YORK REGION

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT STUDY FOR IMPROVEMENTS TO LANGSTAFF ROAD FROM WESTON ROAD TO HIGHWAY 7

NATURAL ENVIRONMENT REPORT

FINAL

AUGUST 1, 2021

wsp

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PROJECT NO.: OUR REF. NO. 16M-01457-01
DATE: AUGUST 2021

WSP
100 COMMERCE VALLEY DRIVE WEST
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1 INTRODUCTION

1.1 OVERVIEW

The Regional Municipality of York (York Region) is completing a Municipal Class Environmental Assessment (MCEA) study for improvements to Langstaff Road (York Road 72) from Weston Road (Y.R. 56) to Highway 7 (Y.R. 7), within the City of Vaughan.

The MCEA study is being carried out in accordance with Schedule 'C' of the MCEA document (October, 2000, amended 2007, 2011, and 2015). This document outlines the process whereby municipalities can comply with the requirements of the Ontario Environmental Assessment Act. An Environmental Study Report (ESR) will be prepared to document the decision-making process carried out during the Class EA study.

The purpose of the study is to identify the improvements required to address existing and future transportation problems and opportunities in the Langstaff Road corridor. The Preliminary Preferred Planning Solution identified as part of the MCEA Study includes:

- Langstaff Road Widening to six (6) lanes between Weston Road and Dufferin Street;
- Implementation of intersection improvements, pedestrian and cycling facilities, and provision for transit amenities;
- A bridge going over the CN MacMillan Yard crossing;
- A bridge going over the Metrolinx GO Transit Barrie Line;
- A bridge replacement over West Don River (Bowes Bridge); and
- Channel bed widening of the Tributary of Westminster Creek.

The overall MCEA study area limits are depicted on Figure 1, Appendix A, where environmental features were assessed based on desktop review. The overall study area is also depicted on Figure 1b, Appendix A, along with more refined and focused study area limits for the natural environment assessment. The focused study area (here after referred to as the "study area") was identified based on the preferred solution identified in Phase 2 of the MCEA (i.e. improvements on Langstaff Road) and field work was conducted within this study area. While the MCEA includes consideration of potential improvements along the Highway 400 corridor to accommodate ramps to-and-from the north at the Highway 400/Langstaff Road interchange, due to the complexity and the extent of the improvements, the interchange improvement is proposed to be reviewed in a future study. As part of the MCEA, this natural environment report also includes high-level documentation of the existing natural features in the Highway 400 corridor, however a preliminary assessment of impacts would require further review that will be carried out as part of a future study.

Within the study area, the length of Langstaff Road is approximately 6.5 km, from Weston Road in the west, to Highway 7 in the east (currently terminates on either side of the CN MacMillan Rail Yard). A partial interchange at Highway 400 currently provides movements to-and-from the south.

The CN MacMillan Rail Yard is one of the most prominent features in the study area. The yard, located at the junction of the CN York Subdivision and CN Halton Subdivision, is the 2nd largest rail classification yard in Canada, measuring approximately 5 km in length and 1.2 km in width with a north-south orientation. The property is bordered by four main roads: Highway 7 (Y.R. 7) to the south, Keele Street to the east, Rutherford Road to the north, and Creditstone Road to the west.

The purpose of this Langstaff Road Class EA Natural Environment Report is to identify and document the existing natural environmental features within the study area to determine constraints, identify mitigation measures and any potential permitting requirements. Specific details on WSP survey methodologies and coverage completed in 2016 and 2017 are described in **Section 1.2**.

1.2 BACKGROUND INFORMATION AND SURVEY APPROACH

Background information sources were reviewed to develop an understanding of the general character of the natural features in the study area, identify potential constraints and sensitivities, and assess the general connectivity of natural features in the study area to features within the surrounding landscape.

Background natural environment information collection included the following sources:

- Topographic mapping and Google satellite mapping (over the timeframe of 2002 to 2020);
- Liaison with the Aurora District Ministry of Natural Resources and Forestry (MNRF) and Toronto Region Conservation Authority (TRCA) staff to gather and confirm existing natural environment information in the vicinity of the study area, including information concerning Species at Risk (SAR) and Species of Conservation Concern (SCC) presence / potential. A follow-up email to MECP was completed in May 2021 to confirm that the Don River West Branch is not regulated for Redside Dace habitat;
- MNRF's Natural Heritage Information Centre (NHIC) database;
- MNRF Regional SAR lists (MNRF website, 2017);
- Ontario Breeding Bird Atlas (OBBA, Bird Studies Canada Website 2016; two 10 km-square areas within study area: No. 17PJ22, 17PJ20 and 17PJ17);
- Ontario Reptile and Amphibian Atlas (ORAA, Ontario Nature 2016; two 10 km-square areas within study area: No. 17PJ20, 17PJ21, and 17PJ22);
- Ontario Mammal Atlas (Dobbyn, 1994); and,
- Fisheries and Oceans Canada (DFO) Distribution of Fish SAR mapping (2020 mapping).

1.2.1 *AQUATIC SURVEY APPROACH*

A reconnaissance visit was undertaken by WSP, as property access permitted, on November 1, 2016 for watercourse crossing locations within the study area. Detailed aquatic surveys including fish community sampling was undertaken on October 4 and 5, 2017 at watercourse crossings within the study area to further refine habitat characteristics. A review of background resources indicated the presence of three TRCA-regulated watercourse features within the CN MacMillan Rail Yard; however, access was not granted within this area. Furthermore, only one of these unnamed watercourses fell within the study area limits of this report (**Figure 2-3**).

Habitat surveys were conducted along Langstaff Road, as well as approximately 50 m upstream and downstream of the crossings respectively, where access permitted. Information collected included the following aquatic habitat parameters:

- Aquatic habitat mapping;
- Channel dimensions, general gradient and profile, bank character (e.g. height and erosion);
- General flow characteristics (permanent, intermittent, dry, pooling) including evidence of groundwater discharge;
- General morphology (flats, pools, riffles);
- Substrates;
- Instream / overhead cover opportunities (e.g. woody debris, undercut banks, boulders, vegetation);
- Riparian vegetation;
- Physical barriers to fish movement;

- Identification of potential critical or specialized habitat areas or features (e.g. potential spawning areas, nursery cover);
- Observations of habitat alterations / land use (e.g. channel modification, potential pollutant point sources); and,
- Potential habitat enhancement opportunities.

1.2.2 *VEGETATION SURVEY APPROACH*

A three-season botanical inventory and vegetation assessment was conducted by WSP within the study area, as property access permitted, on October 17, 2016 and June 9 and July 26, 2017. These surveys documented the characteristics of the natural and culturally influenced vegetation communities, with a focus on the natural features along and adjacent to the road corridor. Street trees and planted landscape features were not assessed by WSP specifically during these field visits. A tree inventory along the Langstaff Road corridor has been prepared; see report under separate cover.

Vegetation field work and associated data assessment involved:

- Botanical inventory and analysis, including preparation of a vascular plant species list (**Appendix B**, **Table B-1**);
- Classifying, mapping and evaluating vegetation communities along the road corridor. Vegetation communities were classified using the *Ecological Land Classification for Southern Ontario* (ELC) (Lee et al, 1998) and *ELC Ecosystem Catalogue: 2008 Version* (Lee, 2008), where applicable (**Figures 2-1 to 2-8**, **Appendix A**);
- Vegetation community significance was evaluated using *Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario* (Bakowsky, 1996; NHIC website);
- Evaluating the sensitivity and significance of vegetation species using the MNRF's NHIC database and SAR websites (updated periodically), the TRCA L-Ranks (TRCA, 2003; TRCA, 2010), and the York Region rare species list from *The Distribution and Status of the Vascular Plants of the Greater Toronto Area* (Varga et al, 2000);
- Analysis of floristics of all inventoried plant species to determine their Coefficient of Conservatism (CC) [1] and Coefficient of Wetness (CW) [2];
- Evaluating habitat potential for vegetation SCC, and in particular, SAR known or thought to exist in the general vicinity of the study area; and,
- Noting general vegetation characteristics including age, general habitat features, drainage conditions, as well as any anthropogenic disturbance.

All terrestrial natural areas were documented and photographs were taken, refer to **Appendix F**.

1.2.3 *WILDLIFE SURVEY APPROACH*

Wildlife surveys were conducted by WSP within the study area, as property access permitted, on October 17, 2016 and June 9, June 23 and July 26, 2017. The field surveys completed in June 2017 were focused

[1] Coefficient of Conservatism: Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters (Oldham et al., 1995).

2 Coefficient of Wetness. Value between 5 and –5. A value of –5 is assigned to Obligate Wetland (OBL) and 5 to Obligate Upland (UPL), with intermediate values assigned to the remaining categories.

specifically on breeding birds, while the other surveys dates consisted of a more generalized wildlife assessment. The 2016 / 2017 assessment surveys involved:

- Breeding bird surveys conducted according to standard protocols established in the OBBA (Cadman et al, 2007). The two survey visits were completed during appropriate timing (early morning during the breeding bird season) and suitable weather conditions (low wind and no precipitation). Breeding bird surveys were conducted by qualified, experienced staff and involved wandering transects through and adjacent to natural features with frequent listening/ observation stops at random locations. Species, abundance and level of breeding evidence were recorded for all avifauna observations;
- SAR wildlife habitat assessment for species with potential to occur in the study area according to MNRF guidance and other background review;
- Recording all direct wildlife observations and wildlife signs (including browse, track / trails, animal scat, bird nesting activity, tree cavities, burrows, excavated holes and vocalizations) and identifying potential wildlife usage and habitat functions associated with vegetation communities.

For areas with no Permission-to-Enter (PTE), surveys were completed from the roadside and supplemented through air photo review. For the purposes of this report, wildlife species and habitat feature observations have been grouped into the ELC units identified through the vegetation surveys (see **Figures 2-1 to 2-8**, **Appendix A**):

Wildlife field investigations also included assessing the various habitats present in relation to their potential to support SAR and/or SCC, as discussed further in **Section 2.6**.

The breeding bird and wildlife survey results are presented in **Appendix C**.

2 EXISTING CONDITIONS

2.1 OVERVIEW

The following sections describe the existing natural environmental features. Designated areas and other broader policy designations are shown on **Figures 3-1 to 3-8** (**Appendix A**) and natural environmental features (both aquatic and terrestrial) are shown on **Figures 2-1 to 2-8** (**Appendix A**).

2.2 ENVIRONMENTAL DESIGNATIONS

There are several environmentally designated areas within the study area, and several associated environmental policy designations (**Figure 3-1 to 3-8**, **Appendix A**). The majority of these natural features are primarily associated with the Don River West Branch and the forest northeast of Langstaff Road and Dufferin Street. The study area is predominantly a commercial landscape mixed with residential communities on either ends of the study area adjacent to Langstaff Road. A brief summary of identified designations is provided below:

- **Natural Heritage System** – The York Region Official Plan and the City of Vaughan Official Plan classify several features within the study area as part of a Natural Heritage System (NHS) and the Greenlands System. These features are comprised of components including the key natural heritage features and key hydrologic features. The municipal policies require that their form and functions be protected, and where possible, enhanced. The key natural heritage features within the study area are: significant habitat of endangered species, threatened species and special concern species; fish habitat; wetlands; significant woodlands; significant wildlife habitat (SWH); and permanent and intermittent streams. The purpose of the Greenlands System policies are to maintain and enhance an interconnected system of natural open space, agricultural lands and enhancement areas and linkages that will preserve these areas of significant ecological value. In turn, these policies provide opportunities to improve biodiversity and connectivity of natural features as well as ecological function.
- **Greenbelt Plan (2017)** The Greenbelt Plan was established under Section 2 of the Greenbelt Act, 2005, to take effect on December 16, 2004. The plan generally identifies where urbanization should not occur in order to provide permanent protection to the agricultural land base and the ecological features and functions occurring on this landscape. The Natural Heritage System identified within the Greenbelt Plan is connected to local, regional and provincial scale natural heritage, water resource and agricultural systems beyond the boundaries of the Greenbelt to include External Linkages. Although the study area falls within a Settlement Area outside of the Greenbelt, it contains an external linkage area along the Don River West Branch (just east of Keele Street). This external linkage that runs through existing or approved urban areas and connects the Greenbelt to inland lakes and the Great Lakes is considered a key component of the long-term health of the Natural Heritage System. The Greenbelt Plan builds upon the existing policy framework established in the Provincial Policy Statement (PPS), issued under section 3 of the *Planning Act*, and its implementation through municipal official plan policies and maps.
- ***Conservation Authorities Act* (1990)** – Portions of the lands in the study area are regulated by the TRCA under Ontario Regulation 166/06 – *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*. Generally, the regulation applies to the watercourses present within the study area. To ensure that development has regard for natural hazard features and the natural environment, while conforming to watershed development policies, the TRCA is authorized under Section 28 of the *Conservation Authorities Act* to implement and enforce their own regulation. Under the regulation, no person shall undertake development or permit another person to undertake development in, or on, the areas within the jurisdiction of a Conservation Authority. A permit to undertake development within the regulated area may be granted by the governing Conservation Authority.

- ***Fisheries Act* (Fisheries and Oceans Canada, 1985) –** The conservation, management, and protection of fish and fish habitat are the responsibility of Fisheries and Oceans Canada (DFO). DFO is given authority to achieve this under the federal Fisheries Act (FA) (Government of Canada, 1990). Fish habitat as defined in the FA, c. F-14 as "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". The Act also includes a broader definition of fish as shellfish, crustaceans, and marine mammals at all stages of their life cycles.

  As of August 28, 2019, the new fish and fish habitat protection provisions of the FA came into effect. The Fish and Fish Habitat Protection Program ensures compliance with relevant provisions under the FA and SARA for those projects taking place in or near water. DFO has provided measures to protect fish and fish habitat so as to avoid causing harmful alteration, disruption or destruction (HADD) of fish habitat. All work proposed in or near watercourses in the study area should be reviewed in relation to the requirements of the *Fisheries Act*.

- ***Endangered Species Act* (Ministry of Environment, Conservation and Parks, 2007)** – SAR definitions are discussed in **Section 2.6** below. All species listed as SAR under the *ESA* (2007) have protection from being killed, harmed, or harassed. Species listed as Endangered or Threatened also have habitat protection. This habitat protection is either regulated or general and is determined by COSSARO on a species by species basis and is published by the MECP on their website and in regulations tied to the *ESA*. The study area has potential to support a variety of SAR, which are discussed further in **Section 2.6.2**.

2.3 FISHERIES AND AQUATIC HABITAT

The study area along Langstaff Road contains seven watercourses, four of which were assessed by WSP ecologists in November, 2016 (reconnaissance) and October, 2017 (detailed field assessment), and three of which were not granted access by the CN MacMillan Rail Yard. Of the three unnamed TRCA-regulated watercourses within the CN MacMillan Rail Yard, only one fell within the study limits of this report (**Figures 3-1 to 3-8**, **Appendix A**). The assessed watercourses include a Tributary of Westminster Creek, Westminster Creek, the Don River West Branch, and Black Creek. The assessed reaches of these watercourses were generally heavily urbanized, often stabilized by rip rap and gabion baskets. Various warmwater bait and forage fish were found throughout all sites. The following provides an in-depth description of the fish and fish habitat observed within each of the watercourses.

BLACK CREEK

Located in the Highway 400 / Langstaff Road area, Black Creek is a north-south flowing watercourse that supports nominal, permanent flow throughout the assessed reach. Its headwaters appear to originate from agricultural runoff to the northwest beyond the study area. As fish were found in this watercourse (**Section 2.3.1**), it is considered to be direct fish habitat.

Upstream of Highway 400

In the upstream reach, west of Highway 400 and east of Creditview Road, Black Creek has been previously realigned (sometime between 1996-1999) as a result of commercial development within the local landscape. Black Creek traverses under Creditview Road via a 4-cell structural culvert. An overflow structure is located at the inlet. At the time of survey, it was filled with duckweed (*Lemnoideae spp.*). At the outlet, no flow was observed but all four cells where filled half way. The water was murky and greater than 1 m in depth with substrates consisting of muck (100%). Approximately 10 m downstream from the outlet, an active beaver dam was present at the time of survey. This has resulted in large outlet pool (approximately 15 m wide by 10 long). Recent beaver activity (chewed tree stumps) were scattered about. Downstream of the beaver dam, the channel was stagnant (with abundant duckweed present) with a mean wetted width of 1.75 m and depth of 0.6 m with substrates consisting of muck (100%). Downstream of Creditview Road to Highway 400, the floodplain vegetation consisted of entirely cultural meadow / wetland species. There were no distinguishable banks of the channel. No fish were observed within this reach.

Upstream of Langstaff Road and South of Highway 400

In the upstream reach, north of Langstaff Road and east of Highway 400, Black Creek outlets from a 3 m wide culvert with little to no flow into a densely choked cattail marsh. Duckweed was observed at the culvert outlet, and no signs of suitable fish habitat were observed. Flow was primarily diffuse through cattails, and substrate consisted of muck (100%). The watercourse continued with little to no flow for approximately 100 m through cattail marsh before opening up at the culvert inlet north of Langstaff Road where three structural culverts each conveyed flow to the downstream reach. Here, the culvert banks were lined with gabion baskets, and the watercourse had a wetted width of 0.9 m and depth of 0.2 m. Bankfull width and depth were each >10 m, and substrate consisted of muck (100%).

Downstream of Langstaff Road

In the downstream reach, south of Langstaff Road and east of Highway 400, the water discharges from the three culverts before converging and subsequently splitting into two, defined, channels. Both defined flow paths continue through dense cattail marsh, each with a wetted width of 0.4 m, depth of <0.1 m, and bankfull width and depth >10 m. Approximately 17 m downstream of the three culvert outlets, a smaller culvert is present on the west bank and discharges into Black Creek, likely conveying stormwater from Highway 400. Riparian vegetation consisted of mainly meadow species and sparse pockets of trees. The two channels converge near the downstream limit of the assessed reach before inletting into three culverts at the Highway 400 off-ramp to Langstaff Road. Here, the channel has a wetted width of 7.5 m, depth of 0.1 m, and bankfull width and depth >10 m. Fish were observed at the inlet of these three culverts and are discussed in **Section 2.3.1**.

DON RIVER WEST BRANCH

Located east of Keele Street, the Don River West Branch is a north-south flowing watercourse that supports permanent flow throughout the assessed reach. Its headwaters originate in the Oak Ridges Moraine, and flows south for 35 km through agricultural, residential, and commercial lands before discharging into Lake Ontario. As fish were found in the downstream reach of this watercourse (**Section 2.3.1**), it is considered to be direct fish habitat.

Upstream

North of Langstaff Road, the assessed reach of the Don River West Branch originates in an open and wide channel with a wetted width of 5.2 m, depth of 0.5 m, bankfull depth of 1.3 m, and bankfull width of >10 m. Substrate within this section consisted of cobble (80%), sand (10%), and gravel (10%). Banks throughout this upstream reach were eroded, and undercut by a mean depth of 1 m, and riparian vegetation consisted of various riparian shrubs and trees. Morphology was predominantly riffles for 50 m before entering under the Langstaff Road Bridge as a flat.

Downstream

Downstream of the structure, the watercourse had a wetted width of 7.5 m, depth of 0.6 m, bankfull depth of >5 m, and bankfull width of 11 m. Substrate consisted of cobble (80%), sand (10%), gravel (5%), and silt (5%), and banks showed less severe signs of erosion and undercutting compared to upstream. At the outlet, two smaller culverts discharge storm flows from the east and west of Langstaff Road into the watercourse. Riparian vegetation in this area was dominated by cattails, goldenrod (*Solidago spp.*), and various riparian trees. Flow continued downstream as a run, passing through wood debris, and emptying into a large pool. The pool had a wetted width of 6.1 m, depth of 0.8 m, bankfull depth of 1 m, and bankfull width of >10 m. Substrate consisted of silt (50%) and sand (50%). Additionally, a dry fragment of a braided channel was observed east of the main watercourse, originating 2 m upstream of the pool and discharging into it. This channel likely proves flow conveyance during high precipitation events. Fish were observed at this site, and are discussed in **Section 2.3.1**. Water then continues downstream as a run throughout the remainder of the assessed reach.

WESTMINSTER CREEK

Located just west of Dufferin Street, Westminster Creek is a north-south flowing watercourse that supports permanent flow throughout the assessed reach. Its headwaters originate in a woodlot south of Major Mackenzie Drive West between Keele Street and Dufferin Street, and flows south for 25 km through residential and commercial lands before discharging into Lake Ontario. Westminster Creek is considered to be direct fish habitat as no physical barriers were observed in the field or through satellite imagery.

Upstream

North of Langstaff Road, the assessed reach of Westminster Creek originates in a densely forested pool with a wetted width of 2.2 m, depth of 0.4 m, bankfull depth of 0.6 m, and bankfull width of 2.2 m. The channel appears to have been previously modified with channel protection measures along the banks, and substrate within the pool is dominated by rip rap (100%). The watercourse then flows south as a riffle through intermittent tree cover with a mean wetted width of 2.4 m, mean depth of 0.1 m, bankfull depth of >3 m, and bankfull width of >5 m. Substrate consists of rip rap (70%) and sand (30%), and riparian vegetation is sparse, consisting of various willow species (*Salix spp.*), and bank stabilization is predominately provided by gabion baskets. Under Langstaff Road, water inlets into twin box culverts, with the west culvert conveying the majority of the flow, and the east culvert primarily blocked by sediment. This blockage resulted in an observable eddy which redirected most of the water into the west culvert. Each culvert had a height of 1.8 m and width of 3.6 m, substrate was dominated by silt (100%); the enclosed portion of the watercourse is approximately 50 m.

Downstream

Water outlets as a run into a more naturalized channel than that observed upstream, with a mean wetted width of 2.6 m, depth of 0.1 m, bankfull depth of 0.6 m, and bankfull width of 7.5 m. Bank composition at the edge of the watercourse is natural, however, gabion baskets are positioned approximately 5 m back from the water's edge. Substrate consisted of sand (50%), gravel (45%), and cobble (5%), and channel banks were lined with various riparian trees, shrubs, and cattails. Similar to the upstream culvert inlet, the east culvert was partially blocked by substrate build-up and subsequent growing vegetation. However, a trickle of flow was observed to be flowing form this culvert outlet at the time of survey. Further downstream, channel width narrowed slightly but maintained a similar morphology to that seen at the downstream outlet. Undercut banks and erosion were noted in the furthest downstream reaches.

TRIBUTARY OF WESTMINSTER CREEK

The Tributary of Westminster Creek is an east-west watercourse that supports intermittent flow in its upstream reach in the northeast corner of Langstaff Road and Dufferin Street, and permanent flow throughout the downstream reach, in the northwest corner of Langstaff Road and Dufferin Street. Its headwaters appear to originate from a SWM pond east of a woodlot north of Langstaff Road (east of Dufferin Street) and is likely pumped underground to the downstream reach. The watercourse then flows within a ditch for approximately 270 m prior to discharging into Westminster Creek through a vertical box culvert. Two fish were found in the downstream reach of this watercourse; however permanent barriers up and downstream are present and habitat within the ditch system is unlikely to support permanent populations, refer to **Section 2.3.1** for more information.

Upstream

In the woodlot northeast of Langstaff Road and Dufferin Street, a dry, defined channel meanders southwest through woody debris within a forest consisting of White Spruce (*Picea glauca*), basswood (*Tilia spp.*), Manitoba Maple (*Acer negundo*), and buckthorn (*Rhamnus spp.*). The dry channel has a width of 1.5 m, a bankfull depth of 0.3 m, and bankfull width of >10 m. Substrate consists of silt (60%), sand (25%), gravel (10%), and cobble (5%), and riparian vegetation is sparse and consists mainly of riparian trees. The channel loses definition near its exit from the woodlot into an area comprised of Common Reed (*Phragmites australis*) and Reed Canary Grass (*Phalaris arundinacea*). Approximately 20 m from the edge of the woodlot, a 300 mm corrugated steel pipe (CSP) culvert, dry at the time of observation, crosses under Dufferin Street and outlets from a 1000 mm CSP downstream into a ditch running along the north side of Langstaff Road.

Downstream

In the downstream reach, the channel becomes defined (within the Langstaff Road ditch) and flows west through a series of tight meanders and aquatic vegetation consisting of curly Leaf Pondweed (*Potamogeton crispus*) and Canada Waterweed (*Elodea canadensis*), and is flanked by manicured lawn. Fish were observed in this reach, and are discussed in **Section 2.3.1**. The channel has a mean wetted width of 0.7 m, a mean depth of 0.1 m, a mean bankfull depth of 0.4 m, and mean bankfull width of >5 m. Substrate consists of silt (50%), sand (45%), and cobble (5%), and riparian vegetation is non-existent; as a result, some erosion was observed. The watercourse exhibits a low-gradient channel with flows consisting of riffles (50%), runs (30%), and pools (20%). Approximately 115 m downstream, the tributary passes through twin 750 mm CSP culverts for 20 m, and continues for another 135 m before outletting into a vertical box culvert, and ultimately, into Westminster Creek. The vertical culvert acts as a permanent barrier to fish movement upstream.

2.3.1 *FISH COMMUNITY*

BLACK CREEK

Fish community was assessed within the study limits of Black Creek, and the fish species identified is associated with warmwater thermal regimes and habitat comprising of silt-dominated substrate.

Table 2-1: Fish Species Identified in Black Creek within the Study Area

COMMON NAME	SPECIES NAME
Brook Stickleback	*Culaea inconstans*

The 16 Brook Stickleback observed at the inlet of the three culverts likely originate from a SWM pond north of the study area, and were carried downstream during high precipitation events, as the densely choked watercourse normally acts as a barrier to fish passage. No exceptional spawning, rearing, or feeding habitat was noted in the assessed reaches; however, the habitat quality was such that it likely supports a small, permanent population.

DON RIVER WEST BRANCH

Fish community was assessed within the study limits of the Don River West Branch, and the fish species identified are associated with warmwater thermal regimes and habitat comprising of weedy or muddy water. TRCA also provided a list of sample sites and fish species observed within the Don River West Branch.

Table 2-2: Fish Species Identified in the Don River West Branch within the Study Area

COMMON NAME	SPECIES NAME
Blacknose Dace*	*Rhinichthys atratulus*
Bluntnose Minnow†	*Pimephales notatus*
Catostomidae†	*Catostomus sp.*
Catostomus sp.†	*Catostomus sp.*
Common Shiner*	*Luxilus cornutus*
Creek Chub*	*Semotilus atromaculatus*

Fathead Minnow†	*Pimephales promelas*
Johnny Darter†	*Etheostoma nigrum*
Pumpkinseed*	*Lepomis gibbosus*
White Sucker†	*Catostomus commersonii*

* Species observed by WSP ecologists in October, 2017
† Species list provided by TRCA

The fish species observed by WSP ecologists and provided by TRCA likely originate in the assessed study site, and are able to spawn, rear, and feed within the same area.

TRIBUTARY OF WESTMINSTER CREEK

Fish community was assessed within the study limits of the Tributary of Westminster Creek, and the fish species identified are associated with warmwater thermal regimes and habitat comprising of weedy or muddy water.

Table 2-3: Fish Species Identified in the Tributary of Westminster Creek within the Study Area

COMMON NAME	SPECIES NAME
Largemouth Bass	*Micropterus salmoides*
Brown Bullhead	*Ameiurus nebulosus*

The one Largemouth Bass and one Brown Bullhead observed near the downstream culvert outlet likely originate from the SWM pond east of the woodlot, north of Langstaff Road (east of Dufferin Street). It is possible that the fish were carried downstream at a time the SWM pond overflowed. As there was no water in the upstream at the time of both the reconnaissance visits in 2016 and the detail field investigations in 2017, they likely travelled through the piped section from the SWM pond and into the culvert crossing under Dufferin Street. No exceptional spawning, rearing, or feeding habitat was noted in the inlet area. Due to the low number of individuals seen, and the overall size of the watercourse, this reach likely does not support a permanent fish population.

2.4 VEGETATION AND FLORA

The landscape along Langstaff Road is dominated by manicured commercial and residential areas and associated sidewalks / roadsides, with mown grass and planted landscape trees. Natural areas are mostly limited to three discrete locations along Langstaff Road; a SWM pond (shown on **Figure 2-6**, **Appendix A**) with surrounding naturalized vegetation, including a large (9.3 ha) woodlot, a corridor of floodplain vegetation surrounding the Don River West Branch, and the cultural ROW vegetation associated with the Highway 400 interchange in the western end of the study area.

The landscape in the northern sections of the study area, adjacent to Highway 400 north to Rutherford Road consists of a combination of large commercial areas and parking lots, with heavily impacted cultural ROW vegetation interspersed with young naturalized vegetation communities. The largest area of natural vegetation is shown on **Figures 2-7** and **2-8** of **Appendix A** and supports moderate sized pockets of wetland and upland communities.

Details of the vegetation species and communities in the study area are presented in the following sections, and detailed in **Appendix B**.

2.4.1 *FLORA OVERVIEW*

A total of 126 vascular plants were identified during the field surveys, all but four of which were identified to species level; sedge (*Carex* sp.), hawthorn (*Crataegus* sp.), apple (*Malus* sp.), and violet (*Viola* sp.). Of the species recorded by WSP, 77 (62%) are native, and 48 (38%) are non-native. Of the 77 native species recorded for which CC values are provided, CC values range from 0 to 8, with the majority between 3 and 5.

One species, Amethyst Aster (*Symphyotrichum* x *amethystinum*) has a provincial ranking of S3? (vulnerable). All other native species have a provincial ranking of S4 or S5 [apparently secure (S4) or secure (S5) in Ontario]. None are listed under the *ESA* (2007). A total of 17 species are considered regionally significant by the TRCA and Varga et al. (2000). The location and abundance of these species are listed and locations are described in **Section 2.6.2**.

2.4.2 *VEGETATION COMMUNITIES OVERVIEW*

A total of 11 vegetation community types as classified by the ELC system were delineated within the study area, as shown in **Figures 2-1 to 2-8**, **Appendix A**. Eleven units consisting of eight of the identified community types, were investigated thoroughly and are described below. Multiple other units were observed and documented during field surveys, however in-depth species data for these communities were not collected due to PTE restrictions or distance from the study area. These communities are also shown in **Figure 2, Appendix A**, but have not been given unit numbers. These communities include multiple Storm Water Management (SWM) ponds, multiple Common Reed dominated Meadow Marshes (MAM2-X), Cultural Savannah (CUS1), Cultural Meadow (CUM1-1), Cultural Woodland (CUW1), Red-osier Dogwood Mineral Thicket Swamp (SWT2-5) associated with a SWM pond, and Open Water (OAO). All vegetation communities present within or adjacent to the study area are considered common in southern Ontario (Bakowsky, 1996 / NHIC).

The TRCA (2010) ranks all of the ELC communities as either L5 (generally secure throughout the jurisdiction, including the urban matrix), L4 (generally secure in the rural matrix, of concern in urban matrix), or L+ (Not native to TRCA jurisdiction. Includes hybrids between a native species and an exotic). The eight community types are described briefly below and in more detail in **Appendix B Table**, **B-2** and delineated on **Figures 2-1 to 2-8** (**Appendix A)** with representative photos provided in **Appendix F**.

- Dry-Moist Old Field Meadow (CUM1-1; Units 2, 7, 11; L+): These units are different in character despite a shared classification. Unit 7 and 11 support a dense layer of herbaceous ground vegetation, consisting of a wide range of common early successional, upland, disturbance-tolerant species including Kentucky Bluegrass (*Poa pratensis* ssp. *pratensis*), Awnless Brome (*Bromus inermis* ssp *inermis*), Tall Goldenrod (*Solidago altissima*), Creeping Thistle (Canada Thistle) (*Cirsium arvense*), White Clover (*Trifolium repens*), Colt's Foot (*Tussilago farfara*), Tufted Vetch (*Vicia cracca*), Meadow Goat's-beard (*Tragopogon dubius*), Self-heal (*Prunella vulgaris* ssp. *lanceolata*), and Garden Bird's-foot-trefoil (*Lotus corniculatus)*. Additionally, patches of wetland species such as Reed Canary Grass, Narrow-leaved Cattail (*Typha angustifolia*) were interspersed within the drainage ditches and depressions.

  Given its location in a low-lying floodplain, Unit 2 is poorly drained, most likely with fresh-moist soils, compared to Unit 7 and supports a lower diversity of species, with a greater percentage of wetland species. These include abundant Reed Canary Grass, European Swallow-wort (*Cynanchum rossicum*), Wild Mock-cucumber (*Echinocystis lobata*), Stinging Nettle (*Urtica dioica* ssp. *dioica*), and frequent Common Milkweed (*Asclepias syriaca*), Creeping Thistle, Field Bindweed (*Convolvulus arvensis*), Tall Goldenrod, Sweet Joe-pye-weed (*Eupatorium purpureum* var *purpureum*).

  These units are regularly subject to anthropogenic disturbance, maintenance and pollution from the roads and highways (particularly adjacent to Highway 400). A high proportion of invasive species and low botanical quality provide evidence of such disturbance.

- Mineral Sumac Cultural Thicket (CUT1-1; Unit 6; L5): This unit forms a mosaic with Unit 2 (described above), north of Langstaff Road. It supports a dense shrub layer consisting of dominant Staghorn Sumac (*Rhus typhina*), with abundant Sandbar Willow (*Salix interior*), and Heart-leaved Willow (*Salix eriocephala*). Occasional White Willows (*Salix alba*), are present in the sparse canopy layer. The ground cover is the same as described above for Unit 2.
- Mineral Cultural Savannah (CUS1; Unit 3; L+): This unit is a manicured park area, with a memorial. The canopy is somewhat sparse, and contains mature Bur Oak (*Quercus macrocarpa* var. *macrocarpa*), Black Walnut (*Juglans nigra*), Wild Black Cherry (*Prunus serotina*), and American Basswood (*Tilia americana*). The shrub layer contains rare Buckthorn (*Rhamnus cathartica*) and is extremely sparse. The ground cover consists of mowed grass (Kentucky Bluegrass, Self-heal, Black Medic [*Medicago lupulina*], violet species [*Viola* sp.]) and garden escapes (European Lily-of-the-valley [*Convallaria majalis*]) on the outskirts of the unit where it is un-mowed.
- Mineral Cultural Woodland Ecosite (CUW1; Unit 5, 8; L+): These units are very small young wooded areas. Unit 5 is located directly adjacent to Langstaff Road and Unit 8 is approximately 50 m south of Langstaff road directly south of a gravel parking lot. The sparse canopy layers contain American Basswood (*Tilia americana*), Black Walnut (*Juglans nigra*), Bur Oak (*Quercus macrocarpa* var. *macrocarpa*), Crack Willow (*Salix fragilis*) and Common Apple (*Malus pumila*). The shrub layers are dense and support primarily non-native species including Tartarian Honeysuckle (*Lonicera tatarica*), Buckthorn, Riverbank Grape (*Vitis riparia*), and Staghorn Sumac. The ground layers are sparse and contain an odd assortment of species such as Tall Goldenrod, European Swallow-wort, Common Viper's-bugloss (*Echium vulgare*), Oxeye Daisy (*Leucanthemum vulgare*), Garden Bird's-foot-trefoil, and Kentucky Bluegrass. Unit 8 differs from Unit 5 in that in some areas it supports a denser canopy dominated by willow species. These unit are heavily disturbed by the close proximity to Langstaff Road and the presence of invasive species.
- Dry-Fresh Sugar Maple – Hickory Deciduous Forest (FOD5-5; Unit 4; L4): This unit is a large mature woodlot located adjacent to the SWM pond. The canopy contains a variety of native species including abundant Sugar Maple (*Acer saccharum* var. *saccharum*), Bitternut Hickory (*Carya cordiformis*), and Northern Red Oak (*Quercus rubra*), frequent Black Maple (*Acer nigrum*), American Basswood, White Ash (*Fraxinus americana*), Eastern Hop-hornbeam (*Ostrya virginiana*), and occasional Eastern White Pine (*Pinus strobus*), and Black Walnut. There is also a small inclusion of Coniferous forest (FOC), with species such as Balsam Fir (*Abies balsamea*), Tamarack (*Larix laricina*), and Black Spruce (*Picea mariana*). The shrub layer contains native and non-native species such as Common Raspberry (*Rubus idaeus* ssp. *strigosus*), Northern Poison Oak (*Toxicodendron rydbergii*), English Hawthorn (*Crataegus monogyna*), Choke Cherry (*Prunus virginiana* var. *virginiana*), Dotted Hawthorn (*Crataegus punctata*), Prickly Gooseberry (*Ribes cynosbati*), Buckthorn American Fly-honeysuckle (*Lonicera canadensis*), and Guelder-rose Viburnum (*Viburnum opulus*). The ground layer is sparse, and included species such as Garlic Mustard (*Alliaria petiolata*), sedge (*Carex* sp.), Herb-robert (*Geranium robertianum*), Enchanter's Nightshade (*Circaea lutetiana* ssp *canadensis*), Jack-in-the-pulpit (*Arisaema triphyllum* ssp *triphyllum*), Virginia Stickseed (*Hackelia virginiana*), Two-leaf Bishop's-cap (*Mitella diphylla*), Bittersweet Nightshade (*Solanum dulcamara*), Heart-leaved Aster (*Symphyotrichum cordifolium*), and Virginia Waterleaf (*Hydrophyllum virginianum*).The edges of this woodlot are disturbed by the proximity to Langstaff Road and Dufferin Street and the presence of invasive species, however the interior is relatively undisturbed. This unit is classified as a Signifcant Woodland under the PPS (2014).
- Fresh Moist Willow Lowland Deciduous Forest (FOD7-3; Unit 1; L5): This unit is mid-aged and is associated with the Don River West Branch, and located south of Langstaff Road. The canopy is sparse, and dominated by Crack Willow with frequent American Elm (*Ulmus americana*), Black Walnut, Manitoba Maple and rare Norway Maple (*Acer platanoides*). The shrub layer contains Wild Red Raspberry Riverbank Grape (*Vitis riparia*), Staghorn Sumac and Tartarian Honeysuckle. The ground cover sparse in the interior of the unit, and denser near the edges. Species include upland and wetland plants, such as Common Milkweed, Common Reed, European Swallow-wort, Enchanter's Nightshade, Wild Mock-cucumber, Dame's Rocket (*Hesperis matronalis*), Purple Loosestrife (*Lythrum salicaria*), Hog-peanut (*Amphicarpaea bracteata*), Rough Avens (*Geum laciniatum*), Fringed Loosestrife

(*Lysimachia ciliata*), and Stinging Nettle (*Urtica dioica* ssp. *dioica*). This unit is likely a result of disturbance. This unit contains a number of snags that may provide wildlife habitat.

- Reed Canary Grass Mineral Meadow Marsh (MAM2-2; Unit 9; L+): This unit is a very small area of low lying land that is dominated by non-native Reed Canary Grass. Other ground layer species include American Bugleweed (*Lycopus americanus*), Purple Loosestrife, Common Reed, Blue Vervain (*Verbena hastata*), and Marsh Bedstraw (*Galium palustre*). Immediately adjacent to the unit is an area of mowed lawn and the busy intersection of Langstaff Road and Dufferin Street, as well as Unit 4. This unit is highly disturbed by the presence of the nearby roads and the invasive species.
- Cattail Mineral Shallow Marsh (MAS2-1; Unit 10; L4): This unit is a relatively large sized wetland characterized by dominant Broad-leaved Cattail vegetation. The unit also contains an Open Water (OAO) Inclusion, as well as multiple patches of Common Reed, some of which are large enough to be inclusions. The species diversity in this unit is extremely limited, with very few other ground layer species, such as Purple Loosestrife. The unit is divided by a berm dominated by Cultural Meadow vegetation and sparsely planted with mid-aged Scots Pine and White Poplar (*Populus alba*). Although this berm divides much of the unit, it does dip in the middle, resulting in the hydrological connection of the two sections. The unit is far enough from the highway to be only indirectly affected. The presence of extensive invasive Common Reed is the greatest disturbance to the unit.

2.5 WILDLIFE

Habitat features present within the study area and broader landscape include urban environments, semi-natural features (e.g., cultural meadows, SWM ponds, planted trees, thickets and hedgerows) and natural vegetation features (e.g., riparian corridor and forest). Habitats within the study area show varying levels of previous disturbance. With the exception of one SAR (Monarch [*Danaus plexippus*]), the suite of wildlife species found was common and expected of cultural and open field habitats and small natural forest patches. During the 2017 and 2018 field investigations, a total of 25 avifauna, four mammals and five insect species (total of 34 wildlife species) were recorded within the study area. Lists of breeding birds and incidental wildlife observed within the study area are presented in **Appendix C.**

No confirmed SWH features were identified by MNRF or identified in the field; however, one candidate SWH feature is discussed in **Section 2.7**.

2.5.1 *BIRDS*

During the 2016 and 2017 field investigations, a total of 25 avifauna were recorded within the study area; and of these, 24 species were recorded with breeding evidence (possible, probable or confirmed according to OBBA protocol). Turkey Vulture was the only species with no breeding evidence.

Most of the bird species recorded in the study area are common throughout southern Ontario and expected given the types of habitat available (forest, forest edge, cultural meadow and urban / semi-urban environments). High numbers of urban tolerant bird species were recorded, such as American Robin (*Turdus migratorius*), Black-capped Chickadee (*Poecile atricapillus*), American Goldfinch (*Spinus tristis*), European Starling (*Sturnus vulgaris*) and Song Sparrow (*Melospiza melodia*). Species associated with deciduous forest habitats (ELC Unit 4) were recorded including, American Redstart (*Setophaga ruticilla*), Red-eyed Vireo (*Vireo olivaceus*) and Downy Woodpecker (*Picoides pubescens*); in addition to species associated with riparian forest / floodplain habitats (Unit 1), including Common Yellowthroat (*Geothlypis trichas*), Red-winged Blackbird (*Agelaius phoeniceus*) and Warbling Vireo (*Vireo gilvus*).

No avian nests were observed within surveyed vegetation areas at the time of the surveys; however, given that these surveys were undertaken within the Regional Nesting Period identified by Environment Canada (approximately end of March to end of August), and suitable nesting habitat exists within the study area, nesting activity and nests were likely present but undetected.

One bridge and several culverts were surveyed for signs of nests or other bird nesting activity, and none were found. Most of the culverts are small and the openings are surrounded by vegetation, making them less desirable for nesting. Two of the culverts and the Bowes Bridge on Langstaff Road over the Don River West Branch provide suitable nesting habitat, however no signs of nesting were observed at these locations. The Bowes Bridge, which provides particularly good habitat for Barn Swallow, should be surveyed at detail Design to confirm the absence of nesting. Generally, the implementation of the mitigation measures outlined in **Section 4.3** for MBCA compliance will avoid impacts to birds potentially nesting in culverts or under bridges.

No SAR birds, nor provincially significant species (S-Rank S1-S3) were recorded within the study area during field investigations. The study area has some potential for supporting a number of other SAR birds; potential for SAR is assessed further in the habitat screening as discussed in **Section 2.6.3**.

2.5.2 *MAMMALS*

Observations and / or signs of four mammal species were recorded within the study area during the field surveys; Eastern Chipmunk (*Tamias striatus*), White-tailed Deer (*Odocoileus virginianus*), Grey Squirrel (*Sciurus carolinensis*) and Coyote (*Canis latrans*). However, the general area likely supports a range of other mammals often found in similar habitats, including: Groundhog (*Marmota monax*), Raccoon (*Procyon lotor*), Eastern Cottontail (*Sylvilagus floridanus*), Red Squirrel (*Tamiasciurus hudsonicus*), Striped Skunk (*Mephitis mephitis*), Red Fox (*Vulpes vulpes*), and a number of small mammals that often go undetected such as Meadow Vole (*Microtus pennsylvanicus*), White-footed Mouse (*Peromyscus leucopus*) and Woodland Jumping Mouse (*Napaeozapus insignis*) (Dobbyn, 1994).

None of the recorded mammal species are SAR or SCC and all have a provincial S-Rank of 5 (Secure). Forested habitats within the study area exhibit potential to support SAR mammals, specifically Small-footed Bat (*Myotis leibii*), Little Brown Bat (*Myotis lucifugus*), Tri-colored Bat (*Perimyotis subflavus*) and Northern Long-eared Bat (*Myotis septentrionalis*) and are discussed further in **Section 2.6.3**.

2.5.3 *HERPETILES*

No herpetofauna (e.g., amphibian and reptile) species, including SAR, were observed during the 2016, 2017, and 2018 field surveys; however, the general area contains habitat for, and may support, several herpetofauna species found in similar habitats, including: American Toad (*Anaxyrus americanus*), Dekay's Brownsnake (*Storeria dekayi dekayi*), and Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) (Ontario Nature, 2017). No specialized habitat features (e.g. amphibian breeding, or reptile overwintering habitat) were observed or are likely to occur in the study area.

2.6 SPECIES OF CONSERVATION CONCERN

For the purposes of this report, the term SAR refers to those species listed as Endangered, Threatened and Special Concern, under the *Species at Risk Act* (*SARA*) and / or listed on the Species At Risk in Ontario (SARO) List (Ontario Regulation 230/08) and protected under Ontario's *Endangered Species Act*, 2007 (*ESA*, 2007). The term SCC encompasses: both SAR and additional species designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and/or species designated by the Committee on the Status of Species at Risk in Ontario (COSSARO), as well as provincially rare species (MNRF S-Rank of S1 to S3), MNRF "Area Sensitive" species (SWH Criteria Schedules; MNRF, 2015) and locally / regionally significant species (TRCA rank of L1 to L3 and MNRF R-ranked species). Specific targeted surveys for SCC were not undertaken as part of the project scope.

Prior to field surveys, a list of SCC with potential to be present within the study area was generated by compiling a 'long list' of SCC known to be present in the general vicinity based on background resources (e.g., NHIC records, MNRF Regional SAR species lists and MNRF / TRCA consultation). This long list was then screened in relation to the habitats present in the study area to exclude those species with no potential

to be present. This screening exercise is presented in **Appendix D**. Observations by WSP during 2016 and 2017 either confirmed presence of these SCC and/or augmented the list.

All SCC found during the field surveys were recorded and are listed below.

2.6.1 *WILDLIFE SCC CONFIRMED IN THE STUDY AREA*

Field surveys in 2016, 2017 and 2018 confirmed the presence of one wildlife SCC within the study area:

- **Monarch** (*Danaus plexippus*) – Listed as Endangered by COSEWIC and Special Concern by COSSARO, and listed under *SARA* (2002) and *ESA* (2007). In 2017, four individuals were observed foraging south of Langstaff Road, and two were observed foraging north of Langstaff Road, both in ELC Unit 2. In 2018, an additional 6 were observed in the same areas. This species is common within the broader landscape and likely to forage in a variety of cultural meadow habitats found throughout the study area; however, a patch of moderately concentrated Milkweed plants was identified in Unit 2 along the edge of Unit 1, approximately 50 m south of Langstaff Road.

2.6.2 *VEGETATION SCC CONFIRMED IN THE STUDY AREA*

A number of vegetation SCC were confirmed within the study area including four species with an S-Rank of S4, meaning they are Apparently Secure (uncommon but not rare, but with some cause for long-term concern) in the province, one species with an S-Rank of S3, meaning it is Vulnerable in Ontario, and 15 Regionally Significant species (L1-L3 or R) designated as such by the TRCA (2003)[3], or City of Toronto (Varga, 2000)[4], as follows:

Table 2-4: Provincially and Regionally Significant Plant Species in the Study Area

COMMON NAME	ACCEPTED NAME	S-RANK	TRCA RANK	CITY OF TORONTO RANK	ELC UNIT LOCATION	LIKELY A LANDSCAPED SPECIES
Broad Waterweed	*Elodea canadensis*	S5	L3	-	Unit 1	
Balsam Fir	*Abies balsamea*	S5	L3	-	Unit 4	
Amethyst Aster	*Symphyotrichum* x *amethystinum*	S3?	LH	-	Unit 11	

[3] Codes are defined as follows:

L1: Of concern regionally; almost certainly rare in TRCA jurisdiction; generally occur in high-quality natural areas, in natural matrix; unable to withstand disturbance.

L2: Of concern regionally; probably rare in TRCA jurisdiction; generally occur in high-quality natural areas, in natural matrix; unable to withstand disturbance.

L3: Of concern regionally; generally secure in natural matrix; able to withstand minor disturbance.

L4: Of concern in urban matrix; generally secure in rural matrix; able to withstand some disturbance.

L5: Not of concern; generally secure throughout jurisdiction, including urban matrix; able to withstand high levels of disturbance.

LX: Extirpated from the TRCA region with remote chance of rediscovery. Presumably highly sensitive. Not scored.

LH: Hybrid Between two native species. Usually not scored unless highly stable and behaves like a species.

L+: Exotic. Not native to TRCA jurisdiction. Includes hybrids between a native species and an exotic. Not scored.

[4] Codes are defined as follows:

U: Uncommon native species

R: Rare native species

+ or I: Introduced species

X+: Introduced in municipality

COMMON NAME	ACCEPTED NAME	S-RANK	TRCA RANK	CITY OF TORONTO RANK	ELC UNIT LOCATION	LIKELY A LANDSCAPED SPECIES
Sweet Joe-pye-weed	*Eupatorium purpureum* var *purpureum*	S4	L3	R	Unit 2	✓
Red Pine	*Pinus resinosa*	S5	L1	-	Unit 7	✓
Smooth Oxeye	*Heliopsis helianthoides*	S5	L2	R	Unit 2	✓
Switch Grass	*Panicum virgatum*	S4	L3	R	Unit 2	✓
Rough Avens	*Geum laciniatum*	S4	L3	-	Unit 1	
Balsam Fir	*Abies balsamea*	S5	L3	-	Unit 4	
Eastern Ninebark	*Physocarpus opulifolius*	S5	L3	R	Unit 7	✓
American Fly-honeysuckle	*Lonicera canadensis*	S5	L3	-	Unit 4	
White Spruce	*Picea glauca*	S5	L3	-	Unit 7	✓
Arrow-leaved Aster	*Symphyotrichum urophyllum*	S4	L3	R	Unit 1	
Tamarack	*Larix laricina*	S5	L3	-	Unit 4	
Smooth Blue Aster	*Symphyotrichum laeve* var *laeve*	S5	L3	R	Unit 7	
Black Spruce	*Picea mariana*	S5	L2	R	Unit 4	
Black Walnut	*Juglans nigra*	S4	L5	-	Units 1, 3, 4, 5	

Provincially, regionally and / or locally rare species are not protected under national / provincial legislation, however opportunities to protect and retain regionally significant species are considered where possible. Amethyst Aster, the species ranked as S3, is provided protection under the PPS (2014), and is discussed further in **Section 2.7** below.

2.6.3 *SAR WITH POTENTIAL TO OCCUR WITHIN THE STUDY AREA*

A review of background information sources (OBBA, NHIC and MNRF Regional SAR Lists) in combination with the assessment of the available habitat indicated there is some potential for 11 SAR to occur within the study area or in the vicinity of the study area. Only one of these species (Monarch) was recorded in the study area during field surveys. However, given the habitat characteristics present in the study area in combination with occurrences of these species in the broader landscape, the following eight wildlife and one plant SAR have moderate - high potential of occurring within the study area:

- Eastern Wood-pewee (*Contopus virens* - Special Concern, COSEWIC and COSSARO): This species is relatively common, and suitable breeding habitat is present in Unit 4. If present, this species is unlikely to nest within the edges of the forest or to move into the study area to forage or defend territory.
- Wood Thrush (*Hylocichla mustelina* - Special Concern, COSEWIC and COSSARO): Wood Thrush is relatively common, and suitable breeding habitat is present in Unit 4. If present, this species is unlikely to nest within the edges of the forest or to move into the study area to forage or defend territory.
- Barn Swallow (*Hirundo rustica* - Threatened, COSEWIC and COSSARO): This species is widespread, and foraging habitat is present over all natural areas, including the SWM pond, within the study area. There is a possibility for this species to occur as a foraging visitant throughout the study area. However, nesting habitat is limited within the study area.
- Common Nighthawk (*Chordeiles minor* - Threatened, COSEWIC and Special Concern, COSSARO) – This species may be present breeding on flat topped rooves in the vicinity of the study area, and foraging over all natural areas including wetlands, watercourses and fields.
- Two Bat Species (Little Brown Bat [*Myotis lucifugus*], Northern Long-eared Bat [*Myotis septentrionalis]* – Endangered, COSEWIC and COSSARO): Little Brown Bat and Northern Long-eared Bat have a

some potential of occurring within the study area, while the other two species have a minimal likelihood (Small-footed Myotis [*Myotis leibii*], typically uses rocky areas / talus slopes, which are not present in the study area, and Tri-coloured Bat (*Perimyotis subflavus*) are generally less common in the Region). These species have not been confirmed during field surveys; and, targeted acoustic monitoring / exit surveys were not part of the project scope. Suitable foraging habitat is present over natural areas and there is limited potential for day roosting within natural areas of the study area. Some potential maternity colony habitat may be present in standing snags with cavities observed in Unit 1, and potentially in Unit 4 see **Figure 2-4 (Appendix A)**. Consultation with MNRF (Bohdan Kowalyk, Management Biologist, pers. comm. Feb 2018) has been undertaken to assess the potential impacts on SAR bats and is detailed in **Appendix E**.

- Butternut (*Juglans cinerea* – Endangered, COSEWIC and COSSARO): This species is widespread, and known to occur in the broader landscape, and suitable habitat is present within the study area, specifically in Unit 1. However, no Butternuts were observed during field investigations.

2.7 SIGNIFICANT WILDLIFE HABITAT

"Significant Wildlife Habitat" (SWH) is identified by MNRF. As outlined in their Significant Wildlife Habitat Technical Guide (OMNR 2000), SWH is broadly categorized as:

- Seasonal concentration areas (i.e., conifer forests for deer wintering);
- Rare vegetation communities or specialized habitats for wildlife;
- Habitats of species of conservation concern, excluding the habitats of endangered and threatened species;
- Animal movement corridors.

Two types of Candidate SWH and one type of Confirmed SWH were identified during field investigations; Candidate Bat Maternity Colonies, Candidate Wetland Amphibian Breeding Habitat and Confirmed Special Concern and Rare Wildlife Species (Monarch and Amethyst Aster). Details on these SWH types are provided in **Table 2-5** below. Impacts and mitigation measures addressing these SWH types are discussed in **Sections 4** and **5** Respectively.

The policy of the City of Vaughan Official Plan (2010b) is to ultimately protect and enhance significant wildlife habitat. Development is not permitted on lands within or adjacent to confirmed SWH unless it is demonstrated that there will be no negative impacts on the habitat. Consultation with the TRCA will likely be required at detail design to determine appropriate mitigation for confirmed SWH identified in the table below, in accordance with the PPS.

Table 2-5: Candidate and confirmed Significant Wildlife Habitat within the project area.

HABITAT TYPE	WILDLIFE SPECIES	CANDIDATE SWH CRITERIA	CONFIRMED SWH CRITERIA	CONCLUSIONS
Bat Maternity Colonies	Big Brown Bat Silver-haired Bat	• Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario. • Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25 cm dbh) wildlife trees • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred	• Maternity Colonies with confirmed use by; >10 Big Brown Bats >5 Adult Female Silver-haired Bats • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies.	Low quality C**andidate SWH** is present in two standing snags observed in Unit 1. Potential candidate maternity colony habitat is likely present in Unit 4, though no cavity trees were explicitly observed during field survey as this unit was surveyed from the roadside only. Neither of these areas will be impacted by the proposed works.
Wetland Amphibian Breeding Habitat	American Toad Blue-spotted Salamander Bullfrog Eastern Newt Four-toed Salamander Gray Treefrog Green Frog Mink Frog Northern Leopard Frog Pickerel Frog Spotted Salamander Western Chorus Frog	• Wetlands >500 m^2 (about 25 m diameter) supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation.	• Presence of breeding population of 1 or more of the listed newt / salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands.	**Candidate SWH** is present within Unit 10. This natural wetland is of adequate size for amphibian breeding, and contains a variety of vegetation types including marsh and open water. Studies to confirm the presence of SWH have not been completed, and should be considered as part of the future Highway 400 study.
Special Concern and Rare Wildlife Species	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal Species.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites	• Assessment / inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat.	**Confirmed SWH** for Monarch is present in Unit 2, where numerous monarchs, as well as their breeding habitat (milkweed) and foraging habitat (flowering plants), were observed. **Confirmed SWH** for Amethyst Aster is present in Unit 11, where one individual was observed. The Cultural Meadow that supports this individual also contains an abundance of Heath Aster and New England Aster, the 'parent' species of this hybrid. As a result, there is likely more than one individual present within the Unit. The entirety of Unit 11 is considered confirmed SWH.

3 PRELIMINARY PREFERRED PLANNING SOLUTION

The overall Preliminary Preferred Planning Solution includes the following:

- Langstaff Road Widening to six (6) lanes between Weston Road and Dufferin Street. (The widening can largely be accommodated within the existing 36 m ROW with some minor property impacts at intersection locations to accommodate the required intersection improvements and at grade separation locations);
- Implementation of intersection improvements, pedestrian and cycling facilities, and provision for transit amenities;
- A bridge going over the CN MacMillan Yard crossing:
- A bridge going over the Metrolinx GO Transit Barrie Line;
- A bridge replacement over West Don River (Bowes Bridge); and
- Channel / ditch bed widening of the Tributary of Westminster Creek.

4 NATURAL ENVIRONMENTAL EFFECTS

Mitigation of negative effects to the natural environmental features is applied throughout the MCEA process as the alignment alternatives are developed, refined and evaluated. The impacts of the Preliminary Preferred Planning Solution for the Langstaff Road improvements from Weston Road to Highway 7 are outlined in this section.

Critical functions for local and regional ecosystems are provided for by natural physical and ecological processes. Crossing designs at watercourses, where permissions to enter were granted, are designed to consider the TRCA Valley and Stream Corridor Guideline and Fish and Wildlife Crossing Guidelines which consider the terrestrial and aquatic wildlife movement needs and the transport of nutrients and energy and the conveyance of runoff and meltwater. These locations include Don River West Branch and the Tributary of Westminster Creek. The proposed new culvert (LC1) of an unnamed tributary of West Don River was not assessed in the field as such design details do not including specific ecological considerations. No proposed changes to the current Westminster Creek crossing are anticipated and the Black Creek crossing will be addressed in a future study.

It should be noted that the construction works for the Preliminary Preferred Planning Solution, including the extent of the direct impacts as a result of design details for the roadway, grade separation, bridges and their associated grading requirements (e.g. roadway and structural embankment slopes, and drainage requirements etc.), are not finalized based on detailed design and therefore the assessment of their associated impacts, are preliminary. This impact assessment will be further developed and finalized during detail design, with agency liaison.

The associated mitigation measures recommended herein, which are designed for avoiding or minimizing intrusion as well as minimizing potential for secondary and indirect effects, will also be refined and finalized at that stage. The mitigation measures developed during detail design will be included in the Contract documents for implementation during construction.

4.1 FISHERIES AND AQUATIC HABITAT

This section summarizes the works and their associated implications on fish and aquatic habitat that would be required as part of the proposed construction of the recommended plan. A bridge replacement, with a longer span, is proposed over West Don River, in addition to channel bed widening of the Tributary of Westminster Creek with the ROW. As outlined, West Don River supports direct fish habitat. Although two fish specimens were observed in the Tributary of Westminster Creek, it is unlikely that this tributary supports a permanent population based on the upstream and downstream barriers. The design of the proposed crossing and associated works outlined below are preliminary and will undergo refinement during detail design.

Based on the preferred road corridor alternative and the preliminary general crossing design, the proposed works that affect fish and fish habitat are as follows.

- A replacement structure over West Don River (Bowes Bridge). The existing structure span is 11.4 m (abutment to abutment), 2.25 m rise, and is 12.1 m in width. The proposed structure span will be 31.5 m (abutment to abutment) with a width of 31.77 m. The design option was selected to address hydraulic and fluvial geomorphic considerations.
- The Tributary of Westminster Creek that carries the ditch will require a slight widening of the bed width to accommodate the widening of the Langstaff Road. The existing mapped watercourse functions as

the ditch system and conveys flows from two existing storm sewers (1650 mm dia and 750 mm dia.) from the intersection of Dufferin Street. The existing channel bed width is 0.42 m and the proposed with is 1.75 m to maintain maximum capacity and allowable depth of 1.0 m.

The potential impacts to fish and fish habitat associated with these proposed works are discussed below.

4.1.1 *IMPACTS TO FISH AND FISH HABITAT*

Impacts associated with the replacement of Bowes Bridge include habitat enclosure, which would require the direct removal of riparian vegetation, indirect loss of in-stream vegetation through shading, modification of bed and bank conditions, and temporary disturbance of habitat within the vicinity of the work zone. The affected riparian vegetation is comprised of culturally influenced vegetation such as: cattails, goldenrod, and various riparian trees, and the stream habitat is dominated by flats with mainly coarse substrates, typical of the study reaches and vicinity. No sensitive or unique habitat elements will be affected by the proposed design of the replacement bridge, which supports direct fish use (up and downstream). The proposed design will maintain fish movement as well as wildlife provide for enhance wildlife movement through the new structure given the longer span. There is likely to be no permanent footprint impact of the replacement bridge below the high-water level.

It is unlikely that the Tributary of Westminster Creek holds a permanent fish population; as such impacts associated with the channel widening would be limited to potential indirect effects during construction. The one Largemouth Bass and one Brown Bullhead observed near the downstream culvert outlet likely originate from the SWM pond east of the woodlot, north of Langstaff Road (east of Dufferin Street). It is possible that the fish were carried downstream at a time the SWM pond overflowed. These specimens likely travelled through the piped section from the SWM pond and into the culvert crossing under Dufferin Street. No exceptional spawning, rearing, or feeding habitat was noted in the tributary. It is recommended that at the onset of detail design, a site reconnaissance visit be completed to confirm that the tributary functions to provide flows and allochthonous inputs to direct fish habitat to Westminster Creek downstream. The proposed channel widening will maintain flow conveyance and important nutrient and sediment inputs into the downstream waterway.

To determine whether death to fish and/or HADD of fish habitat may occur, a review under the Fisheries Act of each watercourse will be required during detail design when the works are finalized and a sound understanding of the construction techniques and impacts are determined.

Potential indirect effects associated with the works, include temporary disturbance during the construction period with associated potential for erosion and downstream sediment transport during periods of higher flow and temporary diversion of flows, as well as disturbance of any fish using the work zone, which is most likely limited to the West Don River. These impacts can be managed using appropriate mitigation measures outlined in **Section 5.1** below.

4.2 VEGETATION RESOURCES

Direct and indirect impacts on the vegetation will be largely confined to the existing ROW. Vegetation communities within or adjacent to the ROW consist primarily of Cultural Meadow, thicket and woodland, anthropogenic habitats considered common and widespread across the broader landscape. None of the potentially impacted vegetation communities are considered rare in Ontario. Following construction, similar vegetation is expected to regenerate naturally in those areas of the corridor temporarily disturbed for construction and staging.

Some potentially sensitive vegetation features exist in the vicinity of proposed works, including:

- Unnamed Significant Woodland in the northeastern corner of Langstaff Road and Dufferin Street (Unit 4), and

- 15 Regionally Significant species (L1-L3 or R) designated by the TRCA (2003), or City of Toronto (Varga, 2000).

Based on the initial design, negative impacts from the construction and staging of the proposed works on these features are likely to be minimal, indirect, or temporary. The proposed works in the vicinity of the Significant Woodland will occur only west of Dufferin Street within the actively maintained ROW, and will not be impacted by the proposed works. Many of the regionally significant plants are associated with the Significant Woodland, or are otherwise located outside of the anticipated area of impacts. Further, many of the species in the vicinity of the Don River West Branch are of anthropogenic origin, as they were planted as part of restoration efforts. The remainder of the species are anticipated to regenerate naturally in those areas of the corridor temporarily disturbed for construction and staging. Standard mitigation measures outlined in **Section 5.2** are sufficient to protect these sensitive vegetation features.

Generally, vegetation communities within the existing rail corridor consist primarily of Cultural Meadow, considered common and widespread across the broader landscape, and support no other sensitive species. The vegetation to be removed or disturbed consists primarily of early successional and disturbance-tolerant species. However, approximately four live or dead trees may require removal with the ROW. Any remaining trees to be removed are individual trees not part of woodland features. Recommendations for tree preservation and mitigation methods and replacement tree / shrub plantings should be provided during detail design. Additionally, given that works are proposed within the area of the Don River West Branch, albeit only within the maintained rail corridor, root zones of some trees may be impacted within the area of impact by the construction work. Specific measures to protect trees are discussed in **Section 5.2.**

None of the potentially impacted trees, vegetation communities, associated species recorded or expected in the area, or their habitat values are rare or limited within the broader landscape surrounding the project. Following construction, similar vegetation is expected to regenerate naturally in those areas of the ROW temporarily disturbed for construction and staging.

As with most construction activities, there is potential for indirect impacts to adjacent retained vegetation features during construction and following construction when the trail is in use and being actively maintained. These indirect impacts may include, but are not limited to, the following:

- Vegetation clearing / damage beyond the working area / rail corridor,
- Spills of contaminants, fuels and other materials that may reach semi-natural areas, and;
- Impacts of trail use (increase anthropogenic disturbance including disruption to wildlife, trash, the introduction of invasive species, etc.) and maintenance (ongoing vegetation clearing, use of salt in slippery conditions if maintained in the winter, etc.).

These potential indirect impacts to vegetation and habitat features can be managed through the implementation of standard mitigation measures, as outlined below.

4.3 WILDLIFE AND WILDLIFE HABITAT

Impacts to wildlife and wildlife habitat are limited to local incremental impacts since the road improvement works involve the widening of an existing road. As outlined above, there will be some direct removals outside of the ROW, along the edges of existing cultural vegetation communities required within the study area and the wildlife habitat associated with these communities will therefore also be affected. These vegetation communities generally support common wildlife habitat types and the majority of the wildlife species observed along and in the vicinity of the study area are common, tolerant species, impacts to which can be managed through the implementation of the mitigation measures outlined in **Section 5.3**. Potential impacts to wildlife SAR are discussed in the following section.

Impacts to wildlife are not expected to be significantly different than those of the existing roadway. Since Langstaff Road is an existing road, wildlife are already adapted to some degree to its general interference

with movement, and some road mortality already occurs. A minor increase in local wildlife road mortality may occur as a result of the wider roadway platform and general increases in traffic volumes. However, the wider platform may also deter wildlife from attempting to cross and driver visibility should be improved so that vehicle mortality may not actually increase. In addition, the new Bowes Bridge will be wider and will accommodate a pedestrian trail connection on one side which will provide an improved safer crossing opportunity for wildlife, as outlined in **Section 3**. Based on the common wildlife present within the vicinityof the Tributary of Westminster Creek, it is anticipated that pre and post wildlife movement through the existing and proposed culvert under Dufferin Street will be maintained.

4.4 SPECIES OF SPECIAL CONCERN

4.4.1 *WILDLIFE*

One wildlife SAR (Monarch) was confirmed within the study area. There is moderate to high potential for an additional six wildlife SAR to occur within the study area. Potential impacts to these species can be summarized as follows:

- Monarch: No direct impacts to this species are anticipated. Although some concentrations of milkweed (breeding habitat) were identified within the study area, these generally occurred outside of the ROW. Impacts on foraging habitat (flowering plants) are expected to be minor and temporary. Areas of disturbance along the ROW are expected to naturally regenerate following construction, including milkweed and other foraging vegetation. Additionally, monarchs are unlikely to be impacted as foraging visitants. Although impacts to monarch habitat will be avoided or mitigated where possible, Monarch habitat is not protected under the ESA (2007), and the MNRF has confirmed that no further review under the ESA is required.
- Wood Thrush and Eastern Wood-pewee: No direct impacts to these species are anticipated. Although relatively common, these species primarily use interior forest communities and are therefore unlikely to be impacted indirectly, for example by noise or dust. No direct impacts to the forest edges or interiors are anticipated, and the species will not be impacted. General mitigation measures for migratory birds are outlined in **Section 5.3**.
- Barn Swallow: No direct impacts to this species are anticipated. The impacts on foraging habitat are expected to be minor and temporary and Barn Swallows are unlikely to be impacted as foraging visitants. As noted above, there is limited potential for this species to nest underneath the Bowes Bridge, however no nesting activity was observed. No other suitable nesting habitat exists within the study area. No direct impacts to this species are anticipated, and species-specific mitigation measures are not warranted. General mitigation measures for migratory birds are outlined in **Section 5.3**.
- Common Nighthawk: No direct impacts to this species are anticipated. Removal of buildings with flat-topped rooves, which constitutes breeding habitat, is not anticipated. The impacts on foraging habitat are expected to be minor and temporary and these species are unlikely to be impacted as foraging visitants. General mitigation measures for migratory birds are outlined in **Section 5.3**.
- Two Bat Species (Little Brown Bat, Northern Long-eared Bat): No direct impacts to these species are anticipated. The impacts on foraging habitat are expected to be minor and temporary and these species are unlikely to be impacted as foraging visitants. Potential day roosting habitat is present within the study area, however disturbance to this habitat will be minimal, or temporary in the case of disturbance of foraging habitat (i.e. construction noise, etc.). Suitable maternity roost trees are not present within the areas of vegetation removal and are unlikely to occur at the edge of the forested units (Units 1 and 4), where no removals are proposed. Personal communication with the MNRF (Bohdan Kowalyk, Management Biologist, pers. comm. Feb 2018) has confirmed that no further review under the ESA is required.

4.4.2 *VEGETATION*

There is moderate to high potential for one vegetation SAR (Butternut) to occur within the study area. As outlined above, no Butternut were observed within the study are, despite the presence of suitable habitat. No direct impacts to this species are anticipated, and species-specific mitigation measures are not warranted. General mitigation measures for vegetation are outlined in **Section 5.2**.

One confirmed vegetation SCC species (Amethyst Aster, ranked as S3?) was observed in Unit 11, within the Highway 400 footprint. As discussed above this species is protected under the PPS (2014) as SWH. This species and its supporting habitat are sensitive to disturbance and may require specific mitigation measure to be determine at detail design in consultation with TRCA.

5 NATURAL ENVIRONMENTAL MITIGATION

The following sections outline a series of preliminary mitigation measures that are recommended to address the potential impacts of the road improvement works within the study area. These measures will be further developed and refined during detail design. Construction-related measures and measures related to design are outlined to avoid or minimize the potential impacts to local vegetation and associated wildlife and wildlife habitat, and to fish and fish habitat.

5.1 FISHERIES AND AQUATIC RESOURCES

The following design-related mitigation measures apply to West Don River as it supports direct fish use up and downstream of the roadway:

- The replacement bridge will span the active channel. Pre-construction channel conditions will be re-instated following the excavations required to install the footings, and transitioned smoothly with the upstream and downstream channel section. The design of the bank restoration will be a collaborative effort with the project water resources team, fluvial geomorphologists and fisheries biologists as appropriate and depending on the degree of disturbance, to be compatible and transition smoothly with the existing channel section up and downstream. The site-specific design will be developed during detail design.
- Installation of any required rock protection or embankment encroachment into edges of the bankfull channel elevation such that it is inset to match the existing bankfull channel profile and transition smoothly with the existing channel profile. If required, any channel hardening should use bio-engineering techniques such as vegetated rock buttresses.

The channel widening of the tributary and associated culvert replacements will be designed and installed so as to transition smoothly with the up and downstream channel section and avoid development of erosion and downstream sediment transfer.

The following general mitigation measures will be implemented where relevant based on the proposed specific works and character of the watercourses, in order to minimize potential impacts during and following construction activities:

- Comprehensive erosion and sediment control (ESC) measures will be specified in the Contract document. TRCA's Erosion and Sediment Control Best Management Practices (2019) should be used a reference when developing appropriate ESC measures. Specific aspects include the following:
  - Perimeter sediment control fence (or appropriate containment measures) will be installed between the work areas and all reaches of the watercourses where works are required, including ditch and drainage works that drain to watercourses that support direct or indirect fish use.
    - Sediment control fences should not be used perpendicular to flow in watercourses or other concentrated flow paths.
    - They should be placed along the up-gradient side of sensitive areas, streams and river corridors.

  - The sediment control fencing will be properly installed and regularly inspected and maintained. It will be left in place and maintained until all surfaces contributing drainage to these watercourses are fully stabilized.
  - All exposed and newly constructed soil surfaces will be stabilized using appropriate means in accordance with the characteristics of the soil material and slope conditions.
  - These surfaces will be fully stabilized and re-vegetated as quickly as possible (and at a maximum within 45 days) following completion of the works.
- The construction access and work areas and associated requirements for removal of riparian vegetation, will be minimized to the extent required for the construction activities, delineated in the field using the properly installed protective measures, re-stabilized and where appropriate (e.g., riparian areas) re-vegetated following construction.
- A warm water construction timing window (no in-water works between April 1st and June 30th) will be used for in-stream works in the watercourses that support bait or forage fish as well as the other watercourses that provide only indirect habitat but support direct fish use at some point downstream of the crossing (or as updated based on fish use during detail design).
- Appropriate 'temporary flow passage' measures (e.g., considering substrate and flow conditions, specific construction methods, timing and duration of works etc.) will be developed and implemented to isolate the temporary instream construction zones to maintain clean flow downstream of the works:
  - Where dam and pump measures are used, the withdrawal points for any dam and pump temporary flow passage systems will be properly sited and designed to prevent intake of silt or fine bed materials, and the discharge points sited and designed to prevent erosion and any sediment re-suspension.
  - If temporary flow bypass channels are required in some cases (e.g., due to flow volumes), these features will be sited and designed to minimize impacts to terrestrial and riparian vegetation, and all disturbed areas will be fully rehabilitated following construction. Specific attention will be paid to the tie-in points with the existing channel both during use and as a component of the rehabilitation.
  - Where temporary flumes are used, they will be sized with specific consideration of the timing and duration of flow.
  - Where there is no flow in a watercourse at the time of construction, temporary flow management measures will be used or maintained on-site and available for immediate installation in the event of a storm and commencement of flow.
- All hoses drawing water from a watercourse supporting fish use will be screened to prevent potential entrainment of fish.
- Any fish stranded within the temporary work zones in those watercourses that support fish will be removed using appropriate techniques by qualified individuals and released downstream of the temporary work zones under a Licence to Collect licence from the local MNRF office.
- All construction-related activities will be controlled so as to prevent entry of any petroleum products, debris or other potential contaminants/deleterious substances, in addition to sediment as outlined above, to the watercourses. No storage, maintenance or re-fueling of equipment will be conducted near the watercourses.
- Only clean materials free of fine erodible particulate matter will be placed in the water for temporary construction measures (e.g. coffer dams will be constructed of 'pea gravel' bags, geotextile fabric, sheet pile or other clean material) or permanent works (e.g. substrate material or scour protection, fill for waterbody crossings).

- During any temporary dewatering required for works, appropriate energy dissipation and settling/filtration measures will be used for discharge of dewatering water to ensure no erosion or sediment release occurs in the watercourses or drainage features. The dewatering plan will include properly sized, designed and sited temporary filtration facilities. Discharge points for release of dewatering discharge will be sited and designed to prevent erosion and ensure only clean flow is released to the watercourses.
- Any temporarily stockpiled soil, debris or other excess materials, and any construction-related materials, will be properly contained in areas separated at least 30 m from the watercourses.
- All construction materials, excess materials and debris will be removed and appropriately disposed of following construction.
- No equipment shall ford or otherwise enter any watercourse except as specified in the future Contract or unless authorized by the appropriate environmental agency/permit.
- An environmental inspector experienced in working around watercourses will be responsible for ensuring the erosion and sediment control measures are functioning effectively and being maintained, and all of the other general mitigation measures are being implemented as intended. The inspector will ensure all environmental mitigation and design measures are properly installed/constructed and maintained, and appropriate contingency and response plans are in place and implemented if required.

5.2 VEGETATION

The following general mitigation measures are recommended to minimize effects to the local vegetation communities and their associated habitat functions across the entire project area:

- A tree inventory to document tree removals in natural and urban areas will occur during detail design to refine the impact assessment and recommend appropriate tree protection measures.
- The areas of vegetation to be cleared and the adjacent areas to be retained will be clearly delineated, to minimize unnecessary vegetation effects and avoid incidental effects as a result of temporary stockpiling, debris disposal and access.
- Stabilize and re-vegetate exposed surfaces within 45 days of completion of works at those locations. Plantings will follow the recommendations on landscape plans, to be developed at detail design and will include native species suitable to the site conditions;
- Clearly delineate vegetation clearing zones and vegetation retention zones (i.e., using fencing) on both the construction drawings and in the field with the Contract Administrator prior to clearing and grading. Equipment, materials and other construction activities will not be permitted in vegetation retention zones;
- The Contract Administrator will be notified in the event the Contractor needs to clear additional vegetation beyond the above limits, as specified in the Contract Documents, and these limits will be reviewed in the field for acceptability;
- If tree removals are necessary, fell trees and shrubs to be removed into the existing work area, to avoid disturbance to retained vegetation and habitats;
- Dispose of cut material through chipping or other appropriate means;
- Avoid all unnecessary traffic, dumping and storage of materials over tree root zones adjacent to the ROW;
- Conduct vehicle maintenance and fueling at the designated and properly contained maintenance areas in the works yards or at commercial garages located well away from retained vegetation areas;

- Remove and dispose of all spoil and other construction-related debris following construction in appropriately designated areas;
- Implement environmental inspection during construction to ensure that all mitigation measures are implemented properly, maintained and repaired, and remedial measures are initiated where warranted;
- To control the establishment and / or proliferation of non-native or invasive species during construction, consider adhering to the Clean Equipment Protocol for Industry;
- Consider the use of salt alternatives for path maintenance in icy weather, such as sand, particularly in proximity to wetland areas;
- Consider opportunities for vegetation compensation / enhancement plantings to address vegetation removals. This could include incorporating removal of invasive species and planting native species. The tree inventory to be completed during detail design should include measures for tree compensation.

5.3 WILDLIFE

The mitigation measures outlined above will minimize effects to vegetation and protect adjacent vegetation areas and will also protect the associated wildlife habitat functions. However, it is also necessary to ensure the protection of wildlife that may nest or otherwise use areas where construction is proposed and other wildlife that might be encountered incidentally during construction.

The following measures are recommended for the protection of wildlife in general:

- Any wildlife incidentally encountered during construction will not be knowingly harmed and will be allowed to move away from the construction area on its own if at all possible.
- In the event that an animal encountered during construction does not move from the construction zone, or is injured, the Contract Administrator will be notified.
- Where dead or dying trees are not required to be removed, they will be left standing as valuable wildlife habitat. Where tree removal is required but space allows for the trunk to be retained (potentially including hazard trees), the tree may be limbed / topped and the trunk left standing.

5.3.1 *MIGRATORY NESTING PREVENTION STRATEGY*

Nesting migratory birds are protected under the Migratory Birds Convention Act (MBCA, 1994). No work is permitted to proceed that would result in the destruction of active nests (nests with eggs or young birds), or the wounding or killing of bird species protected under the MBCA and / or Regulations under that Act.

In order to protect nesting migratory birds, in accordance with the MBCA, the Contract Administrator will:

- Ensure that no active nests (nests with eggs or young birds) will be removed or disturbed in accordance with the MBCA. The “Regional Nesting Period” for this area is March 31st to August 31st, as identified on the Environment Canada website by “nesting zone” C1: http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1#_01_6

Adherence to this mitigation measure for MBCA compliance will also serve to avoid impacts to SAR bird species (i.e. Barn Swallow) potentially nesting on bridges and culverts or elsewhere in the work area or vicinity. Bird nesting exclusion measures installed on the Bowes Bridge is not deemed necessary due to the lack of nesting evidence.

If Barn Swallows build a nest within any culvert or bridge in the study area while the works are occurring, construction must cease until the young have fully fledged or the nest is no longer active. A 30 m buffer will

be implemented around the structure and active nest to avoid harassment to Barn Swallows until the young have fully fledged.

5.4 SPECIES OF CONSERVATION CONCERN

While there are no specialized habitat elements for SAR species discussed above within the areas of impacts, there is potential for some species to move through the study area during construction, and therefore be encountered and disturbed or possibly harmed incidentally by construction activities. Therefore, there is some risk of harm to these species. To protect SAR generally, all relevant protection, handling and MNRF notification protocols will be adhered to:

- In the event that a SAR, or potential SAR, is found within the construction area, the Contractor will immediately cease all work that could potentially harm the animal and will notify the Contract Administrator, as these animals are protected under the *ESA* (2007). The Contract Administrator or his Environmental Inspector will then contact the MNRF SAR Biologist for direction.

For SAR birds generally, the implementation of the mitigation measures outlined above for MBCA compliance will avoid impacts to SAR bird species potentially nesting or foraging in the vicinity of the work area.

6 COMMITMENTS TO FUTURE WORK

With the implementation of the recommended mitigation measures, potential impacts of the proposed road widening works on aquatic and terrestrial features can be minimized. The preliminary impact assessment and associated recommended mitigation measures will be further refined during detail design, based on the design details and site conditions present at that time. This process will include additional agency liaison as appropriate. The final design and construction-related mitigation measures will be incorporated into the Contract Documents for implementation during construction.

During detail design, permits and/or authorizations may be required. The following outlines additional action items to be addressed during the next phase of work:

- The Bowes Bridge, which provides habitat for Barn Swallow, should be surveyed to confirm the absence of nesting.
- All the details for aquatic and terrestrial passage both during construction and post-construction (final design) will need to be discussed with TRCA and should comply with the TRCA Valley and Stream Corridor Guideline and Fish and Wildlife Crossing Guideline for Bowes Bridge replacement and the Tributary of Westminster Creek culvert replacement and channel widening. If during detail design, there are any changes proposed for the existing crossing over Westminster Creek, the new structures should comply with these guidelines.
- A survey of the study area to determine if Butternut trees are within the impacted area.
-
- Ecological inventory to be completed at the proposed new culvert crossing (LC1) of an unnamed tributary to determine that the crossing considers appropriate requirements outlined in the TRCA Valley and Stream Corridor Guideline and Fish and Wildlife Crossing Guideline.
- To determine whether death to fish and/or HADD of fish habitat may occur, a review under the Fisheries Act of each watercourse will be required when the works are finalized and a sound understanding of the construction techniques and impacts are determined. Based on the current Bowes Bridge replacement design, it is not anticipated that a Fisheries Act Authorization or SARA permit is required. However, if the proposed detail design activities will impact fish habitat (below the 2-yr flow), then works should be reviewed under the Fisheries Act and, if required, a Request for Review to DFO shall be submitted. If it is confirmed that the Tributary of Westminster Creek does not support a permanent population of fish; then the widening of this feature is unlikely to result a Fisheries Act Authorization, however a Request for Review (RfR) should be submitted to DFO with an outline of measures to protect fish and fish habitat downstream.
- The total area for natural feature loss including all grading, fill, outfall connections from road drainage, and Low Impact Developments should be quantified to inform compensation requirement by TRCA through their Guideline for Determining Ecosystem Compensation.
- The design and implementation of mitigation and restoration measures should aim to improve the level of ecosystem services provided by the Natural System, as per TRCA's Living City Policies (2014).

The future study at the Highway 400 / Langstaff Road interchange should consider the following:

- Amphibian surveys may be required to confirm / deny the presence of amphibian breeding habitat (SWH) in Unit 10 on Highway 400, depending on the eventual design.
- Further assessment of the Amethyst Aster population in Unit 11 should be carried out to determine if direct impacts will occur and recommend mitigation measures, such as replanting, if appropriate. This process should include consultation with the TRCA to determine appropriate mitigation for confirmed SWH, in accordance with the PPS.
- Assessing impacts to fish and fish habitat associated with potential works at Black Creek within the interchange.

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APPENDIX

A FIGURES

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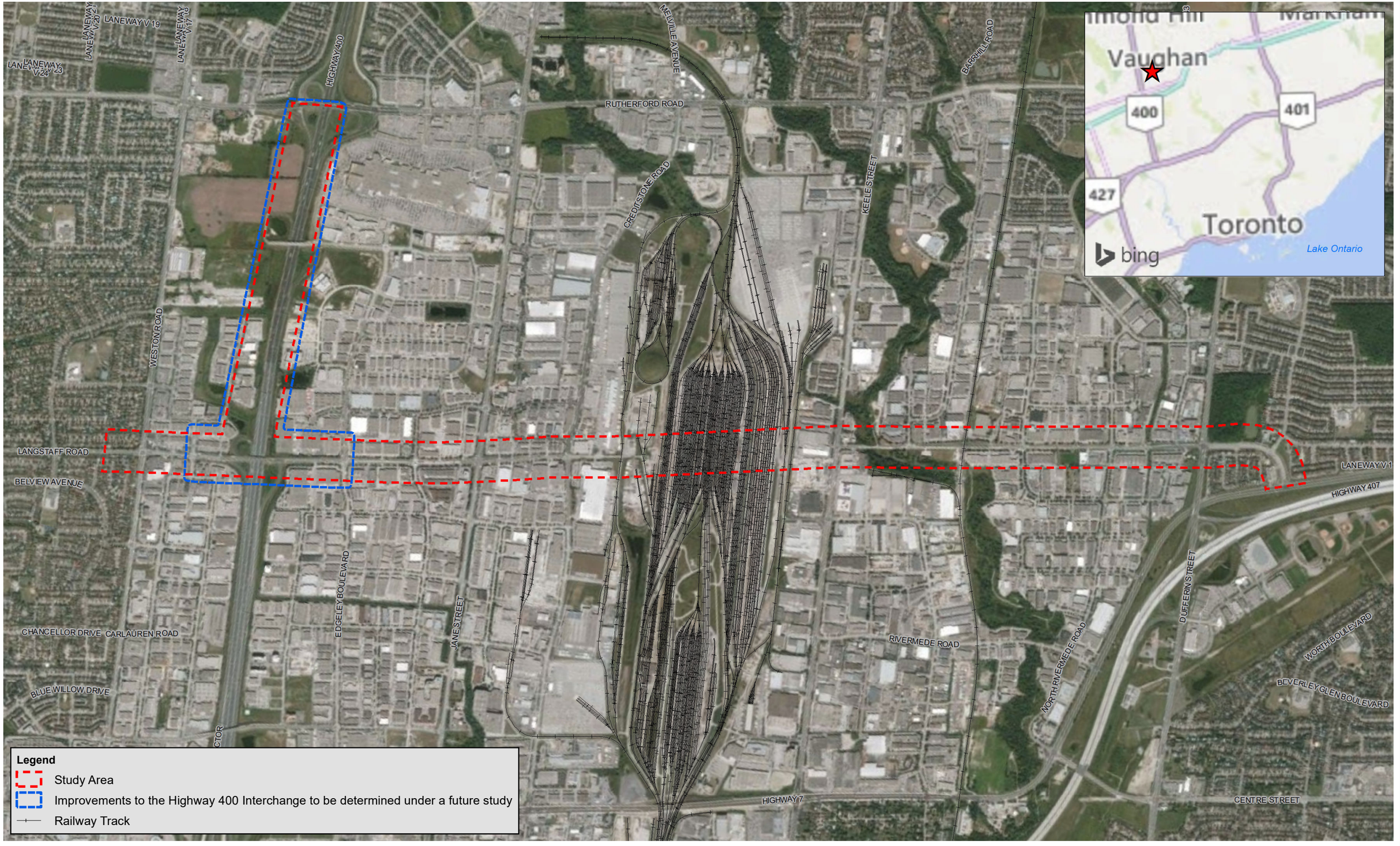


Legend

- Study Area
- Improvements to the Highway 400 Interchange to be determined under a future study
- Railway Track

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Study Area

0 0.25 0.5
kilometres
1:20,000

N

Date: January 2021
Project No: 16M-01457-01
Figure No: 1

C:\My local Storage\Project Assignment\GIS_EIA\3216079_LangstaffEAIMXDs\3216079_LangstaffEA_ELCAquatics_202101.mxd 23 Feb 2021

LANGSTAFF ROAD

WESTON ROAD

HIGHWAY 400 COLLECTOR

HIGHWAY 400

Black Creek

CUM1-1

MAS2-1/
SWT2-5

STORMWATER
MANAGEMENT
POND
OAO

Unit 7
CUM1-1

Legend

Direct Fish Habitat

Flow Direction

Aquatic Features

Culvert

Permanent Watercourse

Study Area

Terrestrial Features

Vegetation Community

Improvements to the Highway 400 interchange to be determined under a future study

ELC Description

CUM1-1: Dry - Moist Old-field Cultural Meadow

SWT2-5: Red-osier Dogwood Mineral Deciduous Thicket Swamp

OAO: Open Aquatic

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Natural Environment Features

0 50 100

Metres
1:3,000

N

Date: February 2021

Project No: 16M-01457-01

Figure No: 2 – 1

C:\My local Storage\Project Assignments\GIS_EIA\3216079_LangstaffEA\MXDs\3216079_LangstaffEA_ELCAquatics_202101.mxd 23 Feb 2021

Unit 7
CUM1-1

Unit 7
CUM1-1

LANGSTAFF ROAD

EDGELEY BOULEVARD

CHANE STREET

Legend

Study Area

Terrestrial Features

Vegetation Community

Improvements to the Highway 400 Interchange to be determined under a future study

ELC: Description

CUM1-1: Dry – Moist Old-field Cultural Meadow

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Natural Environment Features

0 50 100
Metres
1:3,000

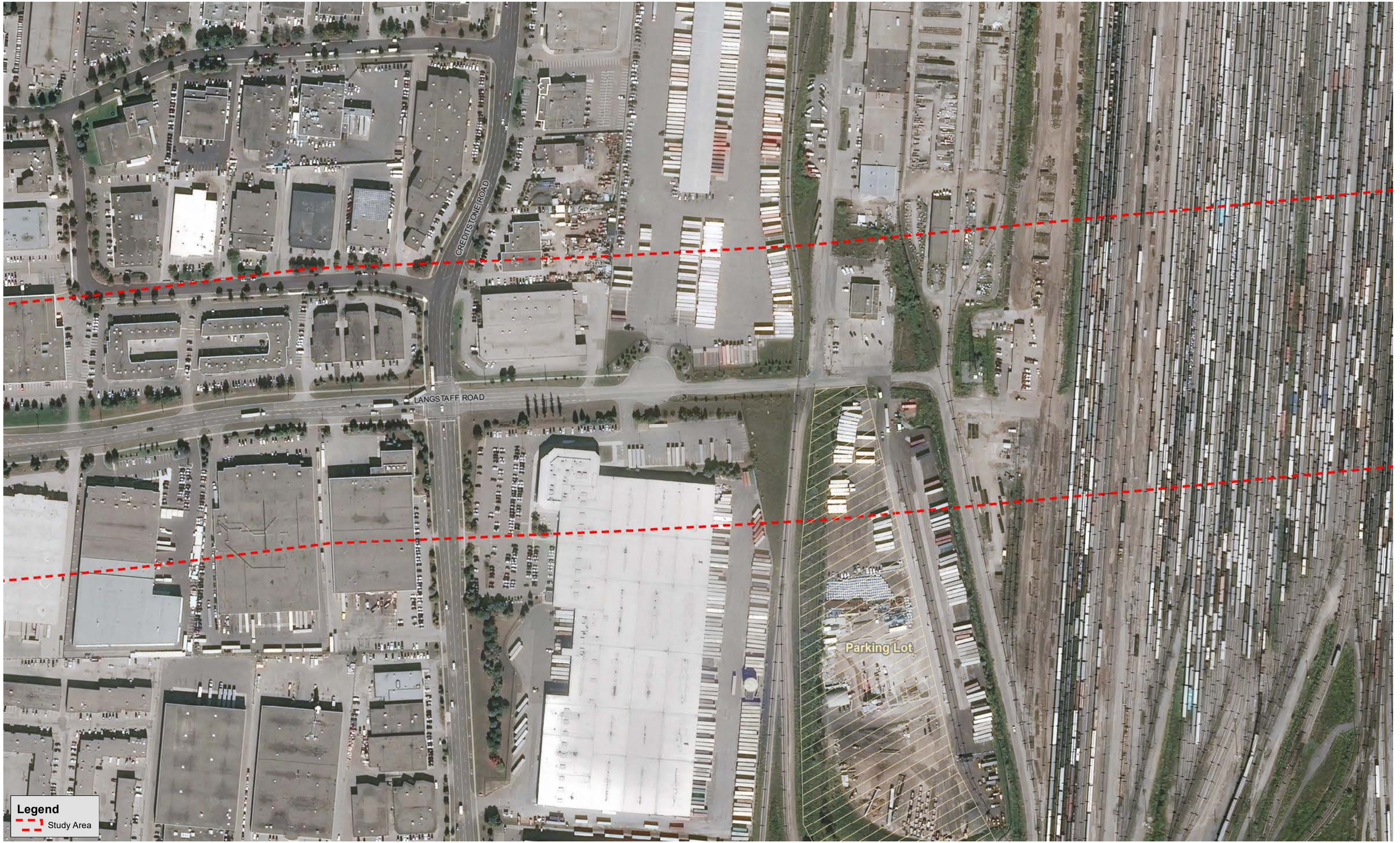
N

Date: February 2021

Project No: 16M-01457-01

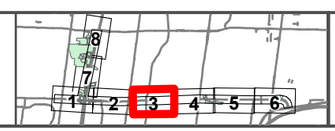
Figure No: 2 – 2

C:\My local Storage\Project Assignment\GIS_EIA\3216079_LangstaffEAMXDs\3216079_LangstaffEA_ELCAquatics_202101.mxd 23 Feb 2021



LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Natural Environment Features



0 50 100
Metres
1:3,000

N

Date: February 2021

Project No: 16M-01457-01

Figure No: 2 – 3

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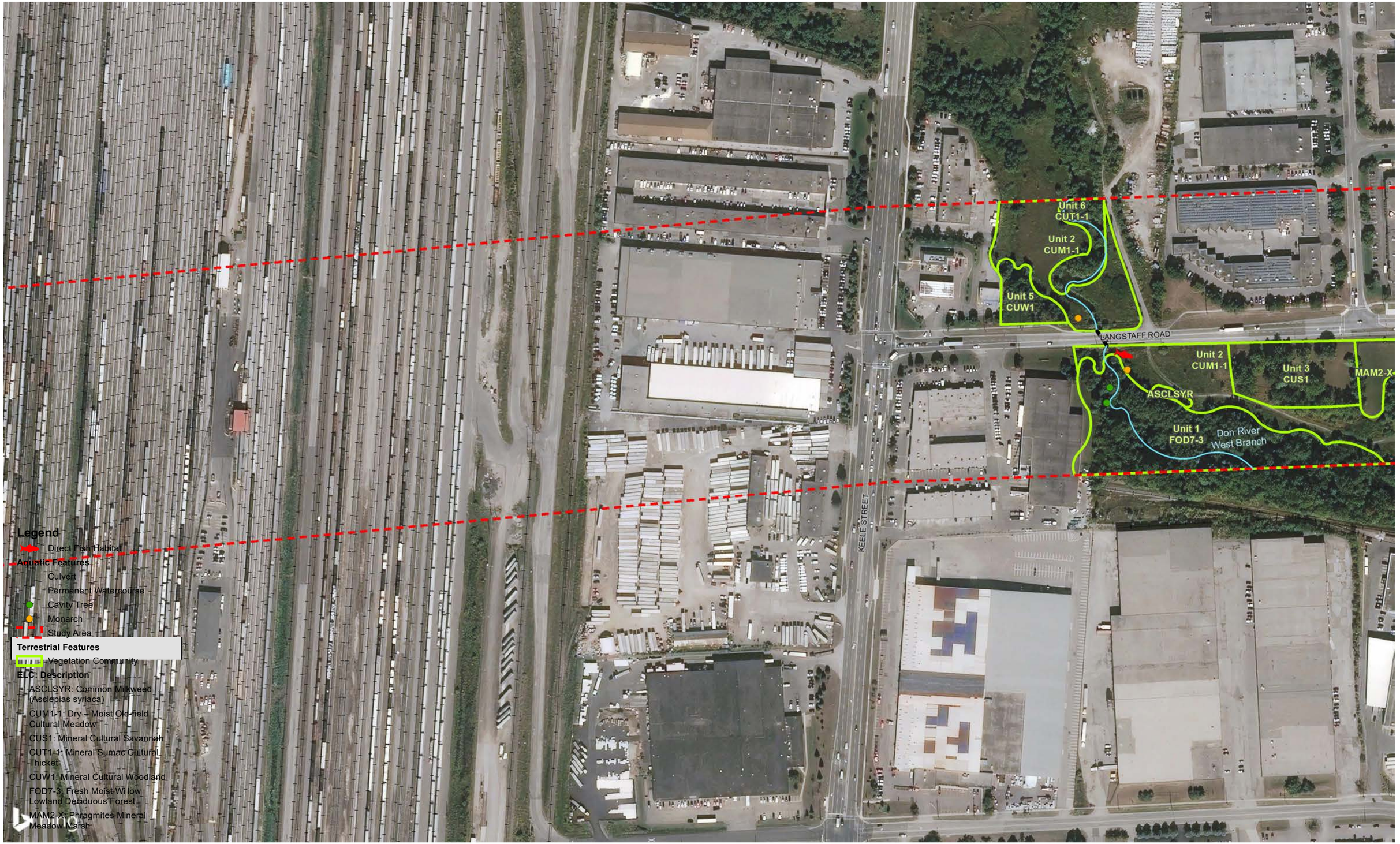

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Environment Features

Date: February 2021
Project No: 16M-01457-01
Figure No: 2 – 4

C:\My local Storage\Project Assignment\GIS_EIA\3216079_LangstaffEA\MXDs\3216079_LangstaffEA_ELCAquatics_202101.mxd 23 Feb 2021

LANGSTAFF ROAD

NORTH RIVERMEDE ROAD

MAM2-X

Unit 3
CUS1

Unit 8
CUW1

Unit 1
FOD7-3

Unit 2
CUM1-1

Legend

Study Area

Terrestrial Features

Vegetation Community

ELC: Description

CUM1-1: Dry – Moist Old-field Cultural Meadow

CUS1: Mineral Cultural Savannah

CUW1: Mineral Cultural Woodland

FOD7-3: Fresh Moist Wi low Lowland Deciduous Forest

MAM2-X: Phragmites Mineral Meadow Marsh

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Environment Features

0 50 100
Metres
1:3,000

N

Date: February 2021

Project No: 16M-01457-01

Figure No: 2 – 5

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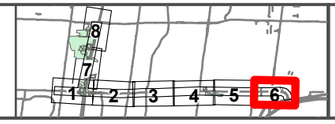
LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Environment Features



0 50 100
Metres
1:3,000

N

Date: February 2021
Project No: 16M-01457-01
Figure No: 2 – 6

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MAM2-X
Unit 11
CUM1-1
OAO
MAM2-X
CUM1-1
Unit 10
MAS2-1
OAO
CUS1
CUM1-1
MAM2-X
Unit 7
CUM1-1
CUW1
WESTON ROAD
HIGHWAY 400
CUW1
HIGHWAY 400 COLLECTOR
OAO/ MAM2-X
CUW1
MAS2-1/
SWT2-5
OAO
STORMWATER MANAGEMENT POND
Unit 7
CUM1-1

Legend

- Flow Direction

Aquatic Features

- Culvert
- Permanent Watercourse
- Study Area

Terrestrial Features

- Vegetation Community
- Improvements to the Highway 400 Interchange to be determined under a future study
- Vegetation Community Inclusion

ELC: Description

- CUM1-1: Dry – Moist Old-field Cultural Meadow
- CUS1: Mineral Cultural Savannah
- CUW1: Mineral Cultural Woodland
- MAM2-X: Phragmites Mineral Meadow Marsh
- MAS2-1: Cattail Mineral Shallow Marsh
- SWT2-5: Red-osier Dogwood Mineral Deciduous Thicket Swamp
- OAO: Open Aquatic

bing

wsp

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Environment Features

0 50 100
Metres
1:5,000

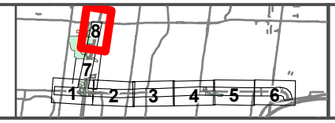
N

Date: February 2021
Project No: 16M-01457-01
Figure No: 2 – 7

C:\My local Storage\Project Assignment\GIS_EIA\3216079_LangstaffEAMXDs\3216079_LangstaffEA_ELCAquatics_202101.mxd 23 Feb 2021

wsp

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Environment Features



0 50 100
Metres
1:5,000

N

Date: February 2021

Project No: 16M-01457-01

Figure No: 2 – 8

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wsp

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Heritage Features

0 50 100
Meters
1:3,000

N

Date: January 2021
Project No: 16M-01457-01
Figure No: 3 – 1

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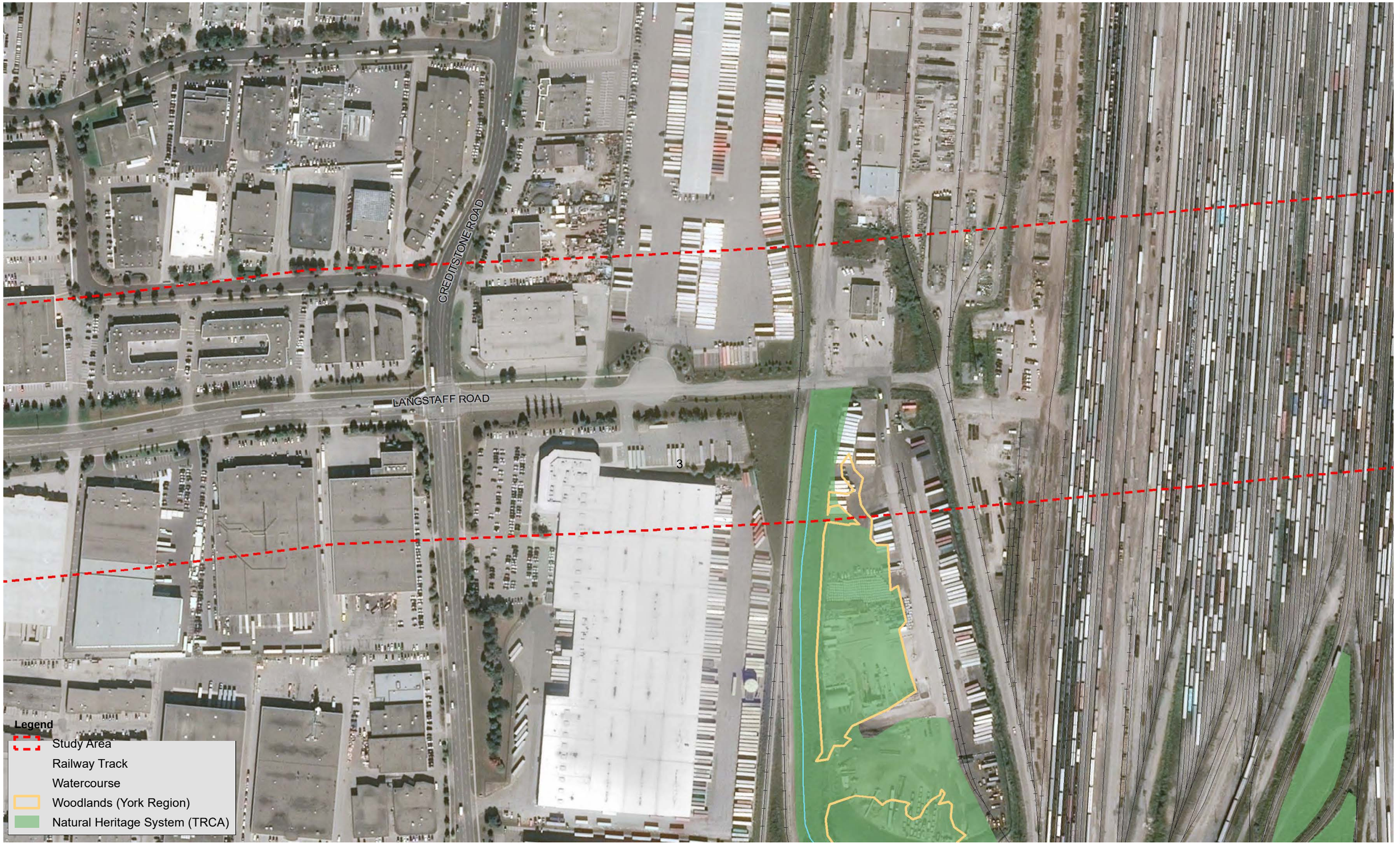
LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Heritage Features

0 50 100
Meters
1:3,000

N

Date: January 2021
Project No: 16M-01457-01
Figure No: 3 – 2



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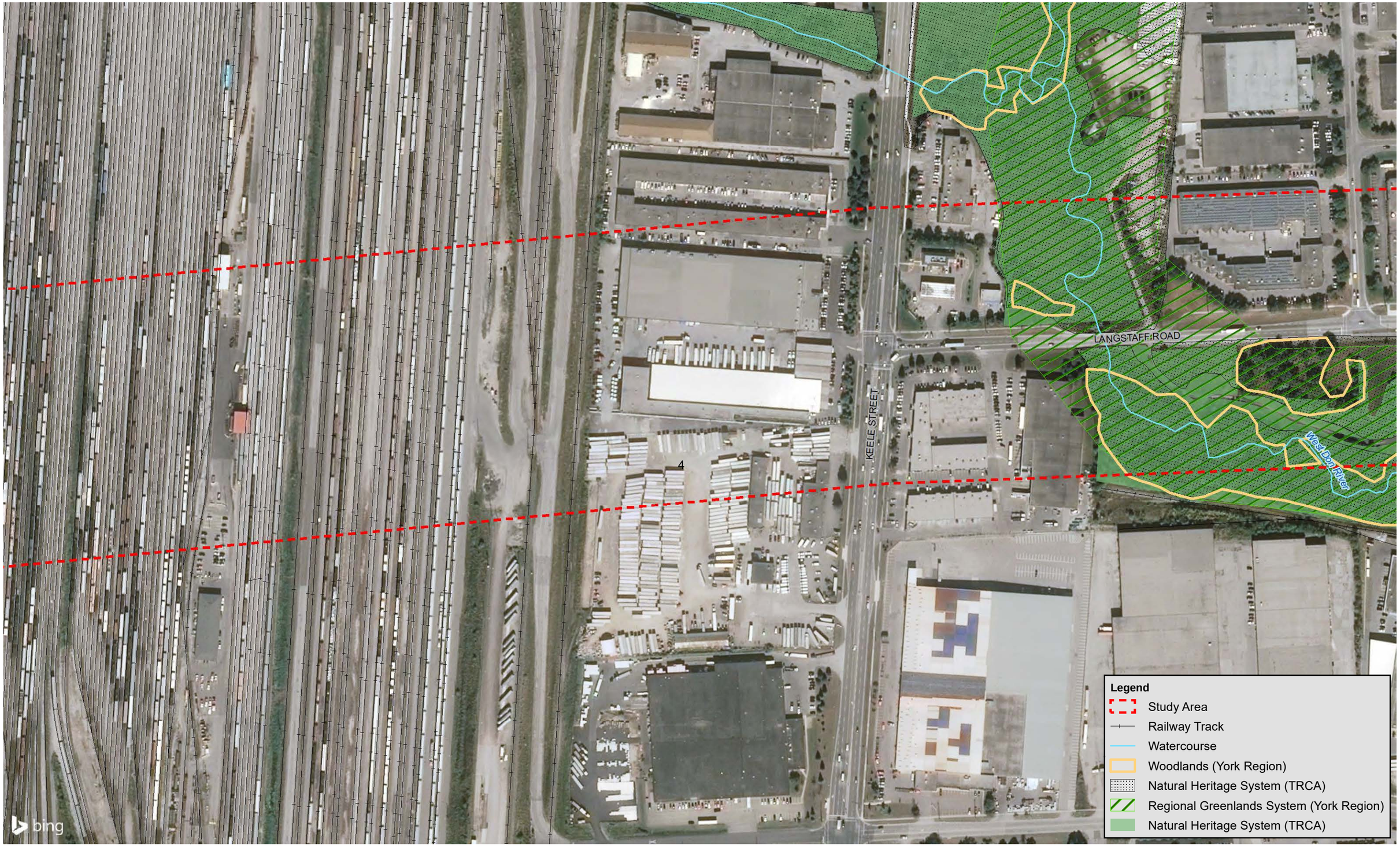
LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Heritage Features

0 50 100
Meters
1:3,000

N

Date: January 2021
Project No: 16M-01457-01
Figure No: 3 – 3



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wsp

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Natural Heritage Features

0 50 100

Meters

1:3,000

N

Date: January 2021

Project No: 16M-01457-01

Figure No: 3 – 4

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wsp

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Natural Heritage Features

0 50 100
Meters
1:3,000

N

Date: January 2021

Project No: 16M-01457-01

Figure No: 3 – 5

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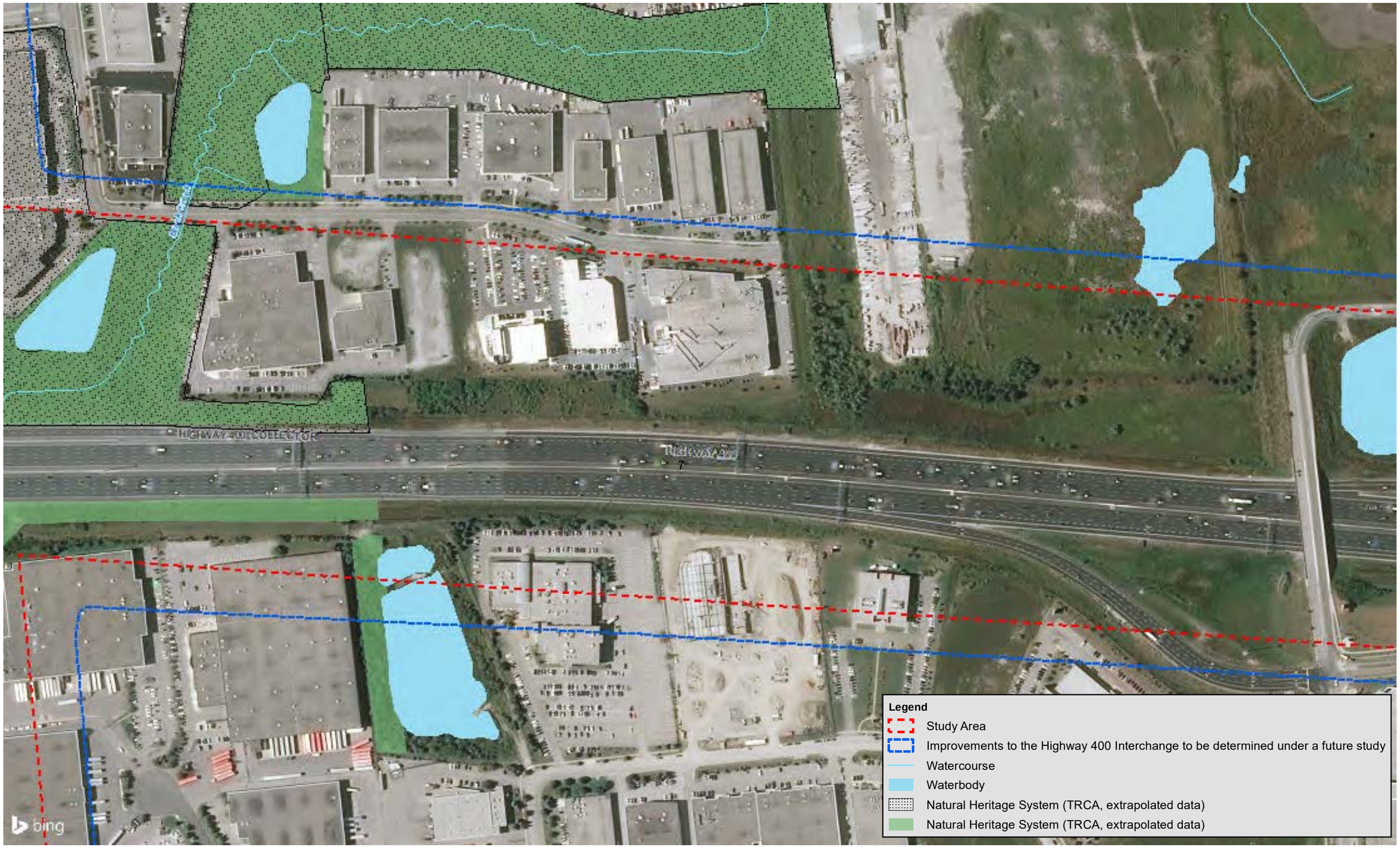
LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Heritage Features

0 50 100
Meters
1:3,000

N

Date: January 2021
Project No: 16M-01457-01
Figure No: 3 – 6



LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Natural Heritage Features

0 50 100

Meters

1:3,000

N

Date: January 2021

Project No: 16M-01457-01

Figure No: 3 – 7

19 Jan 2021

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RUTHERFORD ROAD

HIGHWAY 400

8

Legend

- Study Area
- Improvements to the Highway 400 Interchange to be determined under a future study
- Watercourse
- Waterbody

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Natural Heritage Features

0 50 100

Meters

1:3,000

N

Date: January 2021

Project No: 16M-01457-01

Figure No: 3 – 8

19 Jan 2021

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APPENDIX

B VEGETATION SURVEY RESULTS

Table B-1: Vascular plant species observed within the study area

Common Name (Nature Serve Explorer - June 2013 or VASCAN 2015) (MNRF name if different - for SAR and select common species, 2015)	Accepted Name (Nature Serve Explorer - June 2013)	cc[1]	cw[1]	OWES Wetland Plant List	Grank[2]	Srank[3]	COSEWIC[4]	MNR[5]	Greater Toronto Area (Varga et al. 2000)[6]	Toronto Region Conservation Rank (2003)[7]	native status
Balsam Fir	*Abies balsamea*	5	-3	X	G5	S5			X	L3	N
Box Elder	*Acer negundo*	0	-2	X	G5	S5			X	L+?	N
Black Maple	*Acer nigrum*	7	3		G5	S4?			X	L4	N
Norway Maple	*Acer platanoides*	*	5		GNR	SNA			X	L+	I
Red Maple	*Acer rubrum*	4	0	X	G5	S5			X	L4	N
Sugar Maple	*Acer saccharum var. saccharum*	4	3		G5T5	S5			X	L5	N
Common Yarrow	*Achillea millefolium ssp millefolium*	*	3		G5T5?	SNA			X	L+	I
Garlic Mustard	*Alliaria petiolata*	*	0		GNR	SNA			X	L+	I
Hog-peanut	*Amphicarpaea bracteata*	4	0	X	G5	S5			X	L5	N
Spreading Dogbane	*Apocynum androsaemifolium ssp androsaemifolium*	3	5		G5	S5			X	L4	N
Lesser Burdock	*Arctium minus*	*	5		GNR	SNA			X	L+	I
Woodland Burdock	*Arctium vulgare*				GNR	SNA					I
Jack-in-the-pulpit	*Arisaema triphyllum ssp triphyllum*	5	-2	X	G5T5	S5			X	L4	N
Common Milkweed	*Asclepias syriaca*	0	5		G5	S5			X	L5	N
Awnless Brome	*Bromus inermis ssp inermis*	*	5		GNR	SNA			X	L+	I
Sedge Species	*Carex sp.*										N
Bitternut Hickory	*Carya cordiformis*	6	0		G5	S5			X	L4	N
Enchanter's Nightshade	*Circaea lutetiana ssp canadensis*	3	3		G5T5	S5			X	L5	N
Creeping Thistle (Canada Thistle)	*Cirsium arvense*	*	3		GNR	SNA			X	L+	I
European Lily-of-the-valley	*Convallaria majalis*	*	5		G5	SNA			X	L+	I
Field Bindweed	*Convolvulus arvensis*	*	5		GNR	SNA			X	L+	I
Red-osier Dogwood	*Cornus sericea*	2	-3	X	G5	S5			X	L5	N
English Hawthorn	*Crataegus monogyna*	*	5		G5	SNA			X	L+	I
Dotted Hawthorn	*Crataegus punctata*	4	5		G5	S5			X	L5	N
Hawthorn Species	*Crataegus sp.*										

Common Name (Nature Serve Explorer - June 2013 or VASCAN 2015) (MNRF name if different - for SAR and select common species, 2015)	Accepted Name (Nature Serve Explorer - June 2013)	cc[1]	cw[1]	OWES Wetland Plant List	Grank[2]	Srank[3]	COSEWIC[4]	MNR[5]	Greater Toronto Area (Varga et al. 2000)[6]	Toronto Region Conservation Rank (2003)[7]	native status
European Swallow-wort	*Cynanchum rossicum*	*	5		GNR	SNA			X	L+	I
Queen Anne's Lace	*Daucus carota*	*	5		GNR	SNA			X	L+	I
Fuller's Teasel	*Dipsacus fullonum*	*	5		GNR	SNA			X	L+	I
Barnyard Grass	*Echinochloa crus-galli*	*	-3	X	GNR	SNA			X	L+	I
Wild Mock-cucumber	*Echinocystis lobata*	3	-2	X	G5	S5			X	L5	N
Common Viper's-bugloss	*Echium vulgare*	*	5		GNR	SNA			X	L+	I
Broad Waterweed	*Elodea canadensis*	4	-5	X	G5	S5			X?	L3	N
Winged Spindle-tree	*Euonymus alata*	*	5		GNR	SNA			X	L+	I
Sweet Joe-pye-weed	*Eupatorium purpureum var purpureum*	8			G5T5?	S4			R	L3	N
Flat-top Fragrant Goldenrod	*Euthamia graminifolia*	2	-2		G5	S5			X	L5	N
White Ash	*Fraxinus americana*	4	3		G5	S5			X	L5	N
Marsh Bedstraw	*Galium palustre*	5	-5	X	G5	S5			X	L4	N
Herb-robert	*Geranium robertianum*	*	5		G5	SNA			X	L+?	I
Rough Avens	*Geum laciniatum*	4	-3	X	G5	S4			X	L3	N
Ground Ivy	*Glechoma hederacea*	*	3		GNR	SNA			X	L+	I
Fowl Manna Grass	*Glyceria striata*	3	-5	X	G5	S5			X	L5	N
Virginia Stickseed	*Hackelia virginiana*	5	1		G5	S5			X?	L5	N
Smooth Oxeye	*Heliopsis helianthoides*	3	5		G5	S5			R	L2	N
Dame's Rocket	*Hesperis matronalis*	*	5		G4G5	SNA			X	L+	I
Meadow Hawkweed	*Hieracium caespitosum*	*	5		GNR	SNA			X	L+	I
Virginia Waterleaf	*Hydrophyllum virginianum*	6	-2		G5	S5			X	L5	N
St. John's-wort	*Hypericum perforatum*	*	5		GNR	SNA			X	L+	I
Spotted Jewelweed	*Impatiens capensis*	4	-3	X	G5	S5			X	L5	N
Black Walnut	*Juglans nigra*	5	3		G5	S4			X	L5	N
Tamarack	*Larix laricina*	7	-3	X	G5	S5			X	L3	N
Oxeye Daisy	*Leucanthemum vulgare*	*	5		GNR	SNA			X	L+	I
American Fly-honeysuckle	*Lonicera canadensis*	6	3		G5	S5			X	L3	N

Common Name (Nature Serve Explorer - June 2013 or VASCAN 2015) (MNRF name if different - for SAR and select common species, 2015)	Accepted Name (Nature Serve Explorer - June 2013)	cc[1]	cw[1]	OWES Wetland Plant List	Grank[2]	Srank[3]	COSEWIC[4]	MNR[5]	Greater Toronto Area (Varga et al. 2000)[6]	Toronto Region Conservation Rank (2003)[7]	native status
Tartarian Honeysuckle	*Lonicera tatarica*	*	3		GNR	SNA			X	L+	I
Garden Bird's-foot-trefoil	*Lotus corniculatus*	*			GNR	SNA			X	L+	I
American Bugleweed	*Lycopus americanus*	4	-5	X	G5	S5			X	L4	N
Fringed Loosestrife	*Lysimachia ciliata*	4	-3	X	G5	S5			X	L5	N
Purple Loosestrife	*Lythrum salicaria*	*	-5	X	G5	SNA			X	L+	I
Common Apple	*Malus pumila*	*	5		G5	SNA			X	L+	I
Apple Species	*Malus sp.*										I
Black Medic	*Medicago lupulina*	*	1		GNR	SNA			X	L+	I
Two-leaf Bishop's-cap	*Mitella diphylla*	5	2	X	G5	S5			X	L4	N
White Mulberry	*Morus alba*	*	0		GNR	SNA			X	L+	I
Common Evening-primrose	*Oenothera biennis*	0	3		G5	S5			X	L5	N
Eastern Hop-hornbeam	*Ostrya virginiana*	4	4		G5	S5			X	L5	N
Switch Grass	*Panicum virgatum*	6	-1		G5	S4			R	L3	N
Virginia Creeper	*Parthenocissus quinquefolia*	6	1		G5	S4?			X	L5	N
Reed Canary Grass	*Phalaris arundinacea*	0	-4	X	G5	S5			X	L+?	N
Common Reed	*Phragmites australis*	0	-4		G5	S4?			X	L+?	N
Eastern Ninebark	*Physocarpus opulifolius*	5	-2	X	G5	S5			R	L3	N
Norway Spruce	*Picea abies*	*	5		G5	SNA			X	L+	I
White Spruce	*Picea glauca*	6	3	X	G5	S5			X	L3	N
Black Spruce	*Picea mariana*	8	-3	X	G5	S5			R	L2	N
Red Pine	*Pinus resinosa*	8	3		G5	S5			X	L1	N
Eastern White Pine	*Pinus strobus*	4	3	X	G5	S5			X	L4	N
Kentucky Bluegrass	*Poa pratensis ssp. pratensis*	*	1		G5T5	S5			X	L+	N
Large-tooth Aspen	*Populus grandidentata*	5	3		G5	S5			X	L4	N
Quaking Aspen	*Populus tremuloides*	2	0		G5	S5			X	L5	N
Curly Pondweed	*Potamogeton crispus*	*	-5	X	G5	SNA			X	L+	I
Self-heal	*Prunella vulgaris ssp. lanceolata*	5	5	X	G5T5	S5			X	L+?	N
Wild Black Cherry	*Prunus serotina*	3	3		G5	S5			X	L5	N

Common Name (Nature Serve Explorer - June 2013 or VASCAN 2015) (MNRF name if different - for SAR and select common species, 2015)	Accepted Name (Nature Serve Explorer - June 2013)	cc[1]	cw[1]	OWES Wetland Plant List	Grank[2]	Srank[3]	COSEWIC[4]	MNR[5]	Greater Toronto Area (Varga et al. 2000)[6]	Toronto Region Conservation Rank (2003)[7]	native status
Choke Cherry	*Prunus virginiana var. virginiana*	2	1		G5T5	S5			X	L5	N
Bur Oak	*Quercus macrocarpa var. macrocarpa*	5	1	X	G5T5	SNR			X	L4	N
Northern Red Oak	*Quercus rubra*	6	3		G5	S5			X	L4	N
Hooked Crowfoot	*Ranunculus recurvatus*	4	-3		G5	S5			X	L5	N
Buckthorn	*Rhamnus cathartica*	*	3	X	GNR	SNA			X	L+	I
Staghorn Sumac	*Rhus typhina*	1	5		G5	S5			X	L5	N
Prickly Gooseberry	*Ribes cynosbati*	4	5		G5	S5			X	L5	N
Red Raspberry	*Rubus idaeus ssp. Idaeus*		0		G5T5	SNA			X		I
Wild Red Raspberry	*Rubus idaeus ssp. strigosus*	0	-2		G5T5	S5			X	L5	N
Common Raspberry	*Rubus idaeus ssp. strigosus*	0	-2		G5T5	S5			X	L5	N
White Willow	*Salix alba*	*	-3	X	G5	SNA			X	L+	I
Peach-leaved Willow	*Salix amygdaloides*	6	-3	X	G5	S5			X	L4	N
Heart-leaved Willow	*Salix eriocephala*	4	-3	X	G5	S5			X	L5	N
Crack Willow	*Salix fragilis*	*	-1		GNR	SNA				L+	I
Sandbar Willow	*Salix interior*	3	-5	X	G5	S5			X	L5	N
Bouncing-bet	*Saponaria officinalis*	*	3		GNR	SNA			X	L+	I
Bittersweet Nightshade	*Solanum dulcamara*	*	0	X	GNR	SNA			X	L+	I
Tall Goldenrod	*Solidago altissima*	1	3		G5	S5			X	L5	N
Canada Goldenrod	*Solidago canadensis*	1	3		G5	SNR			X	L5	N
Field Sowthistle	*Sonchus arvensis ssp arvensis*	*			GNRTNR	SNA			X	L+	I
White Heath Aster	*Symphyotrichum ericoides var. ericoides*	4	4		G5T5	S5				L5	N
Smooth Blue Aster	*Symphyotrichum laeve var. laeve*	7	5		G5T5	S5			R	L3	N
Calico Aster	*Symphyotrichum lateriflorum var. lateriflorum*	3	-2	X	G5T5	SNR				L5	N
New England Aster	*Symphyotrichum novae-angliae*	2	-3		G5	S5			X	L5	N
Arrow-leaved Aster	*Symphyotrichum urophyllum*	6	5		G4	S4			R	L3	N
Amethyst Aster	*Symphyotrichum x amethystinum*				GNA	S3?			X	LH	N
Heart-leaved Aster	*Symphyotrichum cordifolium*	5	5		G5	S5			X	L5	N
Common Lilac	*Syringa vulgaris*	*	5		GNR	SNA			X	L+	I

Common Name (Nature Serve Explorer - June 2013 or VASCAN 2015) (MNRF name if different - for SAR and select common species, 2015)	Accepted Name (Nature Serve Explorer - June 2013)	cc[1]	cw[1]	OWES Wetland Plant List	Grank[2]	Srank[3]	COSEWIC[4]	MNR[5]	Greater Toronto Area (Varga et al. 2000)[6]	Toronto Region Conservation Rank (2003)[7]	native status
Common Dandelion	*Taraxacum officinale*	*	3		G5	SNA			X	L+	I
Northern White Cedar	*Thuja occidentalis*	4	-3	X	G5	S5			X	L4	N
American Basswood	*Tilia americana*	4	3		G5	S5			X	L5	N
Northern Poison Oak	*Toxicodendron rydbergii*	0	0		G5	S5			X	L5	N
Meadow Goat's-beard	*Tragopogon dubius*	*	5		GNR	SNA			X	L+	I
Red Clover	*Trifolium pratense*	*	2		GNR	SNA			X	L+	I
White Clover	*Trifolium repens*	*	2		GNR	SNA			X	L+	I
Colt's Foot	*Tussilago farfara*	*	3	X	GNR	SNA			X	L+	I
Narrow-leaved Cattail	*Typha angustifolia*	3	-5	X	G5	SNA			X	L+	I
Broad-leaf Cattail	*Typha latifolia*	3	-5	X	G5	S5			X	L4	N
Blue Cattail	*Typha x glauca*	3	-5	X	GNA	SNA			X	L+	N
American Elm	*Ulmus americana*	3	-2	X	G5?	S5			X	L5	N
Stinging Nettle	*Urtica dioica ssp. dioica*	*	-1		G5T5?	SNA			X	L+	I
Blue Vervain	*Verbena hastata*	4	-4	X	G5	S5			X	L5	N
Guelder-rose Viburnum	*Viburnum opulus*	*	0		G5	SNA			X	L+	I
Tufted Vetch	*Vicia cracca*	*	5		GNR	SNA			X	L+	I
Violet Species	*Viola sp.*										N
Riverbank Grape	*Vitis riparia*	0	-2		G5	S5			X	L5	N

Table B-2: Vegetation Community Table

Unit	ELC Vegetation Type	General description	Vegetation Species	SCC / Sensitivities
1	**FOD7-3** Fresh-Moist Willow Lowland Deciduous Forest	This unit is a low lying located in the floodplain of the Don River West Branch. Willows dominate the canopy, and ground vegetation is sparse underneath. This unit is likely a result of disturbance. Age: Mid-aged Disturbance: Moderate – trails and light recreational use, with many non-natives.	Canopy / Subcanopy: Norway Maple, Black Walnut, Crack Willow, American Elm Shrub Layer: Box Elder, Tartarian Honeysuckle, Buckthorn, Staghorn Sumac, Wild Red Raspberry, Riverbank Grape Ground Layer: Garlic Mustard, Hog-peanut, Common Milkweed, Enchanter's Nightshade, European Swallow-wort, Wild Mock-cucumber, Broad Waterweed, Rough Avens, Dame's Rocket, Fringed Loosestrife, Purple Loosestrife, Common Reed, Curly Pondweed, Arrow-leaved Aster, Common Dandelion, Colt's Foot, Stinging Nettle	Species of Conservation Concern: • Broad Waterweed – ranked L3 by TRCA • Arrow-leaved Aster - ranked L3 by TRCA and rare in the GTA • Rough Avens – ranked L3 by TRCA
2	**CUM1-1** Fresh-Moist Cultural Old Field Meadow	This Unit is low lying poorly drained cultural meadow located in the floodplain adjacent to the Don River West Branch. While dominated by upland species, a relatively high proportion of wetland species are present in this unit. Age: Pioneer Disturbance: low – trails and recreational use with many non-natives.	Shrub Layer: Winged Spindle-tree, Red Raspberry, Sandbar Willow Ground Layer: Common Yarrow, Lesser Burdock, Common Milkweed, Awnless Brome, Creeping Thistle (Canada Thistle), Field Bindweed, European Swallow-wort, Fuller's Teasel, Wild Mock-cucumber, Sweet Joe-pye-weed, Ground Ivy, Smooth Oxeye, St. John's-wort, Garden Bird's-foot-trefoil, Common Evening-primrose, Switch Grass, Reed Canary Grass, Kentucky Bluegrass, Bouncing-bet, Tall Goldenrod, Canada Goldenrod, White Heath Aster, Smooth Blue Aster, Calico Aster, New England Aster, Common Dandelion, Stinging Nettle, Tufted Vetch	Species of Conservation Concern: • Sweet Joe-pye-weed – ranked L3 by TRCA and rare in the GTA • Smooth Oxeye - ranked L2 by TRCA and rare in the GTA, however this species is likely planted • Switch Grass – ranked L3 by TRCA and rare in the GTA, however this species is likely planted • Smooth Blue Aster weed – ranked L3 by TRCA and rare in the GTA,
3	**CUS1** Mineral Cultural Savannah	This unit is a manicured (mowed) park area, with a memorial. Age: Mid-aged Disturbance: Moderate – extensive recreational use with many invasive species.	Canopy / Subcanopy: Black Walnut, Wild Black Cherry, Bur Oak, American Basswood Shrub Layer: Tartarian Honeysuckle, Buckthorn Ground Layer: Awnless Brome, European Lily-of-the-valley, Queen Anne's Lace, Meadow Hawkweed, Black Medic, Virginia Creeper, Kentucky Bluegrass, Self-heal, Common Dandelion, Violet Species	Species of Conservation Concern: • None

Unit	ELC Vegetation Type	General description	Vegetation Species	SCC / Sensitivities
4	**FOD5-5** Dry-Fresh Sugar Maple Hickory Deciduous Forest	This unit is a large mature woodlot located adjacent to the SWM pond. Age: Mature Disturbance: Moderate – some evidence of trails, dumping, and unit in close proximity to Langstaff Road, however unit is also mature with relatively inaccessible interior and primarily native species.	Canopy / Subcanopy: Balsam Fir, Black Maple, Sugar Maple, Bitternut Hickory, White Ash, Black Walnut, Tamarack, Eastern Hop-hornbeam, White Spruce, Black Spruce, Eastern White Pine, Northern Red Oak, American Basswood, American Elm Shrub Layer: Red-osier Dogwood, English Hawthorn, Dotted Hawthorn, American Fly-honeysuckle, Choke Cherry, Buckthorn, Prickly Gooseberry, Common Raspberry, Northern Poison Oak, Guelder-rose Viburnum, Riverbank Grape Ground Layer: Garlic Mustard, Jack-in-the-pulpit, Sedge Species, Enchanter's Nightshade, Creeping Thistle (Canada Thistle), Marsh Bedstraw, Herb-robert, Fowl Manna Grass, Virginia Stickseed, Virginia Waterleaf, Spotted Jewelweed, American Bugleweed, Purple Loosestrife, Two-leaf Bishop's-cap, Reed Canary Grass, Common Reed, Hooked Crowfoot, Bittersweet Nightshade, Calico Aster, Heart-leaved Aster, Blue Vervain	Species of Conservation Concern: • Balsam Fir – ranked L3 by TRCA • Tamarack – ranked L3 by TRCA • American Fly-honeysuckle – ranked L3 by TRCA • White Spruce – ranked L3 by TRCA • Black Spruce - ranked L2 by TRCA and rare in the GTA This unit is a Significant Woodland
5	**CUW1** Mineral Cultural Woodland	This Unit is a very small wooded area located directly adjacent to Langstaff Road. Age: Mid-aged Disturbance: Moderate – located in close proximity to Langstaff Road and contains many non-native species.	Canopy / Subcanopy: Black Walnut, Common Apple, Bur Oak, American Basswood Shrub Layer: Tartarian Honeysuckle, Buckthorn, Staghorn Sumac, Riverbank Grape Ground Layer: European Swallow-wort, Common Viper's-bugloss, Oxeye Daisy, Garden Bird's-foot-trefoil, Kentucky Bluegrass, Tall Goldenrod	Species of Conservation Concern: • None
6	**CUT1-1** Mineral Sumac Cultural Thicket	This unit forms a mosaic with Unit 2 (described above), north of Langstaff Road. It supports a dense shrub layer consisting of upland and wetland shrubs, with dominant Staghorn Sumac. Age: Young Disturbance: Low – limited, dominated by native species.	Shrub Layer: Staghorn Sumac, White Willow, Heart-leaved Willow, Sandbar Willow	Species of Conservation Concern: • None

Unit	ELC Vegetation Type	General description	Vegetation Species	SCC / Sensitivities
7	**CUM1-1** Cultural Old Field Meadow	This represents much of the ROW vegetation in the vicinity of Highway 400 and Langstaff Road. This unit supports a dense layer of herbaceous ground vegetation, consisting of a wide range of common early successional, upland, disturbance-tolerant species. Age: Pioneer Disturbance: High – presence of invasive species, close proximity to highways and road.	Canopy / Subcanopy: Norway Spruce, White Spruce Shrub Layer: Box Elder, Eastern Ninebark, Riverbank Grape Ground Layer: Lesser Burdock, Awnless Brome, Creeping Thistle (Canada Thistle), Barnyard Grass, Garden Bird's-foot-trefoil, Black Medic, Reed Canary Grass, Kentucky Bluegrass, Self-heal, Bouncing-bet, Tall Goldenrod, Calico Aster, New England Aster, Common Lilac, Meadow Goat's-beard, Red Clover, White Clover, Colt's Foot, Narrow-leaved Cattail, Broad-leaf Cattail, Blue Cattail, Tufted Vetch	Species of Conservation Concern: • Eastern Ninebark – ranked L3 by TRCA and rare in the GTA • White Spruce – ranked L3 by TRCA
8	**CUW1** Mineral Cultural Woodland	This Unit is a very small wooded area located approximately 50 m south of Langstaff road directly south of a gravel parking lot. The canopy is relatively dense dominated by willow species in parts of the unit. Much of this unit contains planted species. Age: Mid-aged Disturbance: Low – trails adjacent to the Unit only, with some recreational use (trail signs, etc.). This unit is part of a restoration area.	Canopy / Subcanopy: Box Elder, Norway Maple, Red Maple, White Ash, Black Walnut, Tamarack, White Spruce, Red Pine, Eastern White Pine, Large-tooth Aspen, Quaking Aspen, Crack Willow, American Basswood Shrub Layer: Hawthorn Species, Tartarian Honeysuckle, Apple Species, White Mulberry, Choke Cherry, Buckthorn, Staghorn Sumac, Red Raspberry, Peach-leaved Willow, Sandbar Willow, Northern White Cedar, Riverbank Grape Ground Layer: Common Yarrow, Garlic Mustard	Species of Conservation Concern: • Tamarack – ranked L3 by TRCA, however this species is likely planted • White Spruce – ranked L3 by TRCA, however this species is likely planted • Red Pine – ranked L1 by TRCA, however this species is likely planted
9	**MAM2-2** Reed Canary Grass Mineral Meadow Marsh	This unit is a very small area of low lying land located at the northeast corner of Langstaff Road and Dufferin Street that is dominated by non-native Reed Canary Grass. Age: Young Disturbance: High – located in close proximity to two major roads, evidence of dumping present, and unit is dominated by non-native species.	Ground Layer: Marsh Bedstraw, American Bugleweed, Purple Loosestrife, Reed Canary Grass, Common Reed, Blue Vervain	Species of Conservation Concern: • None This unit is a natural wetland feature

Unit	ELC Vegetation Type	General description	Vegetation Species	SCC / Sensitivities
10	**MAS2-1** Cattail Mineral Shallow Marsh	Age: Mid-aged Disturbance: Moderate – trails, dumping fill and recreational use with many non-natives.	Ground Layer: Purple Loosestrife, Narrow-leaved Cattail, Broad-leaf Cattail	Species of Conservation Concern: • None This unit is a natural wetland feature
11	**CUM1-1** Cultural Old Field Meadow	This represents a large area of fallow field adjacent to Highway 400. This unit supports a dense layer of herbaceous ground vegetation, consisting of a wide range of common early successional, upland, disturbance-tolerant species. Age: Pioneer Disturbance: High – presence of invasive species, close proximity to highways and road.	Ground Layer: Spreading Dogbane, Woodland Burdock, Common Milkweed, Creeping Thistle (Canada Thistle), Flat-top Fragrant Goldenrod, Kentucky Bluegrass, Bittersweet Nightshade, Tall Goldenrod, Field Sowthistle, Calico Aster, New England Aster, Amethyst Aster	Species of Conservation Concern: • Amethyst Aster – S3?, and ranked LH (hybrid) by TRCA

Legend

Accepted Name and Author
Accepted Name and Author were updated primarily using NatureServe Explorer (Updated June 2013), in combination with the Integrated Taxonomic Information System (ITIS), United States Department of Agriculture (USDA) Plants Database, and the New York Flora Atlas.

NatureServe Explorer: http://www.natureserve.org/explorer/index.htm
ITIS: http://www.itis.gov/
USDA Plants: http://plants.usda.gov/java/
New York Flora Atlas: http://newyork.plantatlas.usf.edu/Default.aspx

[1]Coefficient of Conservatism and Coefficient of Wetness

CC: Coefficient of Conservatism. Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters.
CW: Coefficient of Wetness. Value between 5 and –5. A value of –5 is assigned to Obligate Wetland (OBL) and 5 to Obligate Upland (UPL), with intermediate values assigned to the remaining categories.

[2]G-Rank (Global)
(Global Status from MNR Biodiversity Explorer September 2012)

Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

Global (G) Conservation Status Ranks
G1: Extremely rare – usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2: Very rare – usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
G3: Rare to uncommon – usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4: Common – usually more than 100 occurrences; usually not susceptible to immediate threats.
G5: Very common – demonstrably secure under present conditions.

Variant Ranks
G#G#: Range Rank – A numeric range rank (e.g., G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).
GU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible (when the range

of uncertainty is three consecutive ranks or less), a range rank (e.g., G2G3) should be used to delineate the limits (range) of uncertainty.

GNR: Unranked – Global rank not yet assessed

GNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Rank Qualifiers

?: Inexact Numeric Rank – Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status Ranks or GX or GH.

Q: Questionable taxonomy that may reduce conservation priority – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower priority (numerically higher) conservation status rank. The "Q" modifier is only used at a global level and not at a national or subnational level.

C: Captive or Cultivated Only – Taxon or ecosystem at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population or ecosystem restoration, not yet established. The "C" modifier is only used at a global level and not at a national or subnational level. Possible ranks are GXC or GHC. This is equivalent to "Extinct" in the Wild (EW) in IUCN's Red List terminology (IUCN 2001).

[3]S-Ranks (Provincial)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.
(Provincial Status from MNR Biodiversity Explorer September 2012)

S1: Critically Imperiled – Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2: Imperiled – Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3: Vulnerable – Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4: Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: Secure – Common, widespread, and abundant in the nation or state/province.

S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

SX: Presumed Extirpated – Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

SH: Possibly Extirpated (Historical) – Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

SE: Species is considered exotic in Ontario

SNR: Unranked – Nation of state/province conservation status not yet assessed.

SU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.[1]

[4]COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
(federal status from COSEWIC November 2012)

EXT: Extinct – A species that no longer exists.

EXP: Extirpated – A species no longer existing in the wild in Canada, but occurring elsewhere.

END: Endangered – A species facing imminent extirpation or extinction.

THR: Threatened – A species likely to become endangered if limiting factors are not reversed.

SC: Special Concern (formerly vulnerable) – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

NAR: Not At Risk – A species that has been evaluated and found to be not at risk of extinction given the current circumstances.

DD: Data Deficient (formerly Indeterminate) – Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.

Implied COSEWIC Status Notations (Status Due to Taxonomic Relationships)[2]

value (Flagged Value) – The taxon itself is not named in the Canadian Species at Risk list, however, it does have status as a result of its taxonomic relationship to a named entity. For example, if a species has a COSEWIC status of "threatened", then by default, all of its recognized subspecies that occur in Canada also have a threatened status. The subspecies in this example would have the value "$T_{(2)}$" under COSEWIC. Likewise, if all of a species' infraspecific taxa occurring in Canada have the same COSEWIC status, then that status appears in the entry for the "full" species as well. In this case, if the species name is not mentioned in the Canadian Species at Risk list, the status appears with a flag $_{(2)}$ in NatureServe Explorer.

value, value: (Combination values with flags) – The taxon itself is not named in the Canadian Species at Risk list, however, all of its infraspecific taxa occurring in Canada do have status but two or more of the taxa do not have the same status. In this case, a combination of statuses shown with a flag $_{(7)}$ indicates the statuses that apply to infraspecific taxa or populations within this taxon.

[1] Added on June 4, 2013 from http://nhic.mnr.gov.on.ca/glossary/srank.cfm
[2] Added on June 5, 2013 from http://www.natureserve.org/explorer/statusca.htm

PS: Indicates “partial status” – in only a portion of the species’ range in Canada. Typically indicated for a “full’ species where at least one but not all of a species’ infraspecific taxa or populations has COSEWIC status.

PS*value*: Indicates “partial status” – status in only a portion of the species’ range. The value of that status appears because the entity with status (usually a population defined by geopolitical boundaries within Canada) does not have an individual entry in NatureServe Explorer. Information about the entity with status can be found in reports for the associated species.

[5]MNRF (Ministry of Natural Resources and Forestry)

(*Provincial status from MNRF)*
The provincial review process is implemented by the MNRF's Committee on the Status of Species at Risk in Ontario (COSSARO).

EXT: Extinct – A species that no longer exists anywhere.
EXP: Extirpated – A species that no longer exists in the wild in Ontario but still occurs elsewhere.
END: Endangered – A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act (ESA).
THR: Threatened – A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
SC: Special Concern (formerly Vulnerable) – A species with characteristics that make it sensitive to human activities or natural events.
NAR: Not at Risk – A species that has been evaluated and found to be not at risk.
DD: Data Deficient (formerly Indeterminate) – A species for which there is insufficient information for a provincial status recommendation.

[6] Halton, Peel, Toronto, York, Durham, GTA, 6E7, 7E4
The Distribution and Status of the Vascular Plants of the Greater Toronto Area (Varga et. al. 2000).

"Plant rarity is based on the number of locations for a native plant species" and also takes into account native species restricted to specialized rare habitats. For the Greater Toronto Area column, "A species is considered rare in the Greater Toronto Area if it is rare or uncommon in a least four of... Halton, Peel, Toronto, York, and Durham".

Codes are defined as follows:
X: Present
U: Uncommon native species
R: Rare native species
R#: Number of stations for a rare native species
E: Extirpated native species
+ or I: Introduced species
X+: Introduced in municipality
SR: Sight record
LR: Literature record

[7]Toronto and Region Conservation Authority:
From: (TRCA 2003)

L rank (Local Rank) – A rank assigned by TRCA to a species, vegetation community, or habitat patch which describes its rank and level of conservation concern in the TRCA Region. Species of concern, according to the TRCA methodology are any species with a local rank of L1 to L3, and some particularly sensitive species with a rank of L4. They are generally species which are disappearing in the landscape, primarily as a result of land use changes. For flora the ranks are defined as follows (TRCA 2007).

Codes are defined as follows:

L1: Of concern regionally; almost certainly rare in TRCA jurisdiction; generally occur in high-quality natural areas, in natural matrix; unable to withstand disturbance.

L2: Of concern regionally; probably rare in TRCA jurisdiction; generally occur in high-quality natural areas, in natural matrix; unable to withstand disturbance.

L3: Of concern regionally; generally secure in natural matrix; able to withstand minor disturbance.

L4: Of concern in urban matrix; generally secure in rural matrix; able to withstand some disturbance.

L5: Not of concern; generally secure throughout jurisdiction, including urban matrix; able to withstand high levels of disturbance.

LX: Extirpated from the TRCA region with remote chance of rediscovery. Presumably highly sensitive. Not scored.

LH: Hybrid between two native species. Usually not scored unless highly stable and behaves like a species.

L+: Exotic. Not native to TRCA jurisdiction. Includes hybrids between a native species and an exotic. Not scored.

L+?: Origin uncertain or disputed (i.e., may or may not be native). Not scored.

Native Status

N = Native to Ontario
I = Introduced to Ontario

APPENDIX

C WILDLIFE SURVEY RESULTS

Table C-1: Breeding bird species observed within the study area and their breeding status.

Common Name	Scientific Name	GRANK[1]	SRANK[2]	COSEWIC[3]	MNR[4]	SARA Status [5]	Schedule [5]	TRCA rank (2008)[6]	Area Sensitive Birds - Ecoregion 7E[7]	Site Visit Details					
										9-Jun-17		23-Jun-17		Overall	
										Number	Highest BE	Number	Highest BE	Highest Breeding Status	Highest Abundance
American Crow	*Corvus brachyrhynchos*	G5	S5B					L5				1	H	POSS	1
American Goldfinch	*Spinus tristis*	G5	S5B					L5		20	S/H	14	S/H	POSS	20
American Redstart	*Setophaga ruticilla*	G5	S5B					L3		1	S/H			POSS	1
American Robin	*Turdus migratorius*	G5	S5B					L5		3	S/H	4	S/H	POSS	4
Baltimore Oriole	*Icterus galbula*	G5	S4B					L5		2	S/H			POSS	2
Black-capped Chickadee	*Poecile atricapillus*	G5	S5					L5		3	S/H	2	S/H	POSS	3
Brown-headed Cowbird	*Molothrus ater*	G5	S4B					L5		2	P			PROB	2
Blue Jay	*Cyanocitta cristata*	G5	S5					L5		2	H			POSS	2
Cedar Waxwing	*Bombycilla cedrorum*	G5	S5B					L5		9	H			POSS	9
Common Grackle	*Quiscalus quiscula*	G5	S5B					L5		1	CF	2	S/H	CONF	2
Downy Woodpecker	*Picoides pubescens*	G5	S5					L5		1	H	1	S/H	POSS	1
European Starling	*Sturnus vulgaris*	G5	SNA					L+		8	H	11	H	POSS	11
Hairy Woodpecker	*Picoides villosus*	G5	S5					L4		1	S/H			POSS	1
Northern Cardinal	*Cardinalis cardinalis*	G5	S5					L5		1	H	2	P	PROB	2
Northern Flicker	*Colaptes auratus*	G5	S4B					L4				1	S/H	POSS	1
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	G5	S4B					L4		3	H			POSS	3
Red-tailed Hawk	*Buteo jamaicensis*	G5	S5	NAR	NAR			L5				1	S/H	POSS	1
Ring-billed Gull	*Larus delawarensis*	G5	S5B,SZN					L4		1	H	15	H	POSS	15
Red-eyed Vireo	*Vireo olivaceus*	G5	S5B					L4		1	S/H	1	S/H	POSS	1
Red-winged Blackbird	*Agelaius phoeniceus*	G5	S4					L5		13	S/H		CF	CONF	13
Song Sparrow	*Melospiza melodia*	G5	S5B					L5		4	S/H	5	S/H	POSS	5
Tree Swallow	*Tachycineta bicolor*	G5	S4B					L4				6	H	POSS	6
Turkey Vulture	*Cathartes aura*	G5	S5B					L4				1	X	NONE	1

Common Name	Scientific Name	GRANK[1]	SRANK[2]	COSEWIC[3]	MNR[4]	SARA Status [5]	Schedule [5]	TRCA rank (2008)[6]	Area Sensitive Birds - Ecoregion 7E[7]	Site Visit Details					
										9-Jun-17		23-Jun-17		Overall	
										Number	Highest BE	Number	Highest BE	Highest Breeding Status	Highest Abundance
Warbling Vireo	*Vireo gilvus*	G5	S5B					L5		4	S/H			POSS	4
Yellow Warbler	*Setophaga petechia*	G5	S5B					L5		10	P			PROB	10

Table C-2: Incidental wildlife observed within the study area.

Common Name	Scientific Name	GRANK[1]	SRANK[2]	COSEWIC[3]	MNR[4]	SARA Status [5]	Schedule [5]	TRCA rank (2008)[6]
Insects								
Ebony Jewelwing	*Calopteryx maculata*	G5	S5					
Monarch	*Danaus plexippus*	G5	S2N,S4B	END	SC	SC	1	
Little Wood-Satyr	*Megisto cymela*	G5	S5					
Eastern Tiger Swallowtail	*Papilio glaucus*	G5	S5					
Common Whitetail	*Plathemis lydia*	G5	S5					
Mammals								
Coyote	*Canis latrans*	G5	S5					L5
White-tailed Deer	*Odocoileus virginianus*	G5	S5					L4
Grey Squirrel	*Sciurus carolinensis*	G5	S5					L5
Eastern Chipmunk	*Tamias striatus*	G5	S5					L4

Glossary

[1]G-Rank (global)
Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

- G1 Extremely rare - usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
- G2 Very rare - usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
- G3 Rare to uncommon - usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
- G4 Common - usually more than 100 occurrences; usually not susceptible to immediate threats.
- G5 Very common - demonstrably secure under present conditions.

[2]S-Ranks (provincial)
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

- S1 Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
- S2 Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
- S3 Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- S4 Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5 Secure - Common, widespread, and abundant in the nation or state/province.
- S#S# Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
- SAN Non-breeding accidental.
- SE Exotic - not believed to be a native component of Ontario's fauna.
- SZN Non-breeding migrants/vagrants.
- SZB Breeding migrants/vagrants.

[3]COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
(federal status from COSEWIC April 2014)

- EXT Extinct - A species that no longer exists.
- EXP Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.
- END Endangered - A species facing imminent extirpation or extinction.
- THR Threatened - A species likely to become endangered if limiting factors are not reversed.

SC Special Concern (formerly vulnerable) - A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
NAR Not At Risk - A species that has been evaluated and found to be not at risk of extinction given the current circumstances.
DD Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.

[4]OMNRF (Ontario Ministry of Natural Resources and Forestry)

EXT Extinct - A species that no longer exists anywhere in the world.
EXP Extirpated - A species that lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.
END Endangered - A species that is facing imminent extinction or extirpation.
THR Threatened - A species that is likely to become endangered if steps are not taken to address factors threatening to lead to its extinction or extirpation.
SC Special Concern – A species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

[5]SARA (Species at Risk Act) Status and Schedule
The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

EXT Extinct - A wildlife species that no longer exists.
EXP Extirpated **-** A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END Endangered - A wildlife species that is facing imminent extirpation or extinction.
THR Threatened - A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC Special Concern - A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

[6] Toronto and Region Conservation Authority ranks
L-rank (Local Rank)-A rank assigned by TRCA to a species, vegetation community, or habitat patch which describes its status in the TRCA Region. Species of conservation concern, according to the

TRCA methodology are any species with a local rank of L1 to L3, and those L4 species found within the Urban (built-up area). Generally species which are disappearing in the regional landscape, primarily as a result of land use changes. L1 – regional concern; L2 – regional concern; L3 – regional concern; L4 – urban concern
(from TRCA, August 2008)

[7] MNR Significant Wildlife Habitat Technical Guide Area Sensitive Species
Area Sensitivity is defined as species requiring large areas of suitable habitat in order to sustain population numbers
From: Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Science Section. 151pp. + appendices.

Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED
X Species observed in its breeding season (no breeding evidence).

POSSIBLE
H Species observed in its breeding season in suitable nesting habitat.
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE
P Pair observed in suitable nesting habitat in nesting season.
T Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
V Visiting probable nest site
A Agitated behaviour or anxiety calls of an adult.
B Brood Patch on adult female or cloacal protuberance on adult male.
N Nest-building or excavation of nest hole.

CONFIRMED
DD Distraction display or injury feigning.
NU Used nest or egg shells found (occupied or laid within the period of the survey).
FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
AE Adult leaving or entering nest sites in circumstances indicating occupied nest.
FS Adult carrying fecal sac.
CF Adult carrying food for young.
NE Nest containing eggs.
NY Nest with young seen or heard.

APPENDIX

D SAR SCREENING TABLE

Table D-1: Species at Risk Screening Table

Species At Risk Designations
ENDANGERED
THREATENED
SPECIAL CONCERN
EXTIRPATED

Species	ESA Status[1] and Regional Occurrence	ESA Protection[2]	Source of Record (Date)	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Birds								
Eastern Wood-pewee (*Contopus virens*)	SC	N/A	MNRF (2017)	Associated with deciduous and mixed forests. Within mature and intermediate age stands it prefers areas with little understory vegetation as well as forest clearings and edges (MNRF Guelph - Waterloo List, 2014)	High - Potential to occur in Unit 2, which provides breeding habitat; large deciduous forest habitat with a sparse understory.	Breeding Bird Surveys	No observations	None - no impacts to breeding populations are anticipated as this species is unlikely to nest on the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat.
Wood Thrush (*Hylocichla mustelina*)	SC	N/A	MNRF (2017)	Nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. Prefers large forest mosaics, but may also nest in small forest fragments (MNRF Guelph - Waterloo List, 2014)	Moderate - Some potential to occur in Unit 2, which provides large deciduous forest habitat, however understory is sparser than preference.	Breeding Bird Surveys	No observations	None - no impacts to breeding populations are anticipated as this species is unlikely to nest on the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat.
Barn Swallow (*Hirundo rustica*)	THR	Species and General Habitat Protection	MNRF (2017)	Prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc. (MNRF Guelph - Waterloo List, 2014)	Moderate - Possibility to occur as foraging visitant throughout the study area. Suitable foraging habitat over all natural areas within the study are, including over SWM pond; minimal potential for nesting habitat in nearby buildings.	Breeding Bird Surveys	No observations	Low - unlikely to be impacted as foraging visitant; no confirmed nesting habitat in nearby buildings and other man-made structures.
Common Nighthawk (*Chordeiles minor*)	SC	N/A	MNRF (2017)	Generally prefer open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. This species also inhabits mixed and coniferous forests. Can also be found in urban areas (nest on flat roof-tops) (MNRF Guelph - Waterloo List, 2014)	Moderate - Some potential for nesting habitat on flat gravel-topped buildings found on older buildings. May occur as a foraging visitant over wetlands, waterbodies and natural areas.	Breeding Bird Surveys	No observations	Low - unlikely to be impacted as foraging visitant; no buildings will be impacted from the proposed works, and confirmed nesting habitat.
Insects								
Monarch (*Danaus plexippus*)	SC	N/A		Exist primarily wherever milkweed and wildflowers exist; abandoned farmland, along roadsides, and other open spaces (MNRF Guelph - Waterloo List, 2014)	High - likely to pass through and / or forage in cultural ecosites or other open natural areas throughout the broader landscape; some potential for breeding wherever Milkweed or other wildflowers are present in study area.	Incidental wildlife and general habitat surveys	Many Monarchs were observed in Unit 2	Low - Impacts include incremental removal of habitat. Impacts to breeding and foraging habitat are anticipated to be minor, or temporary, and abundant habitat is present in the broader landscape.
Mammals								
Small-footed Bat (*Myotis leibii*)	END	Species and General Habitat Protection	MNRF (2017)	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: primarily under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses and under tree bark (MNRF Guelph - Waterloo List, 2014)	Moderate - Possibility to occur as foraging visitant throughout the study area (limited suitable foraging habitat over SWM ponds); Moderate potential for maternity roost habitat in Unit 4.	Incidental wildlife and general habitat surveys	No observations	Minimal - No impacts to potential maternity roosts are anticipated as this species is unlikely to be present in the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat. No high quality maternity roost trees observed during fieldwork.

Table D-1: Species at Risk Screening Table

Species At Risk Designations	
ENDANGERED	
THREATENED	
SPECIAL CONCERN	
EXTIRPATED	

Species	ESA Status[1] and Regional Occurrence	ESA Protection[2]	Source of Record (Date)	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Little Brown Bat (Little Brown Myotis) (*Myotis lucifugus*)	END	Species and General Habitat Protection	MNRF (2017)	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm dbh) (MNRF Guelph - Waterloo List, 2014)	Moderate - Possibility to occur as foraging visitant throughout the study area (limited suitable foraging habitat over SWM ponds); Moderate potential for maternity roost habitat in Unit 4.	Incidental wildlife and general habitat surveys	No observations	Minimal - No impacts to potential maternity roosts are anticipated as this species is unlikely to be present in the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat. No high quality maternity roost trees observed during fieldwork.
Tri-colored Bat (*Perimyotis subflavus*)	END	Species and General Habitat Protection	MNRF (2017)	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Manmade structures or tree cavities. Foraging over still water, rivers, or in forest gaps (COSEWIC 2013f)	Moderate - Possibility to occur as foraging visitant throughout the study area (limited suitable foraging habitat over SWM ponds); Moderate potential for maternity roost habitat in Unit 4.	Incidental wildlife and general habitat surveys	No observations	Minimal - No impacts to potential maternity roosts are anticipated as this species is unlikely to be present in the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat. No high quality maternity roost trees observed during fieldwork.
Northern Long-eared Bat (Northern Myotis) (*Myotis septentrionalis*)	END	Species and General Habitat Protection	MNRF (2017)	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Often associated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.)(MNRF Guelph - Waterloo List, 2014)	Moderate - Possibility to occur as foraging visitant throughout the study area (limited suitable foraging habitat over SWM ponds); Moderate potential for maternity roost habitat in Unit 4.	Incidental wildlife and general habitat surveys	No observations	Minimal - No impacts to potential maternity roosts are anticipated as this species is unlikely to be present in the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat. No high quality maternity roost trees observed during fieldwork.
Plants								
Butternut (*Juglans Cinerea*)	END	Species and General Habitat Protection	MNRF (2017)	Generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldom, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows (MNRF Guelph - Waterloo List, 2014).	High - Some suitable habitat is present along the Don River West branch, and species is known to occur in the broader landscape.	Three-season botanical inventory and ELC	No observations	None - Suitable habitat present within the study area and no individuals were observed.
Reptiles								
Blanding's Turtle (*Emydoidea blandingii*)	THR	Species and General Habitat Protection	MNRF (2017)	Generally occur in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams (MNRF Guelph - Waterloo List, 2014)	None – Wetlands and Watercourses provide extremely limited suitable habitat. Waterbodies are all small in size with limited or no floating and submergent vegetation. None of these provide the range of habitat necessary for all life functions (hibernation, breeding, and foraging habitat	Incidental wildlife and general habitat surveys	No observations	Minimal - Suitable habitat is very limited, and no turtles were observed.

APPENDIX

E AGENCY CORRESPONDENCE

Enoae, Jenny

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: May 20, 2021 7:48 AM
To: Enoae, Jenny
Subject: RE: Don River West Branch - Question regarding Redside Dace

Jenny;

The tributary in question is historical Redside Dace habitat and holds no current status.

Regards;

JJA

JEFF J. ANDERSEN

MANAGEMENT BIOLOGIST
PERMISSIONS AND COMPLIANCE SECTION, SPECIES AT RISK BRANCH
LAND AND WATER DIVISION
ONTARIO MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS

50 Bloomington Road, Aurora ON L4G 0L8 | jeff.andersen@ontario.ca | 289-221-1705

Ontario

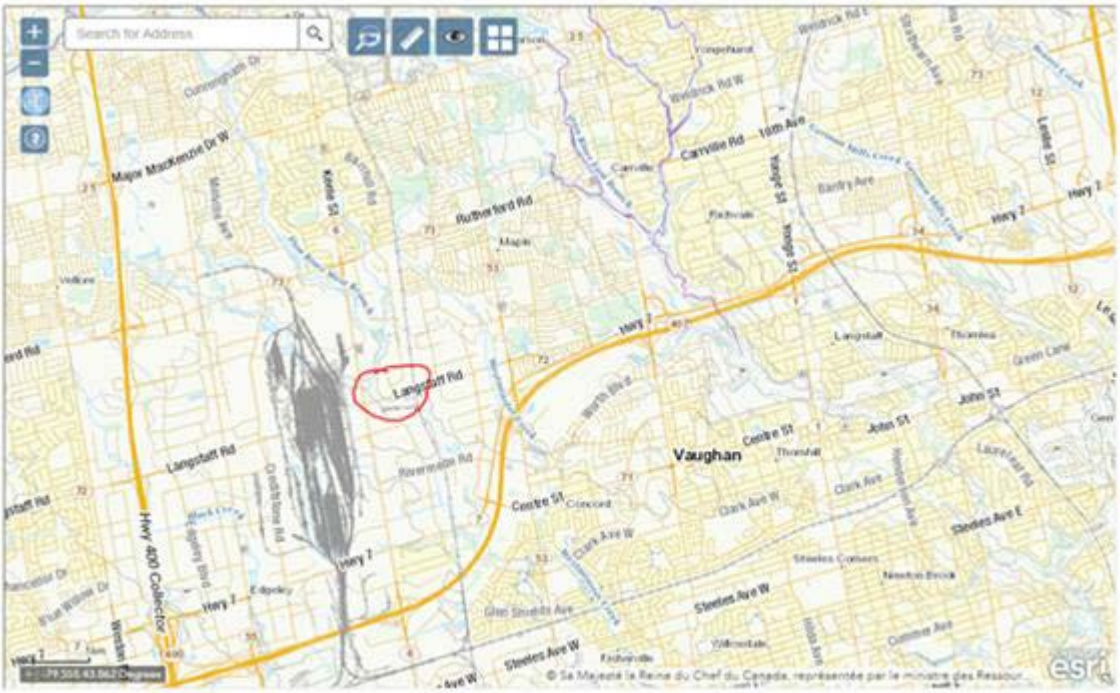
From: Enoae, Jenny <Jenny.Enoae@wsp.com>
Sent: May 19, 2021 7:36 AM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Subject: Don River West Branch - Question regarding Redside Dace

Hello;

WSP is currently working with the Regional Municipality of York Region for a Class EA and Preliminary Design of Langstaff Road from Weston Road to Dufferin Street. A request for SAR information was sent to MNRF in 2017, where a response was received (attached). In that response letter, MNRF did not indicate the regulation of habitat for Redside Dace in the Don River West Branch of the study area (43 49'08.77"N 79 30'05.78W) – could the MECP confirm?

I've also included a location figure: the area circled in red is the crossing location in question and the map is from the DFO Aquatic SAR Mapping reviewed on May 18, 2021 (no indication of regulated habitat).

Thank you



Jenny Enoae, M.Sc.
Team Lead – Ecology, Ontario
Ecology and Environmental Impact Assessment (EIA)

T+ 1 289-982-4848
M+ 1 416-885-0721

100 Commerce Valley Drive West
Thornhill, Ontario
L3T 0A1 Canada
wsp.com

Ontario

Aurora MNR
Information Request Form

Name:	Valerie Stevenson
Company Name:	WSP/MMM
Proponent Name:	York Region
Phone Number:	519-743-8777; ext 2283
Email Address:	stevensonv@mmm.ca
Project Name:	Langstaff Road EA - Weston Rd to HWY 7
Property Location:	Langstaff Road - Weston to HWY 7, York Region
Township:	
Lot & Concession:	

UTM Coordinates: Easting (X) _____ Northing (Y) _____

Brief Description of Undertaking: MMM is completing a natural heritage assessment as part of a Class EA for proposed road improvements

Have you previously contacted someone at MNR for information on this site? ☐ Yes ☒ No

If yes, when and who? _____

Provide a map of accurate scale to illustrate footprint/study area of the proposed activity in relation to the surrounding landscape (e.g. property boundaries, roads, waterbodies, natural features, towns, transmission corridors, and other human landmarks). Use of aerial photography is strongly encouraged. Include scale, north arrow and legend.

ATTACHMENTS - I have attached a:

☐ Picture ☒ Map ☐ Other

REQUEST - I would like to request the following information for the property identified above:
**Requires an appointment and remittance of fees. See Information Request Guideline for details.*

☐ *Fish Dot Information (fish and other aquatic species found in a particular area of a watercourse)

☐ *Wetland evaluation and data record - please provide name of wetland if known _____

☐ *ANSI check- sheet - please provide name of ANSI if known _____

☒ Species at Risk

☒ Other sensitive wildlife habitat; significant features

Please forward the completed form to: esa.aurora@ontario.ca
Or send by mail:
Aurora District, Ministry of Natural Resources
50 Bloomington Rd Aurora, ON L4G 0L8

Ministry of
Natural Resources
and Forestry
Aurora District Office
50 Bloomington Road
Aurora, Ontario L4G 0L8

Ministère des
Richesses naturelles
et des Forets

Telephone: (905) 713-7400
Facsimile: (905) 713-7361

Ontario

February 17, 2017

Valerie Stevenson
Project Manager/Ecologist
MMM Group Limited
583 Lancaster Street West
Kitchener, ON N2K 1M3
519-743-8777 ext. 2283
stevensonv@mmm.ca

Re: Langstaff Road, Weston Road to Highway 7, Vaughan

Dear Valerie Stevenson,

In your email dated October 14, 2017 you requested information regarding the above location. Apologies for the delayed response.

Species at risk recorded in the vicinity include Butternut (endangered), Blanding's Turtle (threatened), Barn Swallow (threatened), Common Nighthawk (special concern), Eastern Wood-pewee (special concern) and Wood Thrush (special concern). There is potential for endangered bats (i.e., Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-colored Bat) in cavities. A significant woodland occurs immediately northeast of Langstaff Road and Dufferin Street.

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. Appropriate inventory work is needed depending on the undertakings proposed. Approval from MNRF may be required if work you are proposing could cause harm to any species that receive protection under the *Endangered Species Act 2007*.

Species at risk information is highly sensitive and is not intended for any person or project unrelated to this undertaking. Please do not include any specific sensitive information in reports that will be available for public record. As you complete your fieldwork in these areas, please report all information related to any species at risk to our office. This will assist with updating our database and facilitate early consultation regarding your project.

If you have any questions or comments, please do not hesitate to contact ESA.aurora@ontario.ca or Bohdan.Kowalyk@Ontario.ca.

Sincerely,

B. Kowalyk

Bohdan Kowalyk, R.P.F.
Technical Specialist, Aurora District, Ontario Ministry of Natural Resources and Forestry

From: Kowalyk, Bohdan (MNRF) <bohdan.kowalyk@ontario.ca>
Sent: Thursday, April 06, 2017 1:02 PM
To: Stevenson, Valerie
Subject: RE: Background Information Request, Langstaff Rd Weston Rd to Hwy 7, Vaughan

Hello Valerie,

These would be considered warm-water watercourses. In-water works should occur outside the April 1 – June 30 period.

Regards,

Bohdan Kowalyk, R.P.F.
Technical Specialist
Aurora District
Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Stevenson, Valerie [mailto:StevensonV@mmm.ca]
Sent: April-06-17 12:41 PM
To: Kowalyk, Bohdan (MNRF)
Subject: RE: Background Information Request, Langstaff Rd Weston Rd to Hwy 7, Vaughan

Hi Bohdan,

We were wondering if you could please provide thermal regimes and timing windows for watercourses situated within the study area.

Thanks,
Valerie

Valerie Stevenson
Project Manager/Ecologist
Ecology Department

MMM Group Limited
583 Lancaster Street West
Kitchener, ON N2K 1M3 Canada
T +1 519-743-8777 #2283
F +1 519-743-8778
stevensonv@mmm.ca

www.mmmgrouplimited.com | www.wspgroup.ca

From: Kowalyk, Bohdan (MNRF) [mailto:bohdan.kowalyk@ontario.ca]
Sent: Friday, February 17, 2017 1:41 PM
To: Stevenson, Valerie <StevensonV@mmm.ca>
Subject: RE: Background Information Request, Langstaff Rd Weston Rd to Hwy 7, Vaughan

Valerie,

The woodland (technically forest) is significant according to criteria established by this Ministry. It has an area of over 1 ha dominated by representative long-lived native species in a municipality (Vaughan) with 12.8% woodland cover. It is identified as a Core Feature in Vaughan's official plan (Schedule 2 – Natural Heritage Network).

Regards,

Bohdan Kowalyk, R.P.F.
Technical Specialist
Aurora District
Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Stevenson, Valerie [mailto:StevensonV@mmm.ca]
Sent: February-17-17 1:16 PM
To: ESA Aurora (MNRF)
Subject: RE: Background Information Request, Langstaff Rd Weston Rd to Hwy 7, Vaughan

Thank you Bohdan.

Can you please provide additional detail on the statement provided below in terms of what makes the woodland 'significant'?

"A significant woodland occurs immediately northeast of Langstaff Road and Dufferin Street."

Thank you,
Valerie

Valerie Stevenson
Project Manager/Ecologist
Ecology Department

MMM Group Limited
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T +1 519-743-8777 #2283
F +1 519-743-8778
stevensonv@mmm.ca

www.mmmgrouplimited.com | www.wspgroup.ca

From: ESA Aurora (MNRF) [mailto:ESA.Aurora@ontario.ca]
Sent: Friday, February 17, 2017 12:27 PM
To: Stevenson, Valerie <StevensonV@mmm.ca>
Subject: RE: Background Information Request, Langstaff Rd Weston Rd to Hwy 7, Vaughan

Hello,

Attached is a screening for the area. Apologies for the delay.

Regards,

Bohdan Kowalyk, R.P.F.
Technical Specialist
Aurora District
Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Stevenson, Valerie [mailto:StevensonV@mmm.ca]
Sent: February-17-17 9:45 AM
To: ESA Aurora (MNRF)
Subject: FW: Background Information Request

Please see below request sent in October.

Thank you,
Valerie

Valerie Stevenson
Project Manager/Ecologist
Ecology Department

MMM Group Limited
583 Lancaster Street West
Kitchener, ON N2K 1M3 Canada
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From: Stevenson, Valerie
Sent: Friday, October 14, 2016 9:47 AM
To: ESA Aurora (MNRF) (ESA.Aurora@ontario.ca) <ESA.Aurora@ontario.ca>
Subject: Background Information Request

Please see attached background data request for the Langstaff Road EA project.

Regards,
Valerie

Valerie Stevenson
Project Manager/Ecologist
Ecology Department

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MMM Group Limited
582 Lancaster St. West,
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T: 519-741-1464; F: 519-743-8778
www.mmm.ca

October 20, 2016

Toronto and Region Conservation Authority,
5 Shoreham Drive
Downsview, ON
M3N 1S4

Dear TRCA Staff,

MMM Group Limited (MMM), a WSP Company has been retained by York Region to undertake a natural heritage assessment as part of a Class Environmental Assessment (EA) for proposed road improvements on Langstaff Road from Weston Road to HWY 7.

Background ecological information is required for the study area (see attached map). As such, we are formally contacting you to request any available natural heritage information pertinent to the study area.

We understand that GIS data layers of natural heritage features are now to be ordered directly from LIO by the consultant. Our intention is to contact you directly for any other pertinent data that cannot be obtained from LIO. Please note that the Ministry of Natural Resources and Forestry (MNRF) have also been contacted for available information.

Information we are seeking includes:

Terrestrial

- Wildlife and vegetation species observation records;
- Sensitive wildlife habitat locations (nesting/breeding/hibernation);
- Sensitive avian nesting sites (heronries, stick nest locations);
- Wildlife road mortality data (if available);
- Updated digital boundary information for designated natural features that may not yet be available in LIO/NRVIS (e.g., recent updated wetland boundaries, ELC communities, Environmentally Sensitive Areas (ESA's), etc.); and
- Natural Areas Inventory (NAI) information and mapping

Aquatic

- Fish sampling locations (e.g., fish dot mapping) along with sample dates and species occurrence records for waterbodies that are located within the study area;
- Confirmed or potential spawning/rearing/foraging habitat locations;
- Mapping of thermal and flow regimes of associated watercourses;
- Surface water quality data, flow data, and benthic invertebrate data

Species at Risk (SAR)

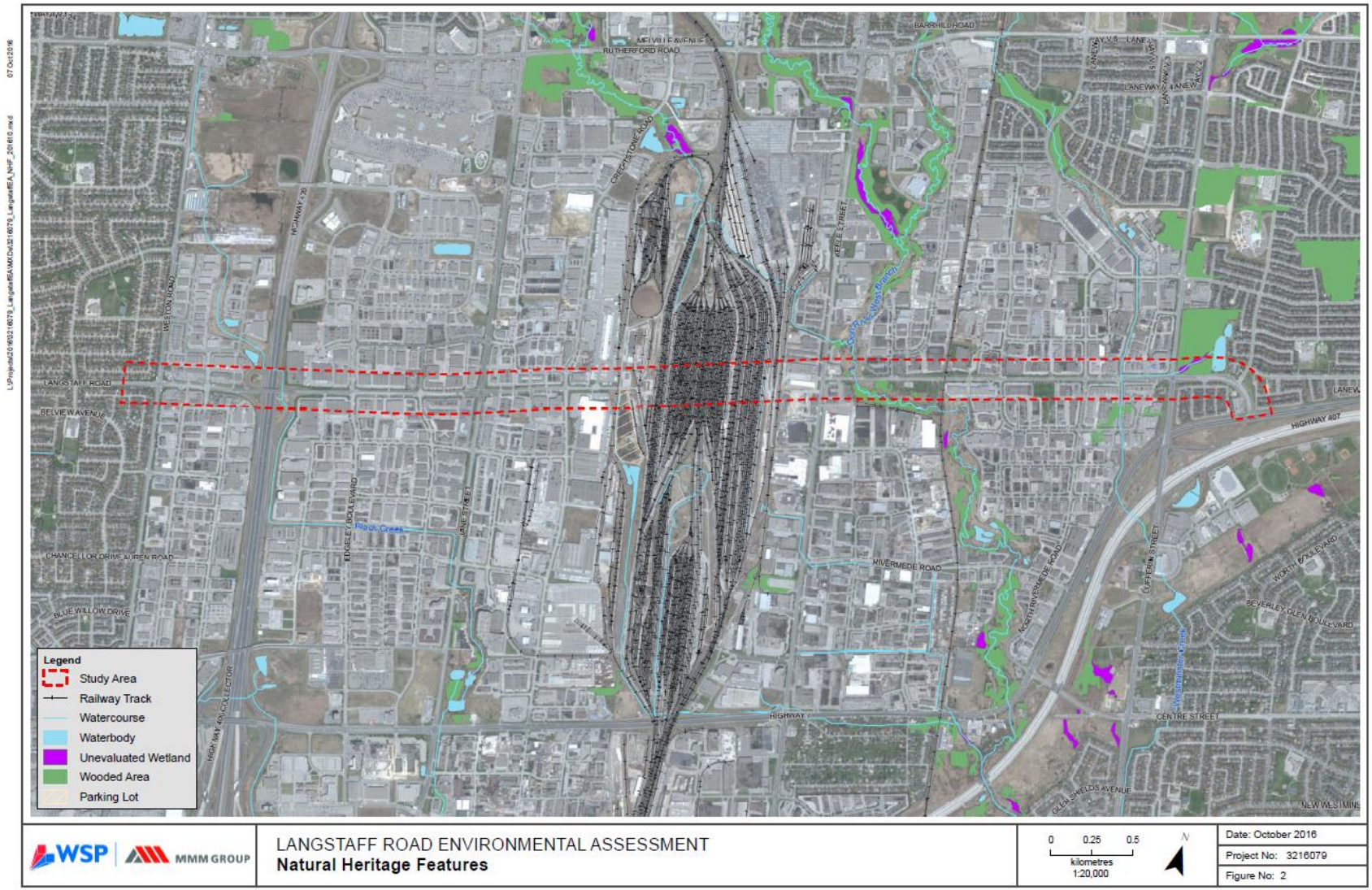
- Locations, observation dates and any other relevant information about SAR – if possible, please provide the UTM's/accuracy codes; and
- Locally rare species lists or species records known from the study area.

If further information is required please feel free to contact the undersigned at 519-743-8777 ext. 2283 or through email at stevensonv@mmm.ca. Thank-you for your assistance, it is greatly appreciated.

Sincerely,

Valerie Stevenson, Dip Env.
Project Manager/Ecologist
Ecology Department

Study Area – Langstaff Road EA



StationName	StationStatus	Watershed	SubWatershed	UTMNorthing	UTMEasting	UTMDatum	Sample Year	VisitDate	Common_Name	Total Weight	Total Num
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Blacknose Dace	6.1	2
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Bluntnose Minnow	1	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Common Shiner	32	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Creek Chub	63.1	4
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Fathead Minnow	13	6
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Pumpkinseed	27	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	White Sucker	95.1	6
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	Blacknose Dace	10	3
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	Catostomus sp.	1.1	11
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	Creek Chub	34.5	8
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	Fathead Minnow	5	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	Pumpkinseed	22	7
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	White Sucker	529	4
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2002	06/28/2002	Blacknose Dace	4	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2002	06/28/2002	Fathead Minnow	16	4
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Blacknose Dace	319.1	89
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Bluntnose Minnow	1	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Common Shiner	9	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Creek Chub	108	17
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Fathead Minnow	41.4	21
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Johnny Darter	0.1	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	White Sucker	25.9	114
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2011	06/15/2011	Catostomidae	0.3	3
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2011	06/15/2011	Creek Chub	79	5
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2011	06/15/2011	Pumpkinseed	0	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2011	06/15/2011	White Sucker	379	6

Gibbs, Sophie

From: Enoae, Jenny
Sent: Friday, March 16, 2018 1:33 PM
To: Kowalyk, Bohdan (MNRF)
Cc: Ahmed, Neil; Jim, Katherine; Brian.Wolf@york.ca; tim.kwan@york.ca; Drost, Alden
Subject: RE: Class EA Study for Improvements to Langstaff Road

Thank you for the quick response.

Have a good weekend,

Jenny Enoae, M.Sc.
T +1 905-882-4211 #1382

WSP

PARENTAL LEAVE NOTICE: March 22, 2018.

From: Kowalyk, Bohdan (MNRF) [mailto:bohdan.kowalyk@ontario.ca]
Sent: March-16-18 13:30
To: Enoae, Jenny <Jenny.Enoae@wsp.com>
Cc: Ahmed, Neil <Neil.Ahmed@wsp.com>; Jim, Katherine <Katherine.Jim@wsp.com>; Brian.Wolf@york.ca; tim.kwan@york.ca; Drost, Alden <Alden.Drost@wsp.com>
Subject: RE: Class EA Study for Improvements to Langstaff Road

Jenny,

I have accepted your report and have no further comments unless you have a specific aspect about which you need clarification.

Regards,

Bohdan Kowalyk, R.P.F.
Aurora District, Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Enoae, Jenny [mailto:Jenny.Enoae@wsp.com]
Sent: March-16-18 1:10 PM
To: Kowalyk, Bohdan (MNRF)
Cc: ESA Aurora (MNRF); Ahmed, Neil; Jim, Katherine; Brian.Wolf@york.ca; tim.kwan@york.ca; Drost, Alden
Subject: RE: Class EA Study for Improvements to Langstaff Road

Hi Bohdan,

Have you had a chance to review the SAR screening results?

Please note that Alden Drost (cc'd) will be taking over this project for me as I'm going on maternity leave next week. All correspondence from herein should be directed to him.

Thank you,

Jenny Enoae, M.Sc.
T +1 905-882-4211 #1382

PARENTAL LEAVE NOTICE: March 22, 2018.

From: Kowalyk, Bohdan (MNRF) [mailto:bohdan.kowalyk@ontario.ca]
Sent: February-27-18 16:18
To: Enoae, Jenny <Jenny.Enoae@wsp.com>
Cc: ESA Aurora (MNRF) <ESA.Aurora@ontario.ca>; Ahmed, Neil <Neil.Ahmed@wsp.com>; Jim, Katherine <Katherine.Jim@wsp.com>; Brian.Wolf@york.ca; tim.kwan@york.ca
Subject: RE: Class EA Study for Improvements to Langstaff Road

Thanks.

Bohdan Kowalyk, R.P.F.
Aurora District, Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Enoae, Jenny [mailto:Jenny.Enoae@wsp.com]
Sent: February-27-18 2:55 PM
To: Kowalyk, Bohdan (MNRF)
Cc: ESA Aurora (MNRF); Ahmed, Neil; Jim, Katherine; Brian.Wolf@york.ca; tim.kwan@york.ca
Subject: Class EA Study for Improvements to Langstaff Road

Hello Bohdan,

Please find attached our SAR screening results for the following project: Class EA Study for Improvements to Langstaff Road from Weston Road to Highway 7.

Regards,

Jenny Enoae, M.Sc.
Project Ecologist - Fisheries
Ecology & Environmental Impact Assessment (EIA)

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M+ 1 416-885-0721

PARENTAL LEAVE NOTICE: March 22, 2018.

100 Commerce Valley Drive West
Thornhill, Ontario
L3T 0A1 Canada

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-LAEmHhHzdJzBITWfa4Hgs7pbKI

February 20, 2018

Ontario Ministry of Natural Resources and Forestry - Aurora District
50 Bloomington Road
Aurora, Ontario L4G 0L8

Attention: Bohdan Kowalyk, A/ Management Biologist

Dear Sir:

Subject: Class EA Study for Improvements to Langstaff Road from Weston Road to Highway 7 - Species at Risk Survey Results

The Regional Municipality of York (York Region) is carrying out a Class Environmental Assessment (Class EA) study for improvements to Langstaff Road (York Road 72) from Weston Road (Y.R. 56) to Highway 7 (Y.R. 7), within the City of Vaughan. Proposed works on Langstaff Road including a new connection across the CN MacMillan Yard, the widening of Langstaff Road to 6 lanes, grade separation at the GO Rail corridor and improvements to the Highway 400 interchange. The proposed improvements along Langstaff Road are largely within the existing Right-of-Way (ROW), with some edge encroachment to adjacent man-made landscapes. Other improvements along Highway 400 are still under review. At the end at the EA Study, an Environmental Study Report (ESR) will be prepared to document the decision making process carried out during the Class EA study.

As part of the EA Study, a review of the natural environment is being carried out. This letter serves to update the Ministry of Natural Resources and Forestry (MNRF) regarding the Species at Risk (SAR) surveys and findings for this project.

BACKGROUND DATA

In previous correspondence with MNRF for this project (B. Kowalyk, February 7, 2017), ten SAR records were identified in the vicinity of the study area: Butternut (endangered), Blanding's Turtle (threatened), Barn Swallow (threatened), Common Nighthawk (special concern), Eastern Wood-pewee (special concern), Wood Thrush (special concern), and four endangered bats (Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-colored Bat). The SAR screening completed by WSP identified potential for one additional SAR to occur in the study area; Monarch (special concern).

SURVEYS COMPLETED

In addition to general wildlife, habitat assessments and botanical surveys conducted on October 17, 2016 and June 9, June 23 and July 26, 2017, breeding bird surveys were completed on June 9, June 23, 2017. Breeding bird surveys were conducted according to standard protocols established in the Ontario Breeding Bird Atlas (Cadman et al. 2007). The two survey visits were completed during appropriate timing (morning surveys, at least ten (10) days apart during breeding season) and suitable weather conditions (low wind and no precipitation). Breeding bird surveys were conducted by qualified, experienced staff and involved wandering transects through and adjacent to habitat features with frequent listening / observation stops. Species, abundance and level of breeding evidence were recorded for all avifauna observations.

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SUMMARY OF FINDINGS

MONARCH

Field surveys in 2017 confirmed the presence of one wildlife SAR, Monarch, within the study area. Four individuals were observed foraging south of Langstaff Road, and two were observed foraging north of Langstaff Road, all in ELC Unit 2 (refer to the mapping in the associated attachments). This species is common within the broader landscape and likely to forage in a variety of cultural meadow habitats found throughout the study area; however, a patch of moderately concentrated milkweed plants was identified in Unit 2 along the edge of Unit 1, approximately 50 m south of Langstaff Road.

Monarch is listed as special concern under the ESA (2007). No direct impacts to this species are anticipated. Further, the majority of habitat, including the concentration of milkweed plants, will not be impacted by the proposed road improvements as the widening of Langstaff Road will occur generally within 25 m of the existing edge of pavement or along Highway 400. Although impacts to monarch habitat will be avoided or mitigated where possible, Monarch habitat is not protected under the ESA (2007), and no further review under the ESA is required.

SAR BATS

There is potential for two SAR bat species to occur within the study area; Little Brown Bat and Northern Long-eared Bat. Small-footed Myotis typically uses rocky areas / talus slopes, which are not present in the study area, and Tri-coloured are generally less common in the Region. These species were not confirmed during field surveys, and targeted acoustic monitoring / exit surveys were not part of the project scope. Suitable foraging habitat is present over all natural areas and there is limited potential for day roosting within natural areas of the study area. Low quality potential maternity colony habitat may be present in standing snags with only two cavities observed in Unit 1. Potential maternity colony habitat is likely present in Unit 4, though no cavity trees were explicitly observed during field survey as this unit was surveyed from the roadside only (refer to the mapping in the associated attachments).

Little Brown Bat and Northern Long-eared Bat are listed as endangered under the ESA (2007). No direct impacts to this species are anticipated. The two potential cavity trees observed in Unit 1 will be avoided as the widening will be limited to the widening of the bridge structure and there are no anticipated encroachments to the Unit 4 woodlot as the road between Dufferin and Highway 7 is not anticipated to be widened further than existing conditions (i.e. to remain as 4-lanes). Further, the majority of habitat, including all of the potential maternity colony habitat and the cavity trees observed, will not be impacted directly by the proposed road improvements, as such no further review under the ESA is required.

ESA IMPLICATIONS

It is our understanding that no further consultation with MNRF is required for this project as we are not impacting potential SAR habitat. Please kindly advise if the MNRF is in agreement with conclusions of our studies or if any further information is required.

Sincerely,

Jenny Enoae
Project Ecologist

Sophie Gibbs
Ecologist

cc: Katherine Jim, WSP
WSP ref.: 16M-01457-01

APPENDIX

F

REPRESENTATIVE SITE PHOTOGRAPHS

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Photo 1: Stormwater management pond upstream of Black Creek

Photo 2: Overview of structural culvert near upstream storm-water management pond, facing east

Photo 3: Culvert face

Photo 4: View of the overflow structure near the inlet at Creditview Road

Photo 5: View of the typical channel form and riparian vegetation upstream of Creditview Road

Photo 6: Woody debris barrier

Photo 7: View of the typical channel form / morphology and riparian vegetation between Highway 400 and Creditview Road

Photo 8: Over view facing north

Black Creek

wsp	Langstaff Road EA REPRESENTATIVE PHOTOGRAPHS	Date: December 2017 Project No: 16M-01457-01 Figure No: Appendix F

Enter File Path here

Photo 9: Overview of culvert inlet at Langstaff Road

Photo 10: Facing culvert inlet at Langstaff Road

Photo 11: Looking downstream through the Langstaff Road culvert inlet

Photo 12: Facing culvert outlet at Langstaff Road

Photo 13: Channel and Duckweed downstream of Langstaff Road

Photo 14: View of the culvert inlet at the off-ramp

Photo 15: Looking through the culvert inlet at the off-ramp

Photo 16: Bluegill found in off-ramp culvert inlet

Black Creek

wsp	Langstaff Road EA REPRESENTATIVE PHOTOGRAPHS	Date: December 2017 Project No: 16M-01457-01 Figure No: Appendix F

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Photo 17: Overview facing upstream from the structure

Photo 18: Downstream view facing the structure

Photo 19: Upstream erosion

Photo 20: Typical upstream channel

Photo 21: Overview facing downstream from the structure

Photo 22: Upstream view facing the structure

Photo 23: Downstream woody barrier

Photo 24: Typical downstream channel

Don River West Branch

wsp

Langstaff Road EA

REPRESENTATIVE PHOTOGRAPHS

Date: December 2017

Project No: 16M-01457-01

Figure No: Appendix F

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Photo 25: Overview facing upstream from the structure

Photo 26: Downstream view facing the structure

Photo 27: Upstream erosion

Photo 28: Typical upstream channel

Photo 29: Overview facing downstream from the structure

Photo 30: Upstream view facing the structure

Photo 31: Downstream woody barrier

Photo 32: Typical downstream channel

Westminster Creek

wsp	Langstaff Road EA REPRESENTATIVE PHOTOGRAPHS	Date: December 2017 Project No: 16M-01457-01 Figure No: Appendix F

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Photo 33: Overview facing upstream from the culvert inlet at Langstaff Road and Dufferin Street

Photo 34: Facing culvert inlet

Photo 35: Intermittent upstream channel bed in woodlot

Photo 36: Downstream overview at Langstaff Road and Dufferin Street

Photo 37: Facing downstream culvert outlet at Langstaff Road and Dufferin Street

Photo 38: Typical downstream channel

Photo 39: Downstream twin culvert inlet

Photo 40: Downstream vertical culvert acting as a permanent barrier to fish passage upstream

Tributary of Westminster Creek

wsp	Langstaff Road EA REPRESENTATIVE PHOTOGRAPHS	Date: December 2017 Project No: 16M-01457-01 Figure No: Appendix F

Photo 41: View of the edge of Unit 1 looking south, showing the sparse willow canopy and adjacent Cultural Meadow Vegetation (Unit 2), June 23, 2017.

Photo 42: View of Unit 2 south of Langstaff Road, with Unit 1 in the background, June 23, 2017.

Photo 43: View of the canopy of Unit 2 north of Langstaff Road with Units 5 and 6 to the left and right, June 23, 2017.

Photo 44: View of Unit 5 and Langstaff Road looking west, June 23, 2017.

Photo 45: View of Unit 3, looking north, June 23, 2017.

Photo 46: View of the Don River West Branch flowing through Unit 1, July 26, 2017.

Photo 47: View of cavity / wildlife trees within Unit 1, July 26, 2017.

Photo 48: View of Unit 4, looking northeast from the corner of Langstaff Road and Dufferin Street, April 3, 2017.