

## APPENDIX F

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### Natural Heritage Report



# Natural Heritage Report Humber Trail Extension Feasibility Study

Prepared for Schollen & Company Inc.

November 2020

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## **1.0 Introduction**

North-South Environmental Inc. (NSE), as a sub-consultant to Schollen & Company Inc. (SCI), was retained by the City of Vaughan to complete a review of natural heritage features in the study area for the proposed Humber Trail extension between Pine Grove Road and Steeles Avenue West in Vaughan. This Natural Heritage Report will contribute to the feasibility study for the proposed trail. The report identifies known natural heritage features within the study area and discusses features that may be constraints to trail development while also identifying opportunities for the trail to protect or enhance natural features. Recommendations are provided for how trail alignment and management can be sensitive to natural features.

### **1.1 Study Area**

The study area spans the length of the East Humber River from Pine Grove Road in the north to Steeles Avenue West in the south. The Natural Heritage Report is primarily focused on natural heritage features within this area. The majority of the properties in the study area are owned by the Toronto and Region Conservation Authority (TRCA), the City of Vaughan, the Regional Municipality of York (York Region) and the Ontario Ministry of Transportation (MTO).

### **1.2 Project Intent**

The City of Vaughan, in partnership with TRCA, intends to construct a multi-use trail between Boyd Conservation Area and Steeles Avenue West. This represents a gap in the existing Humber Trail which is intended to be filled under the City's Pedestrian and Bicycle Master Plan. A feasibility study for the new trail was initiated by SCI in 2018.

Trail planning and management within the corridor must adhere to the policies and principles in the Provincial Policy Statement (PPS) (2020), the York Region Official Plan (2010), the City of Vaughan Official Plan (2010) and other relevant federal, provincial, municipal and conservation authority policies. In determining the alignment and management objectives for the trail, avoidance and mitigation of ecological impacts must therefore be considered. Key ecological considerations for determining the preferred trail alignment include:

- Maintaining the ecological integrity of the East Humber River valley and associated designated areas
- Critical habitat for Species at Risk (SAR)
- Rare vegetation communities, Significant Wildlife Habitat (SWH), and habitat for locally rare
- Proposed tree removal and vegetation clearing
- Disturbance to valley walls and other slopes, especially areas with erosion-prone substrates

- Disturbance to fish and aquatic habitat including any crossings of the East Humber River especially as they relate to impacts to Redside Dace (*Clinostomus elongatus*) habitat
- Trail development and management within the Greenbelt, the York Region Greenlands Network or other designated areas should reflect the provincial and municipal policies pertaining to those areas.

Further consideration should be given to whether the proposed trail design would constitute “site alteration” as per the definition in the PPS (2020), which reads:

*Site alteration: means activities, such as grading, excavation and the placement of fill that would change the landform and natural vegetative characteristics of a site.*

Although the footprint of a granular surface trail or boardwalk will be relatively small, construction of trails of any type will require construction access and other works and the overall construction footprint can be assumed to be larger than the trail itself. Excavation and placement of fill may be required to construct some portions of a trail and construction of abutments and piers may be required for bridges and boardwalks. Therefore, it should be assumed that trail construction would constitute *site alteration* as per the definition in the PPS and would therefore be subject to the policies in the PPS pertaining to natural heritage.

Since trail construction within natural heritage features regulated under the PPS will be unavoidable, any proposed trails will need to demonstrate, through an Environmental Impact Study (EIS) or similar study, that there will be *no negative impact* on those features. Note that no impact assessment has been conducted as part of this feasibility study and therefore an analysis of whether trails would have a negative impact on the features identified below should be conducted in future, more detailed studies.

## 2.0 Methodology

### 2.1 Agency Consultation

SCI obtained a substantial amount of background data pertaining to the study area from TRCA and Land Information Ontario (LIO) at MNRF. No other agency contact was made for the purposes of the feasibility study. However, it is assumed that during the Environmental Assessment (EA) or detailed design phases of the project more detailed discussions with MNRF, the Ministry of Environment, Conservation and Parks (MECP), Fisheries and Oceans Canada (DFO) and other relevant agencies will be undertaken.

### 2.2 Background Review

A variety of sources were consulted in order to obtain existing data pertaining to natural environment features and functions in the study area. These included:



- Information from TRCA, MNR and other agencies
- Publicly accessible databases such as the Natural Heritage Information Centre's (NHIC's) natural areas mapping utility
- Geospatial data provided by TRCA, which included locations of:
  - Rare vegetation communities
  - Endangered and Threatened species
  - Special Concern and provincially rare species
  - Locally rare species
  - SWH
  - Wetlands
- Reports and survey data for the project provided by other consultants
- Reports for other projects in and adjacent to the study area.

This information, in addition to field reconnaissance visits as described below, was used to describe the overall existing conditions in the study area at a high level, as well as to identify locations of constraints to trail development and inform the constraints analysis.

## 2.3 Field Investigations

Field investigations were limited to several reconnaissance visits by NSE staff in the summer of 2018. NSE staff photographed much of the study area and noted any SAR, rare or noteworthy species, habitat features or other natural heritage features observed. Field investigations obtained sufficient information to describe existing conditions in the study area at a high level, including land cover, wetlands, hydrological features, SAR and rare species.

## 2.4 Analysis of Constraints

A constraints analysis was undertaken whereby designated areas, significant species occurrences, sensitive habitats and other features were identified as either high, moderate or low constraint areas, as follows:

- **High constraint areas** were defined as features which, if altered through trail development, would a) require permits and approvals from regulatory agencies and/or b) directly result in negative impacts to the ecological features and functions of the study area, that could not be mitigated.
- **Moderate constraint areas** were defined as features which, if altered through trail development, will not necessarily require permits from regulatory agencies but which still receive some protection under the PPS or other policies. Trail alignments within these areas would need to ensure adequate mitigation would be provided to avoid a negative impact to these features.
- **Low constraint areas** were defined as features which, if altered through trail development, will a) not require permits and approvals from regulatory agencies

and/or b) avoid negative impacts to the ecological features and functions of the study area.

The constraints analysis is meant to be used in conjunction with constraints mapping produced by SCI to determine a preferred route for the Humber Trail that is compatible with the natural environment while still satisfying accessibility, aesthetic and experiential objectives for the trail.

## 3.0 Existing Natural Environment Features

### 3.1 Hydrology and Physiography

The dominant physiographic feature of the study area is the Humber River valley, a relatively steep and narrow ravine formed by the Humber River and its tributaries. The main branch of the Humber River meets the East Humber River to the north of Woodbridge Avenue. The study area includes the main branch of the Humber River to the south of Woodbridge Avenue and then follows the East Humber River north to Boyd Conservation Area. Several much smaller tributaries meet the Humber River and East Humber River in the study area.

Soils in the study area consist mainly of sandy and gravelly loam. The Humber River valley occupies a glaciofluvial meltwater channel and surficial geology in most of the study area consists of Pleistocene glacial deposits (Chapman & Putnam, 1984). The Woodbridge Pleistocene Cut Earth Science Area of Natural and Scientific Interest (ANSI) is located in the southern portion of the study area between Highway 407 and the Canadian National (CN) railway. The ANSI is an excellent cross-section of Pleistocene glaciolacustrine deposits. Constructed berms and embankments support the Canadian Pacific (CP) railway, Highway 407 and other infrastructure and represent major topographic modifications in the study area.

### 3.2 Designated Features

#### 3.2.1 Provincial

The northern portion of the study area falls within the Greenbelt and is part of the Greenbelt Natural Heritage System. Section 3.3.2 of the *Greenbelt Plan* (2017) encourages the creation of trails within the Natural Heritage System:

*The Province should, in partnership with municipalities, conservation authorities, non-government organizations and other interested parties:*

1. *Encourage the development of a system of publicly accessible parkland, open space and trails where people can pursue the types of recreational activities envisaged by this Plan, and to support the connectivity of the Natural Heritage System and the achievement of complete communities in settlement areas across the Greenbelt.*

2. *Encourage the development of a trail plan and a co-ordinated approach to trail planning and development in the Greenbelt to enhance key existing trail networks and to strategically direct more intensive activities away from sensitive landscapes.*
3. *Promote good stewardship practices for public and private lands within the Greenbelt, including clear demarcation of where public access is permitted.*

Two Areas of Natural and Scientific Interest (ANSIs) are located in the study area: the Woodbridge Pleistocene Cut Earth Science ANSI, which is contained entirely within the extreme southwestern corner of the study area, and the Boyd Conservation Area and Adjacent Lands Life Science ANSI, a portion of which is located at the far northern end of the study area. MECP defines ANSIs as “areas of land and water containing unique natural landscape features. These features have been scientifically identified as having life or earth science values related to protection, scientific study or education” (MECP, 2018). Because trail construction can be assumed to constitute *site alteration* as defined in the PPS, future studies will need to demonstrate that there will be *no negative impact* on those features as a result of trail construction.

### **3.2.2 TRCA**

The majority of the study area falls within TRCA’s Regulated Area which includes the East Humber River floodplain. Boyd Conservation Area, a TRCA property, occupies much of the northern portion of the study area. TRCA also regulates wetlands and may require a permit for site alterations within wetlands and adjacent lands within a buffer to be determined by TRCA. A permit can be expected to be required from TRCA for site alterations within a minimum 30 m buffer around wetlands, but this buffer may change through more detailed field surveys.

### **3.2.3 Municipal York Region Official Plan**

Much of the study area is designated as part of York Region’s Greenlands System as illustrated on Map 2 of the Regional Official Plan. According to the Regional Official Plan:

*The Regional Greenlands System...protects key natural heritage features and key hydrologic features and the adjacent lands necessary to maintain these features in a linked system.*

Key natural heritage features and key hydrologic features within the Regional Greenlands System that are present in the study area include Environmentally Significant Areas (ESAs), Regional Forests, wetlands and woodlands. Trail construction within the Regional Greenlands System can be assumed to constitute *site alteration* as defined in the PPS and municipal Official Plans. It should be assumed that any proposed trail construction in the Greenlands System will trigger the need for an EIS as per the policies in Section 2.0 of the York Region Official Plan.

### **City of Vaughan Official Plan**

Most of the study area is designated as part of the City of Vaughan’s Natural Heritage

Network as illustrated on Schedule 2 of the City's Official Plan. The following City ESAs are located in the study area:

- Pine Grove Forest ESA (ESA #19)
- Boyd's Rock Cress ESA (ESA #20)
- Pine Valley Forest ESA (ESA #21)

### **3.3 Vegetation**

TRCA has assessed vegetation communities throughout much of the study area using Ecological Land Classification (ELC) and NSE staff confirmed the accuracy of these communities in the field. The majority of the natural and naturalized vegetation in the study area is associated with the East Humber River valley and consists of a mix of forest and open country habitat with a few wetlands. Most of the vegetation in the study area consists of deciduous and mixed forest interspersed with old fields, meadows and other open country habitat. Intense human disturbance in some areas has led to the formation of sparsely vegetated sand and clay barrens. Most of the forests in the study area are relatively young but mature forests occur on steeper slopes and in Boyd Conservation Area.

#### **3.3.1 Rare Vegetation Communities**

TRCA has identified one provincially rare vegetation community in the study area: Hemlock Mineral Coniferous Swamp (SWC2-2), which has a provincial conservation status of S3S4 according to the NHIC. TRCA also identified a number of locally rare vegetation communities in the study area:

- White Cedar Treed Bluff (BLT1-A)
- Deciduous Treed Bluff (BLT1-B)
- Sumac-Willow-Cherry Shrub Bluff (BLS1-A)
- Reed Canary Grass Riparian Bar (BBO1-3)
- Mineral Treed Riparian Bar (BBT1-B)
- Shrub Clay Barren (CBS1)
- Fresh-Moist Hemlock-White Pine Coniferous Forest (FOC3-A)
- Dry-Fresh Red Oak Deciduous Forest (FOD1-1)
- Dry-Fresh White Pine-Oak Mixed Forest (FOM2-1)
- Fresh-Moist Hemlock-Hardwood Mixed Forest (FOM6-2)
- Fresh-Moist Poplar Mixed Forest (FOM8-1)
- Fresh-Moist Ash Mixed Forest (FOM8-B)
- Fresh-Moist White Pine-Sugar Maple Mixed Forest (FOMA-A)
- Horsetail Mineral Meadow Marsh (MAM2-7)
- Rush Mineral Meadow Marsh (MAM2-C)
- Bur-reed Mineral Shallow Marsh (MAS2-7)
- Unvegetated Mineral Vernal Pool (MAS2-H)
- Shrub Sand Barren (SBS1)
- Treed Sand Barren (SBT1)

- Black Ash Organic Deciduous Swamp (SWD5-1)
- White Cedar-Hardwood Organic Mixed Swamp (SWM4-1)
- Willow Organic Thicket Swamp (SWT3-2)

### 3.3.2 Interior Forest Habitat

Interior forest habitat is typically defined as being forest habitat located over 200 m away from any edge. TRCA has mapped a small amount of interior forest habitat in the study area. It should be noted that because interior forest habitat is directly related to the size of the total forest habitat within which it is contained, any reduction in size of the woodlot will result in a reduction in interior forest habitat.

### 3.3.3 Rare Plant Species

TRCA has mapped two provincially rare plant species in the study area. Habitat for these species is considered SWH as per the SWH Criteria Schedules for Ecoregion 6E (MNR, 2015). Provincially rare plant species in the study area are:

- **Hairy-fruited Sedge (*Carex trichocarpa*)**, which has a provincial conservation status of S3 (“Vulnerable”), has been identified at three locations along the East Humber River by TRCA. Hairy-fruited Sedge is a riparian species and grows on gravelly riverbanks in southern Ontario (MNR, 2000).
- **Meadow Evening-primrose (*Oenothera pilosella*)**, which has a provincial conservation status of S2 (“Imperiled”), has been identified at one location in the study area by TRCA. Meadow Evening-primrose grows at “moist edges of woods and waste ground and prairies” (MNR, 2000). Meadow Evening-primrose is a popular horticultural plant, and it is possible that the population along the East Humber River represents an escape from adjacent residential backyards.

In addition to the two provincially rare plant species noted above, TRCA has mapped observations of 54 locally rare plant species in the study area. Locally rare species are secure or apparently secure in Ontario but are considered to be rare within the TRCA’s watershed.

## 3.4 Breeding Birds

Data from TRCA indicates that a variety of bird species use habitats in the study area for breeding and other life processes. This includes several SAR, provincially rare and locally rare bird species. Endangered and Threatened birds with records from the study area include Bobolink (*Dolichonyx oryzivorus*), Barn Swallow (*Hirundo rustica*), Bank Swallow (*Riparia riparia*) and Eastern Meadowlark (*Sturnella magna*). These species are discussed in more detail in Section 3.8.

One Special Concern bird species was observed by TRCA in the study area: Wood Thrush (*Hylocichla mustelina*). Because it is listed as Special Concern under the provincial *Endangered Species Act* (2007), Wood Thrush does not receive the same regulatory protection as Endangered and Threatened species. However, its habitat is considered SWH as per the SWH Technical Criteria for Ecoregion 6E (MNR, 2015). Wood Thrush nests in

large, mature deciduous and mixed forests. This habitat covers an extensive amount of the study area, primarily in the East Humber River valley. Mature forest habitat in the study area should therefore be considered habitat for Wood Thrush.

Locally rare bird species with observations in the study area include:

- Sharp-shinned Hawk (*Accipiter striatus*)
- Yellow-billed Cuckoo (*Coccyzus americanus*)
- Black-billed Cuckoo (*Coccyzus erythrophthalmus*)
- Pileated Woodpecker (*Dryocopus pileatus*)
- Mourning Warbler (*Geothlypis philadelphia*)
- Eastern Screech-owl (*Megascops asio*)
- Wild Turkey (*Meleagris gallopavo*)
- Scarlet Tanager (*Piranga olivacea*)
- American Woodcock (*Scolopax minor*)
- Hooded Warbler (*Setophaga citrina*)
- American Redstart (*Setophaga ruticilla*)
- Black-throated Green Warbler (*Setophaga virens*)
- Field Sparrow (*Spizella pusilla*)
- Brown Thrasher (*Toxostoma rufum*)

## 3.5 Other Wildlife

Data from TRCA indicates that a variety of reptiles, amphibians, mammals and other wildlife occur in the study area and make use of various habitats for breeding, foraging, overwintering and other life processes. This includes at least one provincially rare species and several locally rare species.

### 3.5.1 Reptiles and Amphibians

TRCA has observations of Snapping Turtle (*Chelydra serpentina*) mapped in the study area. Snapping Turtle is listed as a Special Concern species under the provincial *Endangered Species Act*. As a Special Concern species, it does not receive the same regulatory protection as Endangered and Threatened species. However, its habitat is considered SWH as per the SWH Technical Criteria Schedules for Ecoregion 6E (MNR, 2015) and there may be other SWH associated with Snapping Turtle and other turtles in the study area, such as turtle wintering habitat and turtle nesting areas.

TRCA has observations of three frog species from the study area: Grey Treefrog (*Hyla versicolor*), Spring Peeper (*Pseudacris crucifer*) and Wood Frog (*Lithobates sylvaticus*). These three species are all locally rare and are also indicators of significant amphibian breeding habitat, woodland type (see Section 3.6.1, below).

In addition to frogs, TRCA has observations of Eastern Red-backed Salamander (*Plethodon cinereus*), a locally rare amphibian species, in the study area.

## **3.6 Significant Wildlife Habitat**

SWH was identified in the study area using the criteria in the SWH Criteria Schedules for Ecoregion 6E (MNR, 2015). Some SWH has been mapped by TRCA, such as rare vegetation communities and significant bird breeding habitat types. Terrestrial crayfish were observed by TRCA, but their habitat was not mapped and NSE therefore estimated the extent of this SWH type. Other candidate SWH may be present in the study area based on the presence of certain indicator species as described below.

### **3.6.1 Seasonal Concentration Areas of Animals**

#### **Turtle Wintering Areas**

TRCA has mapped several observations of Snapping Turtle in the study area and other turtle species may be present as well. The possibility that turtles overwinter in the study area should therefore not be ruled out. Suitable overwintering sites may be present in wetlands, ponds, slow-moving embayments of the East Humber River and other hydrologic features with soft substrates. More detailed surveys would be required to specifically identify the locations of turtle wintering areas.

### **3.6.2 Rare Vegetation Communities**

One provincially rare vegetation community is mapped by TRCA in the study area: Hemlock Mineral Coniferous Swamp (see Section 3.3.1, above).

### **3.6.3 Specialized Habitat for Wildlife**

#### **Turtle Nesting Areas**

TRCA has several observations of Snapping Turtle in the study area and other turtle species may be present as well. Nesting sites for Snapping Turtle and other turtles could occur anywhere with sandy or gravelly soil, typically on south-facing slopes where the substrate is exposed for easy excavation. Nesting sites are likely to be in close proximity to the East Humber River and other hydrologic features, but Snapping Turtles are known to travel as far as several hundred metres from their habitat in search of nesting sites. More detailed surveys would be required to identify specific nesting areas.

#### **Amphibian Breeding Habitat (Wetland)**

Three indicator species for significant amphibian breeding habitat, wetland type, have been observed by TRCA in the study area: Grey Treefrog, Spring Peeper and Wood Frog. However, detailed frog call surveys have not been conducted and this SWH cannot be confirmed. All wetlands in the study area should be treated as candidate amphibian breeding habitat, wetland type.

#### **Woodland Area-sensitive Bird Breeding Habitat**

Three area-sensitive bird species have been observed in the study area by TRCA: Pileated Woodpecker, Scarlet Tanager and Black-throated Green Warbler. Interior forest habitat has also been mapped in the study area by TRCA (see Section 3.3.2, above) and there are several

woodlands larger than 30 ha in size. The presence of three indicator species in forests larger than 30 ha containing interior habitat means that these forests are candidate woodland area-sensitive bird breeding habitat. In order to confirm that this SWH type is present in the study area, nesting pairs of these or other indicator species would need to be identified in suitable habitat.

### **3.6.4 Habitat for Species of Conservation Concern**

#### **Shrub/Early Successional Bird Breeding Habitat**

TRCA has mapped shrub/early successional bird breeding habitat in the study area. This type of SWH represents habitat for bird species that require large field areas succeeding into shrub thickets for breeding and foraging. Three indicator species for this SWH type have been recorded in the study area by TRCA: Brown Thrasher, Field Sparrow and Black-billed Cuckoo. This SWH type is located in the southern portion of the study area between Highway 7 and Steeles Avenue West.

#### **Terrestrial Crayfish**

Terrestrial crayfish or 'chimney crayfish' (Cambaridae spp.) are crayfish which live primarily in subterranean burrows. The burrows can be identified by the chimney-like structures at their openings. Two species are known to occur in Ontario: Digger Crayfish (*Fallicambarus fodiens*) and the provincially rare Devil Crayfish (*Cambarus diogenes*). Habitat for both species is considered SWH. TRCA has mapped one observation of a terrestrial crayfish in the study area and NSE staff found additional burrows during a field visit in 2018. Typical terrestrial crayfish habitat is treed or open lowland habitat with waterlogged sandy soil.

#### **Habitat for Special Concern and Rare Wildlife Species**

Two Special Concern species are present in the study area: Wood Thrush and Snapping Turtle. In addition, two provincially rare plant species are present in the study area: Hairy-fruited Sedge and Meadow Evening-primrose. Habitat for these species is considered SWH as per the SWH Criteria Schedules for Ecoregion 6E (MNR, 2015a).

## **3.7 Fish and Aquatic Habitat**

Aquatic Resource Areas (ARA) data from MNR indicates that the main branch of the Humber River within the study area is a warmwater system containing a diversity of fish species including minnows, suckers, catfish, sculpins and sunfish. The East Humber River is a cold water system with a similar diversity of fish species. DFO aquatic SAR mapping indicates that the East Humber River is occupied by Redside Dace (*Clinostomus elongatus*), which is listed as Endangered under the provincial *Endangered Species Act* and the federal *Species at Risk Act* (2002). Redside Dace is discussed in more detail in Section 3.8.6, below.

## **3.8 Endangered and Threatened Species**

### **3.8.1 Butternut**

TRCA has mapped several Butternuts in the study area. Butternut is listed as Endangered



under the provincial *Endangered Species Act* and therefore receives regulatory protection under provincial legislation. Under the *Endangered Species Act*, a protection zone of 25 m radius is applied to individual Butternuts, which has also been mapped by TRCA.

### 3.8.2 Bobolink and Eastern Meadowlark

TRCA has mapped several observations of Bobolink and Eastern Meadowlark in the study area and a Bobolink was also observed by NSE staff during a site visit in 2018. Bobolink and Eastern Meadowlark are both listed as Threatened under the provincial *Endangered Species Act* and these species share similar habitat: both require extensive open grasslands for breeding and foraging. The General Habitat Descriptions for Bobolink (MNR, 2013a) defines the following categories:

- **Category 1 Habitat** is the area within 10 m of a Bobolink nest.
- **Category 2 Habitat** is the area between 10 and 60 m of the nest or approximate centre of defended territory.
- **Category 3 Habitat** is the area of continuous suitable habitat (i.e. open country habitat) within 300 m of the nest or approximate centre of defended territory.

The General Habitat Description for Eastern Meadowlark (MNR, 2013b) is similar except that Category 2 habitat is the area within 100 m of the nest or approximate centre of defended territory. Habitat for Bobolink and Eastern Meadowlark species is located on the west side of the East Humber River between Highway 407 and Highway 7. Open country habitat in this area should be considered Category 3 habitat for these species.

### 3.8.3 Bank Swallow

Information from TRCA indicates that there is a Bank Swallow colony on a bluff along the East Humber River between Highway 407 and Highway 7. Bank Swallow is a Threatened species under the provincial *Endangered Species Act* and alterations to its habitat may require a permit under the *Endangered Species Act*. The General Habitat Description for Bank Swallows (MNR, 2015b) defines the following categories:

- **Category 1 Habitat** is the breeding colony including burrows and the substrate around them.
- **Category 2 Habitat** is the area within 50 m of the front (bank face) of the colony.
- **Category 3 Habitat** is the area within 500 m of the colony.

Much of the area between Highway 407 and Highway 7 can be considered Category 3 habitat for Bank Swallow.

### 3.8.4 Barn Swallow

Information from TRCA indicates that there are Barn Swallow nests on two structures in the study area. Neither of these structures will be modified as part of trail construction but foraging habitat for Barn Swallows could be affected. The General Habitat Description for Barn Swallows (MNR, 2013c) defines the following categories:

- **Category 1 Habitat** is the Barn Swallow nest itself.
- **Category 2 Habitat** is the area within 5 m of the nest.
- **Category 3 Habitat** is the area between 5 and 200 m of the nest.

Category 3 habitat is the core foraging habitat for Barn Swallows and is present at two locations in the study area: the first is located along the East Humber River between Highway 407 and Highway 7 and is completely contained within Category 3 habitat for Bank Swallow (see above). The second area of Category 3 habitat for Barn Swallows is around a municipal salt dome on the north side of Langstaff Road.

### 3.8.5 Endangered Bats

Four of Ontario's bat species are listed as Endangered under the provincial *Endangered Species Act*:

- Eastern Small-footed Myotis (*Myotis leibii*)
- Little Brown Myotis (*M. lucifugus*)
- Northern Myotis (*M. septentrionalis*)
- Tricolored Bat (*Perimyotis subflavus*)

Within the study area, there is potential for these species to roost in cavities, under bark or on branches of mature trees, under bridges and culverts or inside human structures. Any mature trees, especially in forests, are potentially habitat for SAR bats. However, more detailed surveys would be required to determine if SAR bats are present in the study area and where critical habitat occurs.

### 3.8.6 Redside Dace

DFO aquatic SAR mapping indicates that the East Humber River is occupied by Redside Dace, which is listed as Endangered under the provincial *Endangered Species Act* and federal *Species at Risk Act*. Regulated habitat for Redside Dace under the *Endangered Species Act* includes:

- Any watercourse currently occupied by Redside Dace
- Any watercourse occupied by Redside Dace within the past 20 years or that contributes to habitat currently occupied by Redside Dace
- Vegetated and agricultural areas within 30 m of the features described above
- Headwater drainage features, groundwater recharge areas and/or wetlands that contribute to the features described above
- The area encompassing the meander belt of streams described above.

The meander belt plus a 30 m buffer along occupied reaches of the East Humber River within the study area was modeled by Aquafor Beech Limited in 2018. This area represents the limit of regulated habitat for Redside Dace in the study area.

## 4.0 Constraints to Trail Development

### 4.1 High Constraint Areas

#### 4.1.1 Wetlands

Wetlands pose constraints to trail development from both technical and environmental perspectives. Construction of a trail through wetlands may require grading and embankment construction that could cause hydrological changes and affect the ecological functions of those features. Wetlands in the study area are also candidate habitat for amphibians and turtles, including Snapping Turtle, a Special Concern species. Wetlands should therefore be avoided wherever possible. The majority of wetlands in the study area are small and isolated and avoidance of these features should be feasible. If avoiding a wetland is not possible, consideration should be given to constructing a boardwalk where the trail traverses the wetland in order to minimize the trail footprint in the feature.

#### 4.1.2 Habitat for Eastern Meadowlark and Bobolink

As discussed in Section 3.8.2, above, there is habitat for Eastern Meadowlark and Bobolink located between Highway 407 and Highway 7 in the study area. Detailed surveys would be needed to identify nests or estimate the centre of defended territory in this area. For the purposes of the feasibility study, all open country habitat in this area should be considered habitat for Eastern Meadowlark and Bobolink.

While recreational use of existing trails is considered to be generally compatible with Bobolink habitat (MNRF, 2013a), it is difficult to assess the potential impacts of construction of a new trail within their habitat. A permit under the provincial *Endangered Species Act* may be required for trail construction in Bobolink and/or Eastern Meadowlark habitat and it is therefore recommended that this habitat be avoided wherever possible.

More detailed grassland bird surveys should be conducted during the EA or detailed design phases of the project in order to refine the boundaries of Bobolink and Eastern Meadowlark habitat. MECP or MNRF should be contacted during this phase to determine permitting, mitigation and/or compensation requirements for trail construction within their habitat.

#### 4.1.3 Butternut

Several Butternuts have been mapped in the study area by TRCA and a 25 m protection zone has been applied to the trees as required under the *Endangered Species Act*. It should be feasible for the trail alignment to avoid Butternut protection zones. However, if encroaching within Butternut protection zones is unavoidable, or if removal of one or more Butternut trees is required, the trees should be assessed by a Certified Butternut Health Assessor in order to obtain an exemption under Ontario Regulation (O.Reg.) 242/08 for harm to Butternut trees or their habitat.

#### 4.1.4 Habitat for Redside Dace

As discussed in Section 3.8.6, regulated habitat for Redside Dace in the study area includes

occupied reaches of the East Humber River plus the meander belt and a 30 m buffer around those areas. Any trail development in these areas can be expected to require permits from MNR and DFO for site alterations within Redside Dace habitat, particularly where crossings of the East Humber River are proposed. Because trail development in Redside Dace habitat can be expected to require multiple permits, these features have been identified as high constraint areas.

## **4.2 Moderate Constraint Areas**

Moderate constraint areas are not likely to require extensive permit or approval processes for trail development. However, trail development in these areas will need to demonstrate that there will be no negative impact to ecological features and functions. Most of the features categorized as moderate constraint receive protection under the PPS, *Endangered Species Act*, conservation authority policies or municipal policies.

### **4.2.1 Provincially Designated Areas and Features**

Areas north of Langstaff Road are within the Greenbelt Natural Heritage System. As discussed previously, construction of a trail network within the Natural Heritage System is consistent with the policies in the *Greenbelt Plan*.

### **4.2.2 Municipally Designated Areas and Features**

Construction of new trails within the Regional Greenlands System will likely trigger the need for an EIS as per the policies in Section 2.0 of the York Region Official Plan and Section 3 of the City of Vaughan's Official Plan.

### **4.2.3 TRCA Regulated Areas**

Permits under O.Reg. 166/06 for site alterations within TRCA regulated areas may be required. TRCA regulated areas include the regulatory floodplain, wetlands and buffer zones around wetlands as determined by TRCA. Most of the trail is expected to fall within TRCA's regulated areas and permits will likely be required. However, because TRCA is a partner in the Humber Trail extension project, it is anticipated that permits will be easily obtained.

It should be recognized that trails within the regulatory floodplain may be subject to periodic flooding which could damage trail infrastructure. Granular surface treatments are discouraged on floodplains because they are easily eroded by floodwaters. Large flood events, such as during spring freshet, may require trail closures. Sediment deposition on trails during flooding may need to be cleared once floodwaters have receded. For these reasons, it is recommended that the trail be located above the regulatory floodplain wherever possible.

### **4.2.4 Habitat for Bank Swallow**

As discussed in Section 3.8.3, above, much of the area between Highway 407 and Highway 7 should be considered Category 3 habitat for Bank Swallow and most potential trail alignments through this area will affect this habitat. Category 3 habitat is the most tolerant of disturbance and it is unlikely that a trail within this area would affect foraging success for

Bank Swallows. Potential bridge locations throughout the study area should be screened for the presence of Bank Swallows, since bridges will require construction of abutments that could directly impact Bank Swallow colonies, if they are present.

It is unlikely that a permit under the *Endangered Species Act* will be required for trail development within this area. Habitat for Bank Swallow has therefore been determined to be a moderate constraint for the trail. However, MECP or MNRF should be contacted during the EA or detailed design phase of the project for direction on permitting, mitigation and/or compensation requirements for trail development in this area.

#### **4.2.5 Habitat for Barn Swallow**

As discussed in Section 3.8.4, above, several potential trail alignments may affect Category 3 habitat for Barn Swallow. Category 3 habitat is the core foraging habitat for Barn Swallows and has a relatively high tolerance to disturbance. It is unlikely that a trail within Category 3 habitat would affect foraging success of Barn Swallows and it is unlikely that a permit under the *Endangered Species Act* will be required for trail development within this habitat. So long as none of the structures containing Barn Swallow nests are modified as part of trail construction, Barn Swallow habitat is expected to be a moderate constraint to trail development. However, MECP or MNRF should be contacted during the EA or detailed design phase of the project for direction on permitting, mitigation and/or compensation requirements for trail development in Barn Swallow habitat.

#### **4.2.6 Habitat for Endangered Bats**

It is impossible to identify specific habitat for Endangered bat species in the study area without detailed field surveys. However, forest habitat, mature trees outside of forests, bridges, culverts and other human structures could be habitat for Endangered bats. In general, tree removals in order to accommodate the trail should be avoided. If tree removal is required, removals should avoid the timing window provided by MNRF. If the trail traverses woodlands, the width of the trail should be minimized to avoid fragmentation of the woodland and to minimize vegetation removals. It is recommended that detailed bat surveys be conducted during the EA or detailed design phase of the project to determine whether Endangered bats are present and where. If Endangered bats are present in the study area, the MECP or MNRF should be contacted to determine permitting, mitigation and/or compensation requirements.

#### **4.2.7 Significant Wildlife Habitat**

SWH is protected under the PPS and trail development within these features will need to demonstrate, through an EIS or similar study, that there will be *no negative impact* to the ecological function of SWH. The following SWH types may be present in the study area and may be affected by trail development.

##### **Turtle Wintering and Nesting Areas**

Turtle wintering areas, if present in the study area, are likely to be in wetlands, ponds and other hydrologic features with soft substrates. So long as a direct trail footprint within these features is avoided, there will be no negative impacts to turtle wintering areas.

Turtle nesting areas, if present, are likely to occur in areas with easily excavated sandy or gravelly soil and often on south-facing slopes. They are most likely to be within approximately 100 m of the East Humber River and other hydrologic features. At this stage, it is impossible to evaluate whether any potential trail alignments would affect turtle nesting areas. More detailed surveys would be required during the EA or detailed design phase of the project to identify whether this type of habitat is a constraint to trail development.

It should also be considered that trails could separate turtles from their preferred nesting and overwintering habitats and the animals may then attempt to cross the trail while moving between habitats. Turtles could then be directly harmed by bicycles, pets and other human activities. If concentrations of turtle movement or mortality are observed, consideration could be given to installing exclusion fencing or a wildlife passage beneath the trail.

### **Rare Vegetation Communities**

The provincially rare Hemlock Mineral Coniferous Swamp community should be avoided if possible. If avoiding this vegetation community is not possible, it is recommended that the trail through this area consist of a boardwalk so as to minimize the trail footprint and enable wildlife movement beneath the trail.

### **Amphibian Breeding Habitat (Wetland)**

Any wetland habitat in the study area is candidate amphibian breeding habitat, wetland type. So long as a direct trail footprint within wetland features is avoided, there are unlikely to be impacts to amphibian breeding habitat.

### **Woodland Area-sensitive Bird Breeding Habitat**

Woodlands in the study area that contain interior habitat are candidate woodland area-sensitive bird breeding habitat. Potential impacts of trail development on this habitat include: direct loss of woodland habitat resulting in a decrease in interior forest and overall habitat size; fragmentation of the woodland resulting in reduction or elimination of interior forest habitat; increased disturbance due to human intrusion into the woodland; loss of trees from within the woodland that are considered hazardous to trail users; and/or introduction of dogs and other domestic pets that could directly harm nesting birds.

In order to maintain interior forest habitat and the function of woodland features for breeding birds, it is important that fragmentation and/or a reduction in the size of these woodlands be avoided. Potential impacts can be minimized or avoided by:

- Avoiding woodlands containing interior forest habitat where possible
- Minimizing the width of the trail through these features to avoid fragmentation of the woodland
- Avoiding the removal of trees on the edges of woodlands containing interior forest habitat in order to avoid a reduction in the amount of interior habitat.

### **Shrub/Early Successional Bird Breeding Habitat**

The area mapped by TRCA as shrub/early successional bird breeding habitat covers an extensive portion of the study area and avoiding this feature will not be possible. Potential impacts of trail development on shrub/early successional bird breeding habitat include: a reduction in total available habitat; changes in vegetation composition and structure; and/or introduction of dogs and other domestic pets that could directly harm nesting birds.

However, trail development within this feature is unlikely to have a significant impact on the ecological function of the habitat for bird breeding due to its small footprint relative to the overall size of the feature. In general, vegetation removals within this feature should be minimized and seeded and planted vegetation should be selected based on existing native vegetation.

### **Terrestrial Crayfish Habitat**

Potential impacts of trail development on terrestrial crayfish habitat include: direct harm to crayfish or destruction of burrows; hydrological changes resulting in flooding or drying out of burrows; and/or introduction of sediment into the habitat altering the suitability for burrows. These impacts can be avoided or minimized by:

- Avoiding terrestrial crayfish habitat where possible
- Situating the trail towards the edge of the habitat to avoid impacts to the core of the feature
- Using permeable surface treatments to avoid changes to site hydrology that could affect crayfish burrows.

### **Habitat for Special Concern and Rare Wildlife Species**

There is habitat for Wood Thrush, a Special Concern species, in the northern portion of the study area in Boyd Conservation Area. The potential impacts and mitigation measures for Wood Thrush are similar to those for area-sensitive woodland birds. Mitigation measures include:

- Avoiding habitat for Wood Thrush
- Minimizing the width of the trail through Wood Thrush habitat to avoid habitat fragmentation
- Avoiding the edges of Wood Thrush habitat to avoid reducing the overall area of habitat.

Snapping Turtle may be present throughout the study area. Mitigation measures to avoid or minimize impacts to Snapping Turtles have been provided above.

Habitat for the two provincially rare plant species in the study area – Hairy-fruited Sedge and Meadow Evening-primrose – should be avoided where possible. It may not be possible to avoid habitat for Meadow Evening-primrose due to property constraints. If the plants cannot be avoided, consideration could be given to transplanting them to a suitable location within the corridor outside of the trail footprint.

## 4.3 Low Constraint Areas

### 4.3.1 Habitat for Locally Rare Species

Locally rare plant and wildlife species are less sensitive than the species whose habitats make up moderate and high constraint areas. Impacts to these species and their habitat can be avoided or minimized by:

- Reducing the trail footprint either by reducing trail width or constructing a boardwalk
- Minimizing vegetation removals required to accommodate the trail.

### 4.3.2 Locally Rare Vegetation Communities

Locally rare vegetation communities are less sensitive than provincially rare communities and are unlikely to be significantly impacted by trail development. In general, impacts to these communities can be avoided or minimized by:

- Avoiding locally rare vegetation communities where possible
- Reducing the trail footprint within locally rare vegetation communities either by reducing trail width or constructing a boardwalk
- Minimizing vegetation removals within locally rare vegetation communities.

## 5.0 Conclusions and Recommendations

Avoiding high and moderate constraint areas should be a primary consideration when evaluating potential trail alignments. However, the objective of avoiding sensitive natural heritage features must be balanced with the technical and experiential objectives of the trail. For example, constructing extensive boardwalks may reduce the trail footprint in sensitive habitats but may be technically and financially infeasible. Furthermore, situating the trail outside the river valley may avoid regulated areas but would detract significantly from positive user experience. Much research shows that enabling trail users to experience natural habitats can have positive effects on public health. Trail alignments that traverse natural heritage features can present opportunities for improving both natural habitats and public health. This concept is also supported in Section 3.3.3 of the *Greenbelt Plan*.

General guidelines for evaluating alignment alternatives for the Humber Trail extension are as follows:

- The trail should avoid high constraint areas wherever possible
- The trail should be located above the regional storm floodline wherever possible to avoid trail closures and damage to trail infrastructure during flooding
- The trail should be set back a minimum of 3 m from watercourses and the active meanderbelt in order to maintain riparian vegetation



- Vegetation removals, especially of trees, should be minimized throughout the trail system, but especially within natural heritage features
- New crossings of the Humber River and East Humber River should be minimized to reduce permitting requirements, especially in Redside Dace habitat
- Landscaping and revegetation should make use of species native to the local area and should reflect vegetation structure in the surrounding habitat, especially in SWH as described above.

It is anticipated that more a more detailed study, such as an EIS, for the Humber Trail extension will be conducted following completion of the feasibility study. Future studies should undertake the following:

- More detailed surveys to refine the locations and boundaries of SAR habitat, SWH, wetlands and other features described in this report
- Consultation with MNRF, MECP and other agencies to determine permit and authorization requirements, if applicable
- An assessment of potential impacts of trail development on the features identified in this report in order to demonstrate that construction and utilization of trails will have *no negative impact* on protected natural heritage features and functions.

## 6.0 References

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