

GARDINER EXPRESSWAY AND LAKE SHORE BOULEVARD EAST RECONFIGURATION ENVIRONMENTAL ASSESSMENT

Natural Environment Baseline Conditions Report – 2014



WATERFRONToronto



TORONTO



EXECUTIVE SUMMARY

The study area has been heavily urbanized with industrial and port activities dating back to the 1800s. As a result, the natural environment has been severely degraded. Currently there is little existing natural habitat or wildlife that is native to the study area. The study area does provide some habitat for breeding and migrant bird species as well as some breeding and foraging habitat for some herpetofauna and mammals. Species that are tolerant of habitat disturbances and human activity can be found in the study area as documented in a number of background studies completed along Toronto's central waterfront. All flora and fauna have been found to be common in Ontario. An MNR biologist has been contacted (2010) and relays that no aquatic species at risk have been reported within the vicinity of the study area.

Recent activities that have taken place along the Lake Ontario shoreline, particularly those led by Waterfront Toronto, the City of Toronto and the Toronto and Region Conservation Authority (TRCA) have considered environmental concerns to be a key priority. As a result, there has been a gradual improvement in physical shoreline conditions, fish habitat, adjacent natural communities, and water quality in Lake Ontario and the Don River. Examples of these improvements include Corktown Common, which is a new park in the West Don Lands, and Lake Ontario Park in the Port Lands. There are also plans in progress for the Don Mouth Naturalization. Improvements to Toronto's waterfront contribute to the potential of the shoreline area to be a corridor for a healthy aquatic community as well as a natural interface between the shore and Lake Ontario.

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GLOSSARY AND ABBREVIATIONS

Alternative Methods:	Alternative methods of carrying out the proposed undertaking are different ways of doing the same activity.
Areas of Natural and Scientific Interest:	Areas of land and water containing natural landscapes or features that has been identified as having life science or earth science values related to protection, scientific study or education.
Benthic:	On the bottom of a body of water.
Benthos:	Organisms that live on the bottom of a body of water.
Centre of biological organization:	A habitat or area with biophysical features that are essential for self-organization and provides for high levels of reproduction and predation.
Ecological connectivity	The physical and biological relationship among near shore, watershed and lake wide ecosystems. Examples include shoreline processes, wetland functions, migration and over wintering patterns, and spawning and feeding requirements.
Ecosystem integrity:	The ability of an ecosystem to maintain its organization and functions. Some of the factors that contribute to integrity are resilience to change, productivity, vigour and species diversity.
Ecosystem:	A dynamic complex of plants, animals and micro-organisms and their physical environment interacting as a functional unit.
Environmentally Significant Area:	Area of land or water within the natural heritage system with any of the following: a) habitats for vulnerable, rare, threatened or endangered plant and/or animal species and communities that are vulnerable, threatened or endangered within the City or the Greater Toronto Area; or b) rare, high quality or unusual landforms created by geomorphological processes within the City or the Greater Toronto Area; or c) habitats or communities of flora and fauna that are of a large size or have an unusually high diversity of otherwise commonly encountered biological communities and associated plants and animals; or d) areas where an ecological function contributes appreciably to the healthy maintenance of a natural ecosystem beyond its boundaries, such as serving as a wildlife migratory stopover or concentration point, or serving as a water storage or recharge area.

Fish habitat:	The spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes.
Mitigation:	Measures taken to reduce adverse impacts on the environment.
Native species:	Species that are indigenous to Toronto ecosystems (e.g., lake trout).
Natural Heritage Features and Areas	Features and areas, including significant wetlands, significant coastal wetlands, fish habitat, significant woodlands south and east of the Canadian Shield, significant valleylands south and east of the Canadian Shield, significant habitat of endangered species and threatened species, significant wildlife, and significant areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscaped of an area.
Near shore:	Zone that extends lake-ward from the average water level, where wave action and currents directly influence the shoreline.
Phytoplankton:	Plant plankton.
Plankton:	Very small, drifting organisms that occur in water bodies.
Self-sustaining communities:	Communities of plants and animals that are able to reproduce naturally, with minimal human intervention, to maintain healthy populations of plants and animals, including species at risk.
Species at Risk:	Species that are in rapid decline, endemic, internationally significant, and/or listed in international legislation.
Zooplankton:	Animal plankton.

LIST OF ABBREVIATIONS

ANSI	Areas of Natural and Scientific Interest
NHIC	Natural Heritage Information Centre
OBBA	Ontario Breeding Bird Atlas
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
MNR	Ministry of Natural Resources
MOE	Ministry of Environment
SAR	Species at Risk
TRCA	Toronto Region Conservation Authority
CEAA	Canadian Environmental Assessment Agency
EA	Environmental Assessment
EAA	Environmental Assessment Act (Ontario)
ESA	Environmentally Significant Area

1.0 INTRODUCTION

Waterfront Toronto and the City of Toronto (City) have jointly undertaken an Individual Environmental Assessment (EA) to determine the future of the eastern portion of the elevated Gardiner Expressway and Lake Shore Boulevard from approximately Lower Jarvis Street to approximately Leslie Street (referred to as the Gardiner East EA). The EA is being completed pursuant to the Ontario *Environmental Assessment Act* (EAA).

As part of the Gardiner East EA, this report documents the natural environment baseline conditions in the Gardiner East EA study area.

1.1 Study Area

In 2009 the study area for the EA was defined in the Terms of Reference (ToR) as the section of the Gardiner Expressway and Lake Shore Boulevard East that extends 2.4 km from approximately Lower Jarvis Street to Logan Avenue. Since 2009 this study area has been revised to a slightly greater area in order to capture transition areas to the east and west and the Richmond/Adelaide interchange with the Don Valley Parkway (DVP). The study area now extends from approximately Lower Jarvis Street to approximately Leslie Street. This study area is referred to as the Environmental and Urban Design Study Area. It includes the lands in the vicinity of the section of the Gardiner Expressway and Lake Shore Boulevard East that are being considered for reconfiguration. These are the areas that could potentially experience disruption effects and be transformed through redevelopment opportunities. **Figure 1** illustrates the study area.

Figure 1: Study Area



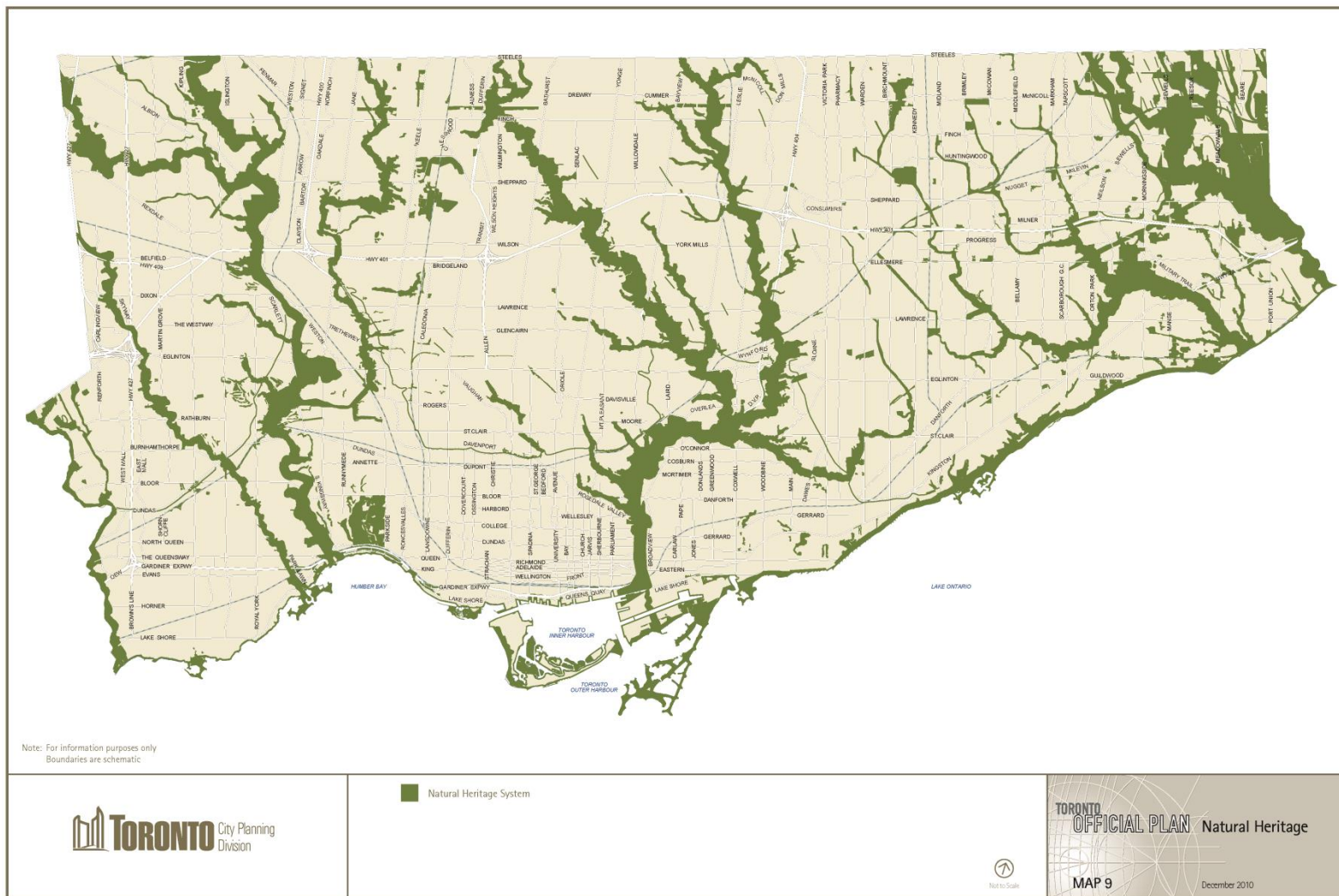
The study area is part of a larger ecoregion known as the St. Lawrence Lowlands and Mixed Forest Plains of southern Ontario. It is characterized by limestone, shale and sandstone from at least four glacial events, and is bounded by three Great Lakes in southern Ontario extending along the St. Lawrence shoreline to Quebec City. These extensive systems of waterways combined with surrounding fertile soils create a very productive ecozone and urban corridor.

The Toronto Waterfront is situated in the Carolinian Life Zone (Carolinian Zone), which is often referred to as North America's Eastern Deciduous Forest Region. The Carolinian Zone is at the northern end of a broad belt that extends from the coastal zone of the Carolinas, northward between the Mississippi River and the Appalachian Mountains, to southern Ontario (Parks Canada, 2009). The Carolinian Zone stretches into southern Ontario due to the 8°C isotherm, a phenomenon which is the result of geographical position and the climate moderating effects of the Great Lakes, termed the "lake effect". There are no Carolinian Core Natural Areas identified on the study site by Carolinian Canada (Carolinian Canada, 2009). There are no Carolinian Canada Signature Sites in the Toronto Waterfront study area.

The study area stretches approximately 2.4 km along the Lake Ontario shoreline and is located on 800 hectares of mostly developed land occupied by commercial, industrial and residential uses with some large vacant or underused lots.

The study area includes the mouth of the Don River at Lake Ontario. **Figure 2** consists of Map 9 of the City of Toronto Official Plan that identifies the City's Natural Heritage System (City of Toronto, 2010). The study area is connected to the Don River Valley which is one of the city's most extensive natural features. Within this regional context, the study area includes the mouth of the Don River at Lake Ontario.

Figure 2: City of Toronto Natural Heritage System



2.0 STUDY METHODOLOGY

This report has been prepared using the following background reports and information.

2.1 Background Data

- Port Land Estuary Report (2007)
- East Bay front Class EA Master Plan, City of Toronto (2006)
- Queens Quay Revitalization EA (May 2000)
- Archaeological Conservation and Management Strategy (2008)
- City of Toronto Official Plan (2010)
- City of Toronto – Natural Heritage Study (2001)
- Toronto Waterfront Aquatic Habitat Strategy (2003)
- Don Mouth Naturalization and Port Lands Flood Protection Project (2006)
- Don Mouth Naturalization and Port Lands Flood Protection Project: Amended Environmental Assessment Report (2014)
- West Don Lands Class EA Master Plan (2005)
- Lower Don Lands Project Design Brief (2008)
- Lower Don Lands Environmental Assessment Master Plan Addendum and Environmental Study Report (2014)
- Port Lands and South of Eastern Transportation and Servicing Master Plan Technical Memo #1: Natural and Socio-Economic (2014)
- Port Lands Energy Centre Environmental Assessment (2013)
- Environmentally Significant Areas (ESAs) in the City of Toronto (2012)
- Toronto Waterfront Sanitary Master Servicing Plan Class EA (2012)
- TRCA background fish collection records (Jean Enneson, MNR Aurora, Personal Communication, 2009)
- Ontario Ministry of Natural Resources (MNR) Species at Risk Consultation

- Existing topographic mapping and air photos.

Appendix A includes the relevant natural environment sampling and survey data provided in the above reports. Tables in **Appendix A** include:

- List of Vegetation documented by TRCA, 1996-2012
- Mammalian Species within the study area
- Avian Species of Concern
- Regionally significant plant species in the Don Mouth Naturalization and Port Lands Flood Protection Project Study Area
- Fish species present in the Lower Don River and Keating Channel
- Mammals, birds and herpetofauna in the Lower Don River
- Regionally significant animal species in the Don Mouth Naturalization and Port Lands Flood Protection Project Study Area
- Amphibians common to Lake Ontario Region
- Fish Observed in the Toronto Waterfront area between 1998 and 2012 by TRCA

2.2 Data Analysis

For the completion of the baseline conditions, a review of background material to determine significance and sensitivity in the study area was done from secondary source information and preliminary field observations. Data from sampling and survey work completed in the study area through previous studies (such as the Don Mouth Naturalization and Port Lands Flood Protection Project Environmental Assessment) completed by others, such as TRCA, was used. As the most significant natural feature in the study area next to Lake Ontario, the Don River conditions were given particular focus in the baseline reporting. TRCA has actively sampled the Don River area for several years to develop baseline conditions.

3.0 EXISTING ENVIRONMENTAL BASELINE CONDITIONS

3.1 Introduction

The following sections describe the existing natural environment conditions in the study area based on a thorough review of up to date background information from the City of Toronto, TRCA, and other public and private sector agencies.

The study area has been heavily urbanized with industrial and port activities dating back to the 1800s. As a result, the natural environment has been severely degraded. Currently there is little natural habitat and wildlife that is native to the study area and many naturalized environments exist as regeneration on former industrial sites.

Presently there are few terrestrial habitat opportunities due to:

- the flat, open terrain of the area;
- lack of cover;
- lack of connecting corridors between habitat blocks; and
- the impact of invasive species, chemical contamination and urban population.

Vegetation communities that do exist in the study area exist along colonized embankments, fill areas, rail corridors and newly regenerated industrial sites that include waterfront parks and open spaces. **Figure 3** presents the existing terrestrial conditions of the study area. There are no Environmentally Significant Areas (ESA) in the study area.

Regarding aquatic communities, urbanization of the watershed in the form of land use changes and habitat fragmentation has led to significant degradation of the aquatic habitat and fish communities historically occurring in the watershed.

Over time, enhancements of waterfront habitat could provide areas for terrestrial and aquatic life. Based on the location of the study area, the area should attract a wide range of wildlife and other species given the proximity to Lake Ontario and Lower Don River. Regenerating the natural environment along the shore of Lake Ontario and the Lower Don River is an important focus for TRCA, the City of Toronto and Waterfront Toronto.

Toronto Central Waterfront

The north shore of the Inner Harbour (which includes the East Bayfront Precinct and the Lower Don Lands-Keating Channel Precinct) consists of a hardened shoreline that is relatively deep with a substrate consisting of organic litter. There is little to sparse aquatic vegetation and little in the way of fish habitat. Fish observed along the Toronto Waterfront between 1998 and 2003 are detailed in **Appendix A**. This appendix includes fish observed along the East Bayfront Precinct, Toronto Central Waterfront and

Keating Channel. The Keating Channel is located between the Lower Don Lands and North Keating area. Fish communities are primarily found in the Lower Don River and Keating Channel.

The Toronto Central Waterfront currently supports only limited hedgerow habitat that provides minor movement corridors for wildlife species. Commonly found mammals within the Toronto Waterfront are listed in **Appendix A**. Plans to improve Toronto's waterfront habitat are being supported by Waterfront Toronto, the City of Toronto, TRCA, Environment Canada, Fisheries and Oceans Canada, and the Ministry of Natural Resources (Ontario). Aquatic Habitat Toronto, which is made up of representatives from the aforementioned agencies, has been working to implement the *Toronto Waterfront Aquatic Habitat Restoration Strategy* in order to improve habitat throughout the waterfront.

TRCA also participates in the Marsh Monitoring Program (MMP), which was established by Bird Studies Canada and Environment Canada in 1994. This program provides accepted protocols and methodology for wetland environmental studies. It showed that reptile and amphibian abundance are very low across the Toronto Waterfront. This is likely attributed to the physical and biological degradation of waterfront habitats for these sensitive animal groups. Populations are primarily restricted to estuary habitat and remnant coastal marshes, which are found outside the study area (Aquatic Habitat Toronto, 2003).

Due to the lack of suitable wetland habitat in the entire study area, very few reptiles and amphibians are expected to exist within it. **Appendix A** documents the common amphibian species found in Lake Ontario.

The study area is divided into a series of smaller planning sub-areas called precincts and neighbourhoods. While these areas are not based on boundaries of natural features they have been used to structure the description of natural features in the study area. **Figure 1** in Section 1.1 displays the study area neighbourhoods and precincts.

Sections 3.2 through 3.6 provide a more detailed overview of the existing conditions of each of these precincts and neighbourhoods.

Figure 3: Existing Conditions



3.2 Port Lands and South Riverdale/Riverside

The Port Lands and South Riverdale/Riverside form the eastern side of the study area, east of the Don River. The Port Lands were formerly marshland and delta for the Don River but were filled in to make more land available for industry and shipping beginning in the late 1800's. For the purposes of this study, the Port Lands area includes the properties east of the Don Roadway, south of Lake Shore Boulevard to Commissioners Street, and west of Logan Avenue. The lands west of Don Roadway and south of the Keating Channel are discussed as the Lower Don Lands in Section 3.4. The Lower Don Lands sit within the Port Lands but are addressed separately in Section 3.4 as they have advanced plans for redevelopment and include the Don Mouth Naturalization plans.

The Port Lands area has been heavily industrialized and contains little natural habitat. Remnant vegetation consists primarily of cultural (anthropogenic) vegetation communities. There is a manicured park with two baseball diamonds, in this area: McCleary Park, located at Logan Avenue on the south side of Lake Shore Boulevard. This park does not contain significant environmental features but is landscaped with trees and various vegetation.

Limited naturalized areas, designated as Existing Natural Cover by the TRCA, are located in the Port Lands (**Figure 3**). These are primarily decommissioned industrial sites that have regenerated with cultural meadow communities of scattered trees and shrubs and within hedgerows. Cultural meadows may provide habitat for small rodents and foraging habitat for raptors while constructed features, including culverts, abandoned buildings and concrete piles may provide wildlife habitat (e.g., cover, nesting) for species that are well-adapted to urban environments.

There are some Environmentally Significant Areas (ESAs) located outside of and adjacent to the study area and are associated with the Port Lands. As these areas are outside the study area they are not anticipated to be directly affected by the Project however they are relatively large natural areas along the nearby waterfront and are acknowledged as part of the wider natural system. The south-western corner of the Port Lands is home to the Cherry Beach and Cherry Beach Extension ESAs, which are parkland similar to the Toronto Islands with their vegetated, vibrant shorelines, but they are in a mostly vacant, industrial setting. The Leslie Street Spit and Base of the Spit ESAs are located south-east of the study area and extend south from the Port lands. The Spit forms an outer harbour, sheltering a bird sanctuary and two boating marinas in the outer harbour. Tommy Thompson Park ESA forms the western part of the Leslie Street Spit ESA and is a notable stopover for migrant songbirds. Tommy Thompson Park is also breeding grounds for a high diversity of sensitive bird species. Terrestrial wildlife in the study area is primarily linked to the proximity of Tommy Thompson Park and the Leslie Street Spit as a significant feature supporting a high diversity of biological communities. Although these ESAs are not included in the study area, they show how areas along the waterfront can be rehabilitated to provide natural habitats for locally occurring flora and fauna. Moreover, given the proximity of the study area to these ESAs, the areas with natural cover in the study area such as those described above can serve as

secondary stopover areas for migratory birds; migratory birds utilize hedgerows associated with road right-of-ways during the breeding season (Toronto Waterfront Sanitary Sewer Master Plan, 2012).

South Riverdale/Riverside is the community north of the Port Lands, north of Lake Shore Boulevard (see **Figure 1** in Section 1.1). The western edge of South Riverdale/Riverside is the Don River. The Don River in this area has been channelized and has hardened shore edges. Further details regarding the Don River are provided in the Lower Don Lands-Keating Channel Precinct discussion in Section 3.4.

3.3 West Don Lands Precinct

The West Don Lands Precinct was a former brownfield area that is currently being revitalized as a mixed use community. Most of the area has been redeveloped according to the Precinct Plan. This area extends approximately from Parliament Street in the west to the Don River in the east and from King Street in the north, south to the rail corridor. In the past the West Don Lands consisted of industrial and commercial land uses that contaminated the soil. The historic uses offered little opportunity for retention of terrestrial or aquatic habitat. The Don River at the eastern edge of the site is the only natural environment connected to the area. It has been channelized and altered over time to accommodate a variety of land uses, road ways, and other urban infrastructure.



The recent redevelopment of West Don Lands began with soil remediation, transportation improvements and the construction of a flood protection landform (FPL). On-top of the FPL now sits the recently constructed Corktown Common, a 7.3 ha park. More than 700 trees have been planted in the park as well as shrubs, groundcovers, and aquatic plants. The planted environment will encourage plant and animal biodiversity and support a healthy forested area over time. There is also a large marsh within the park that will gradually become home to various flora and fauna. A species inventory has not been completed for this park. The eastern edge of the park sits on the Don River. The conditions of the Don River are further discussed in the following Section 3.4 regarding the Lower Don Lands and Keating Channel Precinct.

3.4 Lower Don Lands and Keating Channel Precinct

The natural environment conditions in the Lower Don Lands and Keating Channel Precinct are related to the conditions of the Lower Don River and Don River Mouth to Lake Ontario. As noted, this area has been significantly altered over time by urbanization, particularly port activities and heavy industry. The Lower Don River, from north of the study area at Riverdale Park, downstream to the Keating Channel, has been significantly altered with urbanization. It was straightened in the late 1800s to early 1900's and, as a result, has vertical banks typically comprised of sheet pile, and has no natural connectivity to

the floodplain. The river in this area averages 40m in width and approximately 1-2m in depth. The Keating Channel varies between 40-100m in width and has depths between 2 and 5m depending upon lake levels and degree of sediment accumulation in the channel. Sediments are generally fine sand grading to silt with westward progression. The Keating Channel bank consists of vertical sheet pile walls and few overhanging trees.

In general, the aquatic habitat in the Lower Don River and Keating Channel is of low quality. Fish habitat features within the Lower Don River are generally characterized as degraded, highly disturbed conditions that are uniform in nature and lack habitat diversity and complexity. There is a general lack of in-stream cover in terms of bank structure, aquatic vegetation or suitable substrates such as gravel, cobble and boulders. The river is best characterized as lacustrine in nature with hardened concrete channel banks and very little riparian cover. The productivity, water quality and overall health of an aquatic environment are generally depicted in the health of the benthic community. The most profound influence on the benthic community is suspended sediments and organic enrichment from storm sewer discharge and combined sewer outfalls (CSO). As such, the benthic community present within the Lower Don River exhibits a relatively low diversity. This condition has persisted since the late 1960s showing little change through to today.

Sampling by the TRCA between 1989 and 2012 revealed a total of 30 fish species inhabiting the Lower Don River and the Keating Channel (TRCA, 2014) between May and November, as listed in **Appendix A**. All of the fish captured were typically warmwater and coolwater species; however, Atlantic Salmon (*Salmo salar*), Chinook Salmon (*Oncorhynchus tshawytscha*), Rainbow Trout (*Oncorhynchus mykiss*) and Sea Lamprey (*Petromyzon marinus*), which are typically coldwater species, were also captured. The most common species captured during TRCA sampling of every year were White Sucker (*Catostomus commersoni*), Emerald Shiner (*Notropis atherinoides*) and Gizzard Shad (*Dorosoma cepedianum*). These three species accounted for 68 percent of the fish community in spring, summer and fall in 2012. Other high order piscivorous species such as Northern Pike (*Esox lucius*) and Walleye (*Sander vitreum*) were also captured during the survey period, albeit in low numbers, but indicate that trophic interactions between predator and prey within the degraded system may be occurring.

Through annual surveys, TRCA has found that the limiting aquatic habitat structure plays a key role in affecting the low numbers of fish and species diversity in the Lower Don River.

Dredging occurs frequently in the Keating Channel, which would have a negative impact on colonization of aquatic plants. The deep vertical concrete, wooden and steel sheet pile walls, the lack of riparian / instream vegetation or cover in the Keating Channel, and the regularity of dredging and the general uniform sandy substrates provide poor fish habitat conditions for most estuarine fish and wildlife species. Although there is little aquatic vegetation in the Keating Channel, there is adequate vegetation in the quays and slips of the Inner Harbour as well as the embayments of the Toronto Islands to provide habitat for the fish species found in both the Inner Harbour and Keating Channel.

Fish sampling conducted by TRCA from 1989 to 2012 revealed a total of 25 fish species inhabiting the Keating Channel between May and November. In any particular year, no more than 12 species were

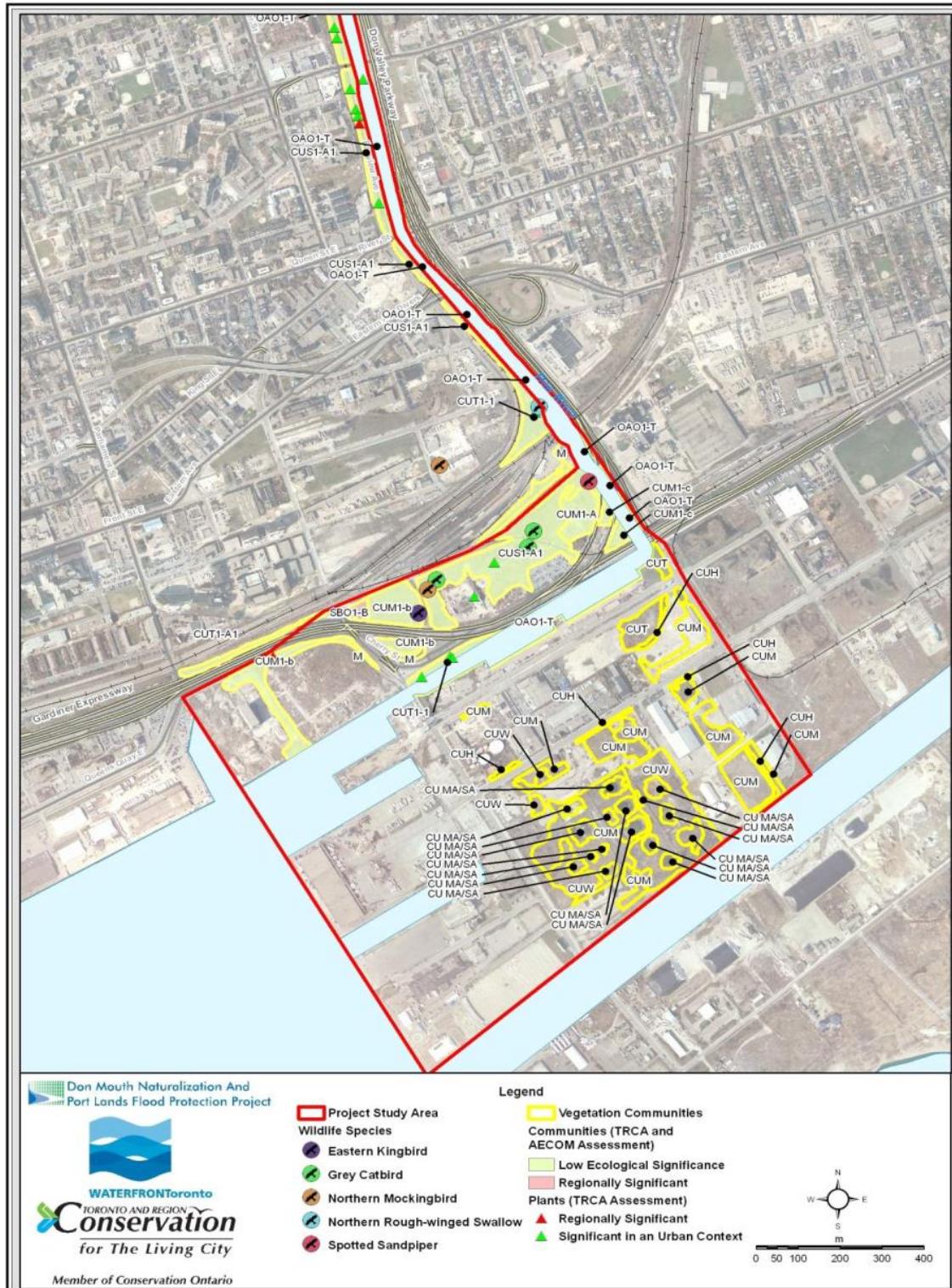
recovered with an average of only seven per year throughout the course of the sampling period. Many of the fish species captured were not considered typical warmwater species; rather they were generally cool and coldwater lake species such as alewife and emerald shiner. The species assemblage and richness captured in the Keating Channel was lower in diversity than the Lower Don River. The most common species captured during TRCA sampling were alewife and emerald shiner in the spring / summer and gizzard shad in the fall. Similar to the Lower Don River, other high order piscivorous species such as Northern pike and Chinook salmon were also captured in the Keating Channel indicating that some trophic interactions between predator and prey within the degraded system may be occurring.

No Areas of Natural or Scientific Interest (ANSI) or Environmental Sensitive Areas (ESA) lie within the Lower Don Lands/Keating Channel Precinct.

The TRCA previously completed a biological inventory of the Lower Don Valley. The survey determined that most of the ecological communities suffer from severe disturbance or invasion by exotic species. The area has a long history of industrial development; some of the vacant parcels are being reclaimed by an array of non-native species. Cottonwood is common in this area; however, many of the trees are invasive alien species such as Manitoba Maple (*Acer negundo*), Black Locust (*Robinia pseudosacacia*) and Norway maple (*Acer platanoides*). These vegetation communities are subject to pressures resulting from the surrounding urban land uses, such as encroachment and disturbance.

Figure 4 shows the vegetation communities mapped in the Keating Channel Precinct. Identified communities include: Native Forb Old Field Meadow, Native Deciduous Cultural Savannah, Exotic Cultural Savannah and Exotic Forb Old Field Meadow. In the lower reaches of the Don River, TRCA mapped four plant species of regional concern and ten species of concern in an urban context (*Source: TRCA, 2011*). The plant species of regional concern are located well away from the Gardiner-Lakeshore Boulevard corridor. Field work confirmed that there are no Butternut Trees located in the Keating Channel Precinct. Past vegetation survey determined that most of the ecological communities suffer from severe disturbance or invasion by exotic species. Vacant land parcels in the study area are being reclaimed by an array of non-native species. Cottonwood is common in the area and many of the trees are invasive alien species such as Manitoba Maple (*Acer negundo*), Black Locust (*Robinia pseudosacacia*) and Norway maple (*Acer platanoides*).

Figure 4: Vegetation Communities at the Mouth of the Don River



Source: TRCA, Don Mouth Naturalization and Port Lands Flood Protection Project EA

Regarding the terrestrial habitat and wildlife in the Lower Don Land and Keating Channel Precinct, based on a review of TRCA reports completed for the Don Mouth Naturalization and Port Lands Flood Protection Project (DMNP Project), within the study area around the Keating Channel and Don River mouth, there were only four animal species observed as having significance in an urban context. **Table 1** lists the species observed.

Table 1: Regionally Significant Animal Species in the Study Area

Species	Common Name	Number of Locations	TRCA Rank
<i>Stelgidopteryx ruficollis</i>	Northern Rough-winged Swallow	1	L4-Urban Significance
<i>Actitis macularia</i>	Spotted Sandpiper	1	L4-Urban Significance
<i>Tyrannus tyrannus</i>	Eastern Kingbird	1	L4-Urban Significance
<i>Dumetella carolinensis</i>	Grey Catbird	3	L4-Urban Significance

Source: TRCA, 2011

The terrestrial habitat patches of the Lower Don River, as well as the Keating Channel, represent wildlife links between Tommy Thompson Park (which is southeast of the study area) and the continuous Don Valley Corridor. The TRCA identified 56 fauna species breeding in the area around that Lower Don River, including seven mammal species, 37 bird species and 12 herpetofauna (see **Appendix A**). In its current condition, the Don Mouth provides poor terrestrial linkages between natural features upstream and downstream.

The City of Toronto, TRCA and Waterfront Toronto have recognized opportunities for enhancement of the Lower Don River and Toronto waterfront since the early 1990s. Encouragement of the naturalization of these areas is ongoing and will continue as plans evolve for the revitalization of the waterfront.

3.5 East Bayfront Precinct

East Bayfront is currently being redeveloped as per the Central Waterfront Secondary Plan and East Bayfront Precinct Plan. Prior to redevelopment, the natural environment conditions of the area were outlined in the East Bayfront 2006 EA Report and in previous studies by TRCA (2000), City of Toronto (2001), and Marshall Macklin Monaghan Limited (MMM) in 2004. The MMM investigations found that vegetation was scattered and sparse, located predominantly along sidewalk areas and consisting predominantly of urban trees (TWRC and City of Toronto, 2006).

Appendix A provides a complete listing of vegetation found in East Bayfront prior to redevelopment of the area as documented in the East Bayfront EA. As a result of the approved East Bayfront Precinct Plan and EA redevelopment starting in 2008 (which is ongoing) improvements to the natural environment have been made. In particular, two parks have been constructed in the area. The first is Canada's Sugar Beach and Water's Edge Promenade (East) consisting of an urban beach, plaza and tree-lined promenade. Sugar Beach is a recreational man-made beach at the foot of Lower Jarvis Street. The Water's Edge Promenade runs east of Sugar Beach to the Parliament Slip along the waterfront. In this area approximately 57 trees have been planted (18 Golden Weeping Willow, 32 Freeman Maple, 7 White Pine) (Waterfront Toronto, 2010). The second park is Sherbourne Common, a 1.5 ha park located on the east side of Lower Sherbourne Street between Lake Ontario and Lake Shore Boulevard. The park includes treed areas, water features and open green spaces. 182 trees have been planted in the park (108 Pacific Sunset Maple, 45 Red Oak, and 29 American Beech) and there is a 0.95 acre open lawn of Kentucky Blue Grass and fescue at the south end of the park (Waterfront Toronto, 2011). The park also serves as a stormwater management facility with a state of the art ultraviolet (UV) facility for neighbourhood-wide stormwater treatment. This system is incorporated into the water features of the park. As a result of the construction of these park spaces, East Bayfront now supports a growing population of birds and other fauna that will continue to grow as these areas mature. A flora and fauna inventory has not been completed for the East Bayfront Precinct as it is still under construction.

The aquatic environment in the East Bayfront Precinct is associated with the aquatic habitats of the Don River and Toronto Harbour. Urbanization and shoreline alteration have resulted in limited aquatic habitat in the vicinity of the East Bayfront (TWRC and City of Toronto, 2006). Water discharging from the Keating Channel (located at the mouth of the Don River) has a direct effect on the water clarity along the East Bayfront shoreline as it flows in a westerly direction. Improvements to the aquatic environment in East Bayfront have been made by Waterfront Toronto, the City and TRCA. The revitalization of East Bayfront features the creation of new fish habitat alongside the new stormwater management facility located at Sherbourne Common next to the Water's Edge Promenade. The new fish habitat includes the installation of riverstone shoals, tree logs and embankments to provide shelter and increased feeding and forging opportunities for lake fish.

3.6 Lower Yonge

The Lower Yonge portion of the study area extends from Yonge Street in the west to Lower Jarvis Street in the east, and from King Street in the north to the water's edge in the south. This area encompasses part of the Lower Yonge Precinct planning area which is currently under study for redevelopment. Similar to other precincts in the study area, the Lower Yonge area has a long history of industrial activity and urbanization. The natural environment has been degraded over time with little existing natural terrestrial or aquatic habitat. The study area contains extensive development consisting primarily of paved surface parking lots and roadways, with buildings occupied by commercial and former industrial uses, much of which is planned for redevelopment. The Yonge Street Slip at the western foot of the study area has little natural habitat and is home to ferries servicing the Toronto Islands. The hardened edges and sides of the slip do not provide substrates for aquatic invertebrates or activities of fish such as

egg laying and feeding. The bottom of the lake along this part of the shoreline is largely rock and provides only limited habitat for aquatic species.

North of the rail corridor there is one community park and open space, Berczy Park. This park does not contain natural environmental features but does have manicured landscaping, trees and vegetation.

4.0 FUTURE ENVIRONMENTAL BASELINE CONDITIONS

The following sections describe future (2031) conditions as per currently approved and proposed precinct plans and development plans. It is anticipated that by 2031 terrestrial and aquatic habitat conditions will be much improved. The approved precinct plans that have been consulted include the West Don Lands, East Bayfront, and Lower Don Lands and Keating Channel Precinct Plans. The Don Mouth Naturalization Project, Lower Don River West Remedial Flood Protection Project, and the Port Lands Flood Protection Project, all being completed in cooperation with TRCA, were also considered in this description. Also considered are the plans in progress for the Port Lands and South of Eastern Area.

The waterfront is an area of transition with new investment and change occurring rapidly. The future conditions are not static and the following sections reflect the information available about the study area given current plans and studies. The nature of this transitioning area is that even planned development may alter by 2031. Therefore, the future conditions represent the best reasonable representation of this area that is known at the time this baseline study for the EA was completed.

4.1 Introduction to Future Baseline

In considering the future baseline of the study area with regards to the natural environment, it is important to review the *Toronto Waterfront Aquatic Habitat Strategy* which was completed in 2003 by TRCA. This strategy is an ecosystem management plan to maximize the potential ecological integrity of the Toronto waterfront as various plans evolve, from Etobicoke Creek in the west to the Rouge River in the east. The strategy applies to all future development along Toronto's waterfront and states that "in order to restore a healthy, self-sustaining aquatic community, it is necessary to create physical, chemical and biological conditions required for a balanced community of native and naturalized species". This strategy is applicable to the portion of the waterfront that falls within the study area.

The strategy states that emphasis for future development should be placed on opportunities associated with shoreline management projects such as erosion control and harbour maintenance. It also focuses on incorporating major improvement to aquatic habitat where land development is taking place. In addition, the goal of this strategy is to restore the interaction between lake, river, and land by designing around the dynamic forces of nature, such as changing lake levels, river flows and climate, and thereby creating a healthy ecological setting to support sustainable habitat for wildlife and fisheries.

Figure 5 on the following page illustrates the future conditions of parks and open spaces in the study area. The future conditions reflect plans to capture opportunities for environmental regeneration.

Figure 5: Future Conditions (2031)



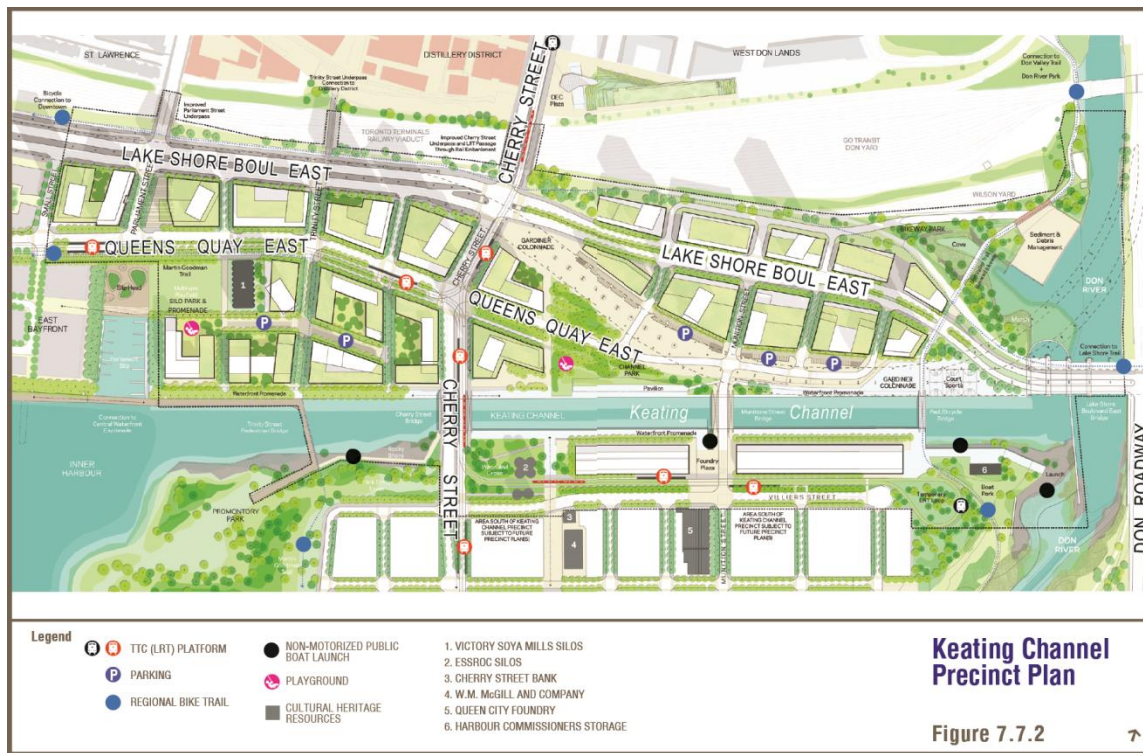
The most significant areas where natural environment improvements are expected include the Lower Don River and Keating Channel, particularly with the opportunities planned through the DMNP Project. The improvements anticipated through the implementation of the Lower Don Lands Plan and DMNP Plan are discussed in **Section 4.2** and illustrated in **Figure 6**.

4.2 Lower Don Lands, Keating Channel Precinct and Don River Mouth

In 2014 the Lower Don Lands Environmental Assessment Master Plan Addendum and Environmental Study Report (2014 LDL EAMP Addendum and ESR) was completed for the Lower Don Lands and Keating Channel Precinct. In addition, the Don Mouth Naturalization and Port Lands Flood Protection Project Environmental Assessment was amended and finalized March 2014 (2014 DMNP EA). The 2014 LDL EAMP Addendum and ESR updates and amends the May 2010 Lower Don Lands Environmental Assessment Master Plan to align with the outcomes of the Port Lands Acceleration Initiative (PLAI) and the 2014 DMNP EA. Beyond providing necessary flood management for much of the Port Lands, the DMNP Project is significant for the natural environment in that it will provide improved green linkages and natural terrestrial habitat areas immediately adjacent to the Don River and Keating Channel.

Through the efforts of the TRCA, Waterfront Toronto and the City of Toronto, the DMNP Project and Lower Don Lands plans will transform the existing mouth of the Don River, including the Keating Channel, into a healthier, more naturalized river outlet to the lake. The DMNP Project acknowledges that due to past engineering, the Don Mouth has undergone a reduction of ecological function and is neither aesthetically pleasing nor enjoyable for the public. Thus, the project addresses the problems of lack of ecological function at the river mouth, vulnerability to flooding, poor aquatic and terrestrial habitat, and the degraded nature of the Lower Don Lands, Keating Channel and subsequent Port Lands. **Figure 6** illustrates the Keating Channel Precinct Plan with the proposed improvements to the Lower Don River as per the Don Mouth Naturalization Project.

Figure 6: Keating Channel Precinct Plan



The future design of the Don River Mouth naturalization, Lower Don Lands and Keating Channel, including flood protection works, incorporates the following key design elements:

- A New Naturalized River Channel: a new river channel is a realignment of the existing Don River outlet into Lake Ontario. It is proposed to be constructed within the floodplain of the Don River, south of the existing Keating Channel through the Lower Don Lands. This channel will provide locations for various forms of instream habitat and fish structures including woody debris, rock and artificial reefs. On the north side of the Keating Channel the Don River will be widened and naturalized and include a new sediment management site.
- The addition of over 30 hectares of higher functioning aquatic and naturalized (terrestrial and wetland) habitat (TRCA, Waterfront Toronto and City of Toronto, 2014).
- 13 hectares of higher functioning wetland habitat created within the DMNP Project study area. This will provide habitat for aquatic life such as breeding and foraging birds, amphibians and reptiles, mammals, fish and invertebrates. The largest wetland will be the Ship Channel wetland which is two hectares. This wetland has the potential to attract marsh species that are currently less common to the DMNP Project Study Area, such as Virginia Rail, Sora Rail, Swamp Sparrows, Great Blue Heron and Common Tern (TRCA, Waterfront Toronto and City of Toronto, 2014).

- The Keating Channel: The existing Keating Channel will not carry regular flows in the future. Two strategically placed weirs (which are small overflow-type dam) are proposed for regulating water and will only allow passage for flood events. This strategy for the future operation of the Keating Channel creates the second needed outlet to Lake Ontario and it will be designed to handle moderate to large flood events.
- The Ship Channel Outlet: This element of the flood conveyance system is an outlet to the Ship Channel to provide a third emergency route for future potential flood waters. This outlet will be regulated by a berm structure set approximately parallel to the river channel allowing flow to outlet directly to the Lake through the Ship Channel.

Aquatic habitat will be created by introducing habitats ranging from already connected wetlands which include various types of marshes and aquatic open water zones, to isolated wetlands that become connected to the lake and river during seasonal flood events. This will provide spawning and feeding habitat for fish and other organisms in the Don River and its associated features. The proposed new design of the Lower Don Lands and Keating Channel Precinct will establish unimpeded access for fish from the Inner Harbour to the existing Don River. In addition, the new Don River mouth and the river's other features such as meanders and aquatic habitat will be substantially more ecologically diverse than the existing Keating Channel.

Through the naturalization of this area, new plantings, landscaping, parks and green space created by the DMNP Project will greatly enhance vegetation and wildlife habitat opportunities. Additional fish habitat will be created through the establishment of various instream structures as well as in the new meandering channel. As this is currently still in the planning and design process and not yet constructed, some minor disturbance to the aquatic habitat may occur during construction of the various waterways, landforms, roads and bridges proposed for the area. However, the redevelopment of the Don River Mouth, Lower Don Lands and Keating Channel Precinct provides an excellent opportunity for environmental restoration and revitalization in an area that is currently degraded.

The establishment of terrestrial habitat is expected to attract a greater diversity of bird species, including woodland breeding birds (such as Red-Tailed Hawk, Downy Woodpecker, Black-capped Chickadee, Cedar Waxwing, Red-eyed Vireo, Baltimore Oriole), thicket breeding birds (such as Ruby-throated Hummingbird, Northern Flicker, Eastern Kingbird, House Wren, Indigo Bunting, American Goldfinch) and migrant birds (such as flycatchers, warblers, vireos, thrushes, finches), which will increase native biodiversity and resiliency. In addition, the new naturalized areas will improve linkages between habitats within and outside of the study area as vegetation matures (TRCA, Waterfront Toronto and City of Toronto, 2014). Specifically, it is anticipated that connections will be established between Cherry Beach and Tommy Thompson Park, among other important regional features.

It is anticipated that the redevelopment of the Don Mouth, Lower Don Lands, and Keating Channel Precinct will be achieved and in place by 2031.

4.3 Port Lands and South Riverdale/Riverside

The full area of the Port Lands includes the Lower Don Lands. Natural environment improvements for the Lower Don Lands and Don River Mouth are described above in Section 4.2. The implementation of the DMNP Project will impact the Port Lands beyond the Lower Don Lands. The Port Lands Estuary Report produced through the Lower Don Lands design competition (2007) includes recommendations for natural environment improvements throughout the Port Lands, Lake Ontario and Don River Watershed. Recommendations focus on the development of a diversity of complementary ecosystems in the Port Lands, including additional open water, floodplain wetlands, wet prairies, and native forest.

The Port Lands Estuary report also recommends that additional plans in the zone between Tommy Thompson Park (including the Port Lands) and the forests in the Upper Don Watershed include on-shore added tree canopy. This would offer a more pronounced flyway for resting of migratory birds, as well as a continuous habitat for the dispersal and/or migration of terrestrial fauna, such as muskrats and other small mammals.

The City and Waterfront Toronto are currently undertaking three studies that include plans to revitalize the Port Lands and area south of Eastern Avenue between the Don River and Coxwell Avenue (within South Riverdale/Riverside). These studies include the Port Lands and South of Eastern Transportation and Servicing Master Plan Class Environmental Assessment, the South of Eastern Strategic Direction, and the Port Lands Planning Framework. All of these studies are currently in progress. They include recommendations for naturalization and green space improvements. Improvements are focused on extensive plans for the greening of the Port Lands and providing natural environment corridors and linkages supporting habitat and wildlife connections with the Don River, Tommy Thompson Park, the Leslie Street Spit, Lake Ontario Park, and Cherry Beach. As plans for this area evolve, considerations for natural environment improvements in the Port Lands that may be impacted by the preferred undertaking for the Gardiner East EA will be required in coordination with the City, Waterfront Toronto and the TRCA.

4.4 East Bayfront Precinct

East Bayfront Precinct is in the process of redevelopment into a new urban waterfront community. As discussed in Section 3.5, East Bayfront is currently being constructed in accordance with the East Bayfront Precinct Plan (TWRC and City of Toronto, 2005). In addition to the recently developed Sherbourne Park, Canada's Sugar Beach, Waterfront Promenade (East), and new fish habitat structures, the redevelopment of East Bayfront includes the following public spaces and environmental features that are still to be constructed:

- *Aitken Place Park*: located south of Queen's Quay, this public park will incorporate landscaping, tree planting and seating areas for outdoor enjoyment.
- *Parliament Slip*: will be a contemporary setting of lawn and trees for relaxation and play.

- *Queen's Quay Boulevard East*: the main east-west thoroughfare in the Central Waterfront which will include extensive street plantings.

The improved greening and tree planting in the precinct is expected to support and improve the flyway for resting of migratory birds by 2031.

4.5 Lower Yonge Precinct

The Lower Yonge Precinct is currently in the planning process. Waterfront Toronto and the City of Toronto have completed two studies that create the foundation for the Lower Yonge Precinct Plan: an Urban Design Report and a Transportation Master Plan Environmental (Phases 1 and 2).

These studies establish the planning context required to guide the Precinct Plan that is still in progress. The Precinct Plan will refine the recommendations of the two studies and confirm the requirements for public spaces and environmental features, community services and facilities, servicing infrastructure, heritage, affordable housing and the development of phasing and implementation tools. The Precinct Plan is anticipated to be completed prior to 2031. Redevelopment in accordance with the Precinct Plan is expected to occur in the years leading up to 2031 but the phasing of the redevelopment is currently unknown. As plans for this area evolve, considerations for natural environment improvements that may be impacted by the preferred undertaking for the Gardiner East EA will be required in coordination with the City, Waterfront Toronto and the TRCA.

5.0 CONCLUSION

There are multiple opportunities for environmental regeneration throughout the Gardiner Expressway and Lake Shore Boulevard Reconfiguration EA study area. The most significant areas where this is possible include the Lower Don River and Keating Channel, particularly with the opportunities planned through the DMNP Project. The DMNP Project is significant in that it provides a green linkage and revitalized natural terrestrial habitat area immediately adjacent to the existing Don River. Improved natural shorelands along watercourses provide refuge for animals that require upland habitat for some part of their life history (e.g. egg laying areas for waterfowl). There is opportunity to support and build on these plans with the reconfiguration of the Gardiner Expressway and Lake Shore Boulevard East.

Recognizing the environmental revitalization opportunities possible through the Gardiner East EA, it is also critical to identify the constraints to the reconfiguration. An updated tree inventory should be conducted along the Gardiner-Lake Shore Boulevard corridor during detailed design, once the preferred undertaking is confirmed. Although given existing vegetation studies, none of the trees are expected to be significant or even large in this heavily urbanized and industrial area, there may be an opportunity to incorporate some existing vegetation into the final plan for the undertaking.

The features and/or areas that need to be considered in the planning of the undertaking include the sensitive Don River Mouth where the Gardiner Expressway and Lake Shore Boulevard cross the Don River. The Keating Channel also requires specific attention as the existing elevated Gardiner East runs adjacent to this water way. Further constraints include the Lake Ontario shoreline within the study area as it has been the subject of much study during the past two decades. Projects have been recently completed on the restoration and creation of fish habitat features and these will continue over the next decade. Fish habitat features are sensitive to disturbance and thus this must be taken into account during the design and construction of any new project in this area.

Overall, there are numerous opportunities for revitalization of the study area and enhancement of the existing natural features. Additional detail regarding the conditions of parks and open spaces in the study area are also documented in the *Urban Design, Public Realm and Land Use Planning Baseline Conditions Report* which is provided as an appendix to the EA.

6.0 REFERENCES

- Aquatic Habitat Toronto. *Toronto Waterfront Aquatic Habitat Restoration Strategy*, 2003.
- Atlas of Breeding Birds Ontario, 2009 (<http://www.birdsontario.org>).
- Carolinian Canada. *Carolinian Species and Habitats*, 2009
(<http://caroliniancanada.ca/legacy/SpeciesHabitats.htm>).
- City of Toronto. *Toronto Official Plan*, 2010.
- City of Toronto and Toronto and Region Conservation Authority (TRCA). *City of Toronto – Natural Heritage Study*, December 2001.
- Natural Heritage Information Centre, 2009 (http://nhic.mnr.gov.on.ca/nhic_.cfm).
- Parks Canada, *Carolinian Life Zone*, 2009 (www.pc.gc.ca).
- Toronto and Region Conservation Authority (TRCA). www.trca.on.ca
- Toronto and Region Conservation Authority (TRCA), Waterfront Toronto and City of Toronto. *Don Mouth Naturalization and Port Lands Flood Protection Project. Amended Environmental Assessment Report*, 2014.
- Toronto and Region Conservation Authority (TRCA). *Port Lands Estuary*, Toronto Waterfront Revitalization Corporation, 2007.
- Toronto and Region Conservation Authority (TRCA). *Lower Don Lands Project Design Brief*, Draft, Nov 2008.
- Toronto and Region Conservation Authority (TRCA). *Toronto Waterfront Aquatic Habitat Restoration Strategy*, 2003.
- Toronto and Region Conservation Authority (TRCA). *Field Survey Forms*, 2000.
- Toronto Waterfront Revitalization Corporation (TWRC) and City of Toronto. *Archaeological Conservation and Management Strategy*, Waterfront Toronto, Final Draft 2008.
- Toronto Waterfront Revitalization Corporation (TWRC) and City of Toronto. *Don Mouth Naturalization & Port Lands Flood Protection Project*, Waterfront Toronto, 2006.
- Toronto Waterfront Revitalization Corporation (TWRC) and City of Toronto. *West Don Lands Class EA Master Plan*, Toronto Waterfront, March 2005.
- Toronto Waterfront Revitalization Corporation (TWRC) and City of Toronto. *West Don Lands Precinct Plan*, Toronto Waterfront, May 2005.

Toronto Waterfront Revitalization Corporation (TWRC) and City of Toronto. *East Bayfront Class EA Master Plan*, Toronto Waterfront, January 2006.

Toronto Waterfront Revitalization Corporation (TWRC). *East Bayfront Precinct Plan*, Toronto Waterfront, November 2005.

Toronto Waterfront Revitalization Corporation (TWRC). *Queens Quay Revitalization*, Toronto Waterfront, November 2008.

Stantec Consulting Limited. *Portlands Energy Centre Environmental Assessment*, 2003.

Waterfront Toronto www.waterfronttoronto.ca

Waterfront Toronto. *Sherbourne Common Fact Sheet Updated*, 2011.

Waterfront Toronto. *Canada's Sugar Beach Fact Sheet*, 2010.

APPENDIX A – TERRESTRIAL & AQUATIC INVENTORY

Natural Environment Baseline Conditions Report
Gardiner Expressway and Lake Shore Boulevard East
Environmental Assessment
2014

A-1: Aquatic Habitat Documented within Toronto Waterfront

Aquatic Component	Comments
Phytoplankton and zooplankton	With less eutrophication due to reduced nutrient inputs, plankton productivity has returned to more normal levels in recent years. The degradation of phytoplankton and zooplankton is listed as a potentially impaired use in the Toronto and Region Area of Concern.
Algae	The taste and odour problems in the Toronto water supply are due to free floating algae that increase rapidly during warm weather, particularly in waters with a high organic content. Toronto water treatment plants have now installed activated carbon feed systems to control this problem.
Invertebrates	Benthic invertebrate communities in the Toronto waterfront are dominated by pollution-tolerant species such as worms. In other areas, away from the influence of the Don River, the densities of pollution-tolerant species are considered lower. The implementation of the City of Toronto West Weather Flow Management Master Plan which will reduce the loading of organic rich sediments from combined sewer overflows and storm sewers is expected to increase the diversity of benthic invertebrates in the Toronto waterfront area. This will in turn support communities of fish, amphibians, reptiles, birds and mammals
Fish	TRCA has been monitoring waterfront fish communities since 1982. Results show a gradual improvement in fish communities. Table 1 indicates species observed in the Toronto Waterfront between 1998 and 2003. Sampling locations included Keating Channel, York Harbour Square, Spadina Quay and the Don Valley River. Results showed 17 species including sportfish and forage fish communities.

A-2: Regionally or Locally Significant Plant Species Documented within the North Shore Park ESA

Scientific Name	Common Name	G Rank	S Rank	TRCA	GTA	HD
<i>Anaphalis margaritacea</i>	Pearly Everlasting	G5	S5	L3	U	4
<i>Epilobium coloratum</i>	Purple-leaf Willow-herb	G5	S5	L4	R	4
<i>Rhus radicans</i> spp. <i>negundo</i>	Climbing Poison Ivy	G5T5	S5	L5	X	4
<i>Spiraea alba</i>	Narrow-leaved Meadow-sweet	G5	S5	L4	X	4

*Source: Environmentally Significant Areas (ESAs) in the City of Toronto, 2012

**Regionally or Locally Significant defined as:

- Plant communities ranking L1, L2 or L3 as determined by TRCA;
- A population of flora that is considered rare in Ecodistrict 7E-4, the Greater Toronto Area, or in the City of Toronto by OMNR and scoring 4 or 5 for habitat dependence in the TRCA scoring system, with the following exceptions: highbush cranberry (*Viburnum trilobum*), red pine (*Pinus resinosa*), blue cohosh (*Caulophyllum thalictroides*), and butternut (*Juglans cinerea*);
- Probable or confirmed breeding of fauna species considered rare in Ecodistrict 7 by OMNR and scoring 4 or 5 for habitat-dependence or sensitivity to development in the TRCA scoring system;
- A population of flora scoring L1 or L2 in TRCAs L-ranking score and scoring 4 or 5 for habitat dependence in the TRCA scoring system, excluding white oak (*Quercus alba*), which is frequently planted; or
- Probable or confirmed breeding of fauna species ranking L1 to L3 (incorporating Local Occurrence data specific for the City of Toronto) and scoring 4 or 5 for habitat-dependence or sensitivity to development in the TRCA scoring system.

A-3: Fish Observed by TRCA between 1998 and 2003

Scientific Name	Common Name	G Rank	S Rank	MNR Ranking	Location
<i>Esox lucius</i>	Northern Pike	G5	S5	Secure	1,2,3
<i>Oncorhynchus tshawytscha</i>	Chinook Salmon	G5	SNA	Secure	1,3
<i>Ameiurus nebulosus</i>	Brown bullhead	G5	S5	Secure	1,2
<i>Micropterus salmoides</i>	Largemouth bass	G5	S5	Secure	1
<i>Ambloplites rupestris</i>	Rock bass	G5	S5	Secure	1,2
<i>Pomoxis nigromaculatus</i>	Black crappie	G5	S4	Secure	1
<i>Perca flavescens</i>	Yellow perch	G5	S5	Secure	1,2
<i>Lepomis gibbosus</i>	Pumpkinseed	G5	S5	Secure	1,2
<i>Alosa pseudoharengus</i>	Alewife	G5	SNA	Exotic	1,2,3
<i>Notropis atherinoides</i>	Emerald shiner	G5	S5	Secure	1,2,3
<i>Notropis hudsonius</i>	Spottail shiner	G5	S5	Secure	1,2,3
<i>Gasterosteus aculeatus</i>	Threespine	G5	S5	Secure	1

	stickleback				
<i>Etherostoma nigrum</i>	Johnny darter	G5	S5	Secure	1
<i>Osmerus mordax</i>	Rainbow smelt	G5	S5	Secure	1,2,3
<i>Dorosoma cepedianum</i>	Gizzard shad	G5	S4	Secure	1,2,3
<i>Catostomus commersoni</i>	White sucker	G5	S5	Secure	1,2,3
<i>Cyprinus carpio</i>	Common carp	G5	SNA	Exotic	1,2,3
<i>Luxilus comutus</i>	Common shiner	G5	S5	Secure	2
<i>Pimephales notatus</i>	Bluntnose Minnow	G5	S5	Not at Risk	2
<i>Aplodinotus grunniens</i>	Freshwater Drum	G5	S5	Secure	2
<i>Morone chrysops</i>	White bass	G5	S4	Secure	3
<i>Sander vitreus</i>	Walleye	G5	S5	Secure	3

1. East Bayfront 2. Toronto Waterfront 3. Keating Channel

A-4: Regionally Significant Plant Species in the Don Mouth Naturalization and Port Lands Flood Protection Project Study Area

Species	Common Name	Number of Location	TRCA Rank
<i>Quercus macrocarpa</i>	Bur Oak	2	L4 – Urban Significance
<i>Salix nigra</i>	Black Willow	2	L3 – Regional Significance (planted)
<i>Thuja occidentalis</i>	White Cedar	1	L4 – Urban Significance (planted)
<i>Salix amygdaloides</i>	Peach-Leaved Willow	1	L4 – Urban Significance
<i>Platanus occidentalis</i>	Sycamore	1	L2 – Regional Significance (planted)
<i>Acer sacharinum</i>	Silver Maple	4	L4 – Urban Significance
<i>Fraxinus nigra</i>	Black Ash	1	L4 – Urban Significance (planted)
<i>Acer rubrum</i>	Red Maple	1	L4 – Urban Significance
<i>Panicum virgatum</i>	Switch Grass	1	L3 – Regional Significance
<i>Rosa blanda</i>	Smooth Wild Rose	2	L4 – Urban Significance
<i>Schoenoplectus validus</i>	Soft-stemmed Bulrush	1	L4 – Urban Significance
<i>Schoenoplectus americanus</i>	Three-square Rush	1	L4 – Urban Significance

*Source: Don Mouth Naturalization and Port Lands Flood Protection Project Environmental Assessment, 2014

A-5: Fish Species Present in the Lower Don River and Keating Channel from 1989 to 2012

Origin	Thermal Guild	Species	Common Name	Trophic Group
Native	Cold	<i>Salmo salar</i>	Atlantic salmon	Piscivore
	Cool	<i>Anguilla rostrata</i>	American eel	Piscivore
		<i>Rhinichthys atratulus</i>	Blacknose Dace	Generalist
		<i>Luxilus cornutus</i>	Common Shiner	Specialist
		<i>Semotilus atromaculatus</i>	Creek Chub	Generalist
		<i>Notropis atherinoides</i>	Emerald Shiner	Specialist
		<i>Etheostoma nigrum</i>	Johnny Darter	Specialist
		<i>Rhinichthys cataractae</i>	Longnose Dace	Specialist
		<i>Lepisosteus osseus</i>	Longnose Gar	Piscivore
		<i>Esox lucius</i>	Northern Pike	Piscivore
		<i>Etheostoma caeruleum</i>	Rainbow Darter	Specialist
		<i>Cyprinella spiloptera</i>	Spotfin Shiner	Specialist
		<i>Notropis hudsonius</i>	Spottail Shiner	Specialist
		<i>Gasterosteus aculeatus</i>	Threespine Stickleback	Generalist
		<i>Sander vitreus</i>	Walleye	Piscivore
		<i>Catostomus commersonii</i>	White Sucker	Specialist
		<i>Perca flavescens</i>	Yellow Perch	Specialist
		Warm	<i>Pimephales notatus</i>	Bluntnose Minnow
	<i>Ameiurus nebulosus</i>		Brown Bullhead	Generalist
	<i>Pimephales promelas</i>		Fathead Minnow	Generalist
	<i>Aplodinotus grunniens</i>		Freshwater Drum	Specialist
<i>Dorosoma cepedianum</i>	Gizzard Shad		Specialist	
<i>Micropterus salmoides</i>	Largemouth Bass		Piscivore	
<i>Lepomis gibbosus</i>	Pumpkinseed		Specialist	
<i>Ambloplites rupestris</i>	Rock Bass		Specialist	
<i>Morone chrysops</i>	White Bass		Specialist	
Non-Native	Cold	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon	Piscivore
		<i>Petromyzon marinus</i>	Sea Lamprey	Parasitic
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	Piscivore
	Cool	<i>Alosa pseudoharengus</i>	Alewife	Specialist
		<i>Salmo trutta</i>	Brown Trout	Piscivore
		<i>Osmerus mordax</i>	Rainbow Smelt	Specialist
	Warm	<i>Cyprinus carpio</i>	Common Carp	Generalist
		<i>Ctenopharyngodon idella</i>	Grass Carp	Generalist
		<i>Carassius auratus</i>	Goldfish	Generalist
		<i>Morone americana</i>	White Perch	Specialist

*Source: Don Mouth Naturalization and Port Lands Flood Protection Project
 Environmental Assessment, 2014

A-6: Mammalian Species within Toronto Waterfront

Bat	Mink
Red Fox	Weasel
Eastern Cottontail	Striped Skunk
Groundhog	Raccoon
Eastern Grey Squirrel	Norway Rat
Red Squirrel	Shrews
Eastern Chipmunk	Mole
Opossum	White-footed Mouse
Muskrat	Meadow Vole
Feral Cats	House mice
Beaver (less common)	Coyote (less common)
White-tailed Deer (less common)	

A-7: Vegetation in East Bayfront

Scientific Name	Common Name	Native(N) /Introduced(I)
<i>Ailanthus altimssima</i>	Tree of Heaven	I
<i>Acern negundo</i>	Manitoba Maple	N
<i>Populus deltoids</i>	Cottonwood	N
<i>Ulmus pumila</i>	Siberian Elm	I
<i>Fraxinus pennsylvanica</i>	Red Ash	N
<i>Daucus carota</i>	Queens Anne’s Lace	I
<i>Cirsium arvense</i>	Canada Thistle	I
<i>Cirsium vulgare</i>	Bull Thistle	I
<i>Chrysanthemum leucanthemum</i>	Ox-eye Daisy	I
<i>Erigeron spp.</i>	Fleabane spp.	N
<i>Echium vulgare</i>	Viper’s Bugloss	I
<i>Cichorium intybus</i>	Chicory	I
<i>Circaea alpina</i>	Common Nightshade	N
<i>Polygonum convovulus</i>	Black Bindweed	I

*Source: East Bayfront Class EA Master Plan, 2006

A-8: Avian Species Documented within Central Waterfront

Scientific Name	Common Name	Conservation Ranking
<i>Ardea alba</i>	Great Egret	NHIC S2B
<i>Nycticorax nycticorax</i>	Black-crowned Night-heron	NHIC: S3B

<i>Aythya valisineria</i>	Canvasback	NHIC: S1B MNR: May be at Risk
<i>Falco peregrinus anatum</i>	Peregrine Falcon	NHIC: S3B
<i>Hydroprogne caspia</i>	Caspian Tern	NHIC: S3B MNR: Not at Risk COSEWIC: Not at Risk
<i>Chaetura pelagica</i>	Chimney Swift	COSEWIC: Threatened
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	COSEWIC: Threatened MNR: Special Concern

Note:

Based on MNR (2009). NHIC S Rank = Provincial conservation rank with respect to breeding in Ontario: S1 Critically Imperiled because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the province. S2 = Very rare, often susceptible to extirpation; S3 = Rare, may be susceptible to large-scale disturbances and are on watch lists; The species at Risk Act establishes Schedule 1 as the official list of wildlife species at risk; COSEWIC rankings are national recommendations assigned by the Committee on the Status of Endangered Wildlife in Canada

Except for the Chimney Swift and Red-headed Woodpecker, all of the species above require specialized wetland or interior forest habitat that the site does not provide.

The Chimney Swift is a habitat generalist found in urban and rural settings, nesting in both anthropogenic structures (chimneys) as well as hollow trees.

The Red-headed Woodpecker likewise prefers open country with scattered trees, inhabiting forest edges and deciduous woodlands. This species has been noted to be in decline over much of its breeding range, in part due to the habitat alterations, but also due to competition from the European Starling for preferred nesting sites in dead trees (Woodliffe 2007).

While the OBBA Shows occurrence of the Chimney Swift in the relevant Atlas square, there is no documented evidence of Chimney Swift nesting on the site. Red-headed Woodpecker has likewise been known to inhabit environs similar to, and has breeding ranges extending into, the survey areas, but has not been documented onsite (Warne 2004).

A-9: Herptiles Documented within Central Waterfront and common in the Lake Ontario Region

<i>Scientific Name</i>	<i>Common Name</i>	<i>Located in Study Area</i>
<i>Rana pipiens</i>	Northern Leopard Frog	●
<i>Rana clamitans</i>	Green Frog	●
<i>Bufo americanus</i>	American Toad	●
<i>Rana catesbeiana</i>	Bullfrog	
<i>Pseudacris triseriata</i>	Chorus Frog	
<i>Pseudacris crucifer</i>	Spring Peeper	
<i>Hyla versicolor</i>	Gray Treefrog	
<i>Rana sylvatica</i>	Wood Frog	

The above listed species are all common and widespread in Ontario. They are also highly mobile species, and are able to relocate from potentially disturbed areas to suitable habitat in close proximity. The species present on the site are adaptable species and may be present in the hedgerow areas onsite. Two other species, chorus frog and gray frog have been listed as probable occurrences, but have not been confirmed (Aquatic Habitat Strategy, 2003).

A-10: Mammals, Birds and Herpetofauna Reported in the Lower Don River

	Common Name	Species	TRCA Locally Significant	TRCA L-Rank
Mammals	Beaver	<i>Castor canadensis</i>	No	L4
	Eastern Chipmunk	<i>Tamias striatus</i>	No	L4
	Grey Squirrel	<i>Sciurus carolinensis</i>	No	L5
	Raccoon	<i>Procyon lotor</i>	No	L5
	Striped Skunk	<i>Mephitis mephitis</i>	No	L5
	White-tailed Deer	<i>Odocoileus virginianus</i>	No	L4
	Coyote	<i>Canis latrans</i>	No	L5
Birds	Spotted Sandpiper	<i>Actitis macularia</i>	No	L4
	Belted Kingfisher	<i>Megaceryle alcyon</i>	No	L4
	Northern Flicker	<i>Colaptes auratus</i>	No	L4
	Eastern Wood-pewee	<i>Contopus virens</i>	No	L4
	Willow Flycatcher	<i>Empidonax trailii</i>	No	L4
	Great Crested Flycatcher	<i>Myiarchus crinitus</i>	No	L4
	Red-eyed Vireo	<i>Vireo olivaceus</i>	No	L4
	Northern Rough-winged Swallow	<i>Stelgidopteryx ruficollis</i>	No	L4
	Grey Catbird	<i>Dumetella carolinensis</i>	No	L4
	Northern Mockingbird	<i>Mimus polyglottos</i>	No	L5
	Canada Goose	<i>Branta canadensis</i>	No	L5
	Mallard	<i>Anas platyrhynchos</i>	No	L5
	Killdeer	<i>Charadrius vociferous</i>	No	L5
	Mourning Dove	<i>Zenaida macroura</i>	No	L5
	Chimney Swift	<i>Chaetura pelagica</i>	No	L4
	Downy Woodpecker	<i>Picoides pubescens</i>	No	L5
	Eastern Kingbird	<i>Tyrannus tyrannus</i>	No	L4
	Warbling Vireo	<i>Vireo gilvus</i>	No	L5
	Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	No	L4
	Barn Swallow	<i>Hirundo rustica</i>	No	L4
	American Crow	<i>Corvus brachyrhynchos</i>	No	L5
	Black-capped Chickadee	<i>Parus atricapillus</i>	No	L5
	American Robin	<i>Turdus migratorius</i>	No	L5
Cedar Waxwing	<i>Bombycilla cedrorum</i>	No	L5	

	Common Name	Species	TRCA Locally Significant	TRCA L-Rank
	Yellow Warbler	<i>Dendroica petechia</i>	No	L5
	Northern Cardinal	<i>Cardinalis cardinalis</i>	No	L5
	Song Sparrow	<i>Melospiza melodia</i>	No	L5
	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	No	L5
	Common Grackle	<i>Quiscalus quiscula</i>	No	L5
	Brown-headed Cowbird	<i>Molothrus ater</i>	No	L5
	Baltimore Oriole	<i>Icterus balbula</i>	No	L5
	Orchard Oriole	<i>Icterus spurius</i>	No	L5
	House Finch	<i>Carpodacus mexicanus</i>	No	L+
	American Goldfinch	<i>Carduelis tristis</i>	No	L5
	Rock Dove	<i>Colombia livia</i>	No	L+
	European Starling	<i>Sturnus vulgaris</i>	No	L+
	House Sparrow	<i>Passer domesticus</i>	No	L+
Herpetofauna	American Toad	<i>Bufo americanus</i>	No	L4
	Green Frog	<i>Rana clamitans</i>	No	L4
	Midland Painted Turtle	<i>Chrysemys picta</i>	Yes	L3
	Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>	No	L4
	Red-eared Slider	<i>Trachemys scripta</i>	No	L+
	Dekay's Brown Snake	<i>Storeria dekayi</i>	No	L4
	Eastern Milksnake	<i>Lampropeltis triangulum triangulum</i>	Yes	L3
	Northern Red-bellied Snake	<i>Storeria occipitomaculata occipitomaculata</i>	Yes	L3
	Northern Watersnake	<i>Nerodia sipedon sipedon</i>	Yes	L2
	Snapping Turtle	<i>Chelydra serpentina serpentina</i>	Yes	L2
	Northern Map Turtle	<i>Graptemys geographica</i>	Yes	L2
	Blanding's Turtle	<i>Emydoidea blandingii</i>	Yes	L1

*Source: Don Mouth Naturalization and Port Lands Flood Protection Project Environmental Assessment, 2014

Note:

L1 – Regional concern due to rarity, stringent habitat needs, and/or threat to habitat

L2 – Regional concern; typically occurs in high-quality natural areas and under highly specific site conditions

L3 – Regional concern; restricted in occurrence and/or requires specific site conditions

L4 – Conservation concern in the urban matrix

L5 – Generally secure; may be a conservation concern in a few specific situations

L+ – Contributes to natural cover

A-11: Regionally Significant Animal Species in the Don Mouth Naturalization and Port Lands Flood Protection Project Study Area

Species	Common Name	Number of Locations	TRCS Rank
<i>Stelgidopteryx ruficollis</i>	Norther Rough-winged Swallow	1	L4 – Urban Significance
<i>Actitis macularia</i>	Spotted Sandpiper	1	L4 – Urban Significance
<i>Tyrannus tyrannus</i>	Eastern Kingbird	1	L4 – Urban Significance
<i>Dumetella carolinensis</i>	Grey Catbird	3	L4 – Urban Significance