolopax minor*	L3	S4B		
Ring-billed Gull	*Larus delawarensis*	L4	S5B,S4N		
Alder Flycatcher	*Empidonax alnorum*	L3	S5B		
Eastern Kingbird	*Tyrannus tyrannus*	L4	S4B		
Barn Swallow	*Hirundo rustica*	L4	S4B	THR	THR
Marsh Wren	*Cistothorus palustris*	L3	S4B		
American Robin	*Turdus migratorius*	L5	S5B		
European Starling	*Sturnus vulgaris*	L+	SNA		
House Sparrow	*Passer domesticus*	L+	SNA		
American Goldfinch	*Spinus tristis*	L5	S5B		
Chipping Sparrow	*Spizella passerina*	L5	S5B		
Savannah Sparrow	*Passerculus sandwichensis*	L4	S4B		
Vesper Sparrow	*Pooecetes gramineus*	L3	S4B		
Song Sparrow	*Melospiza melodia*	L5	S5B		
Swamp Sparrow	*Melospiza georgiana*	L4	S5B		
Red-winged Blackbird	*Agelaius phoeniceus*	L5	S4		
Common Grackle	*Quiscalus quiscula*	L5	S5B		
Common Yellowthroat	*Geothlypis trichas*	L4	S5B		
	MAMMALS				
Muskrat	*Ondatra zibethicus*	L4	S5		
Coyote	*Canis latrans*	L4	S5		
Striped Skunk	*Mephitis mephitis*	L5	S5		

DEFINITIONS

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S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),
S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)
S4: Apparently Secure—Uncommon but not rare
S5: Secure—Common, widespread, and abundant in the province
SNA: Not applicable—Conservation status rank not applicable because the species is not a suitable target for conservation activities.
S#B- Breeding status rank
S#N- Non Breeding status rank
END: Endangered
THR: Threatened
SC: Special Concern
NAR: Not at Risk
L1 = Species of Regional Conservation Concern, regionally scarce due to either accidental occurrence or extreme sensitivity to human impacts
L2 = Species of Regional Conservation Concern, somewhat more abundant and generally slightly less sensitive than L1 species
L3 = Species of Regional Conservation Concern, generally less sensitive and more abundant than L1 and L2 ranked species
L4 = Species of Urban Concern; occur throughout the region but could show declines if urban impacts are not mitigated effectively
L5 = species that are considered secure throughout the region
L+ = introduced species, not native to the Toronto region

APPENDIX F
Photographic Record

Photo 1: Conditions in the east side of the Study Area on June 4, 2021 – Northeast aspect.

Photo 2: Conditions in the east side of the Study Area on June 4, 2021 – Southwest aspect

Photo 3: Conditions in the west of the Study Area on June 4, 2021 – East aspect

Photo 4: Conditions in the northwest of the Study Area on June 22, 2021 – Southeast aspect

Photo 5: Conditions in the east side of the Study Area on June 22, 2021 – East aspect

Photo 6: Conditions in the southeast of the Study Area on June 22, 2021 – South aspect

Stantec

Client/Project	Date
The Regional Municipality of York	21/10/2021
Bass Pro Mills Drive Extension in Vaughan, Ontario	Project No. 160540006
Appendix F PHOTOGRAPHIC RECORD	Page Page 1 of 2

Photo 7: Black Creek north of the Study Area on August 24, 2021 – North aspect.

Photo 8: Black Creek north of the Study Area on August 24, 2021.

Photo 9: Black Creek north of the Study Area on August 24, 2021 – North aspect.

Photo 10: Black Creek north of the Study Area on August 24, 2021.

Photo 11: Black Creek north of the Study Area on August 24, 2021 – South aspect.

Photo 12: Black Creek north of the Study Area on August 24, 2021.

APPENDIX G
Significant Wildlife Habitat Assessment

Appendix G: Significant Wildlife Habitat Assessment for the Bass Pro Mills Drive Extension Study Area

Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
Seasonal Concentration Areas			
Waterfowl Stopover and Staging Area (Terrestrial)	Fields with sheet water or utilized by tundra swans during spring (mid-March to May), or annual spring melt water flooding found in any of the following Community Types: Meadow (ME), Thicket (TH). Agricultural fields with waste grains are commonly used by waterfowl, and these are not considered SWH unless used by Tundra swans in the Long Point, Rondeau, Lake St. Clair, Grand Bend and Point Pelee Areas.	ELC surveys were used to assess features within the Study Area that may support waterfowl stopover and staging areas (terrestrial).	Absent. Low-lying areas were comprised of the MASM1/MAMM1 and MASM1-1 wetlands. An abundance of waterfowl was not recorded during field investigations.
Waterfowl Stopover and Staging Area (Aquatic)	The following Community Types: Meadow Marsh (MAM), Shallow Marsh (MAS), Shallow Aquatic (SA), Deciduous Swamp (SWD). Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. The combined area of the ELC ecosites and a 100 m radius area is the SWH. Sewage treatment ponds and storm water ponds do not qualify as a SWH; however, a reservoir managed as a large wetland or pond/lake does qualify.	ELC surveys were used to assess features within the Study Area that may support waterfowl stopover and staging areas (aquatic).	Absent. Open water is restricted to the southern section of the MASM1/MAMM1 wetland and the stormwater management pond, neither of which are of sufficient size to support SWH for waterfowl stopover and staging areas (aquatic). An abundance of waterfowl was not recorded during field investigations.
Shorebird Migratory Stopover Area	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of amour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a significant wildlife habitat. The following community types: Meadow Marsh (MAM), shoreline (SH), or Sand Dune (SB).	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support migratory shorebirds.	Absent. No suitable shoreline habitat in the Study Area.

Appendix G: Significant Wildlife Habitat Assessment for the Bass Pro Mills Drive Extension Study Area

Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
Raptor Wintering Area	At least one of the following Forest Community Types: Deciduous Forest (FOD), Mixed Forest (FOM) or Coniferous Forest (FOC), in combination with one of the following Upland Community Types: Meadow (ME), Thicket (TH), Savannah (SV), Woodland (WOD) (<60% cover) that are >20 ha and provide roosting, foraging and resting habitats for wintering raptors. Upland habitat (ME, TH, SV, WOD), must represent at least 15 ha of the 20 ha minimum size.	ELC surveys and GIS analysis were used to assess features within the Study Area that may support wintering raptors.	Absent. There were no forest communities in the Study Area.
Bat Hibernacula	Hibernacula may be found in caves, mine shafts, underground foundations and karsts. May be found in these Community Types: Crevice (CCR), Cave (CCA).	ELC surveys were used to assess features within the Study Area that may support bat hibernacula.	Absent.
Bat Maternity Colonies	Maternity colonies considered significant wildlife habitat are found in forested ecosites. Either of the following Community Types: Deciduous Forest (FOD), Mixed Forest (FOM), Coniferous Forest (FOC), Deciduous Swamp (SWD), Mixed Forest (SWM) and Coniferous Forest (SWC) that have wildlife trees >10 cm diameter at breast height (dbh). Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. Northern Myotis prefer contiguous tracts of older forest cover for foraging and roosting in snags and trees. Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred.	ELC surveys were used to assess features within the Study Area that may support bat maternity colonies.	Absent: There were no forest communities in the Study Area.
Turtle Wintering Areas	Snapping and Midland Painted turtles utilize ELC community classes: Swamp (SW), Marsh (MA) and Open Water (OA). Shallow water (SA), Open Fen (FEO) and Open Bog (BOO). Northern Map turtle- open water areas such as deeper rivers or streams	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support areas of permanent standing water but	**Present: Potential habitat in the Study Area in the permanent standing water in the MASM1/MAMM1**

Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
	and lakes can also be used as over-wintering habitat. Water has to be deep enough not to freeze and have soft mud substrate. Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen.	not deep enough to freeze.	**wetland and the stormwater pond in the Bass Pro Mills Drive Highway 400 on-ramp; however, only the MASM1/MAMM1 is considered as candidate SWH since stormwater ponds do not qualify as SWH.**
Snake Hibernacula	Hibernation occurs in sites located below frost lines in burrows, rock crevices, broken and fissured rock and other natural features. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Any ecosite in southern Ontario other than very wet ones may provide habitat. The following Community Types may be directly related to snake hibernacula: Talus (TA), Rock Barren (RB), Crevice (CCR), Cave (CCA), and Alvar (RBOA1, RBSA1, RBTA1).	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support snake hibernacula.	Absent.
Colonial-Nesting Bird Breeding Habitat (Bank and Cliff)	Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, or barns found in any of the following Community Types: Meadow (ME), Thicket (TH), Bluff (BL), Cliff (CL). Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. Does not include a licensed/permitted Mineral Aggregate Operation.	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support colonial bird breeding habitat.	Absent.

Appendix G: Significant Wildlife Habitat Assessment for the Bass Pro Mills Drive Extension Study Area

Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
Colonial-Nesting Bird Breeding Habitat (Tree/Shrubs)	Identification of stick nests in any of the following Community Types: Mixed Swamp (SWM), Deciduous Swamp (SWD), Treed Fen (FET). The edge of the colony and a minimum 300 m area of habitat or extent of the Forest Ecosite containing the colony or any island <15.0 ha with a colony is the SWH. Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used.	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support colonial bird breeding habitat (Trees/Shrubs).	Absent.
Colonial-Nesting Bird Breeding Habitat (Ground)	Any rocky island or peninsula within a lake or large river. For Brewer's Blackbird close proximity to watercourses in open fields or pastures with scattered trees or shrubs found in any of the following Community Types: Meadow Marsh (MAM1-6), Shallow Marsh (MAS1-3), Meadow (ME), Thicket (TH), Savannah (SV).	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support colonial bird breeding habitat (Ground).	Absent.
Migratory Butterfly Stopover Areas	Located within 5 km of Lake Ontario. A combination of ELC communities, one from each land class is required: Field (ME, TH) and Forest (FOC, FOM, FOD). Minimum of 10 ha in size with a combination of field and forest habitat present.	ELC surveys and GIS analysis were used to assess features within the Study Area that may support migratory butterfly stopover areas.	Absent. Study Area is >5 km from Lake Ontario.
Landbird Migratory Stopover Areas	The following community types: Forest (FOD, FOM, FOC) or Swamp (SWC, SWM, SWD). Woodlots must be >10 ha in size and within 5 km of Lake Ontario – woodlands within 2 km of Lake Ontario are more significant.	ELC surveys and GIS analysis were used to assess features within the Study Area that may support landbird migratory stopover areas.	Absent. Study Area is >5 km from Lake Ontario.
Deer Winter Congregation Areas	Woodlots typically >100 ha in size unless determined by the MNR as significant. (If large woodlots are rare in a planning area >50 ha). All forested ecosites within Community Series: FOC, FOM, FOD, SWC, SWM, SWD. Conifer plantations much smaller than 50 ha may also be used.	No studies required as the MNRF delineates this habitat.	Absent.

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Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
Rare Vegetation Communities			
Cliffs and Talus Slopes	A Cliff is vertical to near vertical bedrock >3 m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris. Any ELC Ecosite within Community Series: TAO, TAS, TAT, CLO, CLS, CLT. Most cliff and talus slopes occur along the Niagara Escarpment.	ELC surveys were used to assess features within the Study Area that would be considered cliffs or talus slopes.	Absent.
Sand Barrens	Sand barrens typically are exposed sand, generally sparsely vegetated and cause by lack of moisture, periodic fires and erosion. Vegetation can vary from patchy and barren to tree covered but less than 60%. Any of the following Community Types: SBO1 (Open Sand Barren Ecosite), SBS1 (Shrub Sand Barren Ecosite), SBT1 (Treed Sand Barren Ecosite).	ELC surveys were used to assess features within the Study Area that would be considered to be sand barrens.	Absent.
Alvars	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover. Any of the following Community Types: ALO1(Open Alvar Rock Barren Ecosite), ALS1 (Alvar Shrub Rock Barren Ecosite), ALT1 (Treed Alvar Rock Barren Ecosite), FOC1 (Dry-Fresh Pine Coniferous Forest), FOC2 (Dry-Fresh Cedar Coniferous Forest), CUM2 (Bedrock Cultural Meadow), CUS2 (Bedrock Cultural Savannah), CUT2-1 (Common Juniper Cultural Alvar Thicket), or CUW2 (Bedrock Cultural Woodland).	ELC surveys were used to assess features within the Study Area that would be considered to be alvar communities.	Absent.

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Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
	An Alvar site >0.5 ha in size.		
Old-growth Forest	Old-growth forests tend to be relatively undisturbed, structurally complex, and contain a wide variety of trees and shrubs in various age classes. These habitats usually support a high diversity of wildlife species. No minimum size criteria t in any of the following Community Types: FOD (Deciduous Forest), FOM (Mixed Forest), FOC (Coniferous Forest). Forests greater than 120 years old and with no historical forestry management was the main criteria when surveying for old-growth forests.	ELC surveys were used to assess features within the Study Area that would be considered to be old-growth forest communities.	Absent.
Savannahs	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. In Ecoregion 6E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario). Any of the following Community Types: TPS1 (Dry-Fresh Tallgrass Mixed Savannah Ecosite), TPS2 (Fresh-Moist Tallgrass Deciduous Savannah Ecosite), TPW1 (Dry-Fresh Black Oak Tallgrass Deciduous Woodland Ecosite), TPW2 (Fresh-Moist Tallgrass Deciduous Woodland Ecosite), CUS2 (Bedrock Cultural Savannah Ecosite).	ELC surveys were used to assess features within the Study Area that would be considered to be savannah communities.	Absent.
Tall-grass Prairies	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has <25% tree cover. In Ecoregion 6E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario). Any of the following Community Types: TPO1 (Dry Tallgrass Prairie Ecosite), TPO2 (Fresh-Moist Tallgrass Prairie Ecosite).	ELC surveys were used to assess features within the Study Area that would be considered to be tall-grass communities.	Absent.
Other Rare Vegetation	Provincially Rare S1, S2 and S3 vegetation communities are listed in	ELC surveys were used to	Absent.

Appendix G: Significant Wildlife Habitat Assessment for the Bass Pro Mills Drive Extension Study Area

Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
Communities	Appendix M of the SWHTG.	assess features within the Study Area that would be considered to be other rare vegetation communities.	
Specialized Habitat for Wildlife			
Waterfowl Nesting Area	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SWT1, SWT2, SWD1, SWD2, SWD3, SWD4. Note: includes adjacency to Provincially Significant Wetlands.	ELC surveys were used to assess features within the Study Area that may support nesting waterfowl. Habitats adjacent to wetlands without standing water were not considered candidate SWH.	Absent – Potentially suitable habitat adjacent to wetlands but an abundance of waterfowl were not observed during field investigations.
Bald Eagle and Osprey nesting, Foraging, and Perching Habitat	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. Nests located on man-made objects are not to be included as SWH (e.g., telephone poles and constructed nesting platforms). ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	ELC surveys and wildlife habitat assessments were used to assess features within the Study Area that may support nesting, foraging and perching habitat for large raptors.	Absent
Woodland Raptor Nesting Habitat	All natural or conifer plantation woodland/forest stands combined >30 ha and with >4 ha of interior habitat. Interior habitat determined with a 200 m buffer. Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	ELC surveys, wildlife habitat assessments and GIS analysis were used to assess features within the Study Area that may support nesting habitat for woodland raptors.	Absent.
Turtle Nesting Areas	Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC Ecosites: MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, BOO1, FEO1.	ELC surveys, wildlife habitat assessments and GIS analysis were used to assess features within the Study Area that may	Absent.

Appendix G: Significant Wildlife Habitat Assessment for the Bass Pro Mills Drive Extension Study Area

Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
	Best nesting habitat for turtles is close to water, away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.	support turtle nesting areas.	
Seeps and Springs	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs. Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system.	ELC surveys were used to assess features within the Study Area that may support seeps/springs.	Absent.
Amphibian Breeding Habitat (Woodland)	All Ecosites associated with these ELC Community Series; FOC, FOM, FOD, SWC, SWM, SWD. Presence of a wetland, lake, or pond within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat.	ELC surveys were used to assess features within the Study Area that may support woodland breeding amphibians.	Absent. Wetlands in the Study Area were all >120m from woodland features.

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Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
Amphibian Breeding Habitat (Wetland)	ELC Community Classes SW, MA, FE, BO, OA and SA. Wetland areas >120 m from woodland habitats. Wetlands and pools (including vernal pools) >500 m^2 (about 25 m diameter) supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats. Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. Bullfrogs require permanent water bodies with abundant emergent vegetation.	ELC surveys were used to assess features within the Study Area that may support wetland breeding amphibians. Amphibian call count surveys were conducted to target the wetland features in the Study Area.	Absent. No calling frogs or toads were identified during amphibian surveys that targeted wetlands in the Study Area.
Species of Conservation Concern			
Marsh Bird Breeding Habitat	All wetland habitats with shallow water and emergent aquatic vegetation. May include any of the following Community Types: Meadow Marsh (MAM), Shallow Aquatic (SA), Open Bog (BOO), Open Fen (FEO), or for Green Heron: Swamp (SW), Marsh (MA) and Meadow (ME) Community Types.	ELC surveys were used to identify marshes with shallow water and emergent vegetation that may support marsh breeding birds.	**Present. The MASM1/MAMM1 wetland in the Study Area is potentially suitable for marsh breeding birds. There were two marsh breeding bird habitat indicator species observed during field investigations: Virginia Rail and Marsh Wren. Targeted callback surveys for marsh breeding birds were not completed during field investigations; however, they are recommended to be completed during detailed design to confirm whether marsh**

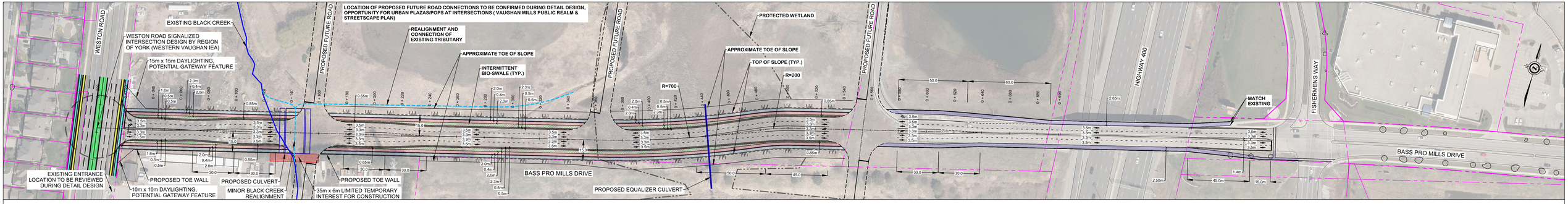
Appendix G: Significant Wildlife Habitat Assessment for the Bass Pro Mills Drive Extension Study Area

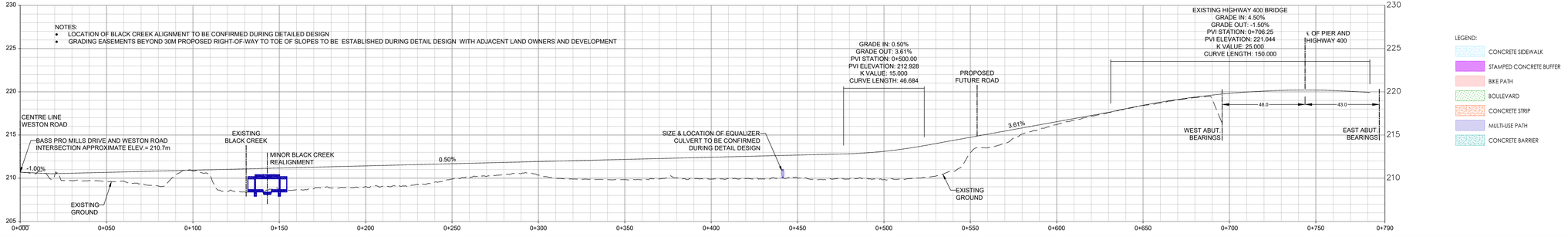
Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
			breeding bird habitat is present.
Woodland Area-sensitive Bird Breeding Habitat	Habitats >30ha where interior forest is present (at least 200 m from the forest edge); typically >60 years old. These include any of the following Community Types: Forest (FO), Treed Swamp (SW).	ELC surveys and GIS analysis were used to determine whether woodlots that occurred within the Study Area that were >30 ha with interior habitat present (>200 m from edge).	Absent.
Open Country Bird Breeding Habitat	Grassland areas > 30 ha, not Class 1 or Class 2 agricultural lands, with no row-cropping or hay or livestock pasturing in the last 5 years, in the following Community Type: Meadow (ME).	ELC surveys and GIS analysis were used to identify grassland communities within the Study Area that may support area-sensitive breeding birds.	Absent. Although there is a large meadow in the Study Area that is approximately 30 ha in size (without the consideration of hedgerows as dividing the meadow habitat), Google Earth imagery from 2018 indicates the feature was undergoing agricultural practices during that time.
Shrub/Early Successional Bird Breeding Habitat	Old field areas succeeding to shrub and thicket habitats >10 ha, not Class 1 or Class 2 agricultural lands, with no row-cropping or intensive hay or livestock pasturing in the last 5 years, in the following Community Types: Thickets (TH), Savannahs or Woodlands (WOD).	ELC surveys and GIS analysis were used to identify large communities that may support shrub/early successional breeding birds.	Absent.
Terrestrial Crayfish	Meadow marshes and edges of shallow marshes (no minimum size). Vegetation communities include MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, MAS1, MAS2, MAS3. Construct burrows in marshes, mudflats, meadows. Can be found far from water.	ELC surveys and wildlife habitat assessments were used to identify shallow marsh and meadow marsh communities that may support Terrestrial Crayfish within the Study Area.	Absent.
Special Concern and	All special concern and provincially rare (S1-S3, SH) plant and animal	ELC surveys were used to	**Present: Potential**

Appendix G: Significant Wildlife Habitat Assessment for the Bass Pro Mills Drive Extension Study Area

Candidate Wildlife Habitat	Criteria	Methods	Potential Habitat Present in the Study Area?
Rare Wildlife Species	species (SOCC) within potential to occur in the Study Area.	identify suitable habitat for each potential SOCC listed in Appendix C.2.	**habitat for the following SOCC was identified in the Study Area: Monarch, Eastern Milksnake and Snapping Turtle.**
Animal Movement Corridors			
Amphibian Movement Corridor	Corridors may be found in all ecosites associated with water. Determined based on identifying significant amphibian breeding habitat (wetland).	Identified after Amphibian Breeding Habitat is confirmed. Movement corridors should be considered when amphibian breeding habitat is confirmed as SWH from Amphibian Breeding Habitat.	Absent.

APPENDIX H
Plan and Profile





LEGEND:

- CONCRETE SIDEWALK
- STAMPED CONCRETE BUFFER
- BIKE PATH
- BOULEVARD
- CONCRETE STRIP
- MULTI-USE PATH
- CONCRETE BARRIER