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DRAFT
NATURAL HERITAGE REPORT - IMPACT ASSESSMENT

ENVIRONMENTAL ASSESSMENT (EA) AND PRELIMINARY DESIGN FOR DRAINAGE IMPROVEMENTS OF HIGHWAY 50 FROM MAYFIELD ROAD TO HEALEY ROAD, TOWN OF CALEDON, REGION OF PEEL, PROJECT # 18-4860

prepared for:

R.V Anderson Associates Limited

arva

prepared by:

LGL LIMITED environmental research associates
CELEBRATING 50 YEARS

November 2021

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November 2021

LGL Project # TA8983

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1.0 INTRODUCTION

The Region of Peel is undertaking a Schedule 'B' Municipal Class Environmental Assessment (EA) Study and Preliminary Design for the proposed improvements to Highway 50 from Mayfield Road to Healey Road in the Town of Caledon. A stormwater management solution is required for numerous culvert crossings and roadside ditches in the study area, to update the drainage conditions to meet current and future requirements. The study limits are presented in **Figure 1** below.

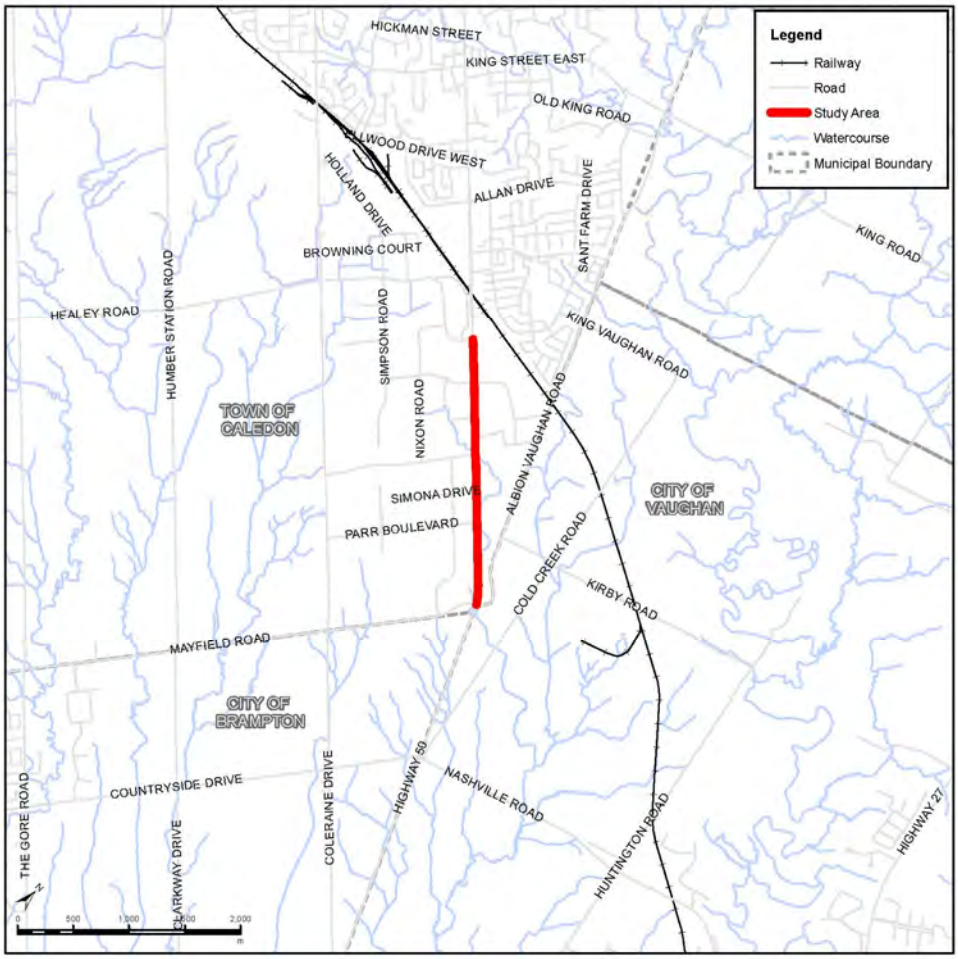

FIGURE 1. KEY PLAN

This Class EA and Preliminary Design Study is being conducted by R.V. Anderson Associates Limited (RVA) on behalf of the Region of Peel. LGL Limited, as a sub-consultant to RVA, is providing natural heritage services. This Natural Heritage Report – Existing Conditions documents the results of data collection and analysis in 2020. The potential effects of this project on natural heritage features, including environmental protection measures, will be presented in a final Natural Heritage Report.

The study area is within an urban area of the village of Bolton with sections of the roadway in a rural cross section and some areas of urbanized section and crossed by permanent and intermittent watercourses. Based on previous study completed by LGL in 2012 the watercourses consist of several Robinson Creek tributaries (referred to as Sites 11 – 14) within the south section of the study area. These watercourses are considered to be Small Riverine Warmwater Habitat and are managed for Darter species (OMNR & TRCA 2005).

2.0 EXISTING CONDITIONS

The following discussion outlines the existing environmental conditions within the study area and identifies natural heritage areas and/or features of environmental sensitivity and/or significance.

2.1 Physiography and Soils

The study area is located within a physiographic region consisting of a till plain (Chapman and Putman, 1984) which is generally flat in topography. The soils within the study limits consist of Peel Clay which is imperfectly drained, consists of smooth, gently sloping topography and is stone-free.

2.2 Aquatic Habitats and Communities

2.2.1 Purpose

Robinson Creek and the roadside ditches flowing into it were assessed in the study area, based on their potential to support direct or indirect fish habitat. Assessment was completed using accepted field investigation methods to determine the extent, quality and type of fish habitat in the study area. Supplemental fish sampling was completed in areas near the roadway using a dip net but no fish were captured.

2.2.2 Fish and Fish Habitat

The headwaters of Robinson Creek are within the study area, paralleling Highway 50 as a roadside ditch for long sections and crossing north of George Bolton Parkway. Robinson Creek is permanently to intermittently flowing watercourse in the study area. Many of the channel sections dry in the summer months but many sections contain permanent standing pools of water which can support year-round fish populations. As the channel contains a defined form within the majority of the study area, a headwater classification using the CVC/TRCA Evaluation, Classification and Management of Headwater Drainage Features Guidelines (January 2014) was not used. The watercourse and its floodplain are regulated by the TRCA O.Reg.166/06.

Aquatic habitat was assessed on April 7, 2020 (Air: 14ºC, partly cloudy) during spring freshet conditions and on July 9, 2020 (Air: 31ºC, sunny) during dry conditions. The locations of the channel are found on **Figure 2**. Photographs of the conditions observed during both site visits can be found in **Appendix A**.

The channel was observed flowing on the north side of George Bolton Parkway during the April visit through a channel approximately 0.3 – 1.0 m in wetted width through a mainly cattail community with no tree cover on the west side of the road. The substrates consist of fine materials including silt and clay with some placed rip rap and gravel likely transported from the roadway or the shoulder. Water is conveyed under the roadway through a corrugated plastic pipe. On the east side of the road, *Phragmites* dominates the area near RR 50. A pool approximately 0.5 m deep is located at the outlet of the concrete box culvert, but no fish were observed during either visit. The channel substrate consists of gravel and rubble and eventually flows into a pond approximately 25 m to the east. Dip netting during the July visit in this area resulted in no catch.

The channel flows out of the pond described above and flows in a large curve to the east and south before returning to the RR50 roadside approximately 400 m to the south, between Simona Drive and Parr Boulevard. At this point, the channel emerges from a large cattail marsh and flows as a large roadside ditch along the east side of RR50. The channel is functioning as a roadside ditch with cattails in the channel and manicured grass surrounding. Flows were observed in the ditches during both field investigation visits. The channel continues as a roadside ditch for a distance of over 200 m before again curving to the east and south

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WHEELER DR
COLERAINE DR
SIMPSON RD
MCEWAN DR
LORING DR
NIXON RD
HOPCROFT RD
COMMERCIAL RD
INDUSTRIAL RD
GEORGE BOLTON PKY
Robinson Creek Tributary
SIMONA DR
PILLSWORTH RD
ALBION-VAUGHAN RD
50 HWY
PARR BLVD
SIMPSON RD
Rainbow Creek
MAYFIELD RD
Rainbow Creek
Robinson Creek
TOWN OF CALEDON
CITY OF BRAMPTON
CITY OF VAUGHAN
KIRBY ROAD
COLD CREEK ROAD
KIRBY ROAD
LIPTAY AVE
LANDSBRIDGE ST
PAVIN CRES
TANZINI DR
EDGAR RD
ROYALTON DR
WATERBURY ST
KING VAUGHAN ROAD
Humber River

8 7 5 6 5 4 3 4 2 3 1 2 1

Source: Esri, Maxar, GeoEye, Earthstar Geograr
Community

LEGEND

- Anuran Monitoring Station
- Breeding Bird Point Count Station
- Flow Direction Arrow
- Municipal Boundary
- Railway
- Study Area
- Watercourse - Warm Thermal Regime
- Greenbelt Plan - Protected Countryside Designation
- Regulation Limit (TRCA)
- Wetland Evaluated Other (Tormore Wetland Complex)
- Wetland Unevaluated per OWES
- Waterbody

Data Sources: LGL Limited field surveys, Toronto and Region Conservation Authority (TRCA) & Ministry of Natural Resources and Forestry (LIO). Produced by LGL Limited under Licence with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2020. Contains information licenced under the Open Government Licence - Ontario.

0 120 240 360 480
m

NATURAL HERITAGE

LGL LIMITED
environmental research associates

Project:	TA8983	**Figure:**	2
Date:	December, 2020	**Prepared By:**	JJP
Scale:	1 : 11,500	**Checked By:**	JC

before returning to Highway 50, 300 m to the south where it returns to a roadside ditch along the east side of the road. Flows were observed in this area both visits as well.

The channel eventually proceeds to the RR50/Mayfield Road/Albion-Vaughan Townline intersection where the main channel proceeds south out of the study area and ultimately away from the roadway and to the southeast. At the intersection of RR50/Mayfield Road/Albion-Vaughan Townline the roadside ditches in each of the intersection quadrants support flows to a degree and therefore have the potential to support fish habitat at various times of the year. Below is a summary of the areas that contain potential direct fish habitat due to flow observations:

- the ditch to the northwest supports potential fish habitat for approximately 25 m north of the culvert and to the west of the culvert for an unknown distance (> 50 m); and
- the ditch to the southwest supports potential fish habitat for approximately 50 m west of the culvert and for approximately 25 m to the south before it enters a culvert under RR50;

2.2.3 Fish Community

Information obtained from Land Information Ontario (LIO) and the Humber River Fisheries Management Plan has identified Robinson Creek as 'Small Riverine Warmwater' fish habitat. Previous fish sampling completed by LGL south of the study area identified Brook Stickleback (*Culaea inconstans*) and Creek Chub (*Semotilus atromaculatus*) in the channel. These are both warmwater forage fish species which are tolerant to disturbance. The in-water construction timing window for this habitat is from July 1 – March 31 of any year to prevent and/or minimize impacts to warmwater fish and their habitat.

2.3 Vegetation and Vegetation Communities

2.3.1 Purpose

The geographical extent, composition, structure and function of the vegetation communities were identified through air photo interpretation and field investigations. Air photos were interpreted to determine the limits and characteristics of the vegetation communities in the study area. A field investigation of the vegetation communities along Highway 50 from Mayfield Road to Healy Road was conducted on September 7, 2020 within the road rights-of-way and adjacent habitat, to the extent possible. The field investigation was carried out to ground truth the boundaries of the vegetation communities and to conduct botanical surveys.

The vegetation communities were classified according to the *Ecological Land Classification for Southern Ontario: First Approximation and Its Application* (Lee *et al.* 1998). A plant list and a description of the general structure of vegetation communities were obtained during the field investigation. Plant species status was reviewed for Ontario (Oldham 2009), for Region of Peel (Riley 1989, Varga 2000) and the Toronto and Region Conservation Authority (TRCA 2009). Vascular plant nomenclature follows Newmaster *et al.* (1998) with a few exceptions that have been updated to Newmaster *et al.* (2005).

Vegetation Communities

Vegetation within the study area largely consists of manicured lawn with planted trees and shrubs. Naturalized vegetation was limited to small linear Dry-Moist Old Field Meadow (CUM1-1) communities adjacent to the Highway 50 right-of-way and Mineral Shallow Marsh (MAS2-1 and MAS) communities associated with the watercourses in the study area.

In general, these cultural meadow communities are comprised of a high proportion of non-native, disturbance tolerant plant species that are well adapted to persist in areas that are regularly disturbed including species that are adapted to high light conditions, limited soil moisture and species that are tolerant of salt spray. These communities are considered to be of low quality.

Several small shallow marsh communities were identified within the study area, these communities are associated with the riparian habitat of the watercourses and are generally dominated by cattails (*Typha* sp.) or common reed (*Phragmites australis*).

All of the vegetation communities identified in the study area are considered widespread and common in Ontario and are secure globally. These communities are delineated on **Figure 2** and described in **Table 1.**

2.3.2 Flora

A total of 51 plant species have been recorded within the study area. Of the 51 plant species identified, 19 (37%) plant species identified are native to Ontario and 32 (63%) plant species are considered introduced and non-native to Ontario. A list of vascular plants is presented in **Appendix B**. Definitions of the acronyms and species ranks used in **Appendix B** are described in **Appendix C**.

2.3.3 Species at Risk

No plant species that are regulated under the Ontario *Endangered Species Act* (ESA) or the Canada *Species at Risk Act* (SARA) were encountered during LGL's botanical investigation within the study area (those plant species regulated as Endangered, Threatened, or Special Concern). A description of provincial species ranks is provided in **Appendix C**.

TABLE 1.

SUMMARY OF ECOLOGICAL LAND CLASSIFICATION VEGETATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Community Characteristics
TERRESTRIAL – CULTURAL			
CUM	Cultural Meadow		
CUM1-1	Dry-Moist Old Field Meadow	**Emergent Trees/Shrubs:** includes Manitoba maple (*Acer negundo*), common buckthorn (*Rhamnus cathartica*), and staghorn sumac (*Rhus hirta*). **Ground Cover:** includes Canada goldenrod (*Solidago canadensis*), Kentucky bluegrass (*Poa pratensis* ssp. *pratensis*), Canada thistle (*Cirsium arvense*), wild carrot (*Daucus carota*), and chicory (*Cichorium intybus*).	• Cultural community (CU). • Tree cover and shrub cover < 25 % (M). • Parent mineral material or mineral soil (1). • Grasses and forbs are dominant (-1). • Community can occur on a wide range of soil moisture regimes (Dry-Moist).
WETLAND			
MAS	Shallow Marsh		
MAS	Shallow Marsh	**Ground Cover:** includes common reed (*Phragmites australis*).	• Tree and shrub cover <25% with variable flooding regimes (water depth <2m) (MA). • Standing or flowing water for much or all of the growing season (S).

TABLE 1.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION VEGETATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Community Characteristics
MAS2-1	Cattail Mineral Shallow Marsh	**Ground Cover:** includes cattails (*Typha* spp.), reed-canary grass (*Phalaris arundinacea*), and purple loosestrife (*Lythrum salicaria*).	• Tree and shrub cover <25% with variable flooding regimes (water depth <2m) (MA). • Standing or flowing water for much or all of the growing season (S). • Mineral soil (2). • Community dominated by cattails (-1).
OTHER*	Manicured		
M	Manicured grasses and planted shrubs and/or trees	Areas where large expanses of grass/shrubs/trees are maintained and/or planted.	

* Not identified as an ELC community by Lee, H., W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998. *Ecological Land Classification for Southern Ontario: First Approximation and Its Application*. Natural Heritage Information Centre.

2.4 Tree Resources

2.4.1 Methodology

An LGL ISA Certified Arborist conducted an inventory of tree resources on March 24, 2021 within the study area. The tree survey was undertaken along Highway 50 from Healey Road to Mayfield, all trees located within the grading limits of the preliminary design alternative and up to 6 metres beyond were surveyed.

The following information was collected for each tree:

- Species identification, including screening for species regulated under the Ontario *Endangered Species Act, 2007*;
- Measurements including diameter at breast height (DBH) and estimation of canopy dripline;
- Location: trees were given a unique numerical identifier and their locations recorded using a mapping grade EOS Arrow 100 GPS unit;
- Health Assessment: assessed as poor, fair, or good based on qualities such as trunk integrity, crown structure, vigour, and dieback. Physical irregularities were also noted for each tree.

2.4.2 Results

A total of 99 trees were identified and assessed during LGL's tree inventory. The majority of the trees surveyed were planted as streetscape and amenity features. Overall, trees within the study area range in size from 3 to 42 cm DBH and are generally considered to be in good to fair condition. A number of the trees displayed signs of abiotic and biotic defects which are typically associated with the urban setting including epicormic branching and stunted growth. A detailed summary of all trees surveyed are presented in **Appendix D – Tree Inventory** and the locations of each tree (by identified number) are

presented in the impact assessment figures further below in this report (**Figures 4A – 4F**).

Species at Risk
No tree species that are regulated under the Ontario *Endangered Species Act* (ESA) and the Canada *Species at Risk Act* (SARA) were identified within the study area.

2.5 Wildlife and Wildlife Habitat

Field investigations were conducted to document wildlife and wildlife habitat and to characterize the nature, extent and significance of wildlife usage within the study area. Wildlife investigations were focused within and adjacent to the Highway 50 ROW, from Mayfield Road north to Healey Road, Town of Caledon. Direct observations, calls and tracks were used to record wildlife present within the study area. Targeted Breeding bird surveys were also completed. A summary of survey date(s), tasks, weather and personnel for each visit is presented in **Table 2**. The methodology and results of these surveys are described in the following sections.

Secondary source data from the MNRF (NHIC) was reviewed to screen for wildlife, wildlife habitat and records of species at risk found within the study area.

TABLE 2.
SUMMARY OF DATE OF INVENTORY, TASK, WEATHER AND PERSONNEL

Date of Inventory	Task	Weather	LGL Personnel
June 8, 2020	Breeding bird, incidental wildlife survey, and habitat review	Partial cloud cover, 20°C, 12km/hr wind	David Smith
July 7, 2020	Breeding bird, incidental wildlife survey, and habitat review	Partial cloud cover, 22°C, 5km/hr wind	David Smith

2.5.1 Wildlife Habitat

The study area is dominated by a highly anthropogenic setting, primarily commercial and industrial lands with manicured grass found across much of the Highway 50 ROW. Small inclusions of semi-natural features, primarily cultural meadow, with several small areas of highly disturbed marsh were present across the study area. A small pond was present near the intersection of Highway 50 and George Bolton Parkway. Several small watercourse features cross through the study area; however, these watercourses provide only seasonal flows, contain little vegetation and are found within highly anthropogenic settings, limiting their capacity to support wildlife species.

Wildlife and wildlife habitat were found to be largely distributed across the entire study area; however, these communities were found to be highly disturbed in nature, limited their capacity to provide wildlife habitat. Wildlife species identified within the study area are generally considered urban or tolerant of anthropogenic features and disturbance.

2.5.2 Fauna

Based on field observations 18 species of wildlife could be verified in the study area and the majority of these records came from identification (through calls and sightings) of bird species with more modest numbers of herpetofauna and mammal species identified. The wildlife assemblage is typical of urban settings and includes wildlife species that are tolerant of a high level of human activity and habitat disturbance. A summary of wildlife species documented in the study area during field investigations is presented in **Table 3**.

TABLE 3. WILDLIFE SPECIES DOCUMENTED IN THE STUDY AREA BY LGL AND OTHERS

Wildlife	Scientific Name	Common Name	Species Status under Legislation/ Local Sensitivity				Source of Species Identification	
			Canada SARA	Ontario ESA	Legal Status	Local	LGL[1]	Secondary Source[2]
Birds	*Branta canadensis*	Canada Goose			MBCA	L5	*	
	Charadrius vociferus	Killdeer			MBCA	L5	*	
	Zenaida macroura	Mourning Dove			MBCA	L5	*	
	Cyanocitta cristata	Blue Jay			FWCA(P)	L5	*	
	Corvus brachyrhynchos	American Crow			MBCA	L5	*	
	Turdus migratorius	American Robin			MBCA	L5	*	
	Sturnus vulgaris	European Starling			-	L+	*	
	Bombycilla garrulus	Cedar Waxwing			MBCA	L5	*	
	Spizella passerina	Chipping Sparrow			MBCA	L5	*	
	Melospica melodia	Song Sparrow			MBCA	L5	*	
	Cardinalis cardinalis	Northern Cardinal			MBCA	L5	*	
	Agelaius phoeniceus	Red-winged Blackbird			-	L5	*	
	Quiscalus quiscula	Common Grackle			-	L5	*	
	Molothrus ater	Brown-headed Cowbird			-	L5	*	
	Carduelis tristis	American Goldfinch			MBCA	L5	*	
	Passer domesticus	House Sparrow			-	L+	*	
Mammals	*Sciurus carolinensis*	Eastern Gray Squirrel			FWCA(G)	L5	*	
	Procyon lotor	Raccoon			FWCA(F)	L5	*	

SARA – federal *Species at Risk Act*:
END - Endangered
THR – Threatened
SC - Special Concern

ESA - *Ontario Endangered Species Act*, 2007
END – Endangered
THR – Threatened
SC - Special Concern

Source of Species Identification:
[1]Species recorded within the study area during field investigations (LGL 2019).
[2]Species recorded within the study area (Conservation Halton 2018).

Other:
Significant Wildlife Habitat Technical Guide:
SWH – Area Sensitive Species
INT - Interior Species
Local – Conservation Halton – R-rare, C-common, A-abundant, U-uncommon, EXT-extirpated, INT-introduced
For definitions of species ranks, refer to **Appendix C**.

Legal Status:
MBCA - *Migratory Birds Convention Act*
ESA - E*ndangered Species Act, 2007*
SARA - *Species at Risk Act*
FWCA - *Fish and Wildlife Conservation Act*
(P) Protected Species (G) Game species (F) Furbearing mammals

Herpetofauna
No reptile or amphibian species were identified during surveys 2020. Use of the study area by reptile and amphibian species is expected to be limited to those species which are highly tolerant of human disturbances. No specialized habitat for reptile species (e.g. hibernacula, egg-laying sites, anuran breeding, etc.) were identified within the study area.

Breeding Bird Species
Breeding bird surveys were conducted on two separate mornings during the 2020 breeding bird season to document breeding bird evidence (BBE) and to characterize the nature, extent and significance of breeding bird usage of the habitats within the study area (see **Table 3**). In all habitat types, survey methodology and breeding bird behaviours used as evidence of breeding success were categorized according to the Breeding Bird Atlas five-year surveys organized by Bird Studies Canada (Cadman et al., 2007). Locations of the eight-breeding bird point count stations are shown on **Figure 2**. Point count stations were strategically placed where natural habitats were present.

Breeding evidence was obtained for 16 species of birds. Of these 16 species, breeding evidence was confirmed in a single species, suspected in eight species, and seven species were identified as having the potential to breed within the study area (see **Table 4**). Confirmed breeding by European Starling (*Sturnus vulgaris*) was documented based on identification of an adult carrying food (to its young). Species which were most commonly encountered across the study area were generally species associated with open-country, anthropogenic, and forest edge habitat types. No bird species at risk were recorded during targeted surveys. No bird nests were identified within culvert structures found across the study area.

No bird species were recorded which are considered area-sensitive and/or interior species according to the Significant Wildlife Habitat Technical Guide (MNRF 2000).

Mammal Species
Two mammal species were identified during field investigations in the study area. Eastern gray squirrel (*Sciurus carolinensis*) were noted frequently in road-side trees and Raccoon (*Procyon lotor*) tracks were observed in the vicinity of several culverts. The mammal species documented represent an assemblage that readily utilizes human influenced landscapes.

2.5.3 Species at Risk

Ten recorded bird species are protected under the *Migratory Birds Convention Act* (MBCA) and a single bird species is protected under the *Fish and Wildlife Conservation Act* (FWCA). Five bird species are not afforded any legislative protection. Each of the two mammal species identified are afforded protection under the FWCA. As noted above, none of the bird species which are considered area-sensitive or interior species according to the Significant Wildlife Habitat Technical Guide (MNRF 2000) were identified within the study area.

Of the 18 wildlife species recorded within the study area, none are regulated under the Ontario *Endangered Species Act, 2007* (ESA) or the federal *Species at Risk Act* (SARA). A review of the NHIC database (MNRF 2020) for rare species records contained no element occurrences for wildlife species at risk within the vicinity of the study area. Given the highly anthropogenic nature of the study area, lack of previous rare species records, and no species at risk being identified during targeted surveys, no species at risk are expected to be found the study area.

TABLE 4. BREEDING BIRD SPECIES DOCUMENTED IN THE STUDY AREA BY LGL LIMITED (2020)

Scientific Name	Common Name	SARA[1]	ESA[1]	Legal Status[1]	Other [1]	BBE[2]	Station #[3]
Branta canadensis	Canada Goose			MBCA	L5	H	1
Charadrius vociferus	Killdeer			MBCA	L5	T, A	1, 3, 7
Zenaida macroura	Mourning Dove			MBCA	L5	T	2, 4, 7, 8
Cyanocitta cristata	Blue Jay			FWCA(P)	L5	H	3
Corvus brachyrhynchos	American Crow			MBCA	L5	H	3, 8
Turdus migratorius	American Robin			MBCA	L5	T	2, 4, 7, 8
Sturnus vulgaris	European Starling			-	L+	CF	1, 3, 4, 5, 6, 8
Bombycilla garrulus	Cedar Waxwing			MBCA	L5	S	7
Spizella passerina	Chipping Sparrow			MBCA	L5	S	8
Melospica melodia	Song Sparrow			MBCA	L5	T, A	1, 2, 3, 7, 8
Cardinalis cardinalis	Northern Cardinal			MBCA	L5	H	3
Agelaius phoeniceus	Red-winged Blackbird			-	L5	T, A	1, 2, 3, 4, 7, 8
Quiscalus quiscula	Common Grackle			-	L5	H	8
Molothrus ater	Brown-headed Cowbird			-	L5	T	8
Carduelis tristis	American Goldfinch			MBCA	L5	T	2, 8
Passer domesticus	House Sparrow			-	L+	T	4, 6, 7

[1]For definitions of species ranks, refer to **Appendix C**.

[2]BBE - Breeding Bird Evidence (according to Bird Studies Canada):
Possible Breeding:
H - Species observed in its breeding season in suitable nesting habitat.
S - Singing male present in its breeding season in suitable nesting habitat.
Probable Breeding:
T - Permanent territory presumed through registration of territorial song on at least two days, a week or so apart, at the same place.
A - Agitated behaviour or anxiety calls of an adult.
Confirmed Breeding:
NU - Used nest or egg shell found (occupied or laid within the period of study).
FY - Recently fledged young or downy young, including young incapable of sustained flight.
CF - Adult carrying food for young.
NE - Nest containing eggs.
NY - Nest with young seen or heard.

[3]Breeding Bird Point Count Station.

2.6 Designated Natural Areas

2.6.1 Purpose

Designated natural areas include areas identified for protection by the Ontario Ministry of Natural Resources and Forestry (MNRF), Toronto and Region Conservation Authority, Town of Caledon and Region of Peel. A review of relevant background data was undertaken to identify designated natural areas within and adjacent to the study. Designated natural areas within the vicinity of the study area are presented on **Figure 2**.

Areas of Natural and Scientific Interest (ANSIs)/ Provincially Significant Wetlands (PSWs)/ Environmentally Sensitive Areas (ESAs)
There are no Areas of Natural and Scientific Interest (ANSIs), Provincially Significant Wetlands (PSWs) or Environmentally Sensitive Areas (ESAs) located in the study area.

Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses
A portion of the is regulated areas under Ontario Regulations 166/06 (TRCA) Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. A permit will be required from TRCA for development within these regulated areas. The regulation limit within the study area is presented on **Figure 2.**

3.0 PROJECT DESCRIPTION

A summary of the recommended preliminary design for Highway 50 is described in **Table 5**. Generally, the work will consist of culvert upgrades and the construction of a pathway along the west side of the roadway.

A review of the preliminary design drawings has been completed to determine the potential environmental impacts and to recommend appropriate environmental protection and mitigation measures. The results of this assessment have been summarized in **Section 4.0**.

4.0 IMPACT ASSESSMENT AND ENVIRONMENTAL PROTECTION

4.1 Soil Disturbance and Potential for Erosion

Soil disturbance within the study area will be limited mainly due to the highly urban nature of the area, with some exceptions, where grading will be required in semi-natural areas. Impacts resulting from any excavating or cut and fill operations will be temporary in nature. Erosion and sedimentation mitigation measures will be implemented prior to and during the construction phase.

A Sediment and Erosion Control Plan will be prepared during detail design. These control measures will include:

- limiting the geographical extent and duration that soils are exposed to the elements;
- implementing standard erosion and sedimentation control measures in accordance with Ontario Provincial Standard Specification (OPSS) 805 Construction Specification for Temporary Erosion and Sediment Control Measures. These standard measures include: silt fence placed along the margins of areas of soil disturbance; applying conventional seed and mulch and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization; and,
- managing surface water outside of work areas to prevent water from coming in contact with exposed soils.

Monitoring of these erosion and sedimentation control measures during and after construction will be implemented to ensure their effectiveness. These environmental measures will greatly reduce/minimize adverse environmental impacts.

TABLE 5.
SUMMARY OF CULVERT MODIFICATIONS AND SITE-SPECIFIC MITIGATION

Name	Fish Habitat	Existing	Proposed	Net Environmental Effects	Site Specific Mitigation
HUMBER RIVER WATERSHED					
Culvert 1: Robinson Creek Tributary (Highway 50 and George Bolton Parkway)	• Permanent flow, warmwater thermal regime	• 600 m diameter x 17.6 m Corrugated Steel Pipe (CSP)	• 17.6 m long concrete box culvert, 1829 mm span x 1829 mm rise culvert opening	• No negative effects anticipated as all culverts will be sized larger than existing • Minor restoration works required at upstream and downstream tie in points	• All works to be conducted within the warmwater timing window (July 1 - March 31). • Work will be done "in the dry" • Vegetation removals will require replacement • Water by-pass system will be required during open cut construction of culvert replacements • A fish rescue could be required during the water by-pass operation.
Culvert 2: Robinson Creek Tributary (Highway 50 and George Bolton Parkway)	• Permanent flow, warmwater thermal regime	• 900 m diameter x 37.15 m Corrugated Steel Pipe (CSP)	• 37.15 m long concrete box culvert, 1829 mm span x 1829 mm rise culvert opening	• No negative effects anticipated as all culverts will be sized larger than existing	• All works to be conducted within the warmwater timing window (July 1 - March 31). • Work will be done "in the dry" • Water by-pass system will be required during open cut construction of culvert replacements • A fish rescue could be required during the water by-pass operation.

TABLE 5.
SUMMARY OF CULVERT MODIFICATIONS AND SITE-SPECIFIC MITIGATION

Name	Fish Habitat	Existing	Proposed	Net Environmental Effects	Site Specific Mitigation
Culvert 3: Robinson Creek Tributary (Highway 50 and George Bolton Parkway)	• Permanent flow, warmwater thermal regime	• 1829 mm span x 1200 mm rise x 33.72 m Corrugated Steel Pipe (CSP)	• 33.72 m long concrete box culvert, 1829 mm span x 1829 mm rise culvert opening	• No negative effects anticipated as all culvert will be sized larger than existing • Minor restoration works required at upstream and downstream tie in points	• All works to be conducted within the warmwater timing window (July 1 - March 31). • Work will be done "in the dry" • Vegetation removals will require replacement • Vegetation removals will require replacement • Water by-pass system will be required during open cut construction of culvert replacements • A fish rescue could be required during the water by-pass operation.
Culvert 4: Robinson Creek Tributary (Highway 50 and Private Property)	• Permanent flow, warmwater thermal regime	• 525 mm diameter x 108.58 m Corrugated Steel Pipe (CSP)	• 600 mm diameter x 108.58 m concrete box culvert	• No negative effects anticipated as all culverts will be sized larger than existing • Minor restoration works required at upstream and downstream tie in points	• All works to be conducted within the warmwater timing window (July 1 - March 31). • Work will be done "in the dry" • Water by-pass system will be required during open cut construction of culvert replacements A fish rescue could be required during the water by-pass operation.

4.2 Aquatic Habitats and Communities

The proposed works have the potential to affect fish habitat, vegetation/trees adjacent to the watercourses and water quality in the study area. As described above, Robinson Creek supports permanent and intermittent segments of warmwater fish habitat. No critical habitats or fish SAR have been identified in the study area. See **Table 5** for a summary of the proposed works.

Impacts to the watercourse in the study area are expected as a result of the road, drainage and structure improvements. The following impacts have the potential to occur:

- temporary and/or permanent disruption of site-specific, direct habitat;
- changes to water quality and quantity;
- changes in water temperature; and
- barriers to fish passage.

A Request for Review will be submitted to DFO to determine the potential for "harmful alteration of fish habitat" at the detail design stage once culvert designs have been advanced as DFO's "measures to protect fish and fish habitat" cannot be fully implemented and there are no 'standards and codes of practices" that apply to culvert replacements.

4.2.1 Temporary Disruption or Permanent Loss of Site-Specific Habitat

All of the culvert works propose to replace culverts with those of a larger size with no increase in the length of the structures. As such there should be no direct loss of fish habitat resulting form structure improvements. Temporary impacts could result from the construction activities required to remove the existing structures and install the new ones. Impacts from construction could result from temporary bypass of flows, increased erosion and sedimentation and the direct mortality of fish. However, if the following mitigation measures are implemented properly, minimal impacts to the fishery should occur.

General Environmental Protection Measures

To reduce the potential for 'harmful alteration, disruption or destruction' of fish habitat, the following environmental protection measures will be implemented:

- work areas will be delineated with construction fencing to minimize the area of disturbance;
- appropriate sediment control structures will be installed prior to and maintained during construction to prevent entry of sediments into the watercourse;
- where cofferdams are to be employed, unwatering effluent will be treated prior to discharge to receiving watercourse;
- cofferdams will be constructed using pea gravel bags or equivalent to isolate the work area and maintain flow;
- fish isolated by construction activities will be captured and safely released to the watercourse. A Licence to Collect Fish for Scientific Purposes under the *Fish and Wildlife Conservation Act* (1997) is required from the MNRF to capture and transfer fish;
- no construction machinery or vehicles are permitted to cross the watercourse at any time during construction, unless authorized by the permitting agencies;
- good housekeeping practices related to materials storage/stockpiling, equipment fuelling/ maintenance, etc. will be implemented during construction; and
- disturbed riparian areas will be vegetated and/or covered with an erosion control blanket as quickly as possible to stabilize the banks and minimize the potential for erosion and sedimentation.

Timing Windows/Working In-the-Dry

The magnitude of effects to the local aquatic habitat and communities is related to the extent, timing and duration of the project. The following mitigation measures are recommended:

- construction should be staged to minimize the duration of in-water work. Any in-water works will occur inside the fisheries timing window of July 1 – March 31 (work permitted) to protect the warmwater fish community and their habitat;
- the in-water works should be completed within an isolated, dry work area behind coffer dams which can withstand potential high flow events (1 in 2-year flow events);
- all construction works and access shall be confined to the minimum area necessary to perform the proposed works;
- in-water construction / demolition will commence only when all materials required for construction are at hand to minimize the duration of in-water work; and
- conduct in-water works during low flow periods.

Erosion and Sediment Control

The works to replace the existing culverts have the potential to suspend soil particles, resulting in the impairment of surface water quality. An increase in runoff may promote erosion downstream thus impairing water quality with sediments. Water quality treatment must be provided to maintain the existing quality of surface water within the study limits. It is assumed that construction will include the creation of isolated work areas to replace the existing culvert structures. The following measures should be implemented:

- install effective erosion and sediment control measures prior to beginning work in order to stabilize all erodible and exposed areas;
- regularly inspect and maintain the erosion and sediment control measures and structures during all phases of the project;
- regularly monitor for any evidence of sedimentation during all phases of the work and take corrective action;
- apply seed and mulch, tackifier and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization;
- keep the erosion and sediment control measures in place until disturbed areas are permanently stabilized;
- use biodegradable sediment control materials whenever possible;
- remove all sediment control materials once the site is stabilized;
- schedule works to avoid wet, windy and rainy periods (and anticipate acclimate weather by checking forecasts) that may result in high flow volumes and/or increase erosion and sedimentation; and
- operate machinery on land in stable dry areas.

These environmental protection measures will greatly reduce the potential adverse effects to fish and fish habitat resulting from construction activities.

4.2.2 Temporary Change to Water Quality

The construction associated with the proposed works has the potential to alter water quality through on-site erosion of exposed materials and the subsequent impairment of downstream water quality with sediments and other contaminants.

Changes to water quality will be mitigated through construction occurring during the driest time of the year, isolation of the work areas behind cofferdams, the treatment of effluent from unwatering prior to its release back into the receiving watercourses, and the deployment and maintenance of erosion and sediment controls

(silt fencing, flow checks, etc.) which will prevent sediments from reaching the watercourses from exposed soils upslope.

Refuelling and construction staging areas where contaminants are handled should be located off-site where possible, or well away from the waterbodies. Equipment refuelling should take place on impermeable pads or buried liners designed to allow full containment of spills.

Stormwater management practices are expected to be incorporated into the design of the widened road.

4.2.3 Changes in Water Temperature

The thermal regime of a receiving watercourse may be altered by stormwater runoff or removal of riparian vegetation that shades the watercourse. In the summer, runoff can become superheated through contact with paved surfaces, which, when discharged to a receiving watercourse can result in thermal shock, thereby injuring or killing aquatic organisms.

It is expected that there will be no significant increase in temperature as a result of the proposed works as few changes to the existing culvert layouts or the roadway are proposed. Appropriate stormwater management strategies will be implemented.

4.2.4 Barriers to Fish Passage

No additional barriers to fish passage will result from this project.

4.3 Vegetation and Vegetation Communities

4 The proposed improvements to Highway 50 have the potential to result in impacts to vegetation and vegetation communities. Effects on vegetation related to these modifications could include:

- Displacement of/ disturbance to vegetation and vegetation communities; and,
- Displacement of/ disturbance to rare, threatened or endangered vegetation or significant vegetation communities.

4.3.1 Disturbance/Displacement of Vegetation and Vegetation Communities

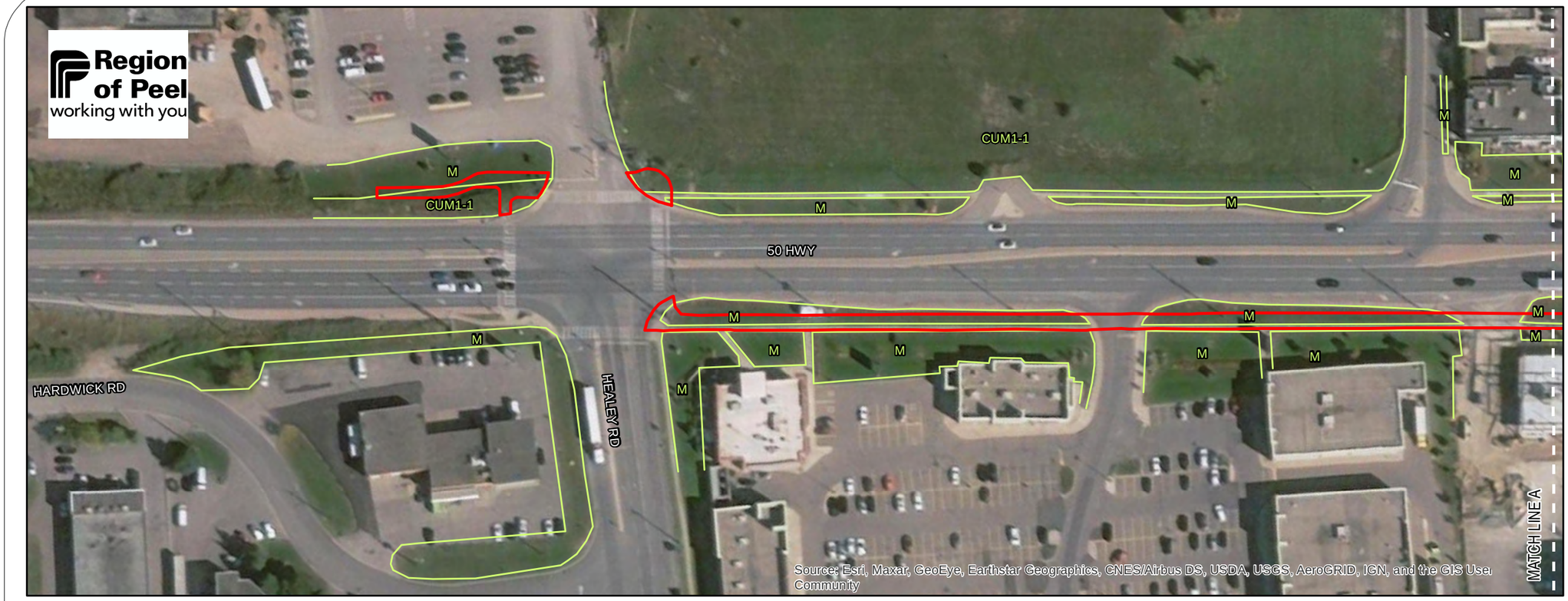
Clearing of vegetation will be required to accommodate the proposed road improvements to Highway 50 from Mayfield Road to Healy Road. The improvements to Highway 50 will result in the removal of portions of shallow marsh and cultural meadows communities and manicured lands. Overall, impacts resulting in the loss of vegetation within the study area is considered to be minor (see **Figures 3A – 3C**).

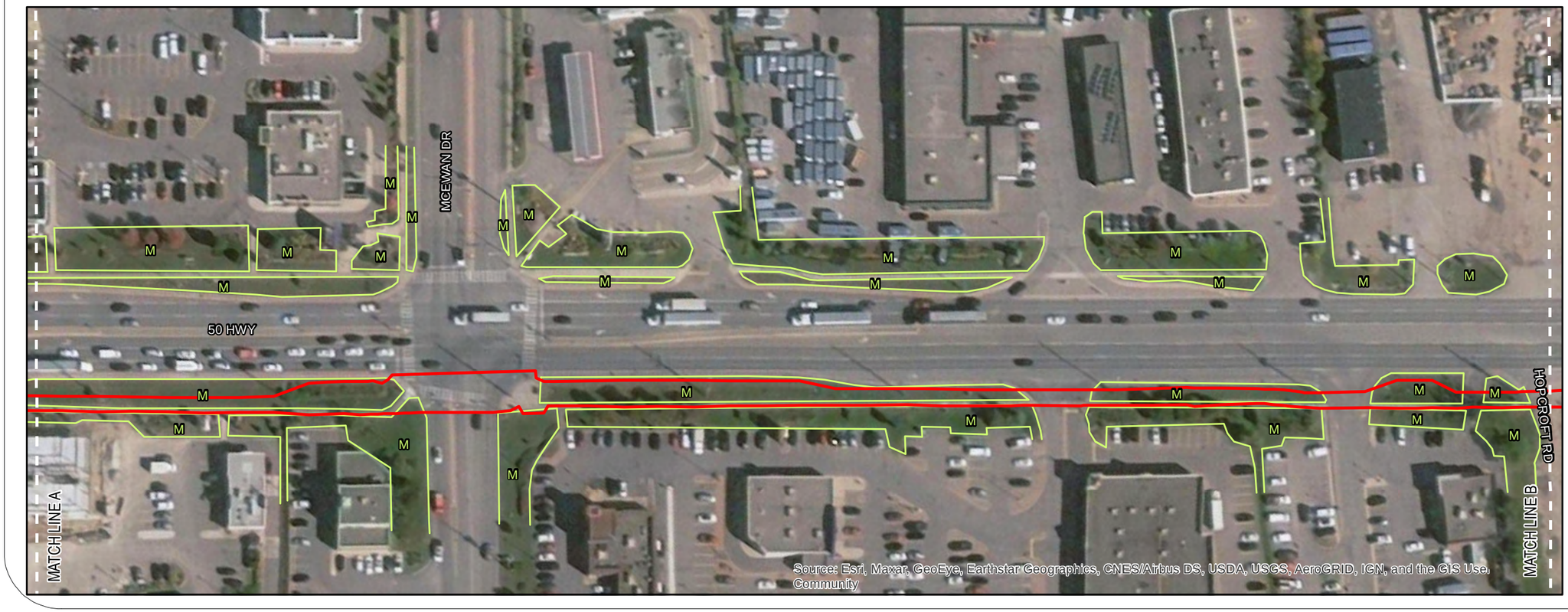
Wetland Communities

Edge impacts will occur to two shallow marsh communities located on the east and west side of the intersection of Highway 50 and George Bolton Parkway. Efforts should be made to retain the remaining portion of the shallow marsh communities, to the extent possible. Shallow marsh communities are widespread and common in Ontario and the loss of a portion adjacent of the communities is not expected to have any negative impacts to the remaining portions of Cattail Shallow Marsh within the study area.

Cultural Meadows

Cultural communities typically persist in areas that are regularly disturbed, and as a result, generally contain a high proportion of invasive and non-native plant species that are tolerant of these conditions. Overall, the loss of vegetation within the cultural meadow communities is considered to be minor in significance. Disturbance to vegetation as a result of the proposed road is considered to be minor since the vegetation located within and adjacent to the proposed right-of-way is adaptable to regular disturbance activities as a result of existing infrastructure and land-use practices.





LEGEND

- Proposed Culvert Upgrade/Replacement
- Grading Limit

Vegetation Communities

- Vegetation Community Boundary
- CUM1-1 Old-Moist Old Field Meadow Type
- M Manicured
- MAS Shallow Marsh
- MAS2-1 Cattail Mineral Shallow Marsh Type
- OAO Open Aquatic

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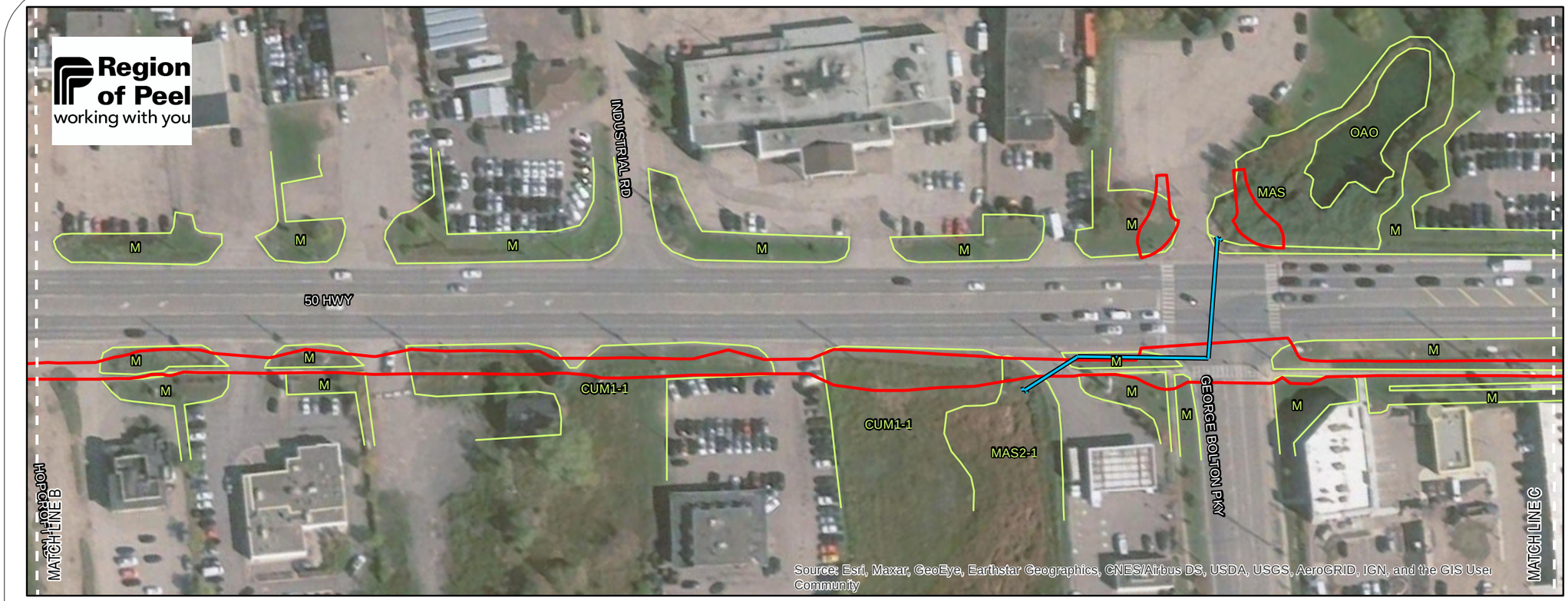
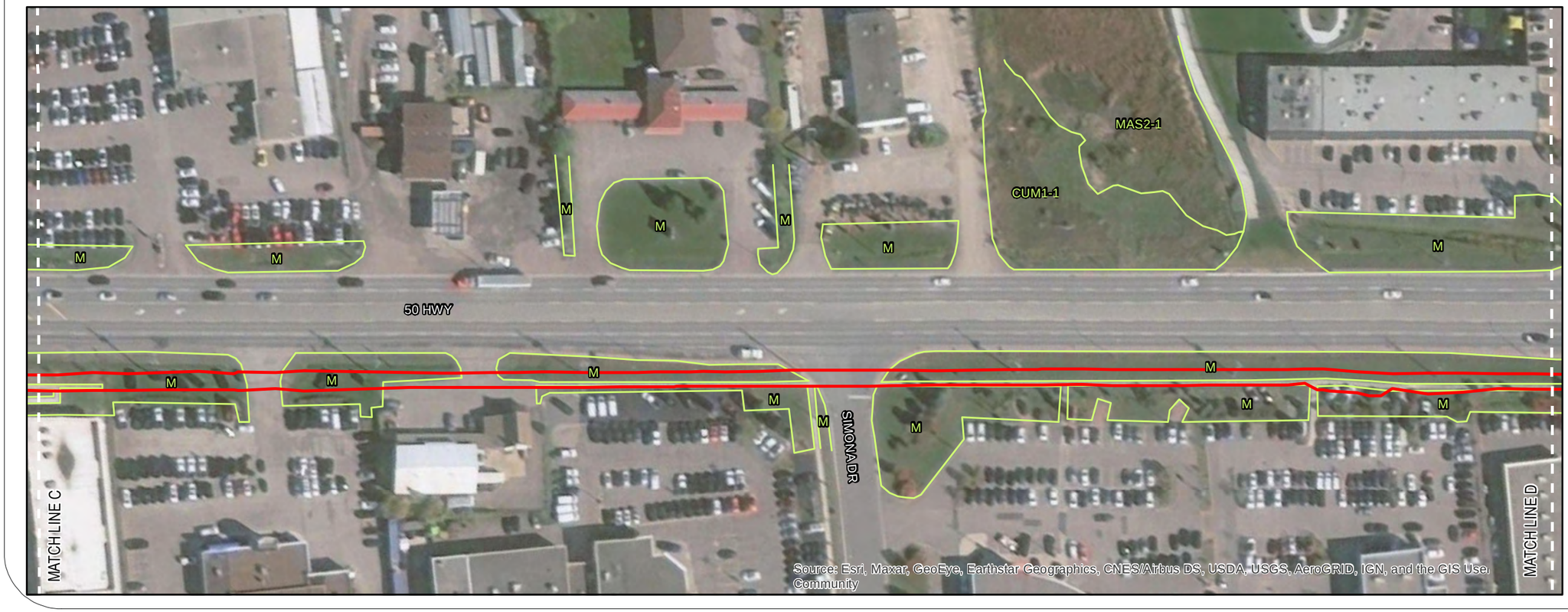
IMPACT ASSESSMENT

LGL LIMITED
environmental research associates

Project:	TA8983	**Figure:**	3a
Date:	March, 2021	**Prepared By:**	JJP
Scale:	1 : 1,300	**Checked By:**	JC





LEGEND

- Proposed Culvert Upgrade/Replacement
- Grading Limit

Vegetation Communities

- Vegetation Community Boundary
- CUM1-1 Old-Moist Old Field Meadow Type
- M Manicured
- MAS Shallow Marsh
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IMPACT ASSESSMENT

LGL LIMITED
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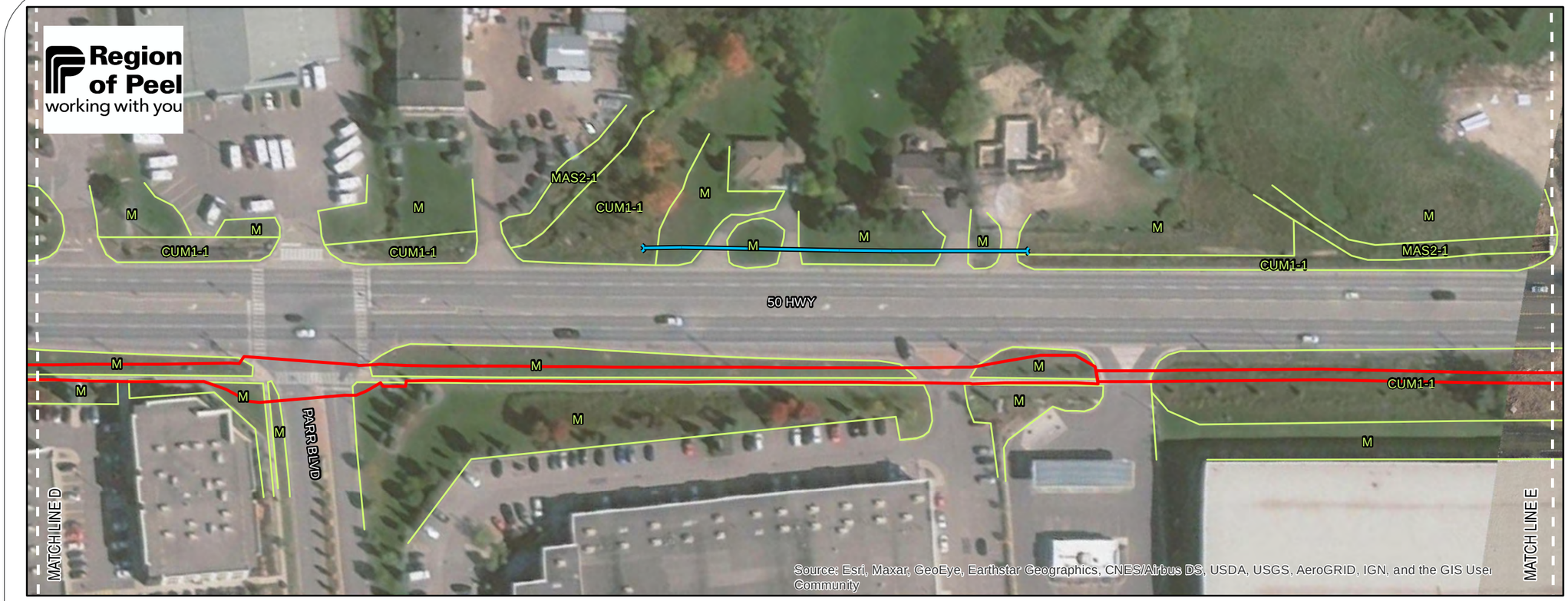
Project:	TA8983	**Figure:**	3b
Date:	March, 2021	**Prepared By:**	JJP
Scale:	1 : 1,300	**Checked By:**	JC



LEGEND

- Proposed Culvert Upgrade/Replacement
- Grading Limit

Vegetation Communities

- Vegetation Community Boundary
- CUM1-1 Old-Moist Old Field Meadow Type
- M Manicured
- MAS Shallow Marsh
- MAS2-1 Cattail Mineral Shallow Marsh Type
- OAO Open Aquatic

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IMPACT ASSESSMENT

LGL LIMITED
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Project:	TA8983	**Figure:**	3c
Date:	March, 2021	**Prepared By:**	JJP
Scale:	1 : 1,300	**Checked By:**	JC

It is expected that plant species displaced and/or disturbed within the cultural vegetation communities due to the road improvements will re-colonize available lands adjacent to the new right-of-way post-construction. Disturbance activities often serve to promote the establishment and / or spread of certain plant species (including the disturbance tolerant species identified within the existing right-of-way).

Manicured Lands
The majority of impacts to vegetation within the study area as a result of the proposed improvements to Highway 50 will occur to manicured lands which generally, consists of turf grasses and planted trees/shrubs. Overall, the significance of the impact to these lands is considered to be minor.

4.3.2 Displacement of Rare, Threatened or Endangered Vegetation or Significant Vegetation Communities

As noted previously, no plant species that are regulated under the Ontario *Endangered Species Act*, or the Canada *Species at Risk Act* were encountered during LGL's botanical investigation with the study area (those plant species regulated as Endangered, Threatened, or Special Concern). In addition, no locally or regionally rare plant species were identified within the study area.

All of the vegetation communities identified during LGL's botanical surveys are considered widespread and common in Ontario and secure globally.

Designated Natural Areas
As noted previously there are no Provincially Significant Wetlands (PSWs), Areas of Natural or Scientific Interest (ANSIs), or Environmentally Significant/ Sensitive Areas (ESAs) on lands within 120 m of the study area.

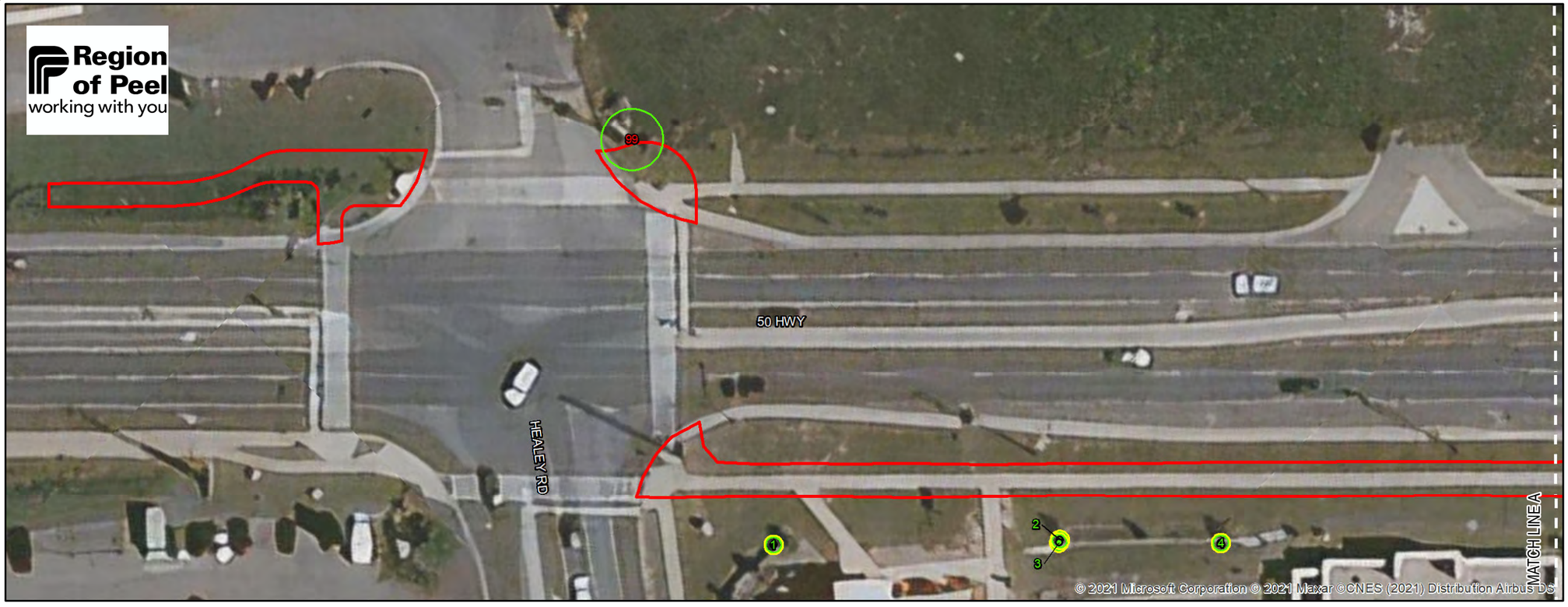
4.4 Tree Impacts

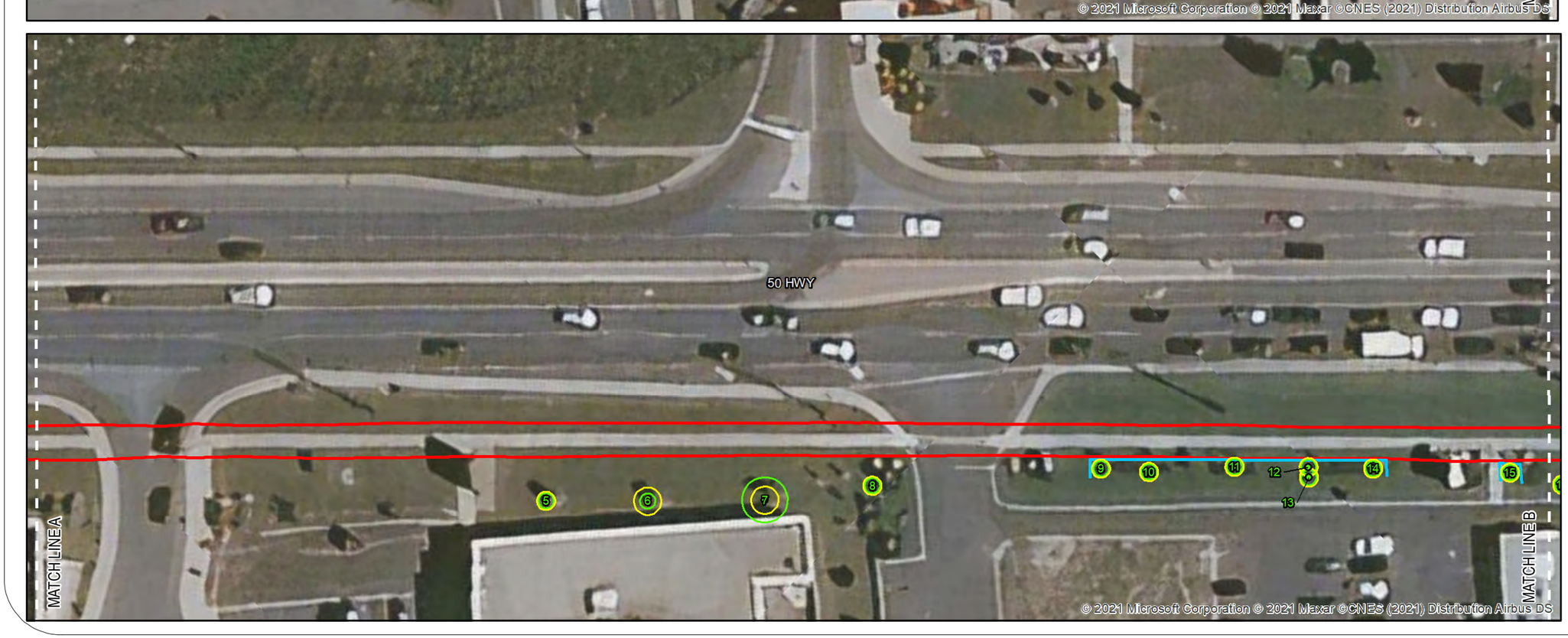
An impact assessment was undertaken to determine impacts to trees resources as a result of the proposed improvements to Highway 50 from Healey Road to Mayfield. Road. This assessment was conducted using the grading limits for the preliminary design alternative. Trees recommended for removal include trees within the grading limits or trees that would not be able to withstand construction related impacts. Trees identified as being injured will have disturbance within the minimum tree protection zone (TPZ); however, impacts to these trees are considered to be minor and it is likely that these trees will survive post construction. In addition, trees identified as retained are considered to be minimally affected and will be protected through mitigation measures.

As noted above, this assessment is preliminary and a detailed tree preservation plan should be prepared during the detail design phase. The recommendations for tree preservation, removal and mitigation measures included in this report should be updated at each phase of the detail design. In addition, a gap analysis shall be undertaken during the detail design phase prior to construction should refinements and changes to the geometry of the preferred design alternative occur. The gap analysis shall be undertaken to ensure that all trees are surveyed and impacts to trees within the study area are adequately addressed.

4.4.1 Tree Removals

As noted above trees identified for removal includes trees within or outside the limit of disturbance where the amount of critical root zone that will be removed will likely cause significant and irreversible decline of the health of the tree. As such, a total of 19 trees have been identified for removal as a result of the proposed improvements to Highway 50. Trees identified for removal are listed in **Appendix D** and presented in **Figures 4A – 4F**.





Region of Peel
working with you

LEGEND

- 15 — Tree To Be Retained
- 39 — Tree To Be Impacted
- 56 — Tree To Be Removed
- Dripline
- Tree Protection Zone (TPZ)
- Tree Protection Fencing
- Grading Limit

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0 6.5 13 19.5 26 m

TREE RESOURCES

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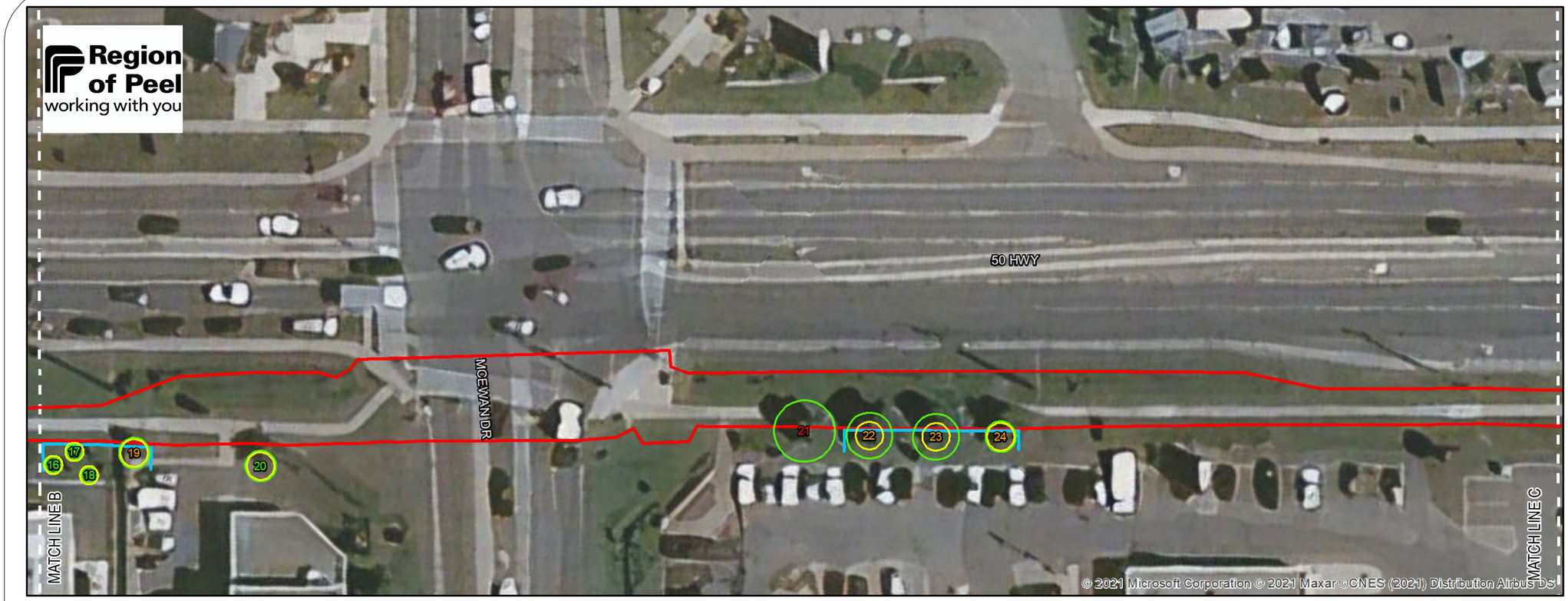
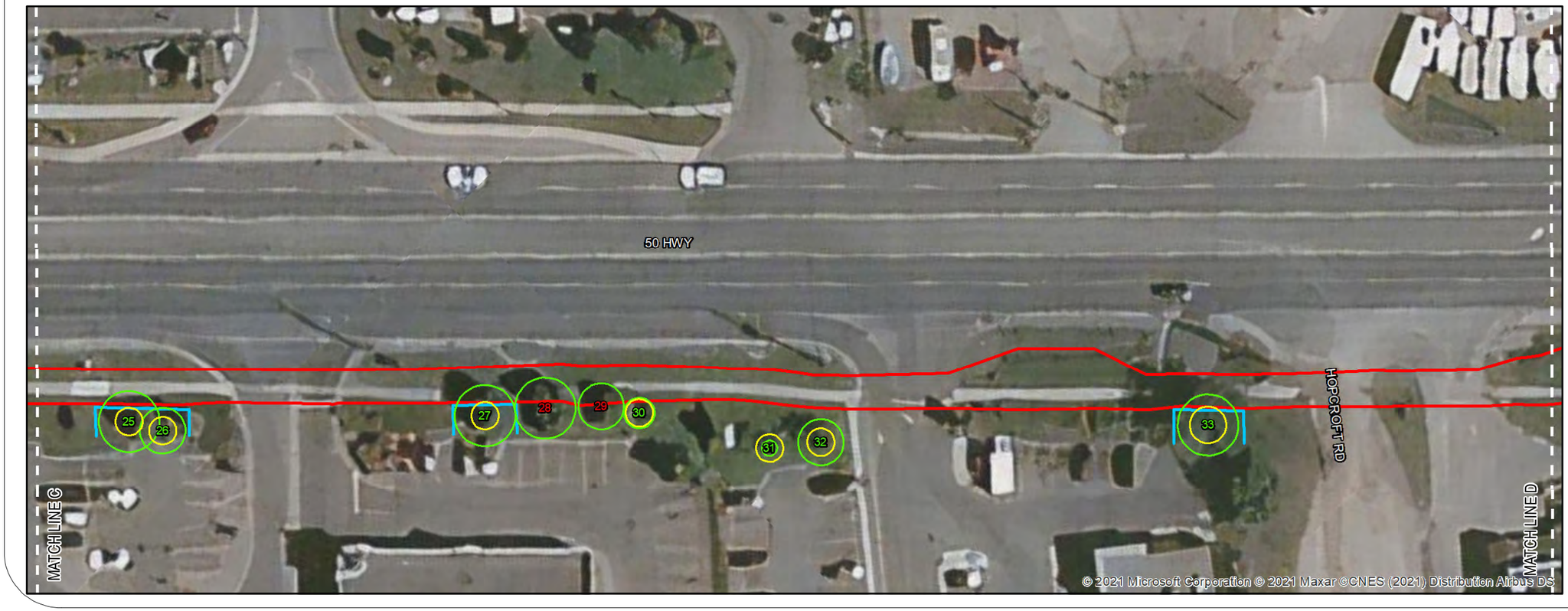
Project:	TA8983	**Figure:**	4a
Date:	March, 2021	**Prepared By:**	JJP
Scale:	1 : 600	**Checked By:**	LMC





Region of Peel
working with you

LEGEND

- 15 — Tree To Be Retained
- 39 — Tree To Be Impacted
- 56 — Tree To Be Removed
- Dripline
- Tree Protection Zone (TPZ)
- Tree Protection Fencing
- Grading Limit

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TREE RESOURCES

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Project:	TA8983	**Figure:**	4b
Date:	March, 2021	**Prepared By:**	JJP
Scale:	1 : 600	**Checked By:**	LMC

LEGEND

- 15 Tree To Be Retained
- 39 Tree To Be Impacted
- 56 Tree To Be Removed
- Dripline
- Tree Protection Zone (TPZ)
- Tree Protection Fencing
- Grading Limit

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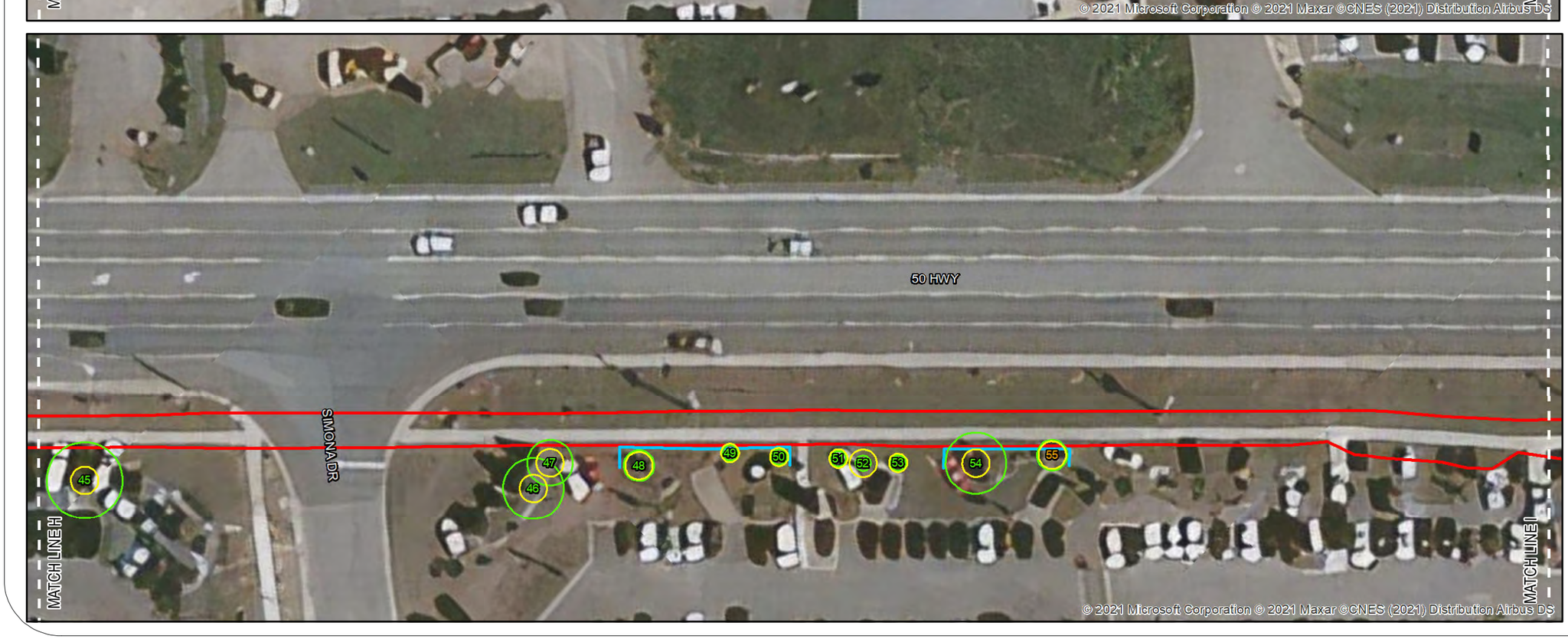
0 6.5 13 19.5 26 m

TREE RESOURCES

LGL LIMITED
environmental research associates

Project:	TA8983	**Figure:**	4c
Date:	March, 2021	**Prepared By:**	JJP
Scale:	1 : 600	**Checked By:**	LMC



Region of Peel
working with you

LEGEND

- 15 — Tree To Be Retained
- 39 — Tree To Be Impacted
- 56 — Tree To Be Removed
- Dripline
- Tree Protection Zone (TPZ)
- Tree Protection Fencing
- Grading Limit

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TREE RESOURCES

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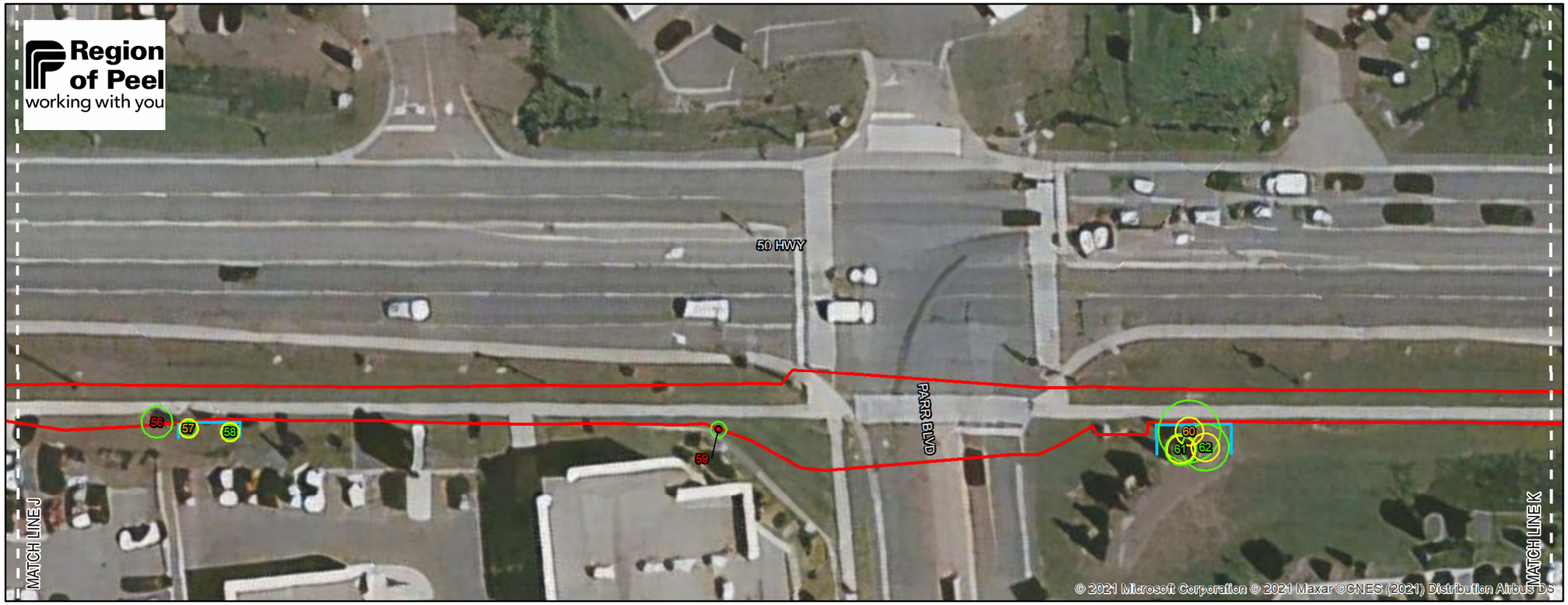
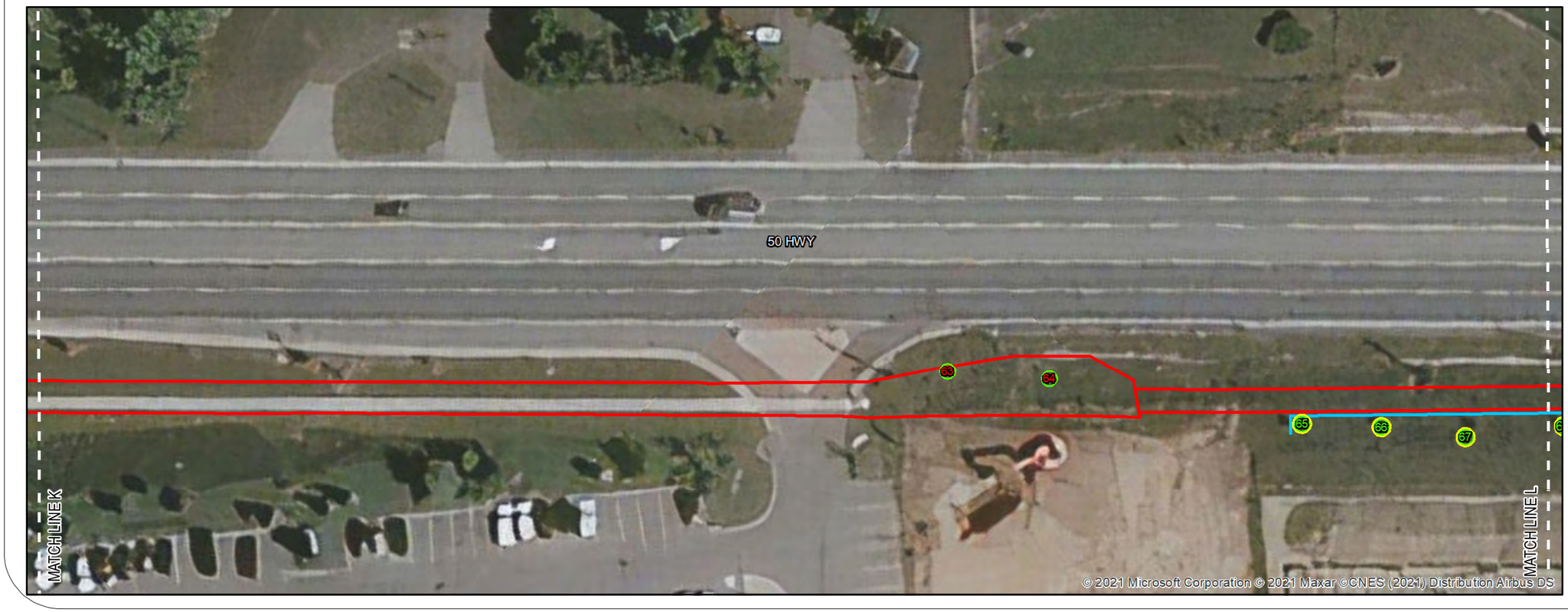
Project:	TA8983	**Figure:**	4d
Date:	March, 2021	**Prepared By:**	JJP
Scale:	1 : 600	**Checked By:**	LMC





Region of Peel
working with you

LEGEND

- 15 Tree To Be Retained
- 39 Tree To Be Impacted
- 56 Tree To Be Removed
- Dripline
- Tree Protection Zone (TPZ)
- Tree Protection Fencing
- Grading Limit

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0 6.5 13 19.5 26 m

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TREE RESOURCES

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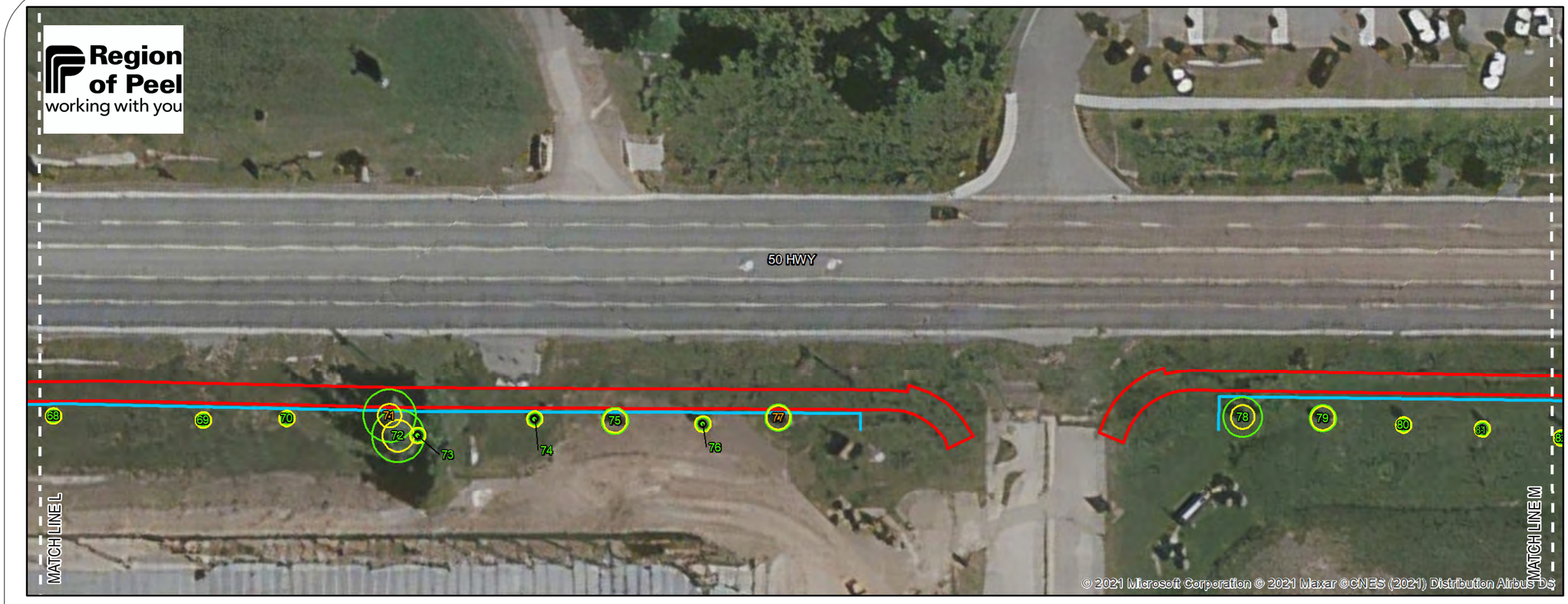
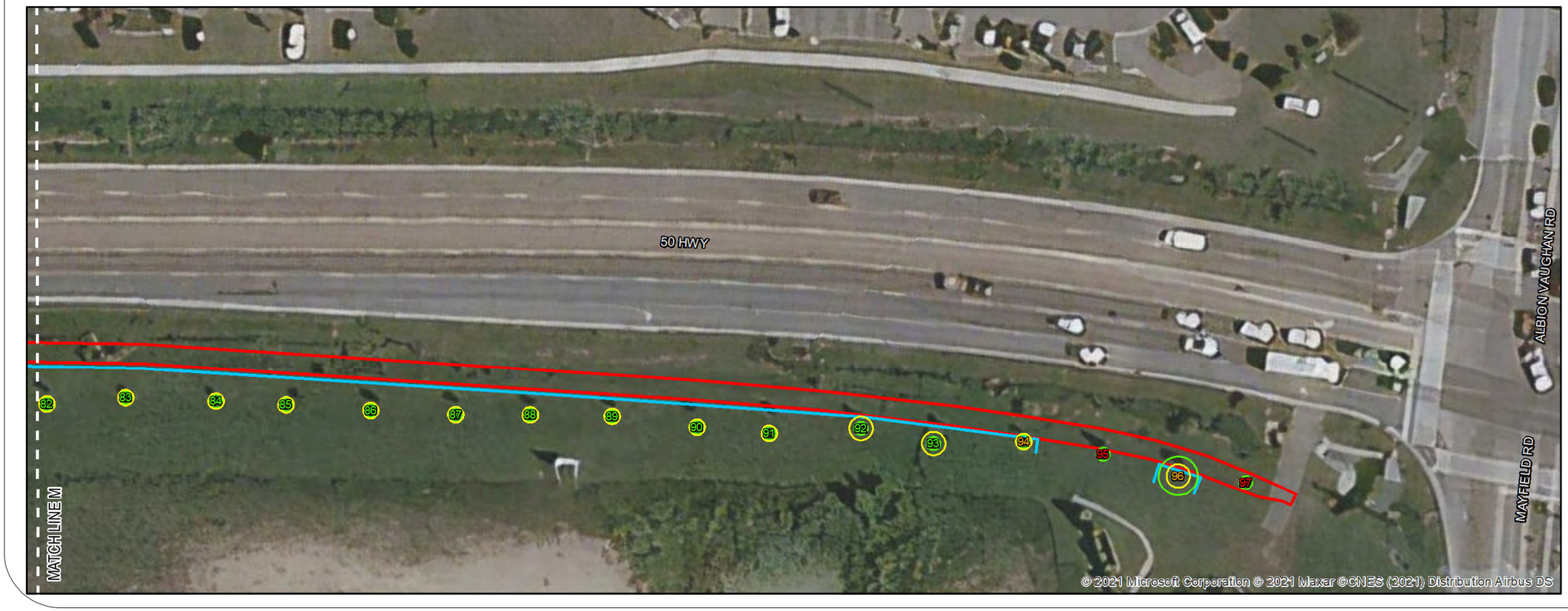
Project:	TA8983	**Figure:**	4e
Date:	March, 2021	**Prepared By:**	JJP
Scale:	1 : 600	**Checked By:**	LMC





LEGEND

- 15 — Tree To Be Retained
- 39 — Tree To Be Impacted
- 56 — Tree To Be Removed
- Dripline
- Tree Protection Zone (TPZ)
- Tree Protection Fencing
- Grading Limit

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0 8 16 24 32 m

TREE RESOURCES

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Project:	TA8983	**Figure:**	4f
Date:	March, 2021	**Prepared By:**	JJP
Scale:	1 : 700	**Checked By:**	LMC

4.4.2 Tree Injuries

As noted above trees identified as injured require works within the minimum TPZ; however, disturbance is minor. As such, a total of 12 trees have been identified as injured as a result of the proposed improvements to Highway 50. Trees identified for removal are listed in **Appendix D** and presented in **Figures 4A – 4F**.

4.4.3 Tree Retention

Trees identified for retention will not be adversely affected by the proposed improvements to Highway 50. A total of 68 trees have been identified for retention and listed in **Appendix D** and presented in **Figures 4A – 4F**.

4.4.4 Mitigation

General Recommendations

The following general recommendations conform to good arboriculture practices and are designed to help ensure impacts to trees surrounding the work zone, and those identified to be retained are minimized. General recommendations include:

- Tree protection fencing must be installed as per the approved tree preservation plan in accordance with OPSS 801 – Construction Specification for the Protection of Trees. The contract administrator must review and approve the fencing prior to the commencement of any grading work and the fencing will be maintained until all construction is complete;
- Heavy machinery shall not to be operated within the TPZ (including overhead swinging of machine arms);
- Construction materials, equipment, soil, construction waste or debris shall not to be stored within the TPZ or dripline of the trees identified for protection;
- No movement or parking of vehicles, placement of equipment or pedestrian traffic shall occur within the TPZ;
- No grade changes shall occur within the TPZ unless approved by the Tree Protection Plan;
- Trees shall not have any rigging cables or hardware of any sort attached or wrapped around them, nor shall any contaminants be dumped within protected areas;
- All removals must be felled into the work zone to ensure that damage does not occur to trees within the TPZ;
- Should any additional, incidental or accidental tree injuries occur during construction, a qualified Arborist shall be consulted to determine whether additional mitigation measures should be employed; and,
- Tree clearing shall not be conducted during the Migratory Bird Convention Act (MBCA) breeding season commonly considered May 1 – August 31, unless under appropriate permitting.

Pruning

The following recommendations shall be implemented for any root or canopy pruning taken within the study area.

Root Pruning

All approved root pruning shall be undertaken by an ISA Certified Arborist or an Ontario College of Trades 444A Arborist or Arborist Apprentice and in accordance with Best Management Practices. The following practices shall be implemented for any root pruning:

- Prior to root pruning low pressure hydro-vac excavation should be undertaken in a 0.5 m wide section within and along the length of the TPZ to a depth of 500 mm to expose the roots;

- No roots greater than 6 cm in diameter shall be pruned;
- Exposed roots shall not be allowed to dry out, where roots are exposed, they shall be covered by dampened mulch or topsoil to prevent desiccation;
- All pruning shall maintain the integrity of the root bark ridge;
- A slow release deep root low nitrogen fertilizer shall be applied to any trees requiring root pruning to increase vigour; and,
- Backfilling shall occur as soon as possible and shall occur with clean native uncontaminated topsoil.

Canopy Pruning
All canopy and clearance pruning shall be undertaken by an ISA Certified Arborist or an Ontario College of Trades 444A Arborist or Arborist Apprentice. Any branches that overhang the work site and require pruning shall be pruned using good arboricultural practices in accordance with American National Standard (ANSI) A300 (Part 1) – 2008 Pruning.

4.5 Wildlife and Wildlife Habitat

The proposed improvements to Highway 50 from Mayfield Road to Healey Road in the Town of Caledon, has the potential to result in the displacement of and disturbance to wildlife and wildlife habitat. Effects on wildlife related to these modifications may include:

- displacement of wildlife and wildlife habitat;
- barrier effects on wildlife passage;
- wildlife/vehicle conflicts;
- disturbance to wildlife from noise, light and visual intrusion;
- potential impacts to migratory birds; and
- displacement of rare, threatened or endangered wildlife and significant wildlife habitat.

4.5.1 Displacement of Wildlife and Wildlife Habitat

The Highway 50 improvements will take place within and outside of the existing highway right-of-way. The areas potentially impacted by the works described above are dominated by highly disturbed manicured landscape, old field meadow habitat with several small inclusions of shallow marsh habitat. The natural heritage features potentially impacted by the Highway improvements consist entirely of disturbed low quality wildlife habitat. These habitats were found to contain a wildlife assemblage which is considered tolerant to human disturbance/anthropogenic influences. Limited negative effects are anticipated as habitats identified within the study area consist almost entirely of previously modified/disturbed wildlife habitat with low habitat diversity and limited habitat potential. For an analysis of vegetation removal per vegetation (habitat) community refer to the section above.

4.5.2 Barrier Effects on Wildlife Passage

From a landscape perspective no new migratory/movement barriers to wildlife will be created as a result of the proposed Highway 50 improvements. Highway widening and associated disturbances may result in increased habitat fragmentation and potentially pose new barriers to wildlife movement within the subject

vegetation communities. However, given the highly disturbed nature of the landscape, wildlife passage/barrier effects are expected to be minor.

4.5.3 Wildlife/Vehicle Conflicts

The proposed Highway 50 improvements may increase the width of the travelled surface resulting in an increased risk of mortality for wildlife that elects to cross the road. The existing Highway 50 right-of-way poses a potential barrier to wildlife movement. While the increase in width of road increases exposure of wildlife to vehicle conflicts, the potential increase in wildlife mortality above existing conditions is considered minor.

4.5.4 Disturbance to Wildlife from Noise, Light and Visual Intrusion

Noise, light and visual intrusion may alter wildlife activities and patterns. In urban settings, such as the study area, wildlife has become acclimatized to urban conditions and only those fauna that are tolerant of human activities tend to persist. Given that wildlife found within the study area are acclimatized to the presence of road infrastructure and other anthropogenic influences, disturbance to wildlife from any increase in noise, light and visual intrusion are not expected to have any significant adverse effects.

Potential disturbance caused by light pollution from the proposed improvements to the transportation network can be mitigated by using reflectors to focus light beams onto the and away from natural heritage features adjacent to the road.

4.5.5 Potential Impacts to Migratory Birds

A number of bird species listed under the *Migratory Birds Convention Act* (MBCA) are located within the study area. The MBCA prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or the damaging, destroying, removing or disturbing of nests. While migratory insectivorous and non-game birds are protected year-round, migratory game birds are only protected from March 10 to September 1. To comply with the requirements of the MBCA, disturbance, clearing or disruption of vegetation where birds may be nesting should be completed outside the window of April 1 to July 31. In the event that these activities must be undertaken from April 1 to July 31, a nest survey will be conducted by a qualified avian biologist to identify and locate active nests of species covered by the MBCA. If an active nest is located, a mitigation plan shall be developed and provided to Environment Canada – Ontario Region for review prior to implementation. No nests of migratory bird species were found under bridge or culvert structures.

4.5.6 Displacement of Rare, Threatened or Endangered Wildlife or Significant Wildlife Habitat

As noted above, none of the species recorded within the study area are regulated under the Ontario *Endangered Species Act, 2007* (ESA) or the federal *Species at Risk Act* (SARA). A review of the NHIC database (MNRF 2020) for rare species records contained no element occurrences for wildlife species at risk within the vicinity of the study area. Given the highly anthropogenic nature of the study area, lack of previous rare species records, and no species at risk being identified during targeted surveys, no species at risk are expected to be found the study area. As a result, no impacts to species at risk are anticipated.

5.0 CONCLUSIONS

The improvements to the roadway and the associated drainage in the study area will have very little potential to affect natural heritage features within the study based on the disturbed and urban nature of the area. No permanent impacts are expected, although temporary impacts from construction are possible.

Scattered trees and semi-natural vegetation occur within close proximity to the roadway which could be impacted. The vegetation communities assessed serve as poor habitat for wildlife, and as such very limited impacts to wildlife or their habitat is expected.

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APPENDIX A
WATERCOURSE PHOTOGRAPHS

PROJECT #TA8983
December 2020

Region of Peel
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REGIONAL ROAD 50
PHOTO APPENDIX

LGL LIMITED
environmental research associates

Robinson Creek northwest of RR50 and George Bolton Parkway Intersection looking northwest (April 7, 2020).

Robinson Creek northwest of RR50 and George Bolton Parkway Intersection looking northwest (April 7, 2020).

Robinson Creek northwest of RR50 and George Bolton Parkway Intersection looking northwest (July 9, 2020).

Robinson Creek northwest of RR50 and George Bolton Parkway Intersection looking northwest (July 9, 2020).

Robinson Creek southeast of RR50 and George Bolton Parkway Intersection looking southeast (April 7, 2020).

Robinson Creek southeast of RR50 and George Bolton Parkway Intersection looking southeast (April 7, 2020).

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Robinson Creek southeast of RR50 and George Bolton Parkway Intersection looking southeast (July 9, 2020).

Robinson Creek southeast of RR50 and George Bolton Parkway Intersection looking southeast (July 9, 2020).

Robinson Creek approx. 120 m south of Simona Drive looking northeast on east side of RR50 (April 7, 2020).

Robinson Creek between Simona Dr. and Parr Blvd. along east side of RR50 looking north (April 7, 2020).

Robinson Creek along east side of RR50 at Parr Blvd and RR50 intersection looking north (July 9, 2020).

Robinson Creek approx. 50 m south of Parr Blvd. looking east (April 7, 2020).

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Robinson Creek approx. 50 m south of Parr Blvd. looking east (April 7, 2020).

Robinson Creek approx. 425 m south of Parr Blvd. looking south along east side of RR50 (April 7, 2020).

Robinson Creek northeast of RR50 and Mayfield Road looking north along east side of RR50 (April 7, 2020).

Robinson Creek southeast of RR50 and Mayfield Road looking south along east side of RR50 (April 7, 2020).

Robinson Creek northwest of RR50 and Mayfield Road looking north along west side of RR50 (April 7, 2020).

Robinson Creek northwest of RR50 and Mayfield Road looking north along west side of RR50 (July 9, 2020).

PROJECT #TA8983
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REGIONAL ROAD 50
PHOTO APPENDIX

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Robinson Creek southwest of RR50 and Mayfield Road looking south along west side of RR50 (April 7, 2020).

Robinson Creek southwest of RR50 and Mayfield Road looking south along west side of RR50 (July 9, 2020).

Robinson Creek southwest of RR50 and Mayfield Road looking west along south side of Mayfield Rd. (April 7, 2020).

Robinson Creek southwest of RR50 and Mayfield Road looking east along south side of Mayfield Rd. (July 9, 2020).

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APPENDIX B
VASCULAR PLANT LIST

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Appendix B.
Vascular Plant List

	Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Peel	CUM1-1	OAO	MAS2-1	MAS
	RANUNCULACEAE	**BUTTERCUP FAMILY**										
*	*Ranunculus acris*	tall buttercup	L+	G5	SE5			X	X			
	AMARANTHACEAE	**AMARANTH FAMILY**										
*	*Amaranthus powellii*	Powell's amaranth	L+	G5	SE5			X	X			
	POLYGONACEAE	**SMARTWEED FAMILY**										
*	*Rumex crispus*	curly-leaf dock	L+	G?	SE5			X	X			
	CUCURBITACEAE	**GOURD FAMILY**										
	Echinocystis lobata	prickly cucumber	L5	G5	S5			X	X			
	BRASSICACEAE	**MUSTARD FAMILY**										
*	*Capsella bursa-pastoris*	shepherd's purse	L+	G?	SE5			X	X			
*	*Hesperis matronalis*	dame's rocket	L+	G4G5	SE5			X	X			
	ROSACEAE	**ROSE FAMILY**										
	Fragaria virginiana ssp. *virginiana*	scarlet strawberry	L5	G5T?	SU			X	X			
	FABACEAE	**PEA FAMILY**										
*	*Lotus corniculatus*	bird's-foot trefoil	L+	G?	SE5			X	X			
*	*Medicago lupulina*	black medick	L+	G?	SE5			X	X			
*	*Melilotus alba*	white sweet-clover	L+	G?	SE5			X	X			
*	*Trifolium hybridum* ssp. *elegans*	alsike clover	L+		SE5			X	X			
*	*Vicia cracca*	tufted vetch	L+	G?	SE5			X	X			
	LYTHRACEAE	**LOOSESTRIFE FAMILY**										
*	*Lythrum salicaria*	purple loosestrife	L+	G5	SE5			X			X	
	ONAGRACEAE	**EVENING-PRIMROSE FAMILY**										

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Appendix B.
Vascular Plant List

	Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Peel	CUM1-1	OAO	MAS2-1	MAS
	Oenothera biennis	common evening-primrose	L5	G5	S5			X	X			
	RHAMNACEAE	**BUCKTHORN FAMILY**										
*	*Rhamnus cathartica*	common buckthorn	L+	G?	SE5			X	X			
	ACERACEAE	**MAPLE FAMILY**										
	Acer negundo	Manitoba maple	L+?	G5	S5			X	X			
	ANACARDIACEAE	**SUMAC FAMILY**										
	Rhus hirta	staghorn sumac	L5	G5	S5			X	X			
	BALSAMINACEAE	**TOUCH-ME-NOT FAMILY**										
	Impatiens capensis	spotted touch-me-not	L5	G5	S5			X			X	
	APIACEAE	**PARSLEY FAMILY**										
*	*Daucus carota*	wild carrot	L+	G?	SE5			X	X			
	ASCLEPIADACEAE	**MILKWEED FAMILY**										
	Asclepias syriaca	common milkweed	L5	G5	S5			X	X			
	SOLANACEAE	**POTATO FAMILY**										
*	*Solanum dulcamara*	bitter nightshade	L+	G?	SE5			X	X			
	BORAGINACEAE	**BORAGE FAMILY**										
*	*Echium vulgare*	blueweed	L+	G?	SE5			X	X			
	PLANTAGINACEAE	**PLANTAIN FAMILY**										
*	*Plantago lanceolata*	ribgrass	L+	G5	SE5			X	X			
*	*Plantago major*	common plantain	L+	G5	SE5			X	X			
	SCROPHULARIACEAE	**FIGWORT FAMILY**										
*	*Verbascum thapsus*	common mullein	L+	G?	SE5			X	X			
	DIPSACACEAE	**TEASEL FAMILY**										

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Appendix B.
Vascular Plant List

	Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Peel	CUM1-1	OAO	MAS2-1	MAS
*	*Dipsacus fullonum* ssp. *sylvestris*	wild teasel	L+	G?T?	SE5			X	X			
	ASTERACEAE	**ASTER FAMILY**										
*	*Achillea millefolium* var. *millefolium*	common yarrow	L+	G5T?	SE?			X	X			
	Ambrosia artemisiifolia	common ragweed	L5	G5	S5			X	X			
*	*Arctium lappa*	great burdock	L+	G?	SE5			X	X			
*	*Arctium minus*	common burdock	L+	G?T?	SE5				X			
	Aster ericoides var. *ericoides*	white heath aster	L5	G5T?	S5			X	X			
	Aster lateriflorus var. *lateriflorus*	calico aster		G5T5	S5				X			
*	*Cichorium intybus*	chicory	L+	G?	SE5			X	X			
*	*Cirsium arvense*	Canada thistle	L+	G?	SE5			X	X			
	Conyza canadensis	horseweed	L5	G5	S5			X	X			
	Euthamia graminifolia	flat-topped bushy goldenrod		G5	S5				X			
*	*Leucanthemum vulgare*	ox-eye daisy	L+	G?	SE5			X	X			
*	*Matricaria maritima* ssp. *maritima*	seaside camomile		G5T?	SE?				X			
	Solidago canadensis	Canada goldenrod	L5	G5	S5			X	X			
*	*Sonchus arvensis* ssp. *arvensis*	field sow-thistle	L+	G?T?	SE5			X	X			
	Symphyotrichum novae-angliae	New England aster	L5	G5	S5			X	X			
*	*Taraxacum officinale*	common dandelion	L+	G5	SE5			X	X			
*	*Tragopogon pratensis* ssp. *pratensis*	meadow goat's-beard	L+	G?T?	SE5			X	X			
	POACEAE	**GRASS FAMILY**										
*	*Bromus inermis* ssp. *inermis*	awnless brome	L+	G4G5T?	SE5			X	X			

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Appendix B.
Vascular Plant List

	Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Peel	CUM1-1	OAO	MAS2-1	MAS
*	*Dactylis glomerata*	orchard grass	L+	G?	SE5			X	X			
*	*Digitaria sanguinalis*	large crabgrass	L+	G5	SE5			X	X			
	Phalaris arundinacea	reed canary grass	L+?	G5	S5			X	X		X	
	Phragmites australis	common reed	L+?	G5	S5			X	X		X	X
	Poa pratensis ssp. *pratensis*	Kentucky bluegrass	L+	G5T	S5			X	X			
	TYPHACEAE	**CATTAIL FAMILY**										
	Typha angustifolia	narrow-leaved cattail	L+	G5	S5			X			X	
	Typha latifolia	broad-leaved cattail	L4	G5	S5			X	X		X	

APPENDIX C
ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

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APPENDIX C
ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

Species Rank

GRANK	Global Rank

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

The most important factors considered in assigning global ranks are the total number of known, extant sites world-wide, and the degree to which they are potentially or actively threatened with destruction. Other criteria include the number of known populations considered to be securely protected, the size of the various populations, and the ability of the taxon to persist at its known sites. The taxonomic distinctness of each taxon has also been considered. Hybrids, introduced species, and taxonomically dubious species, subspecies and varieties have not been included.

Short Form	Definition
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.
GH	Historic, no records in the past 20 years.
GU	Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.
GX	Globally extinct. No recent records despite specific searches.
?	Denotes inexact numeric rank (i.e. G4?).
G	A "G" (or "T") followed by a blank space means that the NHIC has not yet obtained the Global Rank from The Nature Conservancy.
G?	Unranked**,** or, if following a ranking, rank tentatively assigned (e.g. G3?).
Q	Denotes that the taxonomic status of the species, subspecies, or variety is questionable.
T	Denotes that the rank applies to a subspecies or variety.

SRANK	Provincial Rank

Provincial (or Sub-national) ranks are used by the Ontario Ministry of Natural Resources 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. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated lists at least annually.

Short Form	Definition
S1	**Critically Imperiled** in Ontario 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.

SRANK	**Provincial Rank**
Provincial (or Sub-national) ranks are used by the Ontario Ministry of Natural Resources 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. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated lists at least annually.	
Short Form	**Definition**
S2	**Imperiled** in Ontario because of rarity due to very restricted range, very few populations (often 20 or fewer occurrences) steep declines or other factors making it very vulnerable to extirpation.
S3	**Vulnerable** in Ontario 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 Ontario.
SX	**Presumed Extirpated** – Species or community is believed to be extirpated from Ontario.
SH	**Possibly Extirpated** – Species or community occurred historically in Ontario and there is some possibility that it may be rediscovered.
SNR	**Unranked**—Conservation status in Ontario 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.
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).

COSEWIC	**Committee on the Status of Endangered Wildlife in Canada**
The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species that are considered to be at risk in Canada.	
Status	**Definition**
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)	A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

COSSARO/OMNR	**Committee on the Status of Species at Risk in Ontario/Ontario Ministry of Natural Resources**
The Committee on the Status of Species at Risk in Ontario (COSSARO)/Ontario Ministry of Natural Resources (OMNR) assesses the provincial status of wild species that are considered to be at risk in Ontario.	
Status	**Definition**
Extinct (EXT)	A species that no longer exists anywhere.
Extirpated (EXP)	A species that no longer exists in the wild in Ontario but still occurs elsewhere.
Endangered (Regulated) (END–R)	A species facing imminent extinction or extirpation in Ontario which has be regulated under Ontario's *Endangered Species Act.*
Endangered (END)	A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's *Endangered Species Act.*
Threatened (THR)	A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
Special Concern (SC)	A species with characteristics that make it sensitive to human activities or natural events.
Not at Risk (NAR)	A species that has been evaluated and found to be not at risk.
Data Deficient (DD)	A species for which there is insufficient information for a provincial status recommendation.

Species Status under Federal Legislation

MBCA	**Migratory Birds Convention Act**
The Canada *Migratory Birds Convention Act* provides for the protection of migratory birds in Canada and the United States. The provisions of this Act are implemented through the Migratory Bird Regulations. Bird species that are regulated under the *Migratory Birds Convention Act* are noted in the applicable species lists.	

SARA	**Species at Risk Act**
The Canada *Species at Risk Act* provides a framework for actions across Canada to ensure the survival of wildlife species and the protection of our natural heritage. It sets out how to decide which species are a priority for action and what to do to protect a species. It identifies ways governments, organizations and individuals can work together, and it establishes penalties for a failure to obey the law. Regulated species are listed in Schedules 1, 2 and 3 of the Act.	
Schedule 1 SARA (1)	Species that are currently covered under the Act.
Schedule 2 SARA (2)	Species that are endangered or threatened that have not been re-assessed by COSEWIC for inclusion on Schedule 1.
Schedule 3 SARA (3)	Species that are of special concern that have not yet been re-assessed by COSEWIC for inclusion on Schedule 1.

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Species Status under Provincial Legislation

ESA	**Endangered Species Act**	
The Ontario *Endangered Species Act* provides for the conservation, protection, restoration and propagation of species of fauna and flora of the Province of Ontario that are threatened with extinction. Regulated species are listed in Ontario Regulation 338.		
Schedule No.	**Short Form**	**Status**
Schedule 1 ESA (1)	EXT	The species of flora and fauna listed in Schedule 1 are declared to be threatened with extinction.
Schedule 2 ESA (2)	EXP	The species of flora and fauna listed in Schedule 2 are declared to be extirpated.
Schedule 3 ESA (3)	END	The species of flora and fauna listed in Schedule 3 are declared to be endangered.
Schedule 4 ESA (4)	THR	The species of flora and fauna listed in Schedule 4 are declared to be threatened.
Schedule 5 ESA (5)	SC	The species of flora and fauna listed in Schedule 5 are declared to be special concern.

FWCA	**Fish and Wildlife Conservation Act**	
The Ontario *Fish and Wildlife Conservation Act* outlines the restrictions for hunting, trapping and fishing; handling of live wildlife; sale, purchase and transport of wildlife; and, licences that can be secured under the Act. Under Schedules 1 to 11 of the Act, wildlife are grouped for the purpose of regulating these species. These schedules are further defined below. Note: where there is a conflict between this Act and the Ontario *Endangered Species Act*, the provision with the most protection will prevail (s. 2 of the *Fish and Wildlife Conservation Act*).		
Schedule No.	**Short Form**	**Status**
Schedule 1	Furbearing – M	The species of fauna listed in Schedule 1 are declared to be furbearing mammals.
Schedule 2	Game – M	The species of fauna listed in Schedule 2 are declared to be game mammals.
Schedule 3	Game – B	The species of fauna listed in Schedule 3 are declared to be game birds.
Schedule 4	Game – R	The species of fauna listed in Schedule 4 are declared to be game reptiles.
Schedule 5	Game – A	The species of fauna listed in Schedule 5 are declared to be game amphibians.
Schedule 6	Specially Protected – M	The species of fauna listed in Schedule 6 are declared to be specially protected mammals.
Schedule 7	Specially Protected – R	The species of fauna listed in Schedule 7 are declared to be specially protected birds (raptors).
Schedule 8	Specially Protected – B	The species of fauna listed in Schedule 8 are declared to be specially protected birds (other than raptors).
Schedule 9	Specially Protected – R	The species of fauna listed in Schedule 9 are declared to be specially protected reptiles.
Schedule 10	Specially Protected – A	The species of fauna listed in Schedule 10 are declared to be specially protected amphibians.

FWCA	Fish and Wildlife Conservation Act	
The Ontario *Fish and Wildlife Conservation Act* outlines the restrictions for hunting, trapping and fishing; handling of live wildlife; sale, purchase and transport of wildlife; and, licences that can be secured under the Act. Under Schedules 1 to 11 of the Act, wildlife are grouped for the purpose of regulating these species. These schedules are further defined below. Note: where there is a conflict between this Act and the Ontario *Endangered Species Act*, the provision with the most protection will prevail (s. 2 of the *Fish and Wildlife Conservation Act*).		
Schedule No.	**Short Form**	**Status**
Schedule 11	Specially Protected – I	The species of fauna listed in Schedule 11 are declared to be specially protected invertebrates.

Local Species Status

Frontenac Axis (Cuddy, D.G. 1991)	
Acronym	**Short Form** **Status**
1	Rare
2	Uncommon
3	Common

Significant Wildlife Habitat Technical Guide	
Acronym	**Short Form** **Status**
SWH	Area Sensitive Species
INT	Interior Species

BSC	Bird Studies Canada
The Bird Studies Canada *Conservation Priorities for the Birds of Southern Ontario* (1999), based on work completed by Bird Studies Canada, the Canadian Wildlife Service and the MNR identifies bird species of high conservation priority. This list was prepared to assist municipalities in identifying significant natural heritage features, through using the information regarding the presence of birds of conservation priority in their municipality. Birds of conservation priority have been noted (BSC) in the appropriate species lists.	

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APPENDIX D
TREE TABLE

Project: TA8983
Client: RV Anderson
Collectors: LMC, DTS

Region of Peel
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Date: March 24, 2021
Area: Highway 50 from Healey Road to Mayfield Road

Tree Number	Scientific Name	Common Name	DBH (cm)	Additional Stems	Estimation of DBH (x)	CONDITION															Management				COMMENTS
						TI	CS	CV	Radial Dripline (m)	Canopy Die Back (%)	Co-dominant stem	Included Bark	Lean, Dir.	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	EAB	Minimum TPZ (m)	Retain	Remove	Injure	
1	***Tilia cordata***	little leaf linden	5.0			g	g	g	1												1.20	x			
2	***Gleditsia triacanthos***	honey locust	8.0			g	g	g	1												1.20	x			
3	***Gleditsia triacanthos***	honey locust	9.0			g	g	g	1									x			1.20	x			
4	***Gleditsia triacanthos***	honey locust	9.0			g	g	g	1												1.20	x			
5	***Acer x freemanii***	Freeman's maple	9.0			g	g	g	1										x		1.20	x			
6	***Acer x freemanii***	Freeman's maple	10.0			g	g	g	1										x		1.80	x			
7	***Acer x freemanii***	Freeman's maple	14.0			g	g	g	3	10											1.80	x			
8	***Quercus robur***	English oak	6.0			g	g	g	1												1.20	x			
9	***Pyrus calleryana***	pear	9.0			g	g	g	1												1.20	x			
10	***Pyrus calleryana***	pear	9.0			p	p	p	1												1.20	x			
11	***Pyrus calleryana***	pear	7.0			p	p	p	1	10											1.20	x			
12	***Ginkgo biloba***	ginkgo	5.0			g	g	g	1												1.20	x			
13	***Ginkgo biloba***	ginkgo	3.0			g	g	g	1												1.20	x			
14	***Ginkgo biloba***	ginkgo	4.0			g	g	g	1												1.20	x			
15	***Quercus robur***	English oak	6.0			g	g	g	1												1.20	x			
16	***Picea glauca***	white spruce	7.0			g	g	g	1	10											1.20	x			
17	***Picea glauca***	white spruce	6.0			g	g	g	1												1.20	x			
18	***Picea glauca***	white spruce	7.0			g	g	g	1												1.20	x			
19	***Gleditsia triacanthos***	honey locust	15.0			g	g	g	2												1.80			x	
20	***Gleditsia triacanthos***	honey locust	17.0			g	g	g	2												1.80	x			
21	***Acer platanoides***	Norway maple	22.0			g	g	g	4												1.80		x		girdling roots
22	***Acer platanoides***	Norway maple	22.0			g	g	g	3												1.80			x	
23	***Acer platanoides***	Norway maple	22.0			g	g	g	3												1.80			x	
24	***Acer platanoides***	Norway maple	18.0			g	g	g	2												1.80			x	
25	***Picea pungens***	blue spruce	29.0			g	g	g	4												1.80	x			
26	***Picea pungens***	blue spruce	21.0			g	f	f	3												1.80	x			
27	***Acer platanoides***	Norway maple	23.0			g	g	g	4												1.80	x			
28	***Acer platanoides***	Norway maple	22.0			g	g	g	4												1.80		x		
29	***Acer platanoides***	Norway maple	20.0			g	f	g	3												1.80		x		
30	***Acer platanoides***	Norway maple	11.0			g	g	g	2												1.80	x			
31	***Gleditsia triacanthos***	honey locust	10.0			g	g	g	1												1.80	x			
32	***Gleditsia triacanthos***	honey locust	16.0			g	g	g	3												1.80	x			
33	***Gleditsia triacanthos***	honey locust	40.0			g	g	g	4												2.40	x			
34	***Acer platanoides***	Norway maple	7.0	5,4		g	g	g	1												1.20		x		
35	***Acer platanoides***	Norway maple	3.0	3,3,2		g	g	g	1												1.20	x			
36	***Picea pungens***	blue spruce	42.0			g	g	g	6												3.00		x		

Project: TA8983
Client: RV Anderson
Collectors: LMC, DTS

Region of Peel
working with you

Date: March 24, 2021
Area: Highway 50 from Healey Road to Mayfield Road

Tree Number	Scientific Name	Common Name	DBH (cm)	Additional Stems	Estimation of DBH (x)	CONDITION															Management				COMMENTS
						TI	CS	CV	Radial Dripline (m)	Canopy Die Back (%)	Co-dominant stem	Included Bark	Lean, Dir.	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	EAB	Minimum TPZ (m)	Retain	Remove	Injure	
37	***Celtis occidentalis***	common hackberry	6.0			g	g	g	1												1.20	x			
38	***Pyrus calleryana***	pear	9.0			g	g	g	1												1.20		x		
39	***Acer saccharum ssp. saccharum***	sugar maple	9.0			g	g	g	1												1.20			x	
40	***Pyrus calleryana***	pear	7.0			g	g	g	1												1.20		x		
41	***Acer saccharum ssp. saccharum***	sugar maple	6.0			g	g	g	1												1.20		x		
42	***Pyrus calleryana***	pear	7.0			g	g	g	1												1.20		x		
43	***Acer saccharum ssp. saccharum***	sugar maple	5.0			g	g	g	1												1.20		x		
44	***Pyrus calleryana***	pear	8.0			g	g	g	1												1.20		x		
45	***Picea pungens***	blue spruce	23.0			g	g	g	5												1.80	x			
46	***Picea pungens***	blue spruce	27.0			g	g	g	4												1.80	x			
47	***Picea pungens***	blue spruce	22.0			g	g	g	3												1.80	x			
48	***Quercus rubra***	red oak	11.0			g	g	g	2												1.80	x			
49	***Quercus rubra***	red oak	7.0			g	g	g	1												1.20	x			
50	***Quercus rubra***	red oak	8.0			g	g	g	1												1.20	x			
51	***Quercus rubra***	red oak	9.0			g	g	g	1												1.20	x			
52	***Quercus rubra***	red oak	10.0			g	g	g	1												1.80	x			
53	***Quercus rubra***	red oak	7.0			g	g	g	1												1.20	x			
54	***Quercus rubra***	red oak	14.0			g	g	g	4												1.80	x			
55	***Picea pungens***	blue spruce	11.0			g	g	g	2												1.80			x	
56	***Acer platanoides***	Norway maple	10.0			g	g	g	2												1.80		x		
57	***Acer platanoides***	Norway maple	7.0			g	g	g	1												1.20			x	
58	***Acer platanoides***	Norway maple	9.0			g	g	g	1												1.20	x			
59	***Picea pungens***	blue spruce	10.0			g	g	g	1												1.80		x		
60	***Picea pungens***	blue spruce	11.0			g	g	f	4												1.80			x	
61	***Picea pungens***	blue spruce	17.0			g	g	g	2												1.80	x			
62	***Picea pungens***	blue spruce	16.0			g	g	g	3												1.80	x			
63	***Pyrus calleryana***	pear	5.0			g	g	g	1												1.20		x		
64	***Pyrus calleryana***	pear	6.0			g	g	g	1												1.20		x		
65	***Pyrus calleryana***	pear	6.0			g	g	g	1												1.20	x			
66	***Pyrus calleryana***	pear	8.0			g	g	g	1												1.20	x			
67	***Pyrus calleryana***	pear	8.0			g	g	g	1												1.20	x			
68	***Pyrus calleryana***	pear	7.0			g	g	g	1												1.20	x			
69	***Pyrus calleryana***	pear	6.0			g	g	g	1												1.20	x			
70	***Pyrus calleryana***	pear	8.0			g	g	g	1												1.20	x			
71	***Populus tremuloides***	trembling aspen	12.0			g	g	g	4												1.80			x	

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Tree Number	Scientific Name	Common Name	DBH (cm)	Additional Stems	Estimation of DBH (x)	CONDITION															Management				COMMENTS
						TI	CS	CV	Radial Dripline (m)	Canopy Die Back (%)	Co-dominant stem	Included Bark	Lean, Dir.	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	EAB	Minimum TPZ (m)	Retain	Remove	Injure	
72	***Picea abies***	Norway spruce	33.0			g	g	g	4												2.40	x			
73	***Pyrus calleryana***	pear	7.0			g	g	g	1												1.20	x			
74	***Pyrus calleryana***	pear	8.0			g	g	g	1												1.20	x			
75	***Pyrus calleryana***	pear	10.0			g	g	g	2												1.80	x			
76	***Pyrus calleryana***	pear	9.0			g	g	g	1												1.20	x			
77	***Pyrus calleryana***	pear	10.0			g	g	g	2												1.80			x	
78	***Pyrus calleryana***	pear	11.0			g	g	g	3												1.80	x			
79	***Pyrus calleryana***	pear	11.0			g	g	g	2												1.80	x			
80	***Syringa reticulata***	ivory silk tree	7.0			g	g	g	1												1.20	x			
81	***Syringa reticulata***	ivory silk tree	7.0			g	g	g	1												1.20	x			
82	***Syringa reticulata***	ivory silk tree	7.0			g	g	g	1												1.20	x			
83	***Pyrus calleryana***	pear	8.0			g	g	g	1												1.20	x			
84	***Pyrus calleryana***	pear	7.0			g	g	g	1												1.20	x			
85	***Syringa reticulata***	ivory silk tree	9.0			g	g	g	1												1.20	x			
86	***Pyrus calleryana***	pear	9.0			g	g	g	1												1.20	x			
87	***Pyrus calleryana***	pear	8.0			g	g	g	1												1.20	x			
88	***Pyrus calleryana***	pear	9.0			g	g	g	1												1.20	x			
89	***Syringa reticulata***	ivory silk tree	7.0			g	g	g	1												1.20	x			
90	***Pyrus calleryana***	pear	8.0			g	g	g	1												1.20	x			
91	***Pyrus calleryana***	pear	9.0			g	g	g	1												1.20	x			
92	***Pyrus calleryana***	pear	10.0			g	g	g	1												1.80	x			
93	***Pyrus calleryana***	pear	10.0			g	g	g	1												1.80	x			
94	***Pyrus calleryana***	pear	8.0			g	g	g	1												1.20			x	
95	***Pyrus calleryana***	pear	10.0			g	g	g	1												1.80		x		
96	***Pyrus calleryana***	pear	12.0			g	g	g	3												1.80			x	
97	***Pyrus calleryana***	pear	9.0			g	g	g	1												1.20		x		
98	***Picea pungens***	blue spruce	15.0			g	g	g	3												1.80		x		
99	***Elaeagnus angustifolia***	Russian olive	12.0	11,10,10		g	g	g	4												1.80		x		