Airport Road Improvements










APPENDICES ESR 1

Municipal Class Environmental Assessment
Airport Road
from 1.0km north of Mayfield Road to 0.6km north of King Street

October 2015

Region of Peel
Working for you

G NATURAL HERITAGE ASSESSMENT

NATURAL HERITAGE REPORT – IMPACT ASSESSMENT

AIRPORT ROAD FROM MAYFIELD ROAD TO KING STREET
TOWN OF CALEDON, REGION OF PEEL
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT STUDY

prepared for:

IBI GROUP

Region of Peel
Working for you

prepared by:

LGL LIMITED
environmental research associates

APRIL 2015

NATURAL HERITAGE REPORT – IMPACT ASSESSMENT

AIRPORT ROAD FROM MAYFIELD ROAD TO KING STREET
TOWN OF CALEDON, REGION OF PEEL
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT STUDY

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APRIL 2015
LGL Project # TA8188

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1.0 INTRODUCTION

The Region of Peel is undertaking a Schedule 'C' Municipal Class Environmental Assessment (EA) Study for the proposed improvements to Airport Road from 1.0 km north of Mayfield Road to 0.6 km north of King Street. The study limits are presented in **Figure 1**.

This Class EA Study is being conducted by IBI Group on behalf of the Region of Peel. LGL Limited, as a sub-consultant to IBI Group, is providing natural heritage services. This Natural Heritage Report – Impact Assessment documents the results of data collection and analysis in the summer and fall of 2012, spring and summer of 2013, and spring and summer of 2014, and the potential effects of this project on natural heritage features, including environmental protection measures.

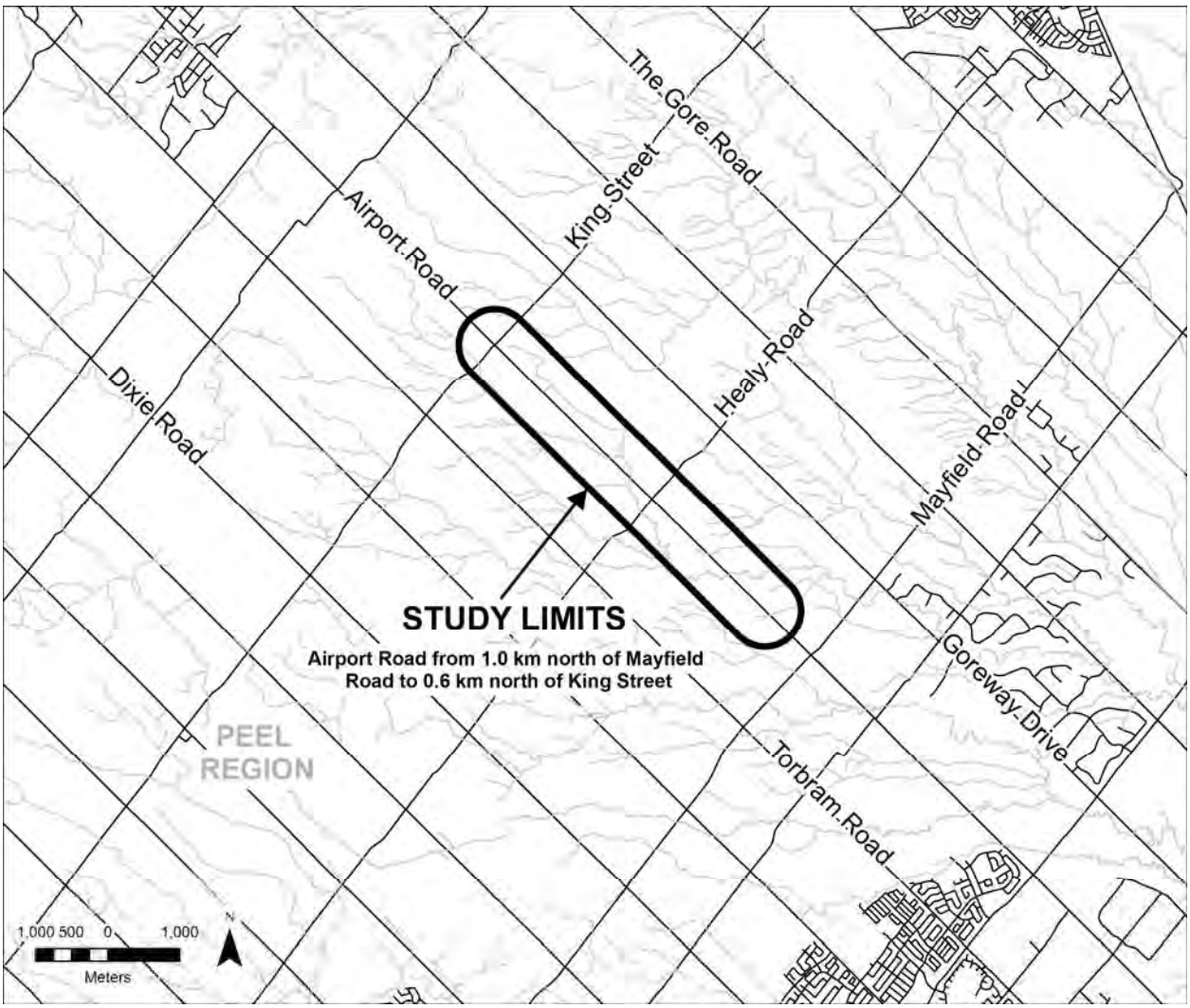


FIGURE 1. KEY PLAN

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 the South Slope physiographic region. This physiographic region occupies approximately 2,400 km^2 and extends from the Niagara Escarpment in the west to the Trent River in the east (Chapman and Putnam 1984). The South Slope predominately consists of shallow shale and till plains which slope gently in a southeasterly direction towards Lake Ontario. The topography is mostly subdued and includes low-relief drumlins and moraines.

The soils within the study limits include Chingacousey clay loam, Peel clay, and Bottom Lands (Hoffman and Richards 1953). These soils are described below.

2.1.1 Chingacousy clay loam

Chingacousy soils are the imperfectly drained member of the Oneida catena. The parent material of this soil is high in limestone, with some evident amounts of shale. Areas with this soil series are typically smooth and gently sloping. In the study area, Chingacousy soils are found north of the intersection of Old School Road/Healey Street and Airport Road, and at the southerly limit of the study area (Hoffman and Richards 1953).

2.1.2 Peel clay

Peel clay is the imperfectly drained member of the Cashel catena, and is found in large areas of Brampton and Caledon. The Cashel catena developed on high lime lacustrine clays underlain by fine textured clay till. The structure of these soils is low, and runoff is generally slow except where the slope is steep enough to cause rapid drainage. Areas where this soil series is present are typically smooth and gently sloping. A large area of Peel clay soils are concentrated at the intersection of Old School Road/Healey Street and Airport Road (Hoffman and Richards 1953).

2.1.3 Bottom Land

Bottom lands are associated with low lying areas along stream courses. Bottom land soils are prone to flooding, are poorly drained and show little soil horizon differentiation. In the study area, the lands located along Salt Creek are classified as Bottom Land soils (Hoffman and Richards 1953).

2.2 Aquatic Habitats and Communities

The study area is located within the West Humber Subwatershed, which is part of the Humber River watershed. Salt Creek, a tributary of the West Humber River, and tributaries of Salt Creek cross Airport Road at a number of locations. Based on a site meeting between TRCA and the Region of Peel staff on December 12, 2011, a total of eight watercourse crossings were identified for fisheries investigations as part of the Class EA Study. Note, an additional crossing was identified north of Mayfield Road; however, this crossing was not determined to be a watercourse by the TRCA. The Watercourse Crossing numbers assigned during this site meeting have been used in this report, to ensure consistency. All TRCA correspondence is presented in **Appendix A** (Agency Correspondence).

Background Data
Historic fish sampling records were provided by TRCA for two stations within, or in close proximity to, the study area. The MNRF station (139) is located on Salt Creek at a crossing of King Street (upstream/west of the study area), and the TRCA station (HUFMP07) is located on Salt Creek at its southernmost crossing of Airport Road within the study area, between Mayfield Road and Healey/Old School Road (Watercourse Crossing 2 on **Figures 2A to 2D**). A summary of the fish species collected from these stations is presented in **Table 1**.

Ten species were captured in historic collections from Salt Creek. Although formal fish sampling was not undertaken during this study, fish presence was confirmed through visual observations during the habitat surveys conducted on September 13, 2012 and November 26, 2012 by LGL and the mussel survey on August 27, 2014. In general, the suite of species listed in **Table 1** represents a fairly diverse mix of warmwater and coolwater forage and sportfish. Some of the species recorded are warmwater sportfish usually associated with larger rivers and waterbodies and may be a result of ponded characteristics of some areas of Salt Creek within the study area.

Field Investigations
LGL conducted surveys of aquatic habitat on September 13, 2012 and November 26, 2012 to characterize the aquatic habitat within the study area. An additional site visit was conducted on September 3, 2014 immediately following heavy rains associated with thunderstorms to ascertain the flow characteristics of the smaller watercourse crossings (Crossings 3, 6, 7, 8 and 9). The fish habitat was assessed approximately 50 m upstream and 100 m downstream of each crossing, where applicable and accessible. Physical habitat features were surveyed in sufficient detail to enable mapping and identification of key habitat types. The physical habitat attributes assessed included: (a) instream cover, (b) bank stability, (c) substrate characteristics, (d) stream dimensions, (e) barriers, (f) stream morphology, (g) terrain characteristics, (h) stream canopy cover, (i) stream gradient, (j) aquatic vegetation, (k) ground water seepage areas, and (l) general comments. Habitat features were recorded on an air photo base during field investigations and representative photographs were taken. **Figures 2A to 2D** present the location of the crossings and an aquatic habitat summary is presented below. Site photos of the crossings are provided in **Appendix B** (Photographic Record).

A late summer survey was conducted on August 27, 2014 to screen watercourses for the presence/absence of mussels. The TRCA indicated in an e-mail on September 24, 2012 that mussels could be present in the study area. Mussel surveys were conducted at Crossings 5, 4 and 2 (the only crossings containing direct fish habitat) and approximately an hour was spent visually searching for mussels at each location. The results of the survey are presented in the following sections.

Watercourse crossings are described from north to south in the following sections. During the TRCA site visit, watercourse crossings were numbered from south to north. As such, the below descriptions start at #9 and end at #2. Watercourse crossing number #1, as noted above, is not considered a watercourse by the TRCA and is located outside the study limits (1 km north of Mayfield Road).

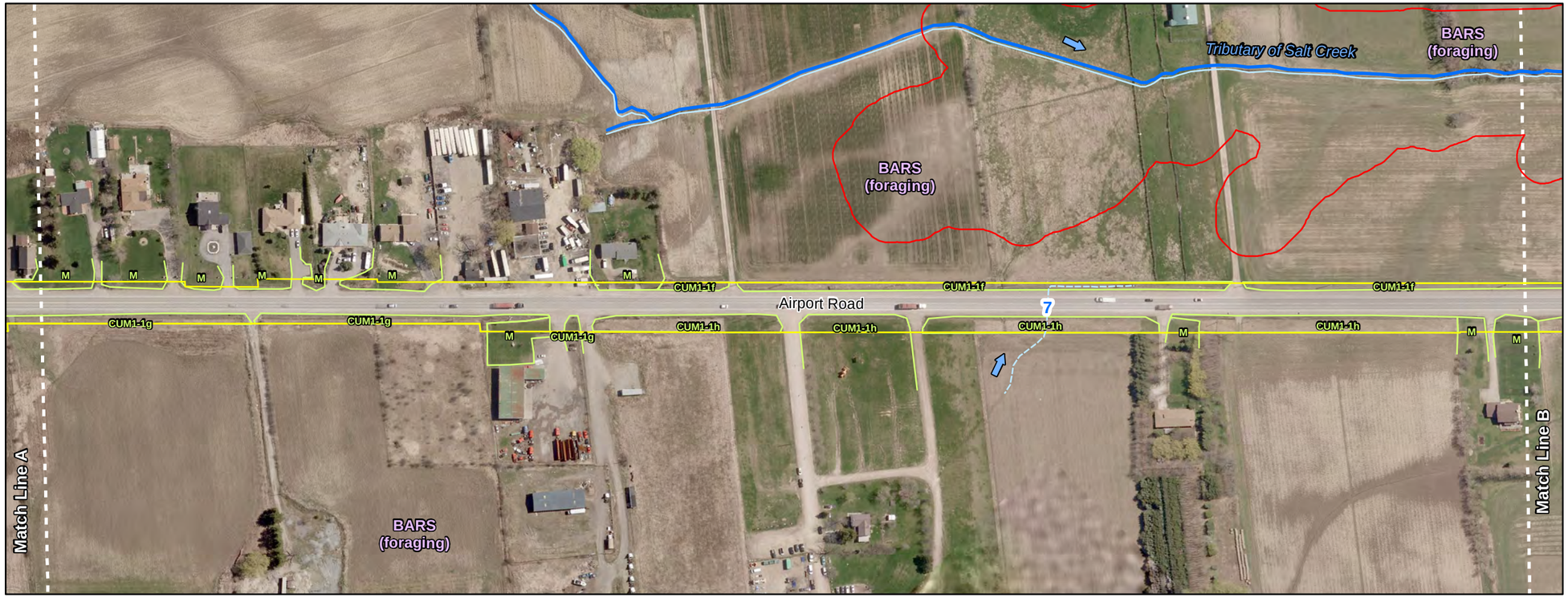
2.2.1 Watercourse Crossing 9 (105 m north of King Street)

A small tributary of Salt Creek crosses Airport Road through a small diameter corrugated steel pipe (CSP) culvert from west to east approximately 105 m north of King Street. Upstream, no defined channel exists and drainage generally appears to travel along the southern edge of ploughed fields. Within the right-of-way (ROW) water travels diffusely through grassy vegetation into the culvert. There was a small amount of flow during the November 26, 2012 site visit and some standing water in lower areas, but no flow on September 3, 2014.

TABLE 1.
FISH COLLECTED HISTORICALLY IN SALT CREEK WITHIN THE VICINITY OF THE STUDY AREA

Scientific Name	Common Name	COSEWIC	MNRF	Provincial	Legal Status	MNRF Stn 139[1]	TRCA Stn HUFMP07[2]	LGL Observations and/or Captures
Semotilus atromaculatus	Creek Chub	-	-	S5	-	X	X	-
Pimephales promelas	Fathead Minnow	-	-	S5	-	X	X	-
Pimephales notatus	Bluntnose Minnow	NAR	NAR	S5	-	X	X	-
Notropis heterolepis	Blacknose Shiner	-	-	S5	-	X	-	-
Catostomus commersonii	White Sucker	-	-	S5	-	X	X	-
Ameiurus nebulosus	Brown Bullhead	-	-	S5	-	-	X	-
Culaea inconstans	Brook Stickleback	-	-	S5	-	X	X	-
Micropterus salmoides	Largemouth Bass	-	-	S5	-	-	X	-
Lepomis gibbosus	Pumpkinseed	-	-	S5	-	-	X	X
Etheostoma nigrum	Johnny Darter	-	-	S5	-	X	-	-

[1] MNRF data from Station 139 at King Street from 1946 and 1972 sampling events
[2] Data provided by TRCA for Station HUFMP07 at Airport Road between Mayfield Road and Healey/Old School Road from a 2004 sampling event



LEGEND

- Watercourse (TRCA)
- Watercourse (LGL)
- Flow Direction Arrow
- Redside Dace Habitat (DFO/TRCA Aquatic Species at Risk Mapping)
- TRCA Watercourse Crossing Identified During December 12, 2011 Site Visit
- TRCA Generic Regulation Area
- Vegetation Community Boundary
- Vegetation Community Boundary (TRCA)
- Right of Way

Targeted Natural Heritage System
Existing Natural Cover

- Forest
- Successional
- Meadow
- Wetland

Potential Natural Cover

- Forest

Vegetation Communities

- CUM1-1 (a-j) Dry-Moist Old Field Meadow Type
- CUW1 Mineral Cultural Woodland Ecosite
- M Manicured
- MAM Meadow Marsh
- MAS Shallow Marsh

Vegetation Communities (TRCA)

- AGR Agriculture
- CUM1b Exotic Cool-season Grass Old Field Meadow
- CUM1c Exotic Forb Old Field Meadow
- CUP3-2 White Pine Coniferous Plantation
- CUW1b Exotic Cultural Woodland
- FOD7-a Fresh-Moist Manitoba Maple Lowland Deciduous Forest
- MAM2-2 Reed Canary Grass Mineral Meadow Marsh
- MAM2-10 Forb Mineral Meadow Marsh
- MAS2-1b Narrow-Leaved Cattail Mineral Shallow Marsh
- OAO (1-7) Open Aquatic Ecosite

Species At Risk Habitat

- BARS Barn Swallow
- EAME Eastern Meadowlark
- BOBO Bobolink

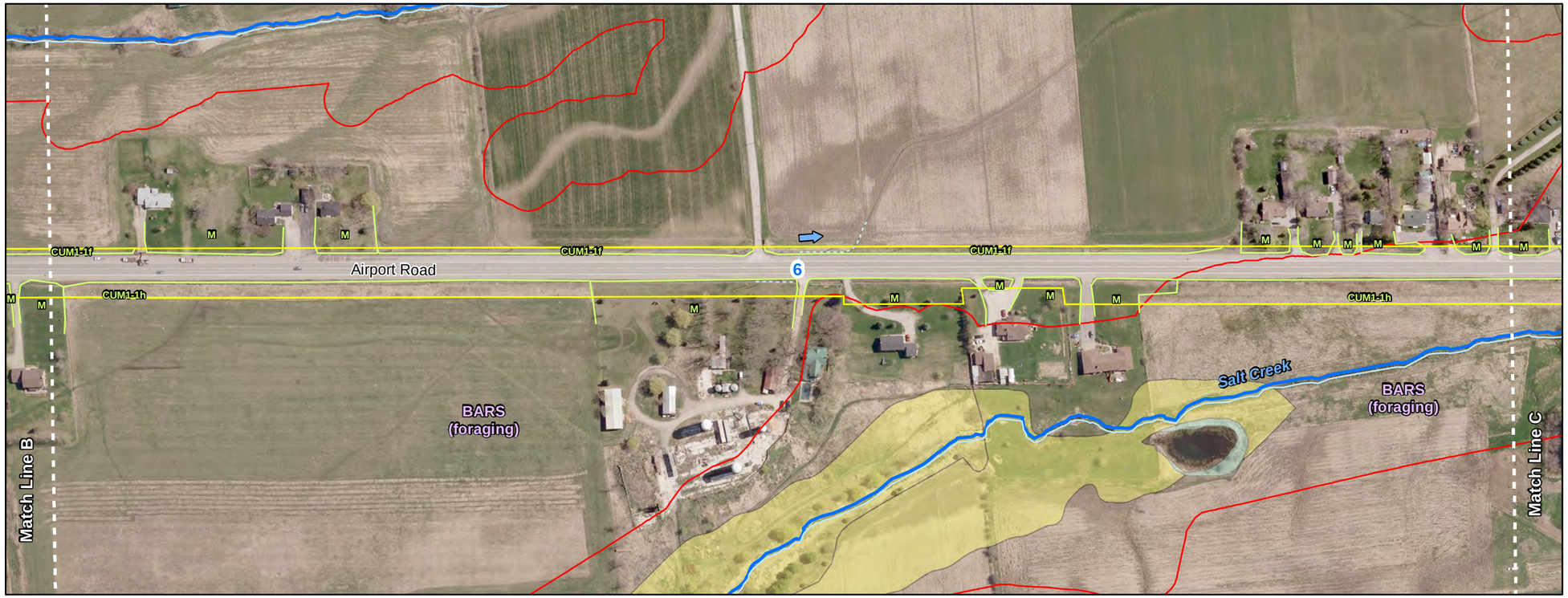
Data Sources: LGL Limited Field Surveys, Toronto Region Conservation Authority GIS Data, TRCA Watercourse Crossing Summary Sheet, and DFO/TRCA Aquatic Species at Risk Mapping.

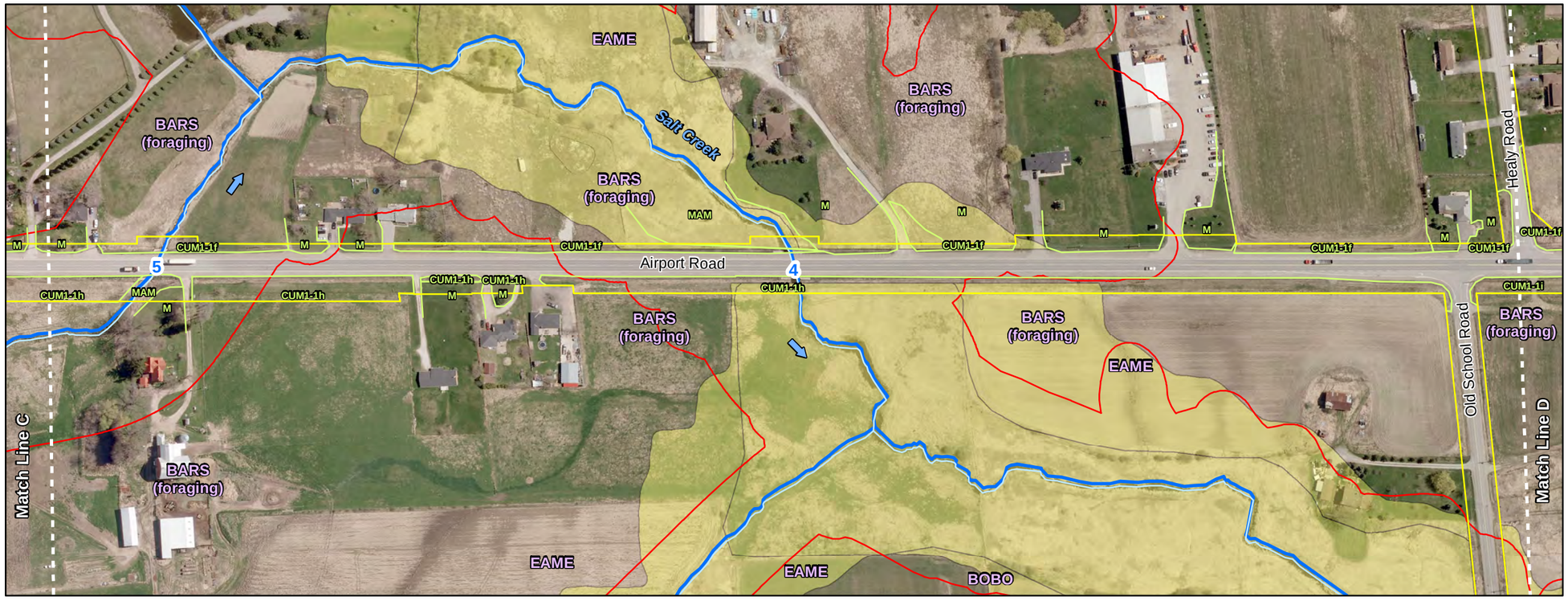
40 20 0 40 Metres

AIRPORT ROAD
1 KM NORTH OF MAYFIELD ROAD TO 0.6 KM NORTH OF KING STREET
NATURAL HERITAGE EXISTING CONDITIONS

LGL LIMITED
environmental research associates

Project:	TA8188	**Figure:**	2A
Date:	October, 2014	**Prepared By:**	MWF
Scale:	1 : 3000	**Checked By:**	KSM





LEGEND

- Watercourse (TRCA)
- Watercourse (LGL)
- Flow Direction Arrow
- Redside Dace Habitat (DFO/TRCA Aquatic Species at Risk Mapping)
- # TRCA Watercourse Crossing Identified During December 12, 2011 Site Visit
- TRCA Generic Regulation Area
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- Vegetation Community Boundary (TRCA)
- Right of Way

Targeted Natural Heritage System

Existing Natural Cover

- Forest
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Species At Risk Habitat

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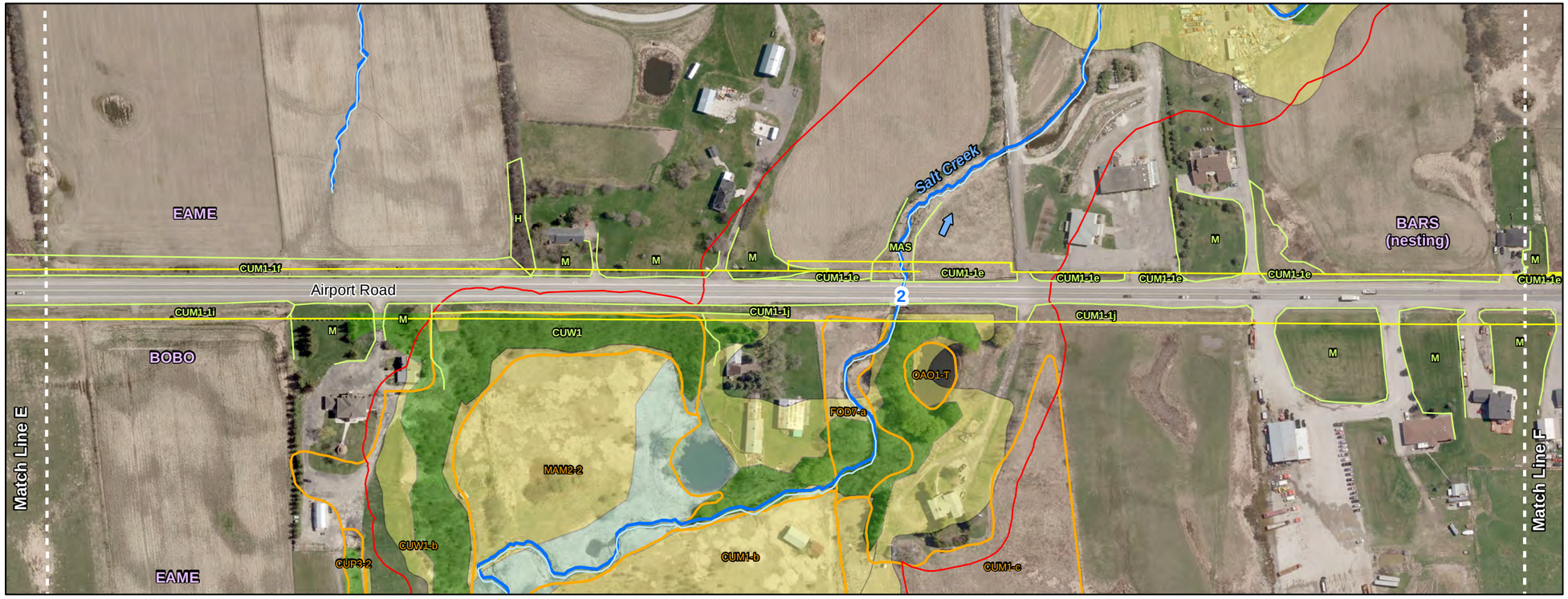
40 20 0 40 Metres

AIRPORT ROAD
1 KM NORTH OF MAYFIELD ROAD TO 0.6 KM NORTH OF KING STREET
NATURAL HERITAGE EXISTING CONDITIONS

LGL LIMITED
environmental research associates

Project:	TA8188	**Figure:**	2B
Date:	September, 2014	**Prepared By:**	MWF
Scale:	1 : 3000	**Checked By:**	KSM



LEGEND

- Watercourse (TRCA)
- Watercourse (LGL)
- Flow Direction Arrow
- Redside Dace Habitat (DFO/TRCA Aquatic Species at Risk Mapping)
- TRCA Watercourse Crossing Identified During December 12, 2011 Site Visit
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- Vegetation Community Boundary
- Vegetation Community Boundary (TRCA)
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Species At Risk Habitat

- BARS Barn Swallow
- BOBO Bobolink
- EAME Eastern Meadowlark

Data Sources: LGL Limited Field Surveys, Toronto Region Conservation Authority GIS Data, TRCA Watercourse Crossing Summary Sheet, and DFO/TRCA Aquatic Species at Risk Mapping.

40 20 0 40 Metres

AIRPORT ROAD
1 KM NORTH OF MAYFIELD ROAD
TO 0.6 KM NORTH OF KING STREET
NATURAL HERITAGE
EXISTING CONDITIONS

LGL LIMITED
environmental research associates

Project:	TA8188	**Figure:**	2C
Date:	September, 2014	**Prepared By:**	MWF
Scale:	1 : 3000	**Checked By:**	KSM

LEGEND

- Watercourse (TRCA)
- Watercourse (LGL)
- Flow Direction Arrow
- Redside Dace Habitat (DFO/TRCA Aquatic Species at Risk Mapping)
- # TRCA Watercourse Crossing Identified During December 12, 2011 Site Visit
- TRCA Generic Regulation Area
- Vegetation Community Boundary
- Vegetation Community Boundary (TRCA)
- Right of Way

Targeted Natural Heritage System
Existing Natural Cover

- Forest
- Successional
- Meadow
- Wetland

Potential Natural Cover

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- MAS Shallow Marsh

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- OAO (1-7) Open Aquatic Ecosite

Species At Risk Habitat

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- EAME Eastern Meadowlark
- BOBO Bobolink

Data Sources: LGL Limited Field Surveys, Toronto Region Conservation Authority GIS Data, TRCA Watercourse Crossing Summary Sheet, and DFO/TRCA Aquatic Species at Risk Mapping.

40 20 0 40 Metres

AIRPORT ROAD
1 KM NORTH OF MAYFIELD ROAD
TO 0.6 KM NORTH OF KING STREET
NATURAL HERITAGE
EXISTING CONDITIONS

LGL LIMITED
environmental research associates

Project:	TA8188	**Figure:**	2D
Date:	September, 2014	**Prepared By:**	MWF
Scale:	1 : 3000	**Checked By:**	KSM

Downstream, the water exits the CSP into a small and poorly defined channel that flows away from the road. Within the ROW a small amount of emergent vegetation exists, but riparian vegetation mainly consists of grasses. Beyond the ROW, the channel, still poorly defined, travels along the edge of a ploughed field. Some standing water was present downstream of the culvert during both site visits. No fish were observed during the site visit and it has been determined that the watercourse at this location supports indirect habitat.

2.2.2 Watercourse Crossing 8 (230 m south of King Street)

Another small tributary of Salt Creek crosses Airport Road through a small diameter CSP culvert from west to east approximately 230 m south of King Street. Upstream, water travels along the northern edge of a ploughed field through a grassy swale. Water enters the culvert within a roadside ditch that is lined with *Phragmites*. No water was observed within the upstream areas during the November 26, 2012 site visit, but a small amount of water was observed on September 3, 2014 following a rain event.

Downstream, the water enters a fairly wide (1.5-2 m) roadside ditch that contained 10-15 cm of standing water during the site visits. As the culvert downstream is at a skew to the road, there is a bend within it under the road platform. The downstream ditch is also lined with *Phragmites* and the watercourse travels within this ditch for approximately 30 m before travelling to the east. From the ditch downstream, the watercourse travels in a grassy swale located between a recently paved truck parking area to the north and a residential/church property to the south.

No fish were observed during the site visits and it has been determined that the watercourse at this location supports indirect habitat.

2.2.3 Watercourse Crossing 7 (930 m south of King Street)

The small tributary of Salt Creek at Crossing 7 travels under Airport Road through a small diameter CSP culvert from west to east approximately 930 m south of King Street. Upstream, the flow travels through a ploughed field into which a narrow ditch has been excavated. The ditch is bare, with no buffer of natural vegetation. Water flows out of the field and enters the ROW perpendicularly to the road platform. It flows down a grassy slope to a low lying area at the upstream end of the culvert. A small amount of standing water was present in this area at the time of the site visits (November 26, 2012 and September 3, 2014). This culvert also receives road drainage from the ditches north and south of the crossing.

Downstream, the culvert is perched and a 0.75 m wide defined channel has been scoured within the ROW. Substrates within this channel consisted of gravel, cobble and small boulders. The banks were undercut and there was approximately 15 cm of standing water present during both site visits. The water was clear and free of vegetation. Beyond the ROW, the watercourse travels through a poorly defined, grassy channel located within a pasture/field.

No fish were observed during the site visits and it has been determined that the watercourse at this location supports indirect habitat.

2.2.4 Watercourse Crossing 6 (1.3 km north of Old School Road)

A small diameter CSP culvert conveys flows across Airport Road from east to west approximately 1.3 km north of Old School Road. Upstream, drainage from agricultural fields enters the roadside ditch and travels to the north into the culvert. Within the vicinity of the culvert, the riparian vegetation consists of grass that had been manicured. Within the ditch, grasses and cattails comprise the vegetation. At the time of the site visits (September 13, 2012 and September 3, 2014), no flow was evident, although standing water was present.

Downstream of the crossing, water exits the culvert into a roadside ditch in front of a residential/farm property. It is not clear where the water travels to, but it may proceed around the property to the north and west, eventually entering Salt Creek.

No fish were observed during the site visits and it has been determined that the watercourse at this location supports indirect habitat.

2.2.5 Watercourse Crossing 5 (Salt Creek 815 m North of Old School Road)

The open footed, concrete culvert at this station conveys water across Airport Road from west to east and is situated on a skew. It is 6.8 m wide, 1.7 m high and 22.4 m long. Upstream (west), the channel travels through a fairly narrow floodplain consisting of old field vegetation that is likely a pasture. It appears as though there is no fencing to prevent cattle (or other livestock) from entering the watercourse upstream of the crossing. In the vicinity of the culvert, the poorly defined channel is 30-40 cm wide and 10-20 cm deep. Morphology consists of riffles and runs over substrates of cobble, gravel, small boulders and detritus. Water was flowing slowly and was clear at the time of the September 2012 site visit and was not flowing on August 27, 2014. However, during the August 2014 mussel survey several pools within and downstream of the culvert contained a significant amount of water and this water was clear. Instream cover is provided by substrates and emergent and overhanging vegetation (grasses). Instream vegetation consisted of grasses with very few cattails.

Downstream of the culvert, conditions were similar, although it is not known whether livestock graze in this section of watercourse. Cattails are more common downstream within and adjacent to the channel. Bankfull width is estimated at 6-7 m and bankfull depth is 1 m. No fish were observed in 2012 but many cyprinids were observed during the mussel survey on August 27, 2014. No mussels (live or shells) were found during the mussel survey. No barriers were observed within the reach investigated and, combined with the fish sampling records from upstream, this reach is direct fish habitat.

2.2.6 Watercourse Crossing 4 (Salt Creek 415 m North of Old School Road)

The open footed, concrete culvert at this station conveys water across Airport Road from east to west and is situated on a skew. It is 6.3 m wide, 2.3 m high and 19.42 m long. Upstream (east), the channel travels through a generally grassy floodplain consisting of old field vegetation, a manicured yard and small agricultural fields. The water flow was very slow at this crossing and water was ponded. Unlike upstream, the water was more turbid at the time of the site visits. Because of the ponding, the substrates are finer (silt, detritus with some boulders). In the vicinity of the culvert, the channel is approximately 5 m wide and 0.75-1 m deep. Morphology consists of a long flat/pool. Banks are steep with overhanging grassy vegetation. Instream cover is provided by organic debris, overhanging vegetation (grasses) and boulders. Instream vegetation consists solely of fringing grasses.

Downstream of the culvert, conditions are similar, except for a short run approximately 25-30 m long. This run is located between the ponded section that extends through and out of the culvert and ponded areas located further downstream. The run is 0.75 m wide and 10 cm deep. The pool at the end of the culvert is 8 m wide and 75 cm deep. The pools/ponded sections located downstream of the run are up to 35 m long and 7.5 m wide. The downstream riparian area consists of old field and is likely used for livestock grazing. There is no fencing preventing livestock from entering the watercourse in this section. Submerged vegetation was noted in the pool immediately downstream of the culvert. Bankfull width was estimated at 5.5-6.5 m and bankfull depth at 2 m. Fish were observed during both the 2012 and the 2014 surveys and, as such, this reach is direct fish habitat. Two mussel shells were found in the downstream pool during the August 27, 2014 survey. These have been identified as Giant Floater (*Pyganodon grandis*) and this identification was confirmed by Daryl McGoldrick at Environment Canada. This

species is not regulated as a species at risk under the ESA, but has a provincial rank of S5 (common). Therefore, no permitting under the ESA is required.

2.2.7 Watercourse Crossing 3 (240 m south of Old School Road)

At Crossing 3, a small tributary of Salt Creek passes under Airport Road through a small diameter CSP culvert from east to west approximately 240 m south of Old School Road. Upstream, flow apparently enters a small cattail marsh, located within the roadside ditch in the ROW, from the active agricultural field to the east. During the time of the site visits (September 13, 2012 and September 3, 2014), most of the marsh was dry with the exception of the standing water at the upstream end of the culvert.

Downstream, flows exit the culvert into a small pool. At the time of the site visits, the pool contained standing water. From there, water travels across the residential property to the west. Within the ROW, water flows diffusely through cattails and *Phragmites*. Beyond the ROW, the flow continued to be diffuse, but the vegetation is dominated by *Phragmites* that had been cut recently. The slope within this area appears to be relatively steep.

No fish were observed during the site visits and it has been determined that the watercourse at this location supports indirect habitat.

2.2.8 Watercourse Crossing 2 (Salt Creek 1.5 km South of Old School Road)

Salt Creek crosses from west to east under Airport Road through a bridge structure that is 10.7 m wide, 2.8 m high and 17.2 m long and is situated perpendicular to the roadway. Upstream (west) the channel travels through a floodplain consisting of wet meadow vegetation and large deciduous trees. There are two small offline ponds located adjacent to the watercourse. The water flow was slow at this crossing and water was ponded under the bridge at the time of the site visits. Unlike Watercourse Crossing 4 the water was less turbid at this location at the time of the site visits. A large pool is located upstream of the crossing that is approximately 5 m wide and 30 cm deep and is fringed with cattails and grasses. Between this pool and the bridge, the channel diffusely flows through cattails in a short 10-15 m section. Substrates consist of silt, detritus, boulders, cobble (shale) and gravel. Aquatic vegetation consists of cattails and grasses and instream cover consists of vegetation, boulders, organic debris and woody debris.

Downstream of the bridge, the channel meanders through grasses and cattails as a large run. This run is 0.75 m wide and up to 30 cm deep with vertical banks in some areas. The channel is completely overhung with riparian vegetation (mainly grasses). A large cluster of cattails exists downstream of this run through which the watercourse flows diffusely. The downstream riparian area consists of old field which is bordered to the north by active agricultural land. Approximately 110 m downstream of Airport Road, the channel passes under a driveway. Bankfull width is estimated at 15 m and bankfull depth at 1 m. Several fish were observed, including a Pumpkinseed (*Lepomis gibbosus*). As such, this reach is direct fish habitat. No mussels (live or shells) were found during the mussel survey.

2.2.9 Species at Risk

No mussel species at risk were documented within the study area. Redside Dace, an Endangered species, are not known to currently occupy Salt Creek within the study area. However, old records exist for this species and the MNRF has indicated that Salt Creek (Crossings 5, 4 and 2) within the study area is regulated as "recovery habitat", and thus is subject to the requirements of the Ontario *Endangered Species Act* (ESA). Redside Dace is regulated as 'Endangered' under the ESA. Federally, Redside Dace is designated as 'Endangered' by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), but is regulated as 'Special Concern' (Schedule 3) under the federal *Species at Risk Act*. The MNRF manages fish habitat, in concert with the TRCA under Fisheries Management Plans, and provides direction in the classification of watercourses as warmwater, coldwater and/or Redside Dace

habitat. An Information Gathering Form will be submitted to the MNRF for review, and the MNRF will clarify permit requirements for Redside Dace.

2.3 Vegetation and Vegetation Communities

The geographical extent, composition, structure and function of the vegetation communities were identified through air photo interpretation and a field investigation. 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 Airport Road between King Road and Mayfield Road was conducted on October 6 and 24, 2012 and August 28, 2013 within the right-of-way, to the extent possible. The field investigation was carried out to ground truth the boundaries of the vegetation communities and to conduct a botanical survey.

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 were obtained during the field investigations. Plant species status was reviewed for Ontario (Oldham 2009), Toronto and Region Conservation Authority (TRCA 2009) and for Region of Peel (Riley 1989, Varga 2000). Vascular plant nomenclature follows Newmaster *et al*. (1998) with a few exceptions that have been updated to Newmaster *et al.* (2005).

2.3.1 Vegetation Communities

The study area consists of a mixture of cultural and wetland vegetation communities, including portions of vegetation communities that are already in a disturbed state as a result of the existing roadways and residential land uses. Evidence of disturbance includes a high proportion of non-native 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.

Four ELC vegetation community types were identified within the study limits during LGL's botanical survey including: Dry-Moist Old Field Meadow (CUM1-1a to j), Mineral Cultural Woodland (CUW1), Meadow Marsh (MAM), and Shallow Marsh (MAS). All of the vegetation communities identified within the study area are considered widespread and common in Ontario and are secure globally. These vegetation communities are delineated in **Figures 2A to 2D** and are described in **Table 2.**

There are several areas that are not identified by an ELC classification such as areas of manicured grass (M) which include mown lawns, gardens and planted trees.

In addition, TRCA has delineated ELC communities for the valleylands associated with Salt Creek on the south side of Airport Road. These communities include: Exotic Cool-season Grass Old Field Meadow (CUM1b), Exotic Forb Old Field Meadow (CUM1c), White Pine Coniferous Plantation (CUP3-2), Exotic Cultural Woodland (CUW1b), Fresh- Moist Manitoba Maple Lowland Deciduous Forest (FOD7-a), Reed Canary Grass Mineral Meadow Marsh (MAM2-2), Forb Mineral Meadow Marsh (MAM2-10), Narrow-Leaved Cattail (MAS2-1b), and Open Aquatic Ecosite (OAO (1-T)). These vegetation communities are delineated in orange in **Figures 2A to 2D**. In some cases, existing conditions have changed since the TRCA data was collected, as a result, some of these vegetation communities may be out of date.

The Torbram - Old School North Natural Areas Report (2011) notes the above mentioned valleylands have the potential to support and sustain biodiversity, healthy ecosystem functions and to provide long-term resiliency for the natural system. The riparian area of Salt Creek provides a transition between terrestrial and aquatic habitats, and provides a movement corridor for plants and wildlife (Region of Peel 2011). The cultural plantation community to the south serves as an uninterrupted narrow corridor with adjacent naturally vegetated areas to the north, northeast, southeast.

TABLE 2.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION VEGETATION COMMUNITIES IDENTIFIED DURING LGL'S BOTANICAL SURVEY

ELC Code	Vegetation Type	Species Association	Community Characteristics
WETLAND			
MAS	Shallow Marsh		
MAS	Shallow Marsh	**Emergent shrubs**: include staghorn sumac (*Rhus typhnia*). **Ground cover**: includes narrow-leaved cattail (*Typha angustifolia*), reed-canary grass (*Phalaris arundinacea*), and awnless brome (*Bromus inermis* ssp. *inermis*).	• Tree and shrub cover ≤25% with variable flooding regimes (water depth <2m) (MA). • Water up to 2 m deep (MAS).
MAM	Meadow Marsh		
MAM	Meadow Marsh	**Emergent shrubs:** includes staghorn sumac, and red-osier dogwood (*Cornus sericea* spp. *sericea*). **Ground cover**: includes reed-canary grass, Canada goldenrod (*Solidago canadensis*), common reed (*Phragmites australis*), common milkweed (*Asclepias syriaca*), and purple loosestrife (*Lythrum salicaria*).	• Tree and shrub cover ≤25% with variable flooding regimes (water depth <2m) (MA). • Species less tolerant of prolonged flooding (MAM).
TERRESTRIAL – CULTURAL			
CUM	Cultural Meadow		
CUM1-1 (a to j)	Dry-Moist Old Field Meadow	**Emergent trees/shrubs:** include common buckthorn (*Rhamnus cathartica*), Manitoba maple (*Acer negundo*), Russian olive (*Elaeagnus angustifolia*), and staghorn sumac. **Ground cover:** includes Canada goldenrod, awnless brome, quack grass (*Elymus repens*), Canada thistle (*Cirsium arvense*), reed-canary grass, perennial rye grass (*Lolium perenne*), and elecampane (*Inula helenium*).	• Cultural community resulting from, or maintained by, cultural or anthropogenic- based disturbance (CU). • Tree cover and shrub cover < 25 % (M). • Parent mineral material or mineral soil (1). • This community can occur on a wide range of soil moisture regimes (Dry-Moist). Grasses and forbs are dominant (-1).
CUW	Cultural Woodland		
CUW1	Mineral Cultural Woodland	**Canopy**: includes common buckthorn, common apple (*Malus pumila*), and black locust (*Robinia pseudo-acacia*). **Understory:** includes common buckthorn. **Canopy:** includes Canada goldenrod.	• Cultural community (CU). • 35% < tree cover < 60% (W). • This community can occur on a wide range of soil moisture regimes (Dry-Moist) (-1). • Pioneer community resulting from, or maintained by, anthropogenic-based influences.
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 vegetation 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.

2.3.2 Flora

A total of 137 plant species have been recorded within the study area. Six of these plants could only be identified to genus and are not included in the following calculations. Of the 131 plant species identified, 49 (37%) plant species identified are native to Ontario and 82 (63%) plant species are considered introduced and non-native to Ontario. A list of vascular plants is presented in **Appendix C**.

2.3.3 Species at Risk

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 within the study area (those plant species regulated as Endangered, Threatened, or Special Concern). A description of provincial species ranks is provided in **Appendix D**.

Three plant species that are considered TRCA species of concern (L1 to L3) and two species considered rare in the Region of Peel were identified in the cultural meadows (CUM1-1a, f, and h) within the study area. **Table 3** presents a list of rare species, TRCA species rank, Region of Peel status, and which community each species was identified within.

TABLE 3.
SUMMARY OF RARE PLANT SPECIES IDENTIFIED IN THE STUDY AREA

Scientific Name	Common Name	MNRF	COSEWIC	TRCA	Peel	CUM1-1a	CUM1-1f	CUM1-1h
Carya ovata var. *ovata*	Shagbark hickory			L3				X
Epilobium leptophyllum	Narrow-leaved willow herb			L3	R4	X		
Agrostis scabra	Fly-away grass			L3			X	X
Sorbus americana	American mountain-ash				R1			X

In addition, the Torbram - Old School North Natural Areas Report (2011) identified two TRCA plant species of concern (L1 to L3) within the vicinity of the study area. These species include: white spruce (*Picea glauca*) and cottongrass bulrush (*Scirpus cyperinus*). These species are listed as L3 species within TRCA jurisdiction.

2.4 Tree Inventory

An ISA Certified Arborist conducted an inventory of tree resources along Airport Road between King Street and Mayfield Road on November 14 and 15, 2012 and June 19, 2014. The investigation included an analysis of all trees 10 cm diameter at breast height (DBH) or greater within the right-of-way and 10 metres beyond

For the trees with a DBH of 10 cm or greater, the following information was recorded: species identification; DBH at 1.37 m above the ground; tree condition using a matrix of trunk integrity; canopy structure; crown vigour; and general comments, where warranted. Tree locations were captured using a TOPCON GSR-1 GPS unit and this information was translated for geographical information system (GIS) mapping.

All surveyed trees were screened to determine the presence of any species at risk, including those species regulated as 'Endangered', 'Threatened', or 'Special Concern' under the Ontario *Endangered Species Act* and/or the Canada *Species at Risk Act*. A summary of this screening is presented in **Section 2.4.3**.

2.4.1 Tree Preservation Policies and Guidelines

The Region of Peel has prepared an Urban Forest Strategy that is intended to provide the framework and strategic direction for the protection and enhancement of the urban forest. The Plan includes strategic goals, including the preparation of urban forest management plans and policy frameworks. As part of this strategy, an analysis of the Town of Caledon's urban forest was undertaken and documented in the Town of Caledon Urban Forest Study - Technical Report. In this report, a number of recommendations were made to better manage the urban forest, including establishment of a private tree bylaw to protect trees on private lands outside of woodlands, establishment of a Tree Protection Policy that outlines enforceable guidelines for tree protection, among others. As such, the policy framework that applies to tree protection in the Town of Caledon may be subject to change.

The Town of Caledon Woodland Conservation By-law 2000-0100 as amended by By-law 2002-165 and 2004-54 regulates the removal of trees in woodlands greater than 0.5 ha in size. However, works undertaken by the Region are exempt from the provisions of this by-law. Individual tree removals are not presently regulated in the Town of Caledon.

2.4.2 Summary of Results

A total of 213 trees consisting of 27 species was identified within the study area. Overall, trees within the study area range in size from 10 to 160 cm DBH. Generally trees within the study area are considered to be in good to fair condition with the exception of a few in poor condition. Of the 213 trees identified, 5 trees are dead. Numerous trees had died or experienced a significant change in health status since the initial tree survey conducted in 2012 and consequently the health status of each tree was reassessed in June 2014. **Table 4** provides a summary of the total number of each tree species identified within the study area. A detailed summary of the data collected for all living trees within the study area is presented in **Appendix C**. The locations of the inventoried trees are presented in **Figures 3A to 3D**.

TABLE 4.
SUMMARY OF TREE SPECIES IDENTIFIED IN THE STUDY AREA

Scientific Name	Common Name	Number of Trees Identified
Acer negundo	Manitoba maple	15
Acer platanoides	Norway maple	9
Acer rubrum	red maple	4
Acer saccharinum	silver maple	20
Acer saccharum spp. *Saccharum*	sugar maple	3
Aesculus hippocastanum	horsechestnut	1
Betula papyrifera	white birch	1
Carya ovata	shagbark hickory	1
Elaeagnus angustifolia	Russian olive	1
Fraxinus pennsylvanica	red ash	10
Fraxinus sp.	ash	6
Gleditsia triacanthos var. *inermis*	shademaster honey locust	2
Malus sp.	apple	4
Picea abies	Norway spruce	8
Picea glauca	white spruce	6

TABLE 4.
SUMMARY OF TREE SPECIES IDENTIFIED IN THE STUDY AREA

Scientific Name	Common Name	Number of Trees Identified
Picea pungens	blue spruce	24
Pinus nigra	Austrian pine	27
Pinus sylvestris	Scots pine	13
Populus deltoides spp. *Deltoides*	eastern cottonwood	4
Populus tremuloides	trembling aspen	4
Quercus macrocarpa	bur oak	4
Robinia pseudoacacia	black locust	13
Salix sp.	willow	4
Salix X *sepulcralis*	willow hybrid	10
Thuja occidentalis	eastern white cedar	4
Ulmus americana	American elm	5
Ulmus pumila	Siberian elm	10
	Total	**213**

2.4.3 Species at Risk

No tree species that are regulated under the Ontario *Endangered Species Act* or the Canada *Species at Risk Act* were encountered during LGL's tree inventory within the study area (those tree species regulated as Special Concern, Endangered, Rare or Threatened).

2.5 Wildlife and Wildlife Habitat

Field investigations along Airport Road, from 1.0 km north of Mayfield Road to 0.6 km north of King Street were conducted within and directly adjacent to the right-of-way on September 7, 2012 and on June 24, July 2, and July 11, 2013, to document wildlife and wildlife habitat and to characterize the nature, extent, and significance of animal usage within the project limits. Direct observations, calls, tracks, scats, and runways were used to record wildlife present within the study area.

2.5.1 Wildlife Habitat

Wildlife and wildlife habitat was found to be distributed across the entire study area, however given the cleared landscape practices (agriculture and urban development) and disturbed nature of the study area, natural heritage features were generally restricted to fragmented areas along Airport Road, more specifically around Salt Creek (West Humber River tributary crossings). The majority of the study area consists of agricultural crops, along with abandoned pastures or cultural meadows. Small patches of marsh are found among the cultural meadows adjacent to Airport Road, and one cultural woodland is located north of Watercourse Crossing 2.

The natural areas surrounding the Salt Creek crossings are considered the more significant wildlife habitat in the study area. These riparian areas provided nesting and foraging habitats for wildlife as well as travel corridors. Concrete box culverts under Airport Road provided passage for amphibian and mammal species. The culverts also provided site-specific nesting habitat for migratory birds. Due to the large amount of disturbed lands within the study area, the natural areas around the Salt Creek crossings are locally significant to wildlife. The areas of disturbed landscape found around the rest of the study area supported minimal natural heritage features, resulting in a limited number of wildlife species generally considered urban or tolerant of anthropogenic features and disturbance.

C:_TA\TA8188 - Airport Road\Maps\Trees_a.mxd

LEGEND

Tree

Data Source: LGL Limited field surveys.

40 20 0 40 Metres

N

AIRPORT ROAD
1 KM NORTH OF MAYFIELD ROAD
TO 0.6 KM NORTH OF KING STREET
TREE RESOURCES

LGL LIMITED
environmental research associates

Project:	TA8145	**Figure:**	3A
Date:	September, 2014	**Prepared By:**	MWF
Scale:	1 : 20,000	**Checked By:**	NMF

LEGEND

Tree

Data Source: LGL Limited field surveys.

40 20 0 40 Metres

AIRPORT ROAD
1 KM NORTH OF MAYFIELD ROAD
TO 0.6 KM NORTH OF KING STREET
TREE RESOURCES

LGL LIMITED
environmental research associates

Project:	TA8145	**Figure:**	3B
Date:	September, 2014	**Prepared By:**	MWF
Scale:	1 : 20,000	**Checked By:**	NMF

C:_TA\TA8188 - Airport Road\Maps\Trees_b.mxd

C:_TA\TA8188 - Airport Road\Maps\Trees_c.mxd

LEGEND

Tree

Data Source: LGL Limited field surveys.

40 20 0 40 Metres

AIRPORT ROAD
1 KM NORTH OF MAYFIELD ROAD
TO 0.6 KM NORTH OF KING STREET
TREE RESOURCES

LGL LIMITED
environmental research associates

Project:	TA8145	**Figure:**	3C
Date:	September, 2014	**Prepared By:**	MWF
Scale:	1 : 20,000	**Checked By:**	NMF

LEGEND

Tree

Data Source: LGL Limited field surveys.

40 20 0 40 Metres

N

AIRPORT ROAD
1 KM NORTH OF MAYFIELD ROAD
TO 0.6 KM NORTH OF KING STREET
TREE RESOURCES

LGL LIMITED
environmental research associates

Project:	TA8145	**Figure:**	3D
Date:	September, 2014	**Prepared By:**	MWF
Scale:	1 : 20,000	**Checked By:**	NMF

C:_TA\TA8188 - Airport Road\Maps\Trees_d.mxd

2.5.2 Fauna

A total of 47 wildlife species (5 herpetofauna, 32 birds and 10 mammals) were recorded within the study area along Airport Road (**Table 5**). Of the 32 bird species recorded, 30 are considered (based on behaviours exhibited) to be breeding within the study area. During the September 2012 survey, species such as Barn Swallow (*Hirundo rustica*) and Cliff Swallow (*Petrochelidon pyrrhonota*) were identified as local breeders from the abandoned mud nests found inside two of the culverts where Salt Creek crosses Airport Road. Cliff Swallow nests were found within the culverts of Crossings 2 and 4 and a Barn Swallow nest was found within the culvert of Crossing 2. The 2013 summer surveys, however, did not find active Barn Swallow nests in any culverts along Airport Road. Cliff Swallows were constructing nests inside the culvert of Crossing 2. Barn Swallows were observed foraging across much of the study area along Airport Road. Nests were identified on the side of a home and within numerous barns located along Airport Road (see **Figures 2A to 2D**). Northern Rough-winged Swallows (*Stelgidopteryx serripennis*) were observed around a factory building on the northwest corner of Perdue Road and Airport Road. Eastern Meadowlark (*Sturnella magna*) and Bobolink (*Dolichonyx oryzivorus*) were identified within a number of the cultural meadows and agricultural fields along Airport Road, and in some cases were observed within 10 m of the right-of-way (see **Figures 2A to 2D**). Other area sensitive species (as identified by Bird Studies Canada), such as Savannah Sparrow (*Passerculus sandwichensis*), Spotted Sandpiper (*Actitis macularius*), Eastern Kingbird (*Tyrannus tyrannus*), Horned Lark (*Eremophila alpestris*), American Goldfinch (*Carduelis tristis*) and American Kestrel (*Falco sparverius*), were observed along Airport Road on each visit and are considered (based on behaviours exhibited) to be breeding within the study area. Highly anthropogenic communities, such as manicured grass and residential areas, provided habitat for highly adaptable species such as American Robin (*Turdus migratorius*), European Starling (*Sturnus vulgaris*), Mourning Dove (*Zenaida macroura*), Rock Dove (*Columba livia*), and Northern Cardinal (*Cardinalis cardinalis*).

Green Frog (*Lithobates clamitans*) was observed inside the culvert of Crossing 2 and around the pond located southwest of the crossing. American Bullfrog (*Lithobates catesbeiana*) was calling from the same pond. Gray Treefrog was heard calling from the small factory building on the northwest corner of Airport Road and Perdue Road. Based on habitat types, other herpetofauna species such as American Toad (*Anaxyrus americanus*) and Eastern Gartersnake (*Thamnophis sirtalis*) could be expected to inhabit the study area.

Six mammal species were recorded in the study area using signs (tracks, scats, trails) left in the riparian zones along the Salt Creek shorelines, in the mud banks under the culverts, and in the cultural meadows and thickets along Airport Road. The major wildlife corridors used to cross Airport Road are primarily at the Watercourse Crossings 2, 4, and 5. Species such as mink (*Mustela vison*), raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis*) were all using the travel corridors through the Salt Creek culverts. Track and trail evidence for white-tailed deer (*Odocoileus virginianus*) indicated a minor crossing point over Airport Road, about 600 m south of Old School Road, from the CUW and CUM on the west side of Airport Road to the CUM and agricultural fields on the east side. Based on habitat-types found within the study area, other mammal species such as Virginia opossum (*Didelphis virginiana*), meadow vole (*Microtus pennsylvanicus),* red fox (*Vulpes vulpes*) and coyote (*Canis latrans*) were also recorded to inhabit the study area.

A summary of wildlife species documented in the study area is presented in **Table 5**.

TABLE 5.
WILDLIFE SPECIES DOCUMENTED IN STUDY AREA

Wildlife	Scientific Name	Common Name	ESA[2]	SARA[2]	Local[1]	Legal Status[2]	BBE[3]
Herpetofauna	*Anaxyrus americanus*	American Toad					
	Hyla versicolor	Gray Treefrog				FWCA(P)	
	Lithobates clamitans	Green Frog					
	Lithobates catesbeiana	American Bullfrog				FWCA(G)	
	Thamnophis sirtalis	Eastern Gartersnake					
Birds	*Branta canadensis*	Canada Goose				MBCA	FY
	Anas platyrhynchos	Mallard				MBCA	FY
	Ardea herodias	Great Blue Heron				MBCA	N/A
	Falco sparverius	American Kestrel			BSC	FWCA(P)	T
	Charadrius vociferus	Killdeer				MBCA	A
	Actitis macularius	Spotted Sandpiper			BSC	MBCA	FY
	Larus delawarensis	Ring-billed Gull				MBCA	N/A
	Columba livia	Rock Pigeon					T
	Zenaida macroura	Mourning Dove				MBCA	T
	Tyrannus tyrannus	Eastern Kingbird			BSC	MBCA	T
	Vireo gilvus	Warbling Vireo				MBCA	T
	Cyanocitta cristata	Blue Jay				FWCA(P)	T
	Eremophila alpestris	Horned Lark			BSC	MBCA	T
	Tachycineta bicolor	Tree Swallow				MBCA	T
	Stelgidopteryx serripennis	N. Rough-winged Swallow			BSC	MBCA	A
	Petrochelidon pyrrhonota	Cliff Swallow			BSC	MBCA	NU
	Hirundo rustica	Barn Swallow	THR	THR	BSC	MBCA	NE
	Turdus migratorius	American Robin				MBCA	T
	Sturnus vulgaris	European Starling					T
	Bombycilla cedrorum	Cedar Waxwing				MBCA	T
	Geothlypis trichas	Common Yellowthroat				MBCA	T
	Spizella passerina	Chipping Sparrow				MBCA	T
	Passerculus sandwichensis	Savannah Sparrow			BSC	MBCA	T

TABLE 5.
WILDLIFE SPECIES DOCUMENTED IN STUDY AREA

Wildlife	Scientific Name	Common Name	ESA[2]	SARA[2]	Local[1]	Legal Status[2]	BBE[3]
Birds (continued)	*Melospiza melodia*	Song Sparrow				MBCA	T
	Cardinalis cardinalis	Northern Cardinal				MBCA	T
	Dolichonyx oryzivorus	Bobolink	THR	THR	BSC	MBCA	T
	Sturnella magna	Eastern Meadowlark	THR	THR	BSC	MBCA	T
	Quiscalus quiscula	Common Grackle					T
	Molothrus ater	Brown-headed Cowbird					T
	Agelaius phoeniceus	Red-winged Blackbird					T
	Carduelis tristis	American Goldfinch			BSC	MBCA	T
	Passer domesticus	House Sparrow					T
Mammals	*Didelphis virginianus*	Opossum				FWCA(F)	
	Sylvilagus floridanus	Eastern Cottontail				FWCA(G)	
	Sciurus carolinensis	Gray Squirrel				FWCA(G)	
	Microtus pennsylvanicus	Meadow Vole					
	Mustela vison	Mink				FWCA(F)	
	Procyon lotor	Raccoon				FWCA(F)	
	Mephitis mephitis	Striped Skunk				FWCA(F)	
	Canis latrans	Coyote				FWCA(F)	
	Vulpes vulpes	Red Fox				FWCA(F)	
	Odocoileus virginianus	White-tailed Deer				FWCA(G)	

For definitions of acronyms and species ranks, refer to **Appendix C**.
[1]Local Ranks:
BSC – Bird Studies Canada, Species of Conservation Priority.
[2]ESA/SARA:
ESA - Ontario *Endangered Species Act.*
SARA- Federal *Species at Risk Act*.
[3]BBE:
BBE Breeding Bird Evidence (according to Bird Studies Canada survey protocol).

2.5.3 Species at Risk

Three species at risk, Barn Swallow, Eastern Meadowlark and Bobolink, were confirmed to be present within the study area. All three species are considered 'Threatened' and regulated as such under the Ontario *Endangered Species Act* (ESA) and the federal *Species at Risk Act* (SARA). Background information (Peel Natural Areas Inventory 2011) indicated that Wood Thrush (*Hylocichla mustelina*), an additional bird species at risk, may be present in the vicinity of the study area. Each of the four species at risk identified, their respective legal status, biological requirements, survey status and the likelihood of presence within the study area is discussed below.

Barn Swallow
Barn Swallow is regulated as 'Threatened' under the Ontario ESA. Barn Swallows generally build mud nests on bridges, walls, ledges and barns, and typically forages in open areas such as agricultural lands, meadows or over water. During field investigations carried out in September 2012, an unoccupied Barn Swallow nest was found under the bridge at Watercourse Crossing 2 (Norris Bridge). However, during breeding bird surveys conducted in June/July 2013, the nest was not in use. No other Barn Swallow nests were identified within culvert structures within the study area. As noted above (see **Section 5.2.5**), Barn Swallows were observed foraging across much of the study area along Airport Road. Nesting colonies were identified on the side of a home and within a number of barns located along Airport Road, immediately adjacent to the study area (see **Figures 2A to 2D**).

Eastern Meadowlark
Eastern Meadowlark, a species with a broad distribution across southern Ontario, is regulated as 'Threatened' under the Ontario ESA. Eastern Meadowlark, formerly a prairie species, has adapted to agricultural practices of the European settlers (hayfields, pastures etc.). As farming practices have become more efficient, Eastern Meadowlark numbers have declined. Eastern Meadowlark was identified during the Natural Area Inventory of Site #8363 (Torbram – Old School North) in 2002 and 2005, and during LGL site visits in 2012 and 2013 based on visual/auditory identification of individuals calling and foraging at point locations within particular habitat communities. Eastern Meadowlark were found to inhabit a large proportion of the cultural meadow and agricultural fields along the Airport Road study area, and in some cases were observed within 10 m of the right-of-way (see **Figures 2A to 2D**).

Bobolink
Bobolink, a species with a broad distribution across southern Ontario, is regulated as 'Threatened' under the Ontario ESA. Bobolinks are typically described as residents of grassland communities with an abundance of grass species that are typical of old fields. Bobolinks are also commonly associated with agricultural lands. Bobolinks were identified during the Natural Area Inventory of Site #8363 (Torbram – Old School North) in 2002 and 2005, and during LGL site visits in 2012 and 2013 based on visual/auditory identification of individuals calling and foraging at point locations within particular habitat communities. Bobolink were found to inhabit a large proportion of the cultural meadow and agricultural fields along the Airport Road study area, and in some cases were observed within 10 m of the right-of-way (see **Figures 2A to 2D**).

Wood Thrush
The Peel Natural Areas Inventory (2011) for the Torbram – Old School North site also notes the presence of Wood Thrush (*Hylocichla mustelina*) within the natural area. Wood Thrush breed in deciduous and mixed forests where there are large trees, moderate understorey, shade and abundant leaf litter. Wood Thrush is listed as 'Special Concern' under the Ontario ESA (effective June 27, 2014). However, based on a review of the habitat features within this natural area, suitable habitat for Wood Thrush is located beyond the Airport Road study area.

Twenty-four recorded species of bird are protected under the *Migratory Birds Convention Act* (MBCA) and two bird species are protected under the *Fish and Wildlife Conservation Act* (FWCA). As noted in **Table 4**, 11 bird species found within the study area are recommended by Bird Studies Canada as priority species for conservation in Peel Region. Nine species of mammal and two herpetofauna species are offered protection under the FWCA.

2.6 Designated Natural Areas

Designated natural areas include areas identified for protection by the Ontario Ministry of Natural Resources (OMNRF), TRCA, the Regional Municipality of Peel, and Town of Caledon. A review of the OMNRF Natural Heritage Information Centre indicates that there are no Provincially Significant Wetlands (PSWs), Areas of Natural and Scientific Interest (ANSIs), or Environmentally Sensitive Areas (ESAs) located within 120 m of the study area.

Region of Peel Official Plan
Based on a review of Schedule A (Core Areas of the Greenlands System in Peel) of the Region of Peel Official Plan (2012), the riparian habitat associated with Salt Creek located along Airport Road is designated as 'Core Areas of the Greenlands System'. Based on a review of the Natural Heritage Policy Review (2008) that was completed during the Region of Peel Official Plan Review process, a number of mapping updates were made to the Greenlands System. The valleylands of Salt Creek were identified as 'Core Valley and Stream Corridors – Major Tributary', and a portion of the woodlands along Salt Creek on the west side of Airport Road, south of Healey/Old School Road are identified as 'Proposed Core Woodlands'. As such, the lands within the study area identified as part of the Greenlands System on Schedule A of the Region of Peel Official Plan have been classified given their function as a valley/stream corridor, or as a significant woodland.

Town of Caledon Official Plan
Based on a review of Schedule 4 (Land Use Plan) of the Town of Caledon Official Plan (2008), the riparian habitat associated with Salt Creek located along Airport Road is designated as 'Environmental Policy Area.'

TRCA Terrestrial Natural Heritage System
A portion of the study area is identified as a component of the TRCA Terrestrial Natural Heritage System, including 'Existing Natural Cover' and 'Potential Natural Cover.' Existing natural cover is identified as four different habitat types: forest, meadow, succession, and wetland. The locations of these areas are presented in **Figures 2A to 2D.** These areas are generally disturbed and contain a high proportion of non-native and invasive species.

Region of Peel Natural Areas Inventory
The Torbram – Old School North Site #8363 was inventoried as part of the Peel Region Natural Areas Inventory. This site is privately owned, and has a total area of approximately 29 ha. It is a linear natural area, containing riparian habitat along Salt Creek, a tributary of the West Humber River. The site is disturbed, and has a high proportion of non-native species. However, two species at risk: Bobolink, Eastern Meadowlark, and Wood Thrush were recorded within the site. These species at risk have been previously discussed in **Section 2.5.3**.

3.0 PROJECT DESCRIPTION

The existing Airport Road within the study area consists of a two lane, rural cross-section, with road side ditches. The preliminary design is to widen Airport Road to four lanes. In addition, the existing intersections at Airport Road and Old School Road/Healey Road, and King Street will be replaced with two lane roundabouts. The majority of the study area will have a rural cross-section, with a paved shoulder and flat bottom ditches. A portion at the north end of the study area (approximately 950 m) will have an urban cross-section with a curb and gutter, storm sewer, and v-type ditch.

The road widening will involve the replacement of 11 culverts/bridges within the study area. Eight of these culverts are at watercourse crossings identified by the TRCA. Three of these watercourses are permanent watercourses with fish habitat, and the work at these crossings is summarized below. At each of the three crossings (Salt Creek at Crossings 5, 4 and 2), the existing structures are proposed to be replaced with larger structures.

- At Crossing 5 (Salt Creek Culvert), the existing 7.2 m x 2.3 m x 22.4 m open-footing concrete culvert will be replaced with a 10.67 m x 2.13 m x 34.5 m pre-cast open footing concrete culvert. As such, the new culvert will be 3.47 m wider, 0.17 m higher and 12.1 m longer than the existing culvert.
- At Crossing 4 (Deans Culvert), the existing 6.5 m x 2.2 m x 19.42 m open footing concrete culvert will be replaced with a 10.67 m x 2.13 m x 31.6 m pre-cast open footing concrete culvert. As such, the new culvert will be 4.17 m wider, 0.07 m less high and 12.18 m longer than the existing culvert.
- At Crossing 2 (Norris Bridge), the existing 10.7 m x 2.8 m x 17.2 m bridge structure will be replaced with a 14.64 m x 3.35 m x 29.9 m pre-cast con-span bridge. As such, the new bridge will be 3.94 m wider, 0.55 m higher and 12.7 m longer than the existing structure.

All other culverts at watercourse crossings identified on **Figures 2A to 2D** will be replaced with larger and longer structures to accommodate the widened road platform. The details of these replacements are presented in the storm water management report (IBI 2014) for this project, under separate cover.

4.0 IMPACT ASSESSMENT AND ENVIRONMENTAL PROTECTION

4.1 Soils

The soils found within the study area are classified as Chinguacousy clay loam, Peel clay, and Bottom Land. Drainage within the study area varies and includes soils that are classified as imperfectly drained. With the exception of the bottom lands immediately adjacent to rivers and streams, slopes are generally smooth and gently sloping. However, soils are present in the study area that are known to be susceptible to erosion if left exposed.

Soil disturbance within the Airport Road study area will be limited to the previously disturbed areas, with some exceptions, where grading will be required in 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) 577 Construction Specification for Temporary Erosion and Sediment Control Measures and TRCA Erosion and Sediment Control Guidelines for Urban Construction. 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.

4.2 Aquatic Habitats and Communities

Three of the watercourses within the project limits support direct fish habitat (Crossings 5, 4 and 2), while the remainder are likely indirect fish habitat. **Figures 2A to 2D** present the locations of all crossings. Because the watercourses at the crossing locations constitute some form of fish habitat, the proposed culvert works discussed above have the potential to result in serious harm to fish habitat due to the following effects:

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

As a result of recent changes to the *Fisheries Act*, the DFO has introduced a self assessment process for proponents to determine if serious harm to fish or fish habitat is expected as a result of activities from the project. Previously, all screenings under the *Fisheries Act* in the TRCA jurisdiction were undertaken by the Conservation Authority in accordance with an agreement with DFO. With the new process, proponents use the DFO screening criteria to determine if a review of the project by DFO is required. The preliminary design at Watercourse Crossing 2 includes a bridge replacement that will result in a larger footprint below the high water mark. At Watercourse Crossings 4 and 5, the replacement culverts will result in new fill below the high water mark. As a result, it is unlikely that this project will meet the self-assessment criteria and that serious harm to fish or fish habitat may occur. A 'Request for Review' will be submitted to DFO for review, to determine if an authorization under the *Fisheries Act* is required. If it is required, the completed 'Application Form for Paragraph 35(2)(b) *Fisheries Act* Authorization (Normal Circumstances)' will be submitted to DFO for review. This submission will be made during detail design.

The following sections evaluate the potential for 'serious harm' to fish and fish habitat as a result of the proposed improvements.

4.2.1 Temporary Disruption or Permanent Loss of Site-Specific Habitat

The culvert/bridge works at all locations have the potential to result in temporary disruption of localized fish habitat. In order to minimize the potential for serious harm, the new structure/culvert lengths will be

as short as possible and all works will be performed in-the-dry using temporary flow bypass systems and cofferdams to isolate the work areas. Construction will also be staged such that both water flow and traffic flow can be maintained.

At the intermittent watercourses (crossings 9, 8, 7, 6, and 3) work can be done in the dry during a period when the channels are not conveying flow. Revegetation/restoration of the crossings will be completed to provide additional riparian habitat and for cover and shade once the works are completed.

To reduce the potential for serious harm to fish habitat, the following environmental protection measures should be implemented:

- an in-water construction timing restriction should be implemented to protect spawning fish, incubating eggs and fry emergence;
- since Salt Creek is Redside Dace recovery habitat, in-water work should be permitted from July 1 to September 15 at Crossings 5, 4 and 2 and, potentially, the same in-water works timing window should be employed at the remainder of the crossings (to be confirmed by MNRF during detail design);
- work areas should be delineated with construction fencing to minimize the area of disturbance;
- appropriate sediment control structures should be installed prior to and maintained during construction to prevent entry of sediments into the watercourse;
- where cofferdams are to be employed, unwatering effluent should be treated prior to discharge to receiving watercourse;
- cofferdams should be constructed using pea gravel bags or equivalent to isolate the work area and maintain flow;
- fish isolated by construction activities should be captured and safely released to the watercourse;
- good housekeeping practices related to materials storage/stockpiling, equipment fuelling/ maintenance, etc. should be implemented during construction; and,
- disturbed riparian areas should 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.

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 the 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. At Watercourse Crossings 7 and 8, enhanced bio-retention swales and oil grit separators will be installed to treat water prior to it entering the watercourse. In addition, all exposed areas will be vegetated as quickly as possible once work is completed.

4.2.3 Changes in Water Temperature

The thermal regime of a receiving watercourse may be altered by storm water 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. Coldwater or coolwater streams are usually considered more sensitive to changes in water temperature than warmwater streams.

It is expected that there will be no significant increase in temperature as a result of the proposed works.

4.2.4 Barriers to Fish Passage

No barriers to fish passage will result from this project.

4.2.5 Restoration/Enhancement

Because the watercourse at Crossings 5, 4 and 2 is considered to be Redside Dace recovery habitat, an ESA permit from the MNRF (overall benefit permit) will likely be required. This permit application will be completed during detail design and all accompanying restoration/enhancement associated with the overall benefit to the species will be negotiated at that time. However, at a minimum, the following should be employed as restoration/enhancement during the detail design phase of the project.

Restoration and enhancement will focus on the main areas of impact: Crossings 5, 4 and 2. The goal of the restoration/enhancement plan is to provide an overall benefit to the watercourse at these locations through restoration of natural channel form and geomorphic function (via widened structures and potential fluvial geomorphological works) and increased riparian cover under the structures at Crossings 5 and 2 due to their increased heights. If channel works will occur under the new structures, the channels will be designed by a fluvial geomorphologist in conjunction with a fisheries biologist using natural channel design principles. If possible, pools will be placed within the channel to act as refugia for fish during times when flows are minimal. These works will increase the diversity of habitat in relation to what is present currently. The slopes of the main channel will be planted with native grasses and shrubs to provide increased shading and allochthonous inputs to the watercourse. Overall, the channel works and restoration under the new structures will increase riparian cover, increase habitat diversity and provide good floodplain connectivity.

4.2.6 Species at Risk

An Information Gathering Form will be submitted to the MNRF for review, and the MNRF will clarify permit requirements for Redside Dace. An ESA Permit, if required, will be secured during detail design.

4.3 Vegetation and Vegetation Communities

Improvements to Airport Road have the potential to result in impacts to vegetation and vegetation communities. Effects on vegetation related to these modifications could include:

- Disturbance/displacement of vegetation and vegetation communities; and
- Displacement of 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 improvements to Airport Road. The improvements to Airport Road will result in the removal of approximately 9.62 ha of naturalized and/or planted areas. The largest area of impact will be to lands that have been anthropogenically

(human) influenced, including cultural vegetation communities and manicured areas. Of these lands, a total of 6.93 ha and 2.513 ha, respectively, will be removed. In addition, a total of 0.18 ha of wetland communities will be removed. **Table 6** provides a summary of the total area of vegetation communities that will be removed for the improvements to Airport Road. **Figures 4A to 4D** also present the limits of vegetation communities and the grading limits.

TABLE 6.
IMPACTS TO VEGETATION COMMUNITIES WITHIN THE STUDY AREA

Vegetation Community Type	Vegetation Community	Total Area (ha) to be Impacted
Cultural	Dry-Moist Old Field Meadow (CUM1-1e to i)	6.52
	Mineral Cultural Woodland (CUW1)	0.41
	Sub-total	**6.93**
Wetland	Mineral Shallow Marsh (MAS)	0.05
	Meadow Marsh (MAM)	0.13
	Sub-total	**0.18**
Human Influenced Lands	Manicured (M)	2.51
	Hedgerow (H)	0.003
	Sub-total	**2.513**
	Total Area	**9.62**

Cultural Vegetation Communities
A total of two cultural community types will be impacted as a result of the improvements to Airport Road. These include: Dry-Moist Old Field Meadow (CUM1-1e to i) and Mineral Cultural Woodland (CUW1). As noted in **Table 6**, the largest impact will occur to the cultural meadow communities with a total removal of 6.52 ha. A total of 0.41 ha of cultural woodland will be removed. The impacts to the cultural communities will involve the removal of narrow strips adjacent to the Airport Road right-of-way.

Overall, impacts resulting in the loss of vegetation within these cultural communities are considered to be minor. Cultural meadow communities typically persist in areas they 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.

It is expected that plant species displaced and/or disturbed within the cultural communities due to road widening 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 such as those disturbance tolerant species identified within the existing rights-of-way. However, the impacts at watercourses have the potential to displace riparian vegetation. During detail design a restoration plan should be prepared for addressing the disturbance to riparian areas at watercourses. Comments received from TRCA on January 13, 2015 with respect to the restoration plans should be considered during detail design. A copy of these comments are available in the Environmental Study Report for this study.

Wetland Vegetation Communities
A total of two wetland community types will be impacted as a result of the improvements to Airport Road. These include: Mineral Shallow Marsh (MAS) and Meadow Marsh (MAM). These wetlands were created a result of drainage modifications, and are not significant. As noted in **Table 6**, the largest impact will occur to the meadow marsh community with a total removal of 0.13 ha. A total of 0.05 ha of shallow marsh will be removed. The impacts to the wetland communities will involve the removal of narrow

strips of wetland communities adjacent to the right-of-way on either side of Airport Road. Narrow strips of meadow marsh and shallow marsh within the study area are associated with roadside ditches, therefore impacts resulting in the loss of vegetation within these communities are considered minor. Meadow marsh and shallow marsh communities are common and widespread throughout Ontario.

Human Influenced Lands

A total of two additional areas that will be impacted as a result of the improvements to Airport Road. These communities include: manicured areas and hedgerows. As noted in **Table 6**, the largest impact will occur to the manicured areas, with a total removal of 2.51 ha. In addition, a total of 0.003 ha of hedgerows will be removed. The overall significance of the impact to these communities is considered minor.

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

As noted in **Section 2.3.3**, no plant species that are regulated under the Ontario *Endangered Species Act* or the Canada *Species at Risk Act* were identified within the study area (those plant species regulated as Endangered, Threatened or Special Concern).

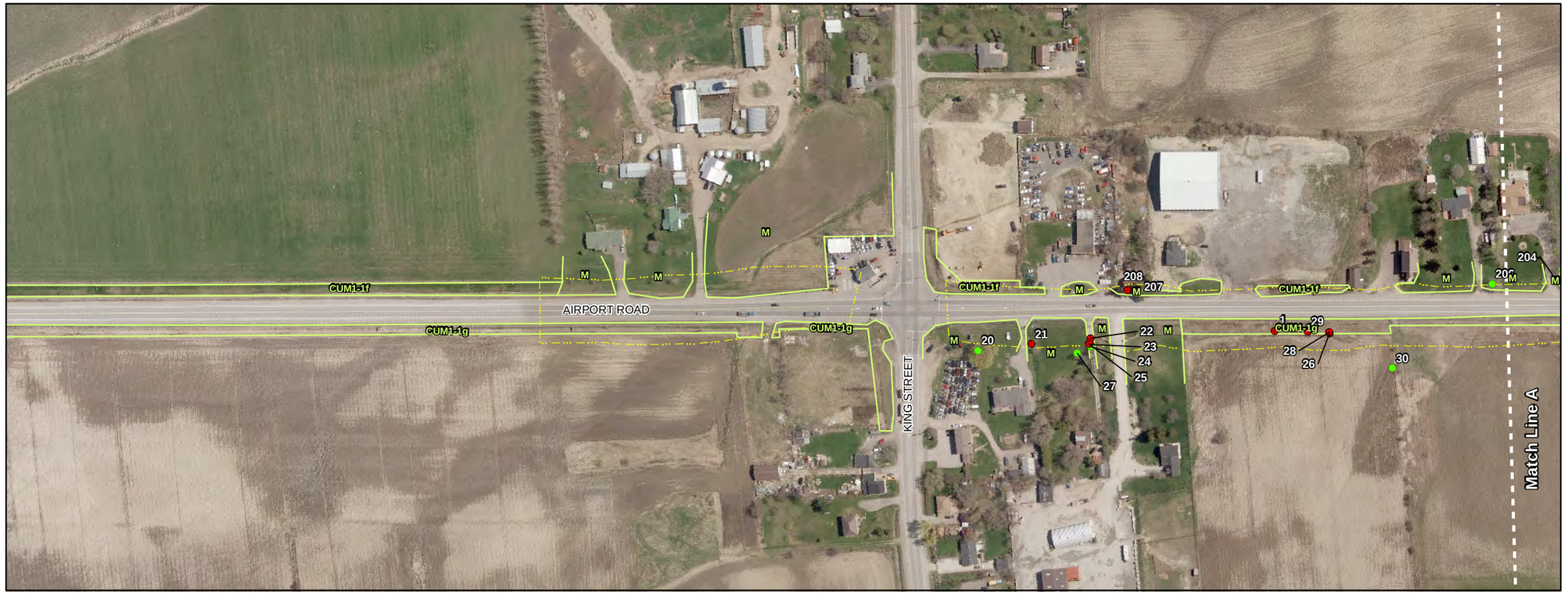
A total of three plant species that are considered TRCA species of concern and one species considered rare in the Region of Peel were identified within the study area. **Table 3** presents a list of these species. It is recommended that the regionally and locally significant plant species be retained, to the extent possible. If impacts are unavoidable, it is recommended that regionally and locally significant plant species, including individual shrub and trees that measure less than 10 cm DBH, be transplanted into suitable habitat conditions. Where possible, these plants should be transplanted into the newly created edges of those impacted communities, but outside the limit of disturbance.

4.4 Tree Impacts

An assessment of the potential number of trees to be impacted by the road improvements to Airport Road was undertaken. This assessment was based on the preliminary design grading limits. Trees located within the grading limits and 1.5 m beyond were identified for removal. Change of grade and construction activity within 1.5 m of a tree will severely impact the integrity and root structure of the tree and the survival of the tree post-construction. Consequently, trees located within the grading limit and within 1.5 m of the grading limit have been identified for removal. Refinements to the number of trees to be removed will be required with any changes to the proposed grading limits.

4.4.1 Trees to be Removed

A total of 151 trees will be removed to accommodate the road widening and improvements along Airport Road. Trees marked for removal range in size from 3 cm to 105 cm DBH. Of the trees to be removed, 28 trees are in poor condition. The remaining 123 trees are considered to be in good to fair condition. These trees consist of 28 species which are described in **Table 4**, and further described by tree ID in **Appendix E**. Refer to **Figures 4A to 4D** for the location of trees to be removed. Efforts will be made during the detail design study to identify opportunities to make design refinements to minimize tree removals, where appropriate. Any changes made to the design that affect the grading limits will require refinements to the tree impact assessment (e.g., number of trees to be removed/protected).



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LEGEND

- Grading Limit
- TRCA Generic Regulation Area
- Tree to be Retained
- Tree to be Removed

Vegetation Communities

CUM1-1 (a-j)	Dry-Moist Old Field Meadow Type
CUW1	Mineral Cultural Woodland Ecosite
M	Manicured
MAM	Meadow Marsh
MAS	Shallow Marsh

Data Source: LGL Limited field surveys, Toronto Region Conservation Authority

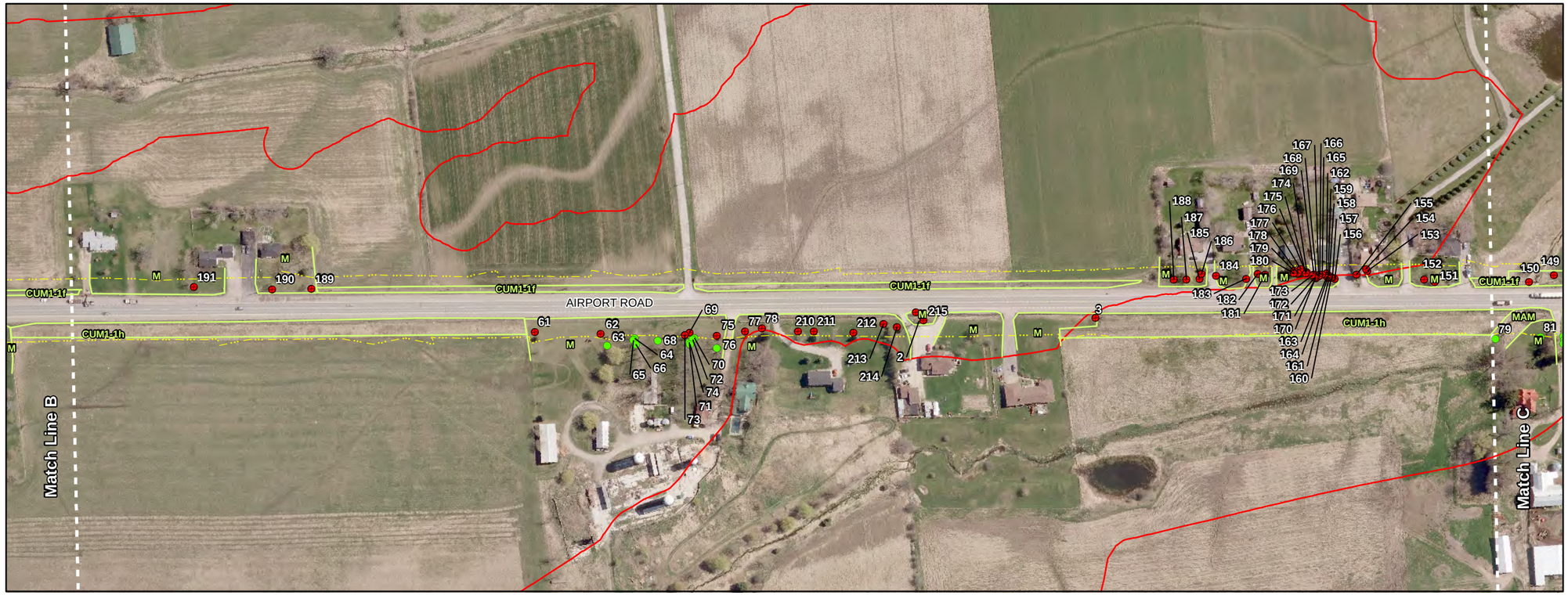
40 20 0 40 Metres

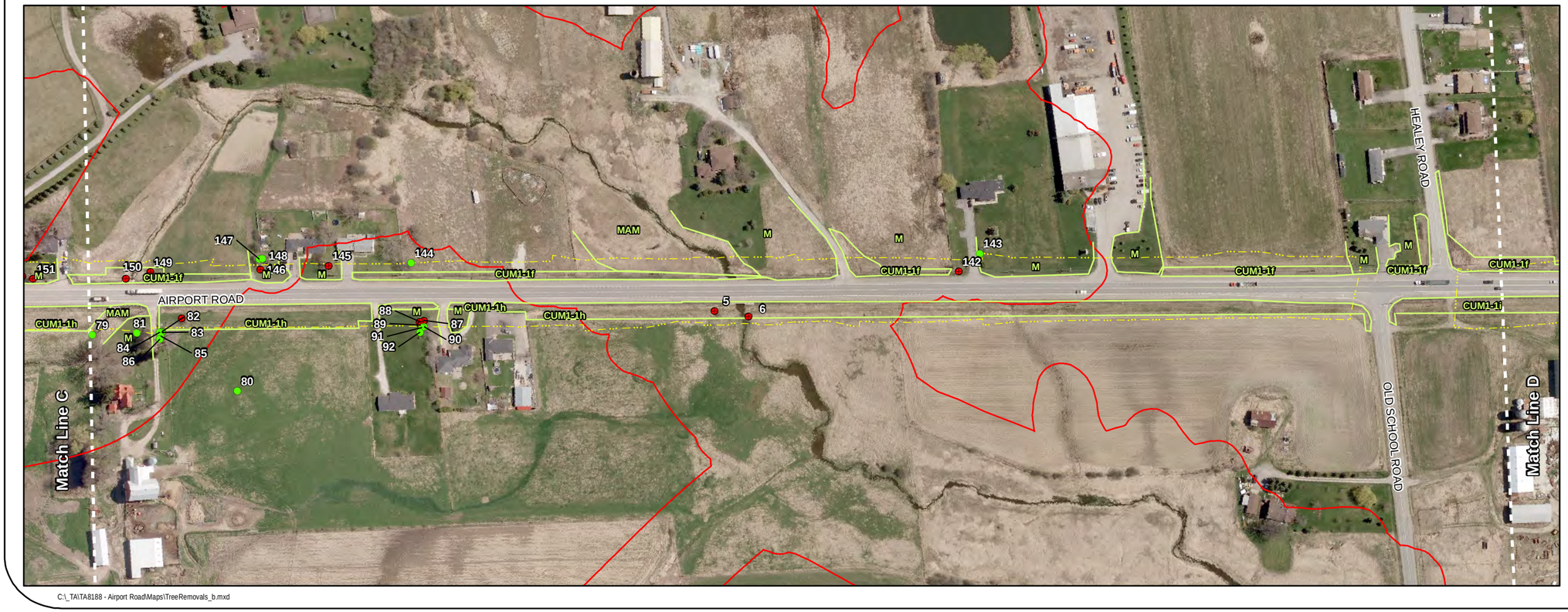
N

TREE AND ELC VEGETATION COMMUNITY REMOVALS

LGL LIMITED
environmental research associates

Project:	TA8188	**Figure:**	4A
Date:	March, 2015	**Prepared By:**	MWF
Scale:	1 : 20,000	**Checked By:**	KSB





LEGEND

- Grading Limit
- TRCA Generic Regulation Area
- Tree to be Retained
- Tree to be Removed

Vegetation Communities

CUM1-1 (a-j)	Dry-Moist Old Field Meadow Type
CUW1	Mineral Cultural Woodland Ecosite
M	Manicured
MAM	Meadow Marsh
MAS	Shallow Marsh

Data Source: LGL Limited field surveys.

40 20 0 40 Metres

TREE AND ELC VEGETATION COMMUNITY REMOVALS

LGL LIMITED
environmental research associates

Project:	TA8188	**Figure:**	4B
Date:	March, 2015	**Prepared By:**	MWF
Scale:	1 : 20,000	**Checked By:**	KSB

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LEGEND

- Grading Limit
- TRCA Generic Regulation Area
- Tree to be Retained
- Tree to be Removed

Vegetation Communities

CUM1-1 (a-j)	Dry-Moist Old Field Meadow Type
CUW1	Mineral Cultural Woodland Ecosite
M	Manicured
MAM	Meadow Marsh
MAS	Shallow Marsh

Vegetation Communities (TRCA)

AGR	Agriculture
CUM1b	Exotic Cool-season Grass Old Field Meadow
CUM1c	Exotic Forb Old Field Meadow
CUP3-2	White Pine Coniferous Plantation
CUW1b	Exotic Cultural Woodland
FOD7-a	Fresh-Moist Manitoba Maple Lowland Deciduous Forest
MAM2-2	Reed Canary Grass Mineral Meadow Marsh
MAM2-10	Forb Mineral Meadow Marsh
MAS2-1b	Narrow-Leaved Cattail Mineral Shallow Marsh
OAO (1-T)	Open Aquatic Ecosite

Data Source: LGL Limited field surveys, Toronto Region Conservation Authority

40 20 0 40 Metres

N

TREE AND ELC VEGETATION COMMUNITY REMOVALS

LGL LIMITED
environmental research associates

Project:	TA8188	**Figure:**	4C
Date:	March, 2015	**Prepared By:**	MWF
Scale:	1 : 20,000	**Checked By:**	KSB

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LEGEND

- Grading Limit
- TRCA Generic Regulation Area
- Tree to be Retained
- Tree to be Removed

Vegetation Communities

CUM1-1 (a-j)	Dry-Moist Old Field Meadow Type
CUW1	Mineral Cultural Woodland Ecosite
M	Manicured
MAM	Meadow Marsh
MAS	Shallow Marsh

Vegetation Communities (TRCA)

AGR	Agriculture
CUM1b	Exotic Cool-season Grass Old Field Meadow
CUM1c	Exotic Forb Old Field Meadow
CUP3-2	White Pine Coniferous Plantation
CUW1b	Exotic Cultural Woodland
FOD7-a	Fresh-Moist Manitoba Maple Lowland Deciduous Forest
MAM2-2	Reed Canary Grass Mineral Meadow Marsh
MAM2-10	Forb Mineral Meadow Marsh
MAS2-1b	Narrow-Leaved Cattail Mineral Shallow Marsh
OAO (1-7)	Open Aquatic Ecosite

Data Source: LGL Limited field surveys, Toronto Region Conservation Authority

40 20 0 40 Metres

N

TREE AND ELC VEGETATION COMMUNITY REMOVALS

LGL LIMITED
environmental research associates

Project:	TA8188	**Figure:**	4D
Date:	March, 2015	**Prepared By:**	MWF
Scale:	1 : 20,000	**Checked By:**	KSB

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4.4.2 Trees to be Retained

Based on the assessment using the preliminary grading limits, trees have been identified for protection. The location of these trees are presented in **Figures 4A to 4D. Appendix E** includes a table that indicates which trees will be retained.

4.4.3 Trees Protection Measures

The following recommendations are provided to ensure impacts to all retained trees are minimized. Designation of a Tree Protection Zone (TPZ) is imperative for the protection of trees (roots, trunks, branches) adjacent to construction works. The TPZ will restrict construction related machinery and activities from damaging trees identified for protection. This protection zone is the minimum distance from the tree trunk required for protection, and it varies depending on tree size. At a minimum the tree protection zone should be 1 metre beyond the dripline of the tree.

The following recommendations are for those trees that will be preserved.

Protection recommendations:

- Tree protection barriers should be 1.2 m (4ft.) high and consist of orange plastic web snow fencing on a wood frame made of 2"x 4"s.
- Any excavations within the minimum tree protection zone (TPZ) must be completed by hand or low pressure hydro vac excavation under the direction of a Certified Arborist/Forester.
- Tree protection hoarding/barrier must be installed prior to the commencement of any construction activities;
- Heavy machinery should not to be operated within the TPZ (including overhead swinging of machine arms);
- Construction materials, equipment, soil, construction waste or debris are not to be stored within the TPZ or dripline of the trees identified for protection;
- There should be no movement or parking of vehicles, placement of equipment or pedestrian traffic within the TPZ;
- Low pressure hydro-vac excavation technology is recommended to expose roots where encroachment within the minimum TPZ is required;
- Prune any exposed roots with a diameter of less than 5 cm to promote regeneration and prevent infection. All roots greater than 5 cm in diameter should not be removed;
- Any tree removals, pruning or root cutting required is to be conducted by a qualified Arborist;
- Apply a slow release deep root low nitrogen fertilizer to promote increased vigor;
- No signs or objects should be displayed or affixed to any trees;
- Disposal of any liquids shall not occur within the TPZ;
- Should any additional, incidental or accidental tree injuries occur during construction, a qualified Arborist should 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 (March to August), unless under appropriate permitting.

These efforts will help to ensure that impacts to retained trees are minimal and that the condition and character of these trees will not change, either in the short-term or long-term period.

4.4.4 Tree Compensation

A total of 47 trees will be removed within the TRCA Regulation Area. It is recommended that a tree replication ratio that is related to the average DBH of the impacted trees be used to calculate tree replacements. The impacted trees have an average diameter at breast height (DBH) of 30.2 cm, and according to **Table 7**, a replication ratio of 1:10 would apply. Consequently, a total of 470 trees will be planted. A 1:1 tree replacement ratio will apply to the remaining 76 trees, outside the TRCA Regulation Area.

TABLE 7.
PERFORMANCE OF ECOSYSTEM SERVICES BY TREES BY DIAMETER AT BREAST HEIGHT (DBH) AND REPLICATION (PLANTING) RATIO

DBH Class	DBH Range	Replication Ratio[1]
1	2.5-7.6	1:1
2	7.7-15.2	1:3
3	15.3-22.9	1:6
4	23.0-30.5	1:10
5	30.6-38.1	1:14
6	38.2-45.7	1:22
7	45.8-53.3	1:22
8	53.4-61.0	1:32
9	61.1-68.6	1:43
10	68.7-76.2	1:50

Suitable planting locations for the replacement trees are along the roadway as a streetscape feature (where they currently do not exist), within naturalized areas of the tributaries, and within compensation areas identified by the Region of Peel and TRCA. These locations will be determined in consultation with TRCA and the Region of Peel during detail design.

4.5 Wildlife and Wildlife Habitat

4.5.1 Displacement of Wildlife and Wildlife Habitat

Modification and widening of Airport Road will take place within and beyond the existing right-of-way. Much of the right-of-way and lands immediately adjacent consist of disturbed low quality wildlife habitat, with higher quality habitat communities closely associated with the Salt Creek crossings (Crossings 2, 4 and 5). The riparian habitats associated with these watercourse crossings (see above) provided nesting and foraging habitats for birds, as well as travel corridors for mammals.

Impacts to Dry-Moist Old Field Meadow and 'manicured' wildlife habitat communities are most notable (see **Section 4.3.1**); however, these habitats types were found to generally 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 by vegetation community (wildlife habitat) type refer to **Section 4.3.1**.

4.5.2 Barrier Effects on Wildlife Passage

No new permanent migratory barriers to wildlife will be created as a result of road modifications and widening. The existing barrier posed by the current Airport Road right-of-way will be greater due to proposed widening. Given the existing disturbance to wildlife movement by Airport Road, the proposed road improvements are not expected to have a significant cumulative impact on wildlife passage. Consideration of wildlife movement has been addressed as part of the improved Airport Road design with the replacement of bridge/culvert structures with similar or greater sized structures (see **Table 8**). An analysis of the openness ratios has been undertaken and is presented in the following section. Where the openness ratio is being increased over existing conditions, improvement in wildlife passage is expected.

4.5.2.1 Wildlife Openness Ratio Comparison

Openness ratio (OR) is a calculation which is used to determine the tunnel effect created by a structure and thus the likelihood wildlife species would utilize that structure. This evaluation is completed by analysing a structure's component measurements (i.e., height x width / structure length). Generally, a greater openness ratio value is expected to increase the likelihood of wildlife utilization of a given structure or culvert. To maximize the openness ratio, structures should be designed to have a larger opening and the shortest length possible, since wildlife species are generally more likely to enter a culvert if they can see light at the other end.

Minimum OR was determined by a review of secondary source data regarding wildlife passage at road crossings. The minimum OR for medium sized animals (e.g., red fox) should be 0.4, and the minimum OR for large sized animals (e.g., deer) should be 0.75 (Cavallaro et al. 2005). Research indicates that small mammals prefer small diameter openings (e.g., concealment may decrease exposure to predation), and subsequently, smaller OR structures (Ministry of Transportation, 2006). The minimum clearance heights recommended for structures that will provide passage for large, medium and small sized animals is as follows: 2 m, 1 m, and 0.3 m (Cavallaro et al. 2005).

Three crossings (Crossings 2, 4 and 5) that provide locally important function as wildlife corridors and are proposed for replacement as part of improvements to Airport Road were evaluated (see **Table 8**). At each of the three crossings examined, the minimum openness ratio for wildlife passage of small, medium and large animals is exceeded. A summary of openness ratios for the crossings proposed within the study area is presented in **Table 8**.

4.5.3 Wildlife/Vehicle Conflicts

The proposed road modifications and widening will increase the width of the travelled surface resulting in an increased risk of mortality for wildlife that elects to cross the roads. The existing Airport Road 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.

As noted above, where the openness ratio is being increased at the above mentioned culverts, improvement in wildlife passage can be expected. Construction duration and disturbance in the vicinity of culverts and bridges should be minimized to the extent possible to reduce the potential for increase in road mortality caused by wildlife avoidance of these structures.

TABLE 8.
OPENNESS RATIOS FOR STRUCTURES WITHIN THE STUDY AREA

Station/Location	Watercourse	Existing Structure		EA Recommended Structure		Net Change/Comments
		Structure Dimensions	Openness Ratio	Structure Dimensions	Openness Ratio	
Watercourse Crossing 2 Norris Bridge	Salt Creek	10.7 m width x 2.8 m height x 17.2 m length	1.74	14.64 m width x 3.35 m height x 29.9 m length	1.64	Minor decrease in openness ratio. However, suitable height/openness ratio to support movement of small, medium and large animals.
Watercourse Crossing 4 Deans Culvert	Salt Creek	6.5 m width x 2.2 m height x 19.42 m length (on skew)	0.74	10.67 m width x 2.13 m height x 31.6 m length (on skew)	0.76	Increase in openness ratio and increased opportunity for wildlife movement. Suitable height/openness ratio to support movement of small, medium and large animals
Watercourse Crossing 5 Salt Creek Culvert	Salt Creek	7.2 m width x 2.3 m height x 22.4 m length (on skew)	0.74	10.67 m width x 2.13 m height x 34.5 m length (on skew)	0.76	Increase in openness ratio and increased opportunity for wildlife movement. Suitable height/openness ratio to support movement of small, medium and large animals

4.5.4 Disturbance to Wildlife from Noise, Light and Visual Intrusion

Noise, light and visual intrusion may alter wildlife activities and patterns. In rural settings, such as the study area, wildlife has become acclimatized to rural conditions and only those fauna that are tolerant of human activities remain. Given that wildlife are acclimatized to the presence of the existing Airport Road right-of-way in the study area, the tolerance of the wildlife assemblage to human activities and the limited zone of influence of the proposed widening, disturbance to wildlife from noise, light and visual intrusion will have no significant adverse effects.

4.5.5 Potential Impacts to Migratory Birds

As described in **Section 2.5** (above), numerous bird species listed under the *Migratory Birds Convention Act* (MBCA) were identified 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 March 25 to August 31. In the event that these activities must be undertaken between March 25 and August 31, a nest survey will be conducted by a qualified avian biologist to identify and locate active nests of species covered by the MBCA. In the event that a migratory bird nest is discovered, an Avian Biologist and/or Environment Canada should be contacted immediately to discuss potential mitigation strategies.

Several nests of migratory bird species and a single nest of a species at risk were found under bridge or culvert structures within the study area. Cliff Swallow nests were found in culverts at Crossings 2 and 4 and a Barn Swallow nest was found in the culvert at Crossing 2 (see **Section 2.5.2**). However, follow up surveys in 2013 did not find Barn Swallows nesting in any culverts/bridges along Airport Road. Follow up surveys should occur during the detail design phase to determine if any change in culvert/bridge structures use by migratory bird species and/or species at risk has occurred. As noted above, to comply with the requirements of the MBCA, disturbance/replacement of culvert/bridge structures where birds may be nesting should be completed outside the window of March 25 and August 31. In the event that species at risk (Barn Swallow) are found to be nesting within bridge/culvert structures scheduled for disturbance/removal, consultation with Ministry of Natural Resources and Forestry (MNRF) Aurora District shall occur.

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

Field surveys indicated that of the 47 wildlife species recorded within the study area, three are regulated under Ontario *Endangered Species Act* (ESA). One additional species at risk, Wood Thrush, was identified as having potential to be found within the vicinity of the study area based on records from the Peel Natural Areas Inventory (2011) (Torbram – Old School North site). The following sections provide a brief review of each species' status, the results of field surveys carried out, and the potential impacts to those eight species at risk and their populations within the vicinity of the study area.

Barn Swallow

Barn Swallow is regulated as 'Threatened' under the ESA. A single Barn Swallow nest was found under the bridge at Crossing 2 (Norris Bridge) (see **Figures 2A to 2D** and **Section 2.5.3**). However, during breeding bird surveys conducted in June/July 2013, the nest was not active. Barn Swallows were observed foraging across much of the study area along Airport Road. Nesting colonies were identified on

the side of a home and within a number of barns located along Airport Road, immediately adjacent to the study area (see **Figures 2A to 2D**).

Permitting requirements under the ESA will be determined through the submission of a MNRF Information Gathering Form (IGF). As a result of the time lapse between the surveys undertaken as a part of this study and detail design/construction, culverts/bridges and other potential Barn Swallow nesting structures present within the study area should be re-examined during the detail design phase to determine if any change in Barn Swallow use has occurred. Any additional Barn Swallow or Barn Swallow nesting records shall be submitted to the MNRF Aurora District.

Eastern Meadowlark

Eastern Meadowlark is regulated as 'Threatened' under the ESA. Eastern Meadowlark were found to inhabit a large proportion of the cultural meadows and agricultural fields along the Airport Road study area, and in some cases were observed within 10 m of the right-of-way (see **Figures 2A to 2D** and **Section 2.5.3**).

Permitting requirements under the ESA will be determined through the submission of a MNRF IGF. Eastern Meadowlark presence and habitat use within the study area may need to be re-examined, as a result of the time lapse between the surveys undertaken as a part of this study and detail design/construction. Requirements for additional surveys during detail design shall be discussed with MNRF in conjunction with the IGF screening. Any additional Eastern Meadowlark or Eastern Meadowlark nest records shall be submitted to the MNRF Aurora District.

Bobolink

Bobolink is regulated as 'Threatened' under the ESA. Bobolink were found to inhabit a large proportion of the cultural meadows and agricultural fields along the Airport Road study area, and in some cases were observed in proximity of the right-of-way (see **Figures 2A to 2D** and **Section 2.5.3**).

Permitting requirements under the ESA will be determined through the submission of a MNRF IGF. Bobolink presence and habitat use within the study area may need to be re-examined, as a result of the time lapse between the surveys undertaken as a part of this study and detail design/construction. Requirements for additional surveys during detail design shall be discussed with MNRF in conjunction with the IGF screening. Any additional Bobolink or Bobolink nest records shall be submitted to the MNRF Aurora District.

Wood Thrush

Wood Thrush was recently listed as 'Special Concern' under the ESA, effective June 27, 2014. The Peel Natural Areas Inventory (2011) for the Torbram – Old School North site also notes the presence of Wood Thrush within the natural area (see **Section 2.5.3**). No Wood Thrush were identified during surveys conducted in 2012 or breeding bird surveys in 2013. Furthermore, no suitable habitat for the species was identified within or immediately adjacent to the study area. No permits will be required for Wood Thrush as this species is listed as 'Special Concern' under the ESA and is not regulated under the Act.

ESA Requirements

Effective July 1, 2013, Ontario Regulation 242/08 (bobolink, eastern meadowlark) allows for impact to up to 30 hectares of Eastern Meadowlark/Bobolink habitat without the requirement of obtaining an Ontario ESA permit. However, an on-line registration process which involves creation, maintenance and monitoring of Eastern Meadowlark/Bobolink habitat is required. Details on species at risk requirements will be provided by MNRF subsequent to their review of the IGF.

Similarly, Effective July 1, 2013, Ontario Regulation 242/08 (general) permits for impact of Barn Swallow nesting structures without the requirement of obtaining an Ontario ESA permit. However, an on-line registration process which involves creation and monitoring of replacement Barn Swallow nesting structure(s) is required. Details on species at risk requirements will be provided by MNRF subsequent to their review of the IGF.

4.6 Designated Natural Areas

As noted in **Section 2.6**, no Provincially Significant Wetlands (PSWs), Areas of Natural and Scientific Interest (ANSIs), or Environmentally Sensitive Areas (ESAs) are located within 120 m of the study area.

A portion of the study area identified for removal along the east and west side of Airport Road is identified as 'Core Areas of the Greenlands Systems' of the Region of Peel (2012) and 'Environmental Policy Area' of the Town of Caledon (2008) Impacts to these designated natural areas will occur within cultural communities. As noted in **Section 2.3.1**, most of the plant species identified within cultural communities are disturbance tolerant and will re-establish populations in available spaces post-construction. Consequently, impacts to the Regional Greenland System of the Region of Peel and the 'Environmental Policy Area' of the Town of Caledon are expected to be minor.

A portion of the study area identified for removal is identified as a component of the TRCA Terrestrial Natural Heritage System. Impacts within TRCA's Natural Heritage System will primarily occur within cultural communities that persist despite regular disturbance. Consequently, impacts to the Natural Heritage System are expected to be minor.

5.0 PERMITS AND APPROVALS DURING DETAIL DESIGN

5.1 Fisheries Act

As a result of recent changes to the *Fisheries Act*, the DFO has introduced a self assessment process for proponents to determine if serious harm to fish or fish habitat is expected as a result of activities from the project. With the new process, proponents use the DFO screening criteria to determine if a review of the project by DFO is required. It is anticipated that the Airport Road preliminary design will not meet DFO's screening criteria, as discussed in **Section 4.2**. During detail design, a 'Request for Review' will be submitted to DFO for review, to determine if an authorization under the *Fisheries Act* is required. If it is required, the completed 'Application Form for Paragraph 35(2)(b) *Fisheries Act* Authorization (Normal Circumstances)' will be submitted to DFO for review.

5.2 Endangered Species Act

An Information Gathering Form will be submitted to the MNRF to determine permit requirements under the Ontario *Endangered Species Act*. If required, the necessary permit(s) will be secured during detail design. A screening of potential impacts to species at risk was completed for this project and is presented in **Sections 4.2.6, 4.3.2, and 4.5.6**.

5.3 TRCA Regulated Area

Based on a review of the TRCA's "Summary Sheet for Structure Sizing (Culvert, Bridge) at Watercourse Crossings", of the nine watercourses in the study area, Watercourse Crossings 2, 4 and 5 are regulated by Ontario Regulation 166/06 (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses). The extent of the Regulation Limit is presented in **Figures 4A to 4D**. During detail design, a permit will need to be secured from the TRCA for these watercourse crossings.;

6.0 MONITORING

To ensure that erosion and sediment controls are installed prior to and maintained during construction, an Erosion and Sediment Control (ESC) Plan will be prepared in accordance with the TRCA *Erosion and Sediment Control Guideline for Urban Construction* (2006). The ESC plan will provide details regarding the inspection, maintenance (e.g., need for repair), documentation procedures during all stages of construction. An environmental inspector will monitor the site during construction to ensure that construction fencing, tree protection barriers and erosion and sedimentation control measures are installed correctly and function. In addition, the environmental inspector will be responsible for delineating work areas and ensuring that the provisions related to fisheries and watercourse protection are met.

Additional monitoring associated with permits (e.g., DFO, MNRF, TRCA) will be determined during detail design.

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APPENDIX A

AGENCY CORRESPONDENCE

Katherine Bibby

From: Heaton, Mark (MNR) [mark.heaton@ontario.ca]
Sent: Friday, December 07, 2012 10:16 AM
To: Judson Venier
Cc: kmitchell@lgl.com; Bobak, Eva (MNR)
Subject: RE: Airport Rd between Mayfield and King

Hello Judson,

This is the habitat regulation for the area:

Redside dace habitat

29.1 For the purpose of clause (a) of the definition of "habitat" in subsection 2 (1) of the Act, the following areas are prescribed as the habitat of redside dace:

1. Within the cities of Hamilton and Toronto, the counties of Bruce, Grey, Huron, Simcoe and Wellington, the regional municipalities of Durham, Halton, Peel and York, the Townships of St. Joseph, Jocelyn and Hilton, and the Village of Hilton Beach,

   i. any part of a stream or other watercourse that is being used by a redside dace,

   ii. any part of a stream or other watercourse that was used by a redside dace at any time during the previous 20 years and that provides suitable conditions for a redside dace to carry out its life processes,

   iii. the area encompassing the meander belt width of an area described in subparagraph i or ii,

   iv. the vegetated area or agricultural lands that are within 30 metres of an area described in subparagraph iii, and

   v. a stream, permanent or intermittent headwater drainage feature, groundwater discharge area or wetland that augments or maintains the baseflow, coarse sediment supply or surface water quality of a part of a stream or other watercourse described in subparagraph i or ii, provided the part of the stream or watercourse has an average bankfull width of 7.5 metres or less.

2. Within the City of Hamilton, counties of Bruce, Grey, Huron, Simcoe and Wellington and the regional municipalities of Durham, Halton, Peel and York,

   i. any part of a stream or other watercourse used by a redside dace at any time in the past that is located in the same or adjacent sub-watershed as the area identified in subparagraph 1 i or ii that provides suitable conditions for successful stream corridor rehabilitation and for natural recolonization of redside dace,

   ii. the area encompassing the meander belt width of an area described in subparagraph i,

   iii. the vegetated area or agricultural lands that are within 30 metres of an area described in subparagraph ii, and

   iv. a stream, permanent or intermittent headwater drainage feature, groundwater discharge area or wetland that augments or maintains the baseflow, coarse sediment supply or surface water quality of a part of a stream or other watercourse described in

subparagraph i, provided the part of the stream or watercourse has an average bankfull width of 7.5 metres or less. O. Reg. 293/11, s. 6.

There are a number of steps to take before your question can be answered

1) The average bankfull width of Salt Creek (29.1 2i) needs to be assessed in order to determine which watercourses could be included as part of the (iv) habitat above. Do you have a geomorphic assessment completed for Salt Creek?
2) If the average bankfull width is 7.5m or less, then all or some of these smaller watercourses and/or headwater drainage features could be assigned as regulated habitat if they provide the functions described in (iv) above.

Regards,

Mark Heaton
OMNR Aurora

From: Judson Venier [mailto:jvenier@lgl.com]
Sent: December 5, 2012 10:48 AM
To: Heaton, Mark (MNR)
Cc: kmitchell@lgl.com
Subject: Airport Rd between Mayfield and King

Hi Mark,

We are working on an EA project for the widening of Airport Road between Mayfield Road and King Street in Caledon. The road is crossed by Salt Creek three times and several small tributaries of Salt Creek also cross the road. Can you tell me which crossings accommodate regulated Redside Dace habitat? I've attached the TRCA watercourse map for your reference. Please note that Crossings 1 and 10 are not within the study area.

Thank you and hope all is well,

Judson

Judson M. Venier, M.Sc.
Fisheries Biologist
LGL Limited
22 Fisher Street, P.O. Box 280
King City, ON L7B 1A6
Tel: 905-833-1244
Fax: 905-833-1255
e-mail: jvenier@lgl.com

Katherine Mitchell

From: Sharon Lingertat [SLingertat@trca.on.ca]
Sent: Monday, September 24, 2012 11:23 AM
To: kmitchell@lgl.com
Cc: Sally.Rook@peelregion.ca
Subject: Re: Airport Road from 1.0 km north of Mayfield Road to 0.6 km north of King Street
Attachments: CFN 46587 Airport Rd Fisheries Locations.jpg; CFN 46587 AIRPORT RD FISHERIES DATA.xls

Hi,

Attached below is the fisheries information for the area. Redside Dace were found here in 1984 and 1985, however there has not been a lot of sampling since. As a result, please contact MNR.

As an FYI - this area also has a lot of mussels, and as there has now been an endangered one found in our jurisdiction there might be a need to do a survey depending on what is being proposed.

Sharon Lingertat, B.Sc. (Hons), MCIP, RPP | Senior Planner, Environmental Assessment Planning | Toronto and Region Conservation Authority | 5 Shoreham Drive | Toronto, ON | M3N 1S4 |☎ 416-661-6600 ext. 5717 | ✉ slingertat@trca.on.ca | www.trca.on.ca |

From: "Katherine Mitchell" <kmitchell@lgl.com>
To: "'Sharon Lingertat'" <SLingertat@trca.on.ca>,
Date: 08/28/2012 04:16 PM
Subject: Airport Road from 1.0 km north of Mayfield Road to 0.6 km north of King Street

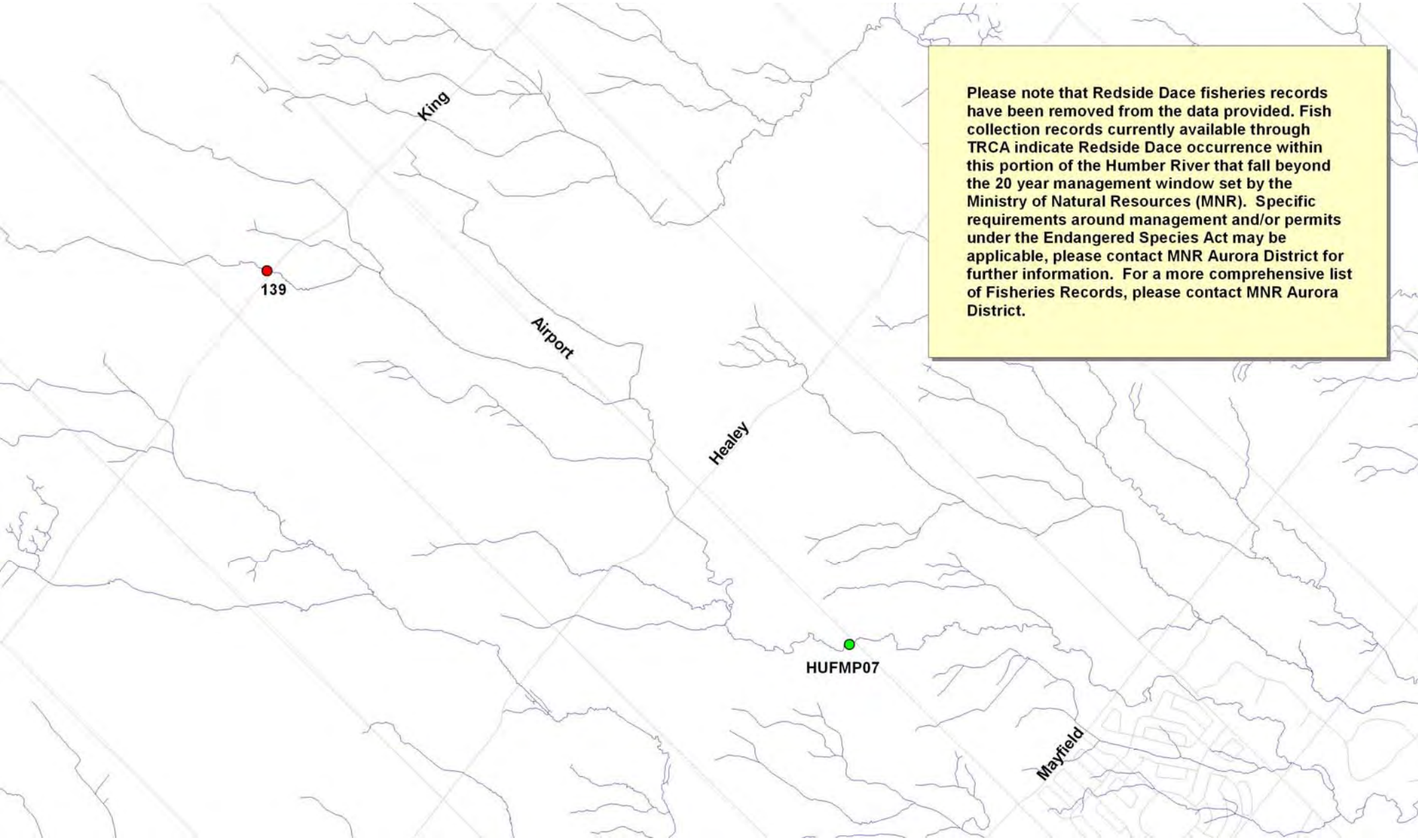
---

Hi Sharon: I hope you are doing well. LGL is working on behalf of IBI Group and the Region of Peel to conduct a Class EA Study for the study area noted above. As part of this work, we would like to request any fish community data you may have for this area. The study area is attached for your review. Please let me know if you need any further information from me.

Kind regards,
Katherine

Katherine Mitchell, MCIP, RPP, Environmental Planner, LGL Limited
22 Fisher Street, P.O. Box 280 | King City, Ontario L7B 1A6
Tel: 905-833-1244 | Fax: 905-833-1255 | Email: kmitchell@lgl.com
[attachment "key plan.pdf" deleted by Sharon Lingertat/MTRCA]

*"*PLEASE CONSIDER THE ENVIRONMENT WHEN DECIDING TO PRINT THIS MESSAGE**



Please note that Redside Dace fisheries records have been removed from the data provided. Fish collection records currently available through TRCA indicate Redside Dace occurrence within this portion of the Humber River that fall beyond the 20 year management window set by the Ministry of Natural Resources (MNR). Specific requirements around management and/or permits under the Endangered Species Act may be applicable, please contact MNR Aurora District for further information. For a more comprehensive list of Fisheries Records, please contact MNR Aurora District.

WATERSHED	SPECIES_CODE	COMMON_NAME	NUMBER OF FISH RECORDED	STATION_NUMBER	EASTING	NORTHING	SAMPLE_DATE	WATERBODY	X_COORD	Y_COORD
Humber River	163	WHITE SUCKER	2	139	594617	4852846	1/1/1946	SALT CREEK	594629.57600	4853067.14935
Humber River	200	BLACKNOSE SHINER	0	139	594617	4852846	1/1/1972	SALT CREEK	594629.57600	4853067.14935
Humber River	208	BLUNTNOSE MINNOW	0	139	594617	4852846	1/1/1972	SALT CREEK	594629.57600	4853067.14935
Humber River	209	FATHEAD MINNOW	0	139	594617	4852846	1/1/1972	SALT CREEK	594629.57600	4853067.14935
Humber River	209	FATHEAD MINNOW	55	139	594617	4852846	1/1/1946	SALT CREEK	594629.57600	4853067.14935
Humber River	212	CREEK CHUB	0	139	594617	4852846	1/1/1972	SALT CREEK	594629.57600	4853067.14935
Humber River	212	CREEK CHUB	10	139	594617	4852846	1/1/1946	SALT CREEK	594629.57600	4853067.14935
Humber River	281	BROOK STICKLEBACK	0	139	594617	4852846	1/1/1972	SALT CREEK	594629.57600	4853067.14935
Humber River	281	BROOK STICKLEBACK	6	139	594617	4852846	1/1/1946	SALT CREEK	594629.57600	4853067.14935
Humber River	341	JOHNNY DARTER	0	139	594617	4852846	1/1/1972	SALT CREEK	594629.57600	4853067.14935

Katherine Mitchell

From: Rakesh Pandey [Rakesh.Pandey@IBIGroup.com]
Sent: Monday, October 29, 2012 3:20 PM
To: kmitchell@lgl.com; Allan Ortlieb
Subject: FW: Airport Road Classs EA (Mayfield Road to King Street) Project - Peel Region (RFP 12-4380): Data Request (SWM and Drainage)
Attachments: 46587 - Watercourse crossings.pdf; 46587 - Watercourse Table.xls

FYI

Rakesh Pandey Ph.D. P.Eng.
Senior Water Resources Engineer

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From: Sharon Lingertat [mailto:SLingertat@trca.on.ca]
Sent: Monday, October 29, 2012 12:40 PM
To: Rakesh Pandey
Cc: Sally.Rook@peelregion.ca
Subject: Re: Airport Road Classs EA (Mayfield Road to King Street) Project - Peel Region (RFP 12-4380): Data Request (SWM and Drainage)

Hi Rakesh,

I've attached the watercourse crossing table as per our site visit with the Region on December 12, 2011, including the mapped locations of the features. I've also included the excel version of the spreadsheet as I think the pdf version is difficult to view. The table identifies all of the regulated areas and watercourses within the study limits ID'd on site.

Flood plain maps/natural features data and drainage areas were provided to the Region on December 6, 2011 and March 30, 2012. Please contact them directly for that information.

In the meantime I will check with engineering to see if they can provide the modeling.

Thanks,
Sharon

Sharon Lingertat, B.Sc. (Hons), MCIP, RPP | Senior Planner, Environmental Assessment Planning | Toronto and Region Conservation Authority | 5 Shoreham Drive | Toronto, ON | M3N 1S4 |☎ 416-661-6600 ext. 5717 | ✉ slingertat@trca.on.ca |🖱 www.trca.on.ca |

From: Rakesh Pandey <Rakesh.Pandey@IBIGroup.com>
To: Sharon Lingertat <SLingertat@trca.on.ca>,
Date: 10/19/2012 02:16 PM
Subject: Airport Road Classs EA (Mayfield Road to King Street) Project - Peel Region (RFP 12-4380): Data Request (SWM and Drainage)

Hi Sharon,
As part of Airport Road EA study, we are looking for the following information from **TRCA**:

1. A list of regulated watercourses within the project limits, including the location.
2. Catchment area maps associated with the watercourses from Mayfield Road to King Street.
3. Hydrologic and hydraulic modeling files of the watercourses excepting the bridge crossing (HEC-RAS model for the bridge crossing i.e. down-stream of Old School Road, has already been provided to IBI).
4. Flow and water level information at the crossings, apart from the bridge crossing.

We are also looking for TRCA's standard table on this project. I believe TRCA usually provides their standard table for such projects. Attached is a sample Table that we received earlier from TRCA on similar projects.

Moreover, if TRCA is aware of other issues or concerns (such as known flooding, erosion problems, etc.) relevant to the project, we would appreciate receiving that information as well.

Your assistance in providing this information will be appreciated.

Have a nice weekend.

Kind Regards,

Rakesh Pandey Ph.D. P.Eng.
Senior Water Resources Engineer

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web www.ibigroup.com

From: Allan Ortlieb
Sent: Thursday, October 18, 2012 3:36 PM
To: Rakesh Pandey
Cc: kmitchell@lgl.com
Subject: RE: Airport Road Classs EA

Rakesh,

Please follow-up with Sharon at TRCA to secure this information and share with LGL once received. Thx

Allan Ortlieb
Associate

IBI Group
30 International Boulevard
Toronto ON M9W 5P3 Canada

tel 416 679 1930
direct 416 798 5480
fax 416 675 4620
email Allan.Ortlieb@IBIGroup.com
web www.ibigroup.com

From: Allan Ortlieb
Sent: Wednesday, October 10, 2012 4:53 PM
To: kmitchell@lgl.com; Rakesh Pandey
Subject: RE: Airport Road Classs EA

Katherine,

Although the minutes refer to a White Tailed Deer presentation …I don't recall any presentation, however I do recall Mark mentioning this as a potential concern. I will follow-up with the Region to see if they have access to any presentation that Mark may have given in the past on this issue.

To my knowledge TRCA has not provided their standard table for this project. Rakesh – do you know if TRCA intends to prepare an initial table or are you planning to prepare one for their input/comment?

It's important that we meet the date for the existing conditions assessment. I don't see any major concerns if the second round of field work needs to extend out, especially if required to ensure work is undertaken during the proper season. We just need to be prepared for a second PIC next September.

Allan Ortlieb
Associate

IBI Group
30 International Boulevard
Toronto ON M9W 5P3 Canada

tel 416 679 1930
direct 416 798 5480
fax 416 675 4620
email Allan.Ortlieb@IBIGroup.com
web www.ibigroup.com

From: Katherine Mitchell [mailto:kmitchell@lgl.com]
Sent: Wednesday, October 10, 2012 2:29 PM
To: Allan Ortlieb
Subject: RE: Airport Road Classs EA

Hi Allan:

Thank you for passing along these materials. We will sign the sub-consultant agreement and return it to you.

The Minutes were helpful – it is good to see that both MNR and TRCA were present. In the minutes, there is reference made to the presentation about White Tailed Deer made by Mark Heaton. Could you please provide a copy of this presentation? TRCA sometimes provides a large table that summarizes watercourse crossing information – do you happen to know if Sharon is providing this table to the study team?

I've had a look at the project schedule, and had a few comments:

- I see you have a draft existing conditions report scheduled for early December – that should be fine
- The second round of field work in 2013 will need to be extended to early July, so that we include the breeding bird window
- A report by May 2013 won't be feasible for us, as the breeding bird window is between May 24 and July 10. Is it possible to delay this deliverable?

Thanks,
Katherine

Katherine Mitchell, MCIP, RPP, Environmental Planner, LGL Limited
22 Fisher Street, P.O. Box 280 | King City, Ontario L7B 1A6
Tel: 905-833-1244 | Fax: 905-833-1255 | Email: kmitchell@lgl.com

From: Allan Ortlieb [mailto:Allan.Ortlieb@IBIGroup.com]
Sent: Friday, October 05, 2012 4:35 PM
To: kmitchell@lgl.com
Cc: 'Judson Venier'
Subject: Airport Road Classs EA

Katherine,

Please find attached:

1) A copy of the Sub-Consultant Agreement (for your signature)
2) Minutes from the project kick-off meeting
3) Overall Project Schedule (please review and let me know if you have any concerns…recognizing we are already one month behind any opportunities to catch-up would be appreciated)
4) FTP link to Base plan (ACAD and GIS data as previously posted), Aerial Photo mapping, additional TRCA data, etc received to date from the Region. The log-in details are below:

ftp://24RX12.010uF:Fbk7gbLA@ftp.ibigroup.com
Please copy the link into My Computer and do not click it, or alternatively:

ftp://ftp.ibigroup.com
Login user name: 24RX12.010uF
Password: Fbk7gbLA

Please provide an approximate timeline for completion of the Natural Heritage – Existing Conditions Assessment. As part of this work, I would also appreciate if you could let me know if/when you expect to be in the field so that I can keep Region staff informed.

If you could also give me a +/- target date as to when you expect to have a draft report available for review, it would be appreciated.

If you require any further information at this time, please let me know. Project invoicing can be sent to my attention at the address below. Thx

Allan Ortlieb
Associate

IBI Group
30 International Boulevard

Toronto ON M9W 5P3 Canada

tel 416 679 1930
direct 416 798 5480
fax 416 675 4620
email Allan.Ortlieb@IBIGroup.com
web www.ibigroup.com

[attachment "42704 - Compensation and w.c. table 4.pdf" deleted by Sharon Lingertat/MTRCA]

Join us for the **Charles Sauriol Environmental Dinner for the Living City** on November 8th 2012.
We need your support to make the Living City come alive! Buy a ticket, a table or become a sponsor.
Visit **www.charlessauriol.ca**.

TORONTO AND REGION Conservation
for The Living City

January 18, 2012

CFN 46587

BY MAIL AND EMAIL (Solmaz.Zia@peelregion.ca)

Solmaz Zia
Region of Peel
10 Peel Centre Drive, Suite B
Brampton, ON L6T 4B9

Dear Ms. Zia:

Re: Watercourse Crossing Chart and Maps
Airport Road (North of Mayfield Road to North of King Street)
Municipal Class Environmental Assessment (EA) - Schedule C
Humber River Watershed; Town of Caledon; Regional Municipality of Peel

Toronto and Region Conservation Authority (TRCA) staff met on site with Region of Peel staff on December 12, 2011 to identify watercourse crossings within the limits of the future Airport Road Environmental Assessment (EA). Nine (9) watercourse crossings were identified on site and will need to be reviewed as part of the EA.

Enclosed is a copy of the TRCA watercourse crossing chart and associated mapping used to identify each of the locations. Please complete the remaining sections of the chart as part of the EA. Once the Region has determined the proposed works at each of the crossing locations, as a result of the road works (i.e., culvert replacement, extension, do nothing), we will be in a position to provide further input regarding engineering studies and requirements. The Ministry of Natural Resources should also be contacted as soon as possible to identify any concerns under the *Endangered Species Act*.

Should you have any questions please contact me at extension 5717 or by email at slingertat@trca.on.ca.

Yours truly,

Sharon Lingertat

Sharon Lingertat
Acting Senior Planner, Environmental Assessment Planning
Planning and Development

Encl: Summary Sheet for Structure Sizing (Culvert, Bridge) at Watercourse Crossings
Mapping

BY EMAIL
cc: TRCA: Beth Williston, Senior Manager, Environmental Assessment Planning
Quentin Hanchard, Senior Manager, Development, Planning and Regulation
Gary Wilkins, Humber River Watershed Specialist

F:\Letters for Mailing\46587 – Watercourse crossings

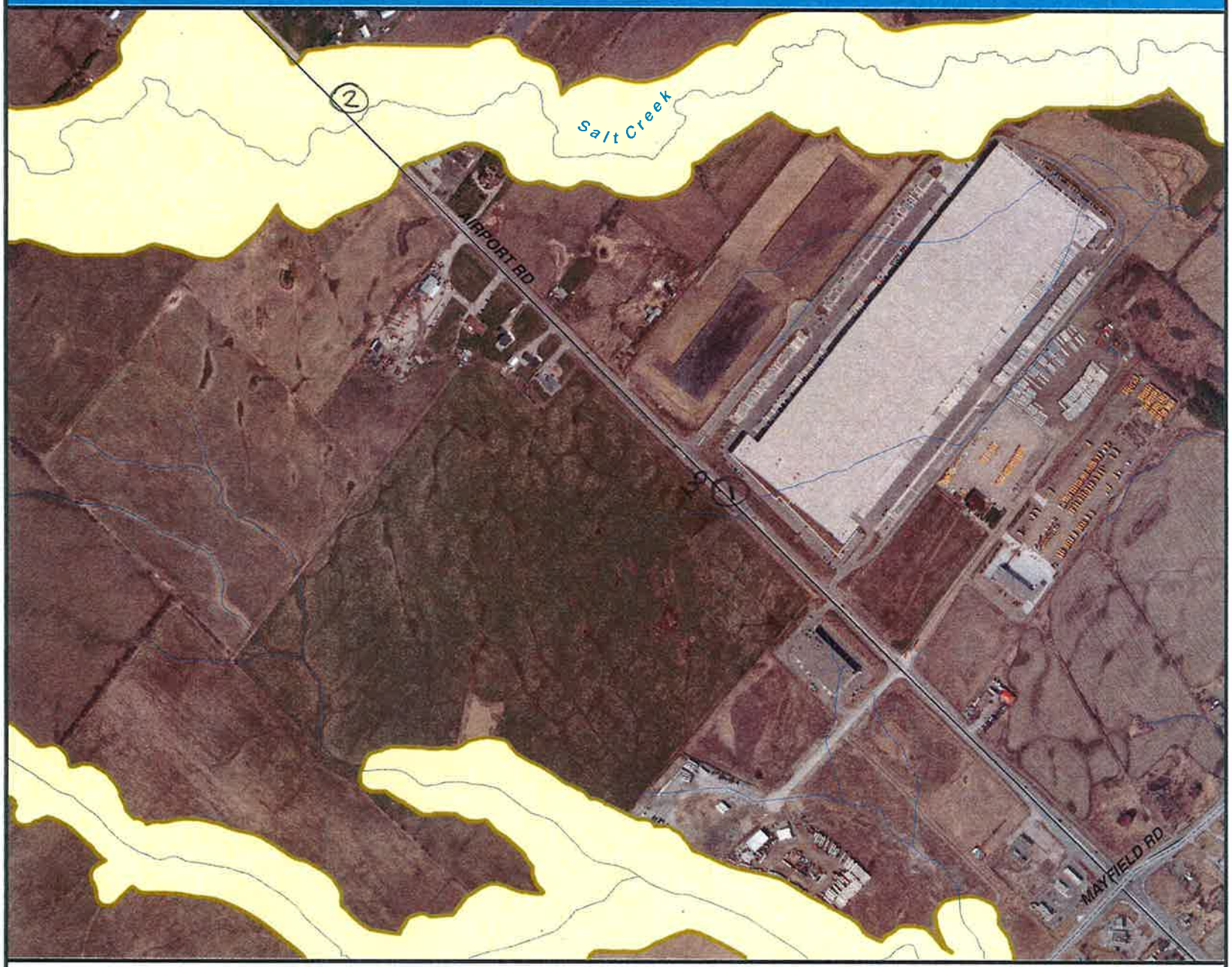
Conservation
for The Living City

SUMMARY SHEET FOR STRUCTURE SIZING (CULVERT, BRIDGE) AT WATERCOURSE CROSSINGS

DATE CHART LAST REVISED: Monday, January 16, 2012
DATE OF SITE VISIT(S): Monday, December 12, 2011
PROJECT NAME: Airport Road EA (1 km North of Mayfield Road to King Street)
PROPONENT: Region of Peel
TRCA PROJECT MANAGER: Sharon Lingertat
MUNICIPAL PROJECT MANAGER: Solmaz Zia
TRCA FILE #: 46587

		1	2	3	4	5	6	7	8	9	10
GEOGRAPHIC AREA											
TRCA STAFF TO COMPLETE	Watercourse Crossing Number (to correspond with tabled or photo)	1	2	3	4	5	6	7	8	9	10
	Location	North of Perdue Court	Salt Creek - Approx. 1.5 km North of Mayfield Road	Approx. 212 m South of Healey Road	Salt Creek (south bend) - Approx. 450 m North of Healey Road	Salt Creek (north bend) - Approx. 660 m North of Healey Road	Approx. 1.7 km South of King Street	Approx. 940 m South of King Street	Approx. 273 m South of King Street	Approx. 105 m North of King Street	Approx. 729 m North of King Street
	TRCA Property in close proximity to the project area? (Y/N)	No	No	No	No	No	No	No	No	No	No
	If yes, please describe										
Ontario Regulation 166/06 Permit Requirements											
TRCA STAFF TO COMPLETE	Within a Regulated Area	No	Yes	No	Yes	Yes	No	No	No	No	No
	Within a Meanderbelt of Watercourse? (Y/N)	Yes	Yes	Yes	No	No	No	No	No	No	No
	Within a Watercourse? (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Within a Regional Storm Floodplain*? (Y/N) (>50 ha upstream drainage/<50ha* upstream drainage) *= Regional Storm Floodplain	No	Yes	TBD	Yes	Yes	TBD	TBD	TBD	TBD	TBD
HABITAT REVIEW											
TRCA STAFF TO COMPLETE	Fish Habitat	No	Yes	Yes	Yes	Yes	Yes	Yes	TBD	TBD	TBD
	Groundwater Upwellings (Y/N)	No	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	Fish Passage Within Culvert/Structure? (Y/N)	No	Yes	TBD	Yes	Yes	TBD	TBD	TBD	TBD	TBD
	Managed for Red Side Dace (RSD) Habitat (Y/N)	No	Yes	Yes	Yes	Yes	Yes	Yes	TBD	TBD	TBD
	Is the project a HADD (Y/N)	No	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	Is the project a Mi-HADD (Y/N)	No	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	Timing Window? (Cold = July 1 to September 15) (Warm = July 1 to March 31)	N/A	RSD (July 1 to Sept 15)	RSD (July 1 to Sept 15)	RSD (July 1 to Sept 15)	RSD (July 1 to Sept 15)	RSD (July 1 to Sept 15)	RSD (July 1 to Sept 15)	TBD	TBD	TBD
	In close proximity to a TRCA Habitat Improvement Plan area?	N/A	No	No	No	No	No	No	No	No	No
EXISTING STRUCTURE DETAILS											
CONSULTANT TO COMPLETE	Existing Structure (L x W x H and type)										
	Open or Closed Footed?										
	Photo record of culvert inlet and outlet, date of photos (attached)										
	Structure assessment to determine the life expectancy of the structure										
	Is there a new infrastructure being proposed which may result in a larger structure?										
	Hydraulic capacity of existing structure is (adequate/inadequate) to convey Regional Storm?										
PROPOSED STRUCTURE DETAILS AND REQUIREMENTS											
CONSULTANT TO COMPLETE	Proposed Structure (L x W x H and type)										
	Open or Closed Footed?										
	Extension only proposed? (Y/N)										
	Removal, Replacement only proposed?										
	Removal, Replacement and Lengthening Proposed? (Y/N)										
	Estimated cost for design alternative										
	Hydraulic capacity of proposed structure is (adequate/inadequate) to convey Regional Storm?										
	[illegible]										
	Terrestrial Passage? (Y/N)										
	Are there any existing or proposed trails within the valley system? (Y/N)										
	Embedment and substrate for Aquatic Passage Required? (Y/N)										
STUDY REQUIREMENTS											
TRCA STAFF TO COMPLETE	Hydraulic Analysis (Y/N)	No	Yes	Yes - If the drainage area is greater than 50 ha	Yes	Yes	Yes - If the drainage area is greater than 50 ha	Yes - If the drainage area is greater than 50 ha	Yes - If the drainage area is greater than 50 ha	Yes - If the drainage area is greater than 50 ha	Yes - If the drainage area is greater than 50 ha
	Is there an existing HEC RAS model at TRCA? Yes? No?	Yes	Yes	No	Yes	Yes	No	No	No	No	No
	Meander Belt Analysis (Y/N) (if an ... only)	Yes	TBD	No	TBD	TBD	No	No	No	No	No
	100 year Erosion Study (Y/N) (if an ... only)	Yes	TBD	No	TBD	TBD	No	No	No	No	No
	Geotechnical Report provided for review (Y/N)	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
SUMMARY OF APPROVALS REQUIRED											
TRCA STAFF TO COMPLETE	Ontario Regulation 166/06 Permit required? (Y/N)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	DFO HADD - TRCA to coordinate DFO requirements	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CONSULTANT TO COMPLETE	MNR contacted? (Y/N)										
	Transport Canada contacted for navigable waterways? (Y/N)										
ADDITIONAL NOTES											
	RSD = Redside dace		Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*
			Meander belt and 100 year erosion analysis requirements to be determined once Peel has provided direction regarding culvert/bridge replacement or extension		Meander belt and 100 year erosion analysis requirements to be determined once Peel has provided direction regarding culvert/bridge replacement or extension	Meander belt and 100 year erosion analysis requirements to be determined once Peel has provided direction regarding culvert/bridge replacement or extension					

Airport Road EA



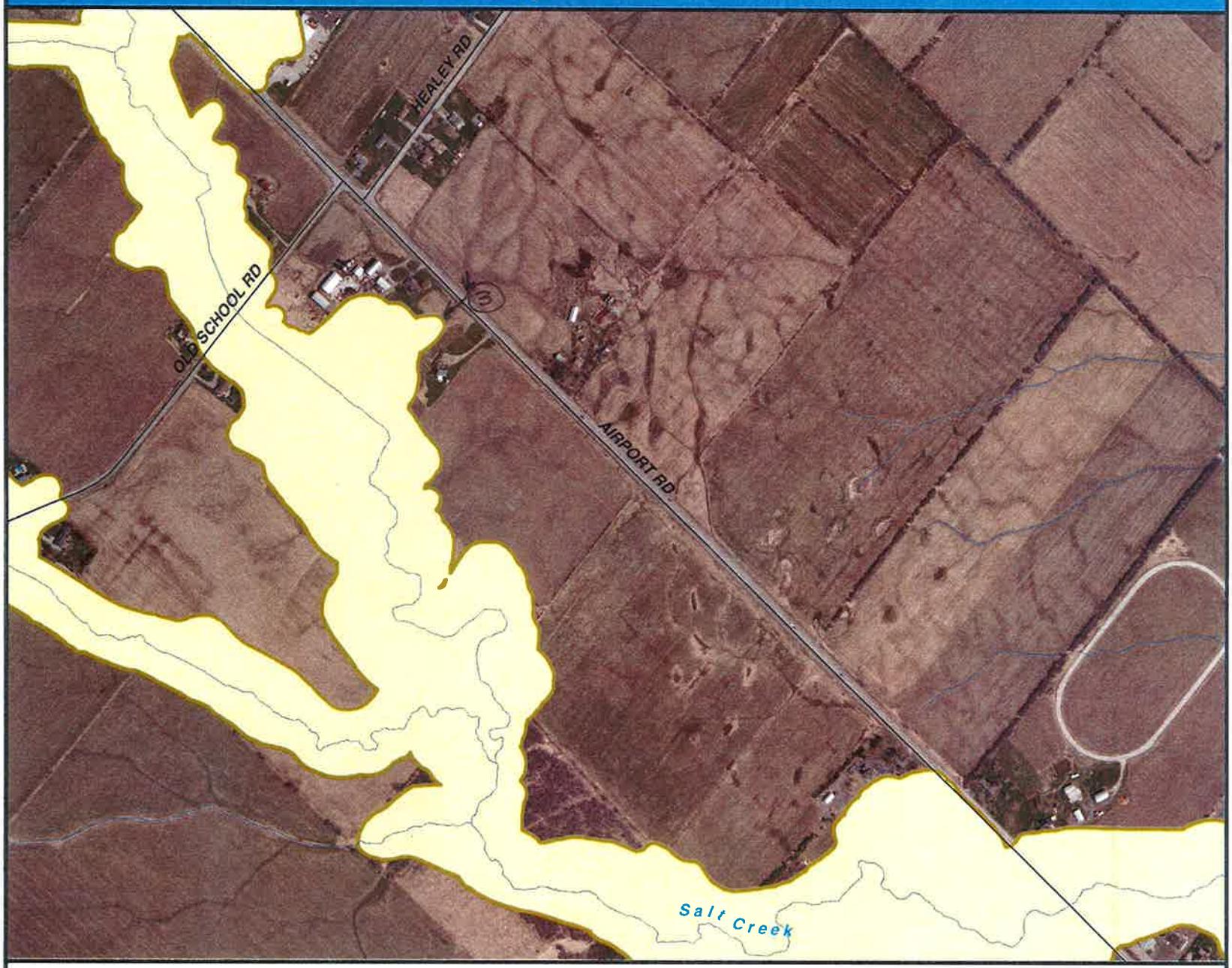
1:8,253

Legend

- Watershed Boundary
- Local Boundary
- Regional Boundary
- Watercourses_TRCA
- Regulation Limit

TORONTO AND REGION Conservation
for The Living City

Airport Road EA



1:8,253

Legend

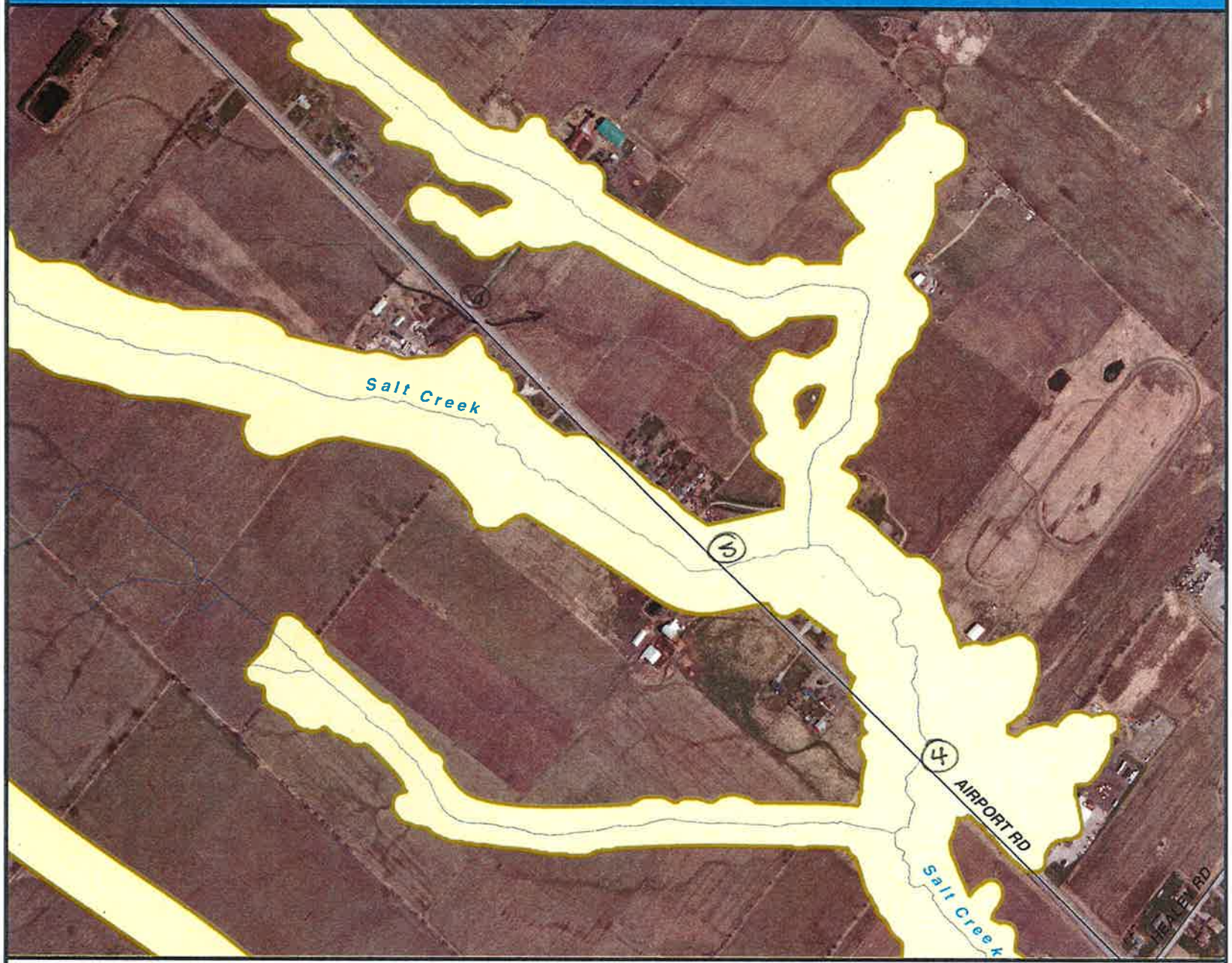
- Watershed Boundary
- Local Boundary
- Regional Boundary
- Watercourses_TRCA
- Regulation Limit

Disclaimer:
The Data used to create this map was compiled from a variety sources & dates. The T.R.C.A. takes no responsibility for errors or omissions in the data and retains the right to make changes & corrections at anytime without notice. For further information about the data on this map, please contact the T.R.C.A. GIS Department. (416) 661-6600

Ortho-photography: First Base Solutions

Toronto and Region Conservation for The Living City

Airport Road EA



1:8,253

Legend

- Watershed Boundary
- Local Boundary
- Regional Boundary
- Watercourses_TRCA
- Regulation Limit

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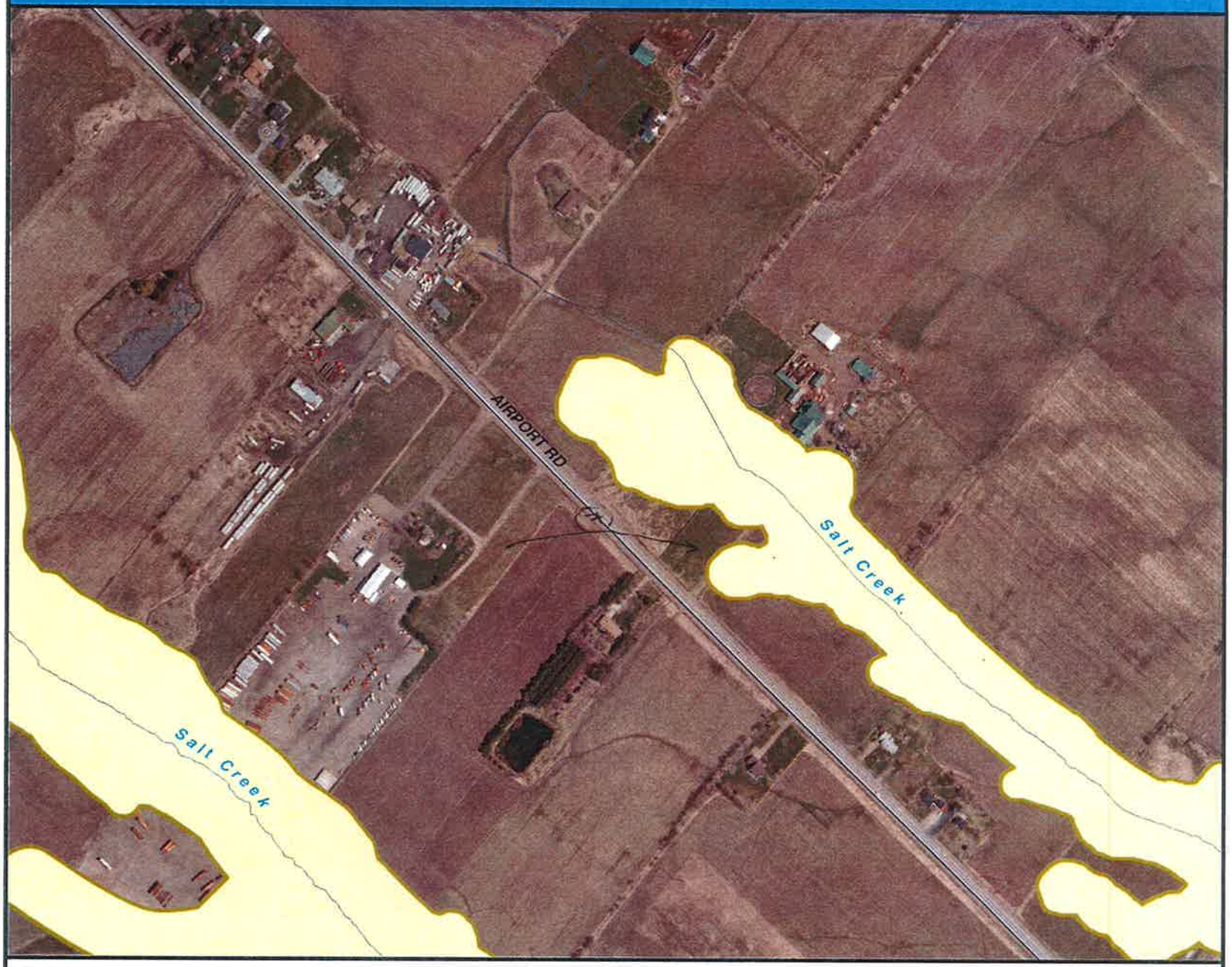
Toronto and Region Conservation for The Living City

Airport Road EA



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Legend

- Watershed Boundary
- Local Boundary
- Regional Boundary
- Watercourses_TRCA
- Regulation Limit

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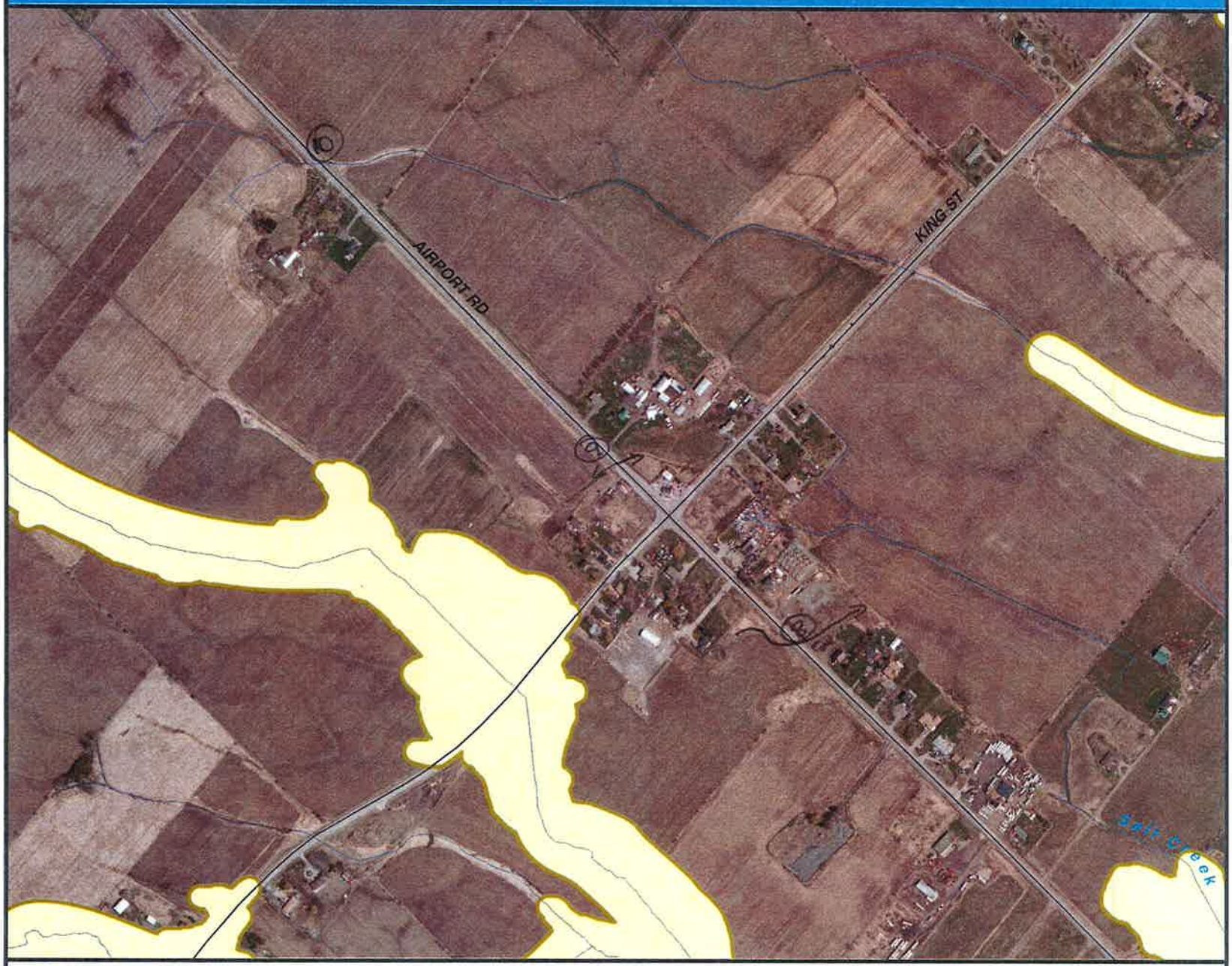
Ortho-photography: First Base Solutions

Toronto and Region Conservation for The Living City

Airport Road EA



1:8,253

Legend

- Watershed Boundary
- Local Boundary
- Regional Boundary
- Watercourses_TRCA
- Regulation Limit

TORONTO AND REGION Conservation for The Living City

SUMMARY SHEET FOR STRUCTURE SIZING (CULVERT, BRIDGE) AT WATERCOURSE CROSSINGS

DATE CHART LAST REVISED: Monday, January 16, 2012
DATE OF SITE VISIT(S): Monday, December 12, 2011
PROJECT NAME: Airport Road EA (1 km North of Mayfield Road to King Street)
PROPONENT: Region of Peel
TRCA PROJECT MANAGER: Sharon Lingertat
MUNICIPAL PROJECT MANAGER: Solmaz Zia
TRCA FILE # 46587

GEOGRAPHIC AREA											
TRCA STAFF TO COMPLETE	Watercourse Crossing Number (to correspond with labled air photo)	1	2	3	4	5	6	7	8	9	10
	Location	North of Perdue Court	Salt Creek - Approx. 1.5 km North of Mayfield Road	Approx. 212 m South of Healey Road	Salt Creek (south bend) - Approx. 450 m North of Healey Road	Salt Creek (north bend) - Approx. 860 m North of Healey Road	Approx. 1.7 km South of King Street	Approx. 940 m South of King Street	Approx. 275 m South of King Street	Approx. 105 m North of King Street	Approx. 728 m North of King Street
	TRCA Property in close proximity to the project area? *(Y/N)*	No	No	No	No	No	No	No	No	No	No
	If yes, please describe:										
Ontario Regulation 166/06 Permit Requirments											
TRCA STAFF TO COMPLETE	Within a Regulated Area	No	Yes	No	Yes	Yes	No	No	No	No	No
	Within a Wetland/Area of Interference ? *(Y/N)*	No	No	No	No	No	No	No	No	No	No
	Within a Watercourse? *(Y/N)*	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Within a Regional Storm Floodplain*? *(Y/N)*	No	Yes	TBD	Yes	Yes	TBD	TBD	TBD	TBD	TBD
	(<50 ha upstream drainage/>50ha upstream drainage)*										
	*= Regional Storm Floodplain										
HABITAT REVIEW											
TRCA STAFF TO COMPLETE	Fish Habitat	No	Yes	Yes	Yes	Yes	Yes	Yes	TBD	TBD	TBD
	Groundwater Upwellings *(Y/N)*	No	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	Fish Passage Within Culvert/Structure(Y/N)	No	Yes	TBD	Yes	Yes	TBD	TBD	TBD	TBD	TBD
	Managed for Red Side Dace (RSD) Habitat (Y/N)	No	Yes	Yes	Yes	Yes	Yes	Yes	TBD	TBD	TBD
	Is the project a HADD (Y/N)	No	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	Is the project a Mit-HADD (Y/N)	No	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	Timing Window? *(Cold = July 1 to September 15) (Warm= July 1 to March 31)*	N/A	RSD (July 1 to Sept 15)	RSD (July 1 to Sept 15)	RSD (July 1 to Sept 15)	RSD (July 1 to Sept 15)	RSD (July 1 to Sept 15)	RSD (July 1 to Sept 15)	TBD	TBD	TBD
	In close proximity to a TRCA Habitat Improvement Plan area?	N/A	No	No	No	No	No	No	No	No	No
EXISTING STRUCTURE DETAILS											
CONSULTANT TO COMPLETE	Existing Structure *(L x W x H and type)*										
	Open or Closed Footed?										
	Photo record of culvert inlet and outlet; date of photos (attached)										
	Structural assessment to determine the life expentancy of the structure										
	Is there in-ground infrastructure below footing which may restrict a larger structure?										
	Hydraulic capacity of existing structure is (adequate/inadequate) to convey Regional Storm?										
PROPOSED STRUCTURE DETAILS AND REQUIREMENTS											
CONSULTANT TO COMPLETE	Proposed Structure *(L x W x H and type)*										
	Open or Closed Footed?										
	Extension only proposed? *(Y/N)*										
	Removal, Replacement only proposed?										
	Removal, Replacement and Lengthening Proposed? *(Y/N)*										
	Estimated cost for design alternative										
	Hydraulic capacity of proposed structure is (adequate/inadequate) to convey Regional Storm?										
	Anticipated erosion rate of the channel										
	Terrestrial Passage? *(Y/N)*										
	Are there any existing or proposed trails within the valley system? (Y/N)										
	Embedment and substrates for Aquatic Passage Required? *(Y/N)*										
STUDY REQUIREMENTS											
TRCA STAFF TO COMPLETE	Hydraulic Analysis *(Y/N)*	No	Yes	Yes - if the drainage area is greater than 50 ha.	Yes	Yes	Yes - if the drainage area is greater than 50 ha.	Yes - if the drainage area is greater than 50 ha.	Yes - if the drainage area is greater than 50 ha.	Yes - if the drainage area is greater than 50 ha.	Yes - if the drainage area is greater than 50 ha.
	Is there an existing HEC RAS model at TRCA? Yes? No?	No	Yes	No	Yes	Yes	No	No	No	No	No
	Meander Belt Analysis *(Y/N)* **(For new/replacement only)**	No	TBD	No	TBD	TBD	No	No	No	No	No
	100-year Erosion Study *(Y/N)* **(For new/replacement only)**	No	TBD	No	TBD	TBD	No	No	No	No	No
	Geotechnical Report *provided for review (Y/N)*	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SUMMARY OF APPROVALS REQUIRED											
TRCA STAFF TO COMPLETE	**Ontario Regulation 166/06 Permit required? *(Y/N)***	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CONSULTANT TO COMPLETE	DFO HADD - TRCA to coordinate DFO requirements	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MNR contacted? (Y/N)										
	Transport Canada contacted for navigable waterway? *(Y/N)*										
ADDITIONAL NOTES											
RSD = Redside dace			Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*.	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*.	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*.	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*.	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*.	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*.	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*.	Peel must contact MNR directly to confirm requirements under the *Endangered Species Act*.	Peel must contact MNR directly to confirm requirements under the Endangered Species Act.
			Meander belt and 100 year erosion analysis requirements to be determined once Peel has provided direction regarding culvert/bridge replacement or extension.		Meander belt and 100 year erosion analysis requirements to be determined once Peel has provided direction regarding culvert/bridge replacement or extension.	Meander belt and 100 year erosion analysis requirements to be determined once Peel has provided direction regarding culvert/bridge replacement or extension.					

APPENDIX B

PHOTOGRAPHIC RECORD

PROJECT #TA8188
November 2012

FISHERIES PHOTO APPENDIX

Crossing 9 Tributary of Salt Creek

LGL LIMITED
environmental research associates

Tributary of Salt Creek upstream (west) of Airport Road

Upstream end of culvert facing downstream (east)

Tributary of Salt Creek facing downstream (east) from Airport Road

Downstream end of culvert facing upstream (west)

PROJECT #TA8188
November 2012

FISHERIES PHOTO APPENDIX

Crossing 8 Tributary of Salt Creek

LGL LIMITED
environmental research associates

Tributary of Salt Creek facing upstream (west) from edge of Airport Road

Upstream end of culvert facing downstream (east)

Facing downstream (southeast) at downstream end of culvert. Note culvert end is not perpendicular to road

Facing upstream (north) at watercourse in ditch

Watercourse bends from ditch to east, facing downstream (east)

PROJECT #TA8188
November 2012

FISHERIES PHOTO APPENDIX

Crossing 7 Tributary of Salt Creek

LGL LIMITED
environmental research associates

Tributary of Salt Creek facing upstream (west) from upstream end of culvert

Upstream end of culvert facing downstream (east)

Facing downstream (east) at downstream end of culvert

Facing downstream (east) from right-of-way at poorly defined channel through pasture

Downstream end of culvert facing upstream (west). Note channel definition and perched condition

PROJECT #TA8188
September 2012

FISHERIES PHOTO APPENDIX

Crossing 6 Tributary of Salt Creek

LGL LIMITED
environmental research associates

Tributary of Salt Creek upstream (east) side of Airport Road facing south.

Facing upstream (east) at crossing from the west side of Airport Road.

Downstream (west) end of culvert

Downstream end of culvert facing south

PROJECT #TA8188
September 2012

FISHERIES PHOTO APPENDIX

Crossing 5 Salt Creek

LGL LIMITED
environmental research associates

Salt Creek upstream (west) of culvert. Note fence and pasture in background

Pasture upstream of Crossing 5

Facing downstream (east) at upstream end of culvert

Inside culvert. Photo taken from downstream end facing upstream

Salt Creek downstream (east) of culvert

Downstream end of culvert facing upstream (west)

PROJECT #TA8188
September 2012

FISHERIES PHOTO APPENDIX

Crossing 4 Salt Creek

LGL LIMITED
environmental research associates

Salt Creek upstream (east) of culvert. Note ponding

Pool/ponded area upstream of culvert

Upstream (east) end of culvert facing downstream

Salt Creek downstream (west) of crossing. Note pasture beyond right-of-way

Pasture and ponded section of Salt Creek downstream (west) of crossing

Downstream end of culvert facing upstream (east)

PROJECT #TA8188
September 2012

FISHERIES PHOTO APPENDIX

Crossing 3 Tributary of Salt Creek

LGL LIMITED
environmental research associates

Upstream (east) end of culvert showing small amount of standing water within cattails

Upstream end of culvert facing east showing small patch of cattails with corn field in background

Small cattail patch upstream (east) of crossing with corn field adjacent to it

Downstream (west) end of culvert facing downstream

Downstream end of culvert showing small amount of standing water

Downstream (west) end of culvert facing downstream. Note that watercourse vegetation had been cut

PROJECT #TA8188
September 2012

FISHERIES PHOTO APPENDIX

Crossing 2 Salt Creek

LGL LIMITED
environmental research associates

Salt Creek upstream (west) of crossing

Upstream end of bridge facing downstream (east)

Pool upstream of crossing

Salt Creek under bridge. Photo taken from downstream end of bridge facing upstream (west)

Salt Creek downstream of crossing facing downstream (east)

Downstream end of bridge facing upstream (west)

APPENDIX C

VASCULAR PLANT LIST

APPENDIX C.
VASCULAR PLANT LIST

	Scientific Name	Common Name	GRank	SRank	MNRF	COSEWIC	TRCA	Peel-Riley	Peel - Varga	CUM1-1a	CUM1-1b	CUM1-1c	CUM1-1d	CUM1-1e	CUM1-1f	CUM1-1g	CUM1-1h	CUM1-1i	CUM1-1j	CUW	MAM	MAS
	CUPRESSACEAE	**CEDAR FAMILY**																				
	Thuja occidentalis	eastern white cedar	G5	S5			L4	X	X					X								
	BERBERIDACEAE	**BARBERRY FAMILY**																				
*	*Berberis vulgaris*	common barberry	G?	SE5			L+	X	X			X										
	ULMACEAE	**ELM FAMILY**																				
	Ulmus americana	white elm	G5?	S5			L5	X	X						X				X	X		
	JUGLANDACEAE	**WALNUT FAMILY**																				
	Carya ovata var. *ovata*	shagbark hickory	G5	S5			L3	X	X								X					
	FAGACEAE	**BEECH FAMILY**																				
	Quercus macrocarpa	bur oak	G5	S5			L4	X	X						X							
	CHENOPODIACEAE	**GOOSEFOOT FAMILY**																				
*	*Chenopodium album* var. *album*	lamb's quarters	G5T5	SE5			L+	X		X		X	X	X	X		X	X	X			
*	*Chenopodium glaucum*	oak-leaved goosefoot	G5T?	SE5			L+	X	X	X		X										
	AMARANTHACEAE	**AMARANTH FAMILY**																				
*	*Amaranthus powellii*	Powell's amaranth	G5	SE5			L+	X	X	X								X				
*	*Amaranthus retroflexus*	green amaranth	G?	SE5			L+	X	X	X	X	X					X		X			
	CARYOPHYLLACEAE	**PINK FAMILY**																				
*	*Saponaria officinalis*	bouncing-bet	G?	SE5			L+	X	X									X				
*	*Silene vulgaris*	catchfly	G?	SE5			L+	X	X						X							
*	*Spergularia rubra*	red sand spurrey	G5	SE3?			L+			X		X			X			X				
	POLYGONACEAE	**SMARTWEED FAMILY**																				
*	*Polygonum aviculare*	prostrate knotweed	G?	SE5			L+	X	X	X					X				X			
*	*Polygonum persicaria*	lady's-thumb	G?	SE5			L+	X	X						X	X	X		X			
*	*Rumex crispus*	curly-leaf dock	G?	SE5			L+	X	X	X		X	X	X	X	X	X	X	X			
	GUTTIFERAE	**ST. JOHN'S-WORT FAMILY**																				
*	*Hypericum perforatum*	common St. John's-wort	G?	SE5			L+	X	X			X				X	X					
	CUCURBITACEAE	**GOURD FAMILY**																				
	Echinocystis lobata	prickly cucumber	G5	S5			L5	X	X								X				X	
	SALICACEAE	**WILLOW FAMILY**																				
*	*Salix alba*	white willow	G5	SE4			L+	X	X		X											
	Salix sp.	willow		?							X											
	BRASSICACEAE	**MUSTARD FAMILY**																				
*	*Barbarea vulgaris*	yellow rocket	G?	SE5			L+	X	X	X												

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VASCULAR PLANT LIST

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*	*Lepidium densiflorum*	common pepper-grass	G5	SE5			L+?	X	X			X							X			
*	*Raphanus raphanistrum*	wild radish	G?	SE3			L+			X		X										
*	*Thlaspi arvense*	field penny-cress	G?	SE5			L+	X	X										X			
	ROSACEAE	**ROSE FAMILY**																				
	Crataegus sp.	hawthorn												X						X		
*	*Malus pumila*	common apple	G5	SE5			L+	X	X											X		
*	*Potentilla recta*	rough-fruited cinquefoil	G?	SE5			L+	X	X						X							
	Rubus odoratus	purple flowering raspberry	G5	S5			L5	X	X								X					
	Rubus sp.	raspberry																		X		
	Sorbus americana	American mountain-ash	G5	S5			LX		R1								X					
	FABACEAE	**PEA FAMILY**																				
*	*Coronilla varia*	variable crown-vetch	G?	SE5			L+	X	X			X			X							
*	*Lotus corniculatus*	bird's-foot trefoil	G?	SE5			L+	X	X	X		X	X	X	X	X	X	X	X			
*	*Medicago lupulina*	black medick	G?	SE5			L+	X	X	X					X		X	X				
*	*Medicago sativa* ssp. *sativa*	alfalfa	G?T?	SE5			L+	X	X					X	X	X	X	X				
*	*Melilotus alba*	white sweet-clover	G?	SE5			L+	X	X	X		X	X	X	X	X	X	X	X			
*	*Melilotus officinalis*	yellow sweet-clover	G?	SE5			L+	X	X	X				X	X				X			
*	*Robinia pseudo-acacia*	black locust	G5	SE5			L+	X	X										X	X		
*	*Trifolium pratense*	red clover	G?	SE5			L+	X	X	X		X		X	X	X	X	X	X			
*	*Trifolium repens*	white clover	G?	SE5			L+	X	X	X		X		X		X		X	X			
*	*Vicia cracca*	tufted vetch	G?	SE5			L+	X	X	X		X		X	X	X	X	X	X			
	ELAEAGNACEAE	**OLEASTER FAMILY**																				
*	*Elaeagnus angustifolia*	Russian olive	G?	SE3			L+	X	X	X		X		X	X	X	X	X				
	LYTHRACEAE	**LOOSESTRIFE FAMILY**																				
*	*Lythrum salicaria*	purple loosestrife	G5	SE5			L+	X	X					X	X	X	X		X		X	
	ONAGRACEAE	**EVENING-PRIMROSE FAMILY**																				
	Epilobium leptophyllum	narrow-leaved willow-herb	G5	S5			L3	X	R4						X		X					
	Oenothera biennis	common evening-primrose	G5	S5			L5	X	U						X		X					
	CORNACEAE	**DOGWOOD FAMILY**																				
	Cornus sericea ssp. *sericea*	red-osier dogwood	G5	S5			L5	X	X			X					X		X		X	
	EUPHORBIACEAE	**SPURGE FAMILY**																				
*	*Euphorbia cyparissias*	cypress spurge	G5	SE5			L+	X	X						X	X	X	X				
	RHAMNACEAE	**BUCKTHORN FAMILY**																				

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VASCULAR PLANT LIST

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*	*Rhamnus cathartica*	common buckthorn	G?	SE5			L+	X	X	X	X	X		X	X	X	X	X	X	X	X	
	VITACEAE	**GRAPE FAMILY**																				
	Parthenocissus vitacea	inserted Virginia-creeper	G5	S5			L5	X	X	X	X			X	X	X	X					
	Vitis riparia	riverbank grape	G5	S5			L5	X	X	X		X		X	X	X	X					
	ACERACEAE	**MAPLE FAMILY**																				
	Acer negundo	manitoba maple	G5	S5			L+?	X	X	X	X				X	X	X	X	X	X	X	
*	*Acer platanoides*	norway maple	G?	SE5			L+	X	X											X		
	ANACARDIACEAE	**SUMAC FAMILY**																				
	Rhus hirta	staghorn sumac	G5	S5			L5	X	X								X		X		X	X
	SIMAROUBACEAE	**AILANTHUS FAMILY**																				
*	*Ailanthus altissima*	tree-of-heaven	G?	SE5			L+	X	X			X										
	GERANIACEAE	**GERANIUM FAMILY**																				
	Geranium maculatum	spotted crane's-bill	G5	S5			L4	X	U						X							
	BALSAMINACEAE	**TOUCH-ME-NOT FAMILY**																				
	Impatiens capensis	spotted touch-me-not	G5	S5			L5	X	X								X					
	APIACEAE	**PARSLEY FAMILY**																				
*	*Aegopodium podagraria*	goutweed	G?	SE5			L+	X	X						X							
*	*Daucus carota*	wild carrot	G?	SE5			L+	X	X	X	X	X	X	X	X	X	X	X	X		X	
	ASCLEPIADACEAE	**MILKWEED FAMILY**																				
	Asclepias syriaca	common milkweed	G5	S5			L5	X	X		X			X	X	X	X		X		X	
*	*Cynanchum rossicum*	swallow-wort	G?	SE5			L+	SR	X					X	X		X		X			
	SOLANACEAE	**POTATO FAMILY**																				
*	*Solanum dulcamara*	bitter nightshade	G?	SE5			L+	X	X						X			X			X	
	CONVOLVULACEAE	**MORNING-GLORY FAMILY**																				
*	*Convolvulus arvensis*	field bindweed	G?	SE5			L+		X			X										
	BORAGINACEAE	**BORAGE FAMILY**																				
*	*Cynoglossum officinale*	hound's-tongue	G?	SE5			L+	X	X					X		X	X	X				
	PLANTAGINACEAE	**PLANTAIN FAMILY**																				
*	*Plantago lanceolata*	ribgrass	G5	SE5			L+	X	X					X		X	X	X				
*	*Plantago major*	common plantain	G5	SE5			L+	X	X	X		X		X	X	X	X	X	X			
	OLEACEAE	**OLIVE FAMILY**																				
	Fraxinus americana	white ash	G5	S5			L5	X	X						X							
	Fraxinus pennsylvanica	red ash	G5	S5			L5	X	X						X							

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VASCULAR PLANT LIST

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*	*Syringa vulgaris*	common lilac	G?	SE5			L+	X	X					X			X			X		
	SCROPHULARIACEAE	**FIGWORT FAMILY**																				
*	*Linaria vulgaris*	butter-and-eggs	G?	SE5			L+	X	X	X				X	X		X					
*	*Verbascum thapsus*	common mullein	G?	SE5			L+	X	X	X					X							
	DIPSACACEAE	**TEASEL FAMILY**																				
*	*Dipsacus fullonum* ssp. *sylvestris*	wild teasel	G?T?	SE5			L+	X	X	X								X	X			
	ASTERACEAE	**ASTER FAMILY**																				
*	*Achillea millefolium* var. *millefolium*	common yarrow	G5T?	SE?			L+	X	X	X						X						
	Ambrosia artemisiifolia	common ragweed	G5	S5			L5	X	X	X		X	X	X	X	X	X	X	X			
*	*Anthemis cotula*	stinking mayweed	G5	SE5			L+	X	X	X		X		X	X		X					
*	*Arctium minus*	common burdock	G?T?	SE5			L+		X	X	X			X	X	X	X	X	X		X	
*	*Artemisia vulgaris*	common mugwort	G?	SE5			L+	X	X						X							
	Aster ericoides var. *ericoides*	white heath aster	G5T?	S5			L5	X		X	X	X		X	X	X		X	X			
	Aster lanceolatus ssp. *lanceolatus*	tall white aster	G5T?	S5			L5	X	X					X	X	X	X	X			X	
	Aster lateriflorus var. *lateriflorus*	calico aster	G5T5	S5										X	X							
	Aster puniceus var. *puniceus*	purple-stemmed aster	G5T?	S5			L5	X							X	X	X	X	X		X	
	Aster sp.	aster								X	X						X	X	X			
	Bidens frondosa	devil's beggar-ticks	G5	S5			L5	X	X						X							
*	*Carduus acanthoides*	plumeless thistle	G?	SE5			L+	X	X						X		X		X			
*	*Carduus nutans* ssp. *nutans*	musk thistle	G?T?	SE?			L+	X	X		X	X		X								
*	*Centaurea jacea*	brown knapweed	G?	SE5			L+			X		X					X	X	X			
*	*Cichorium intybus*	chicory	G?	SE5			L+	X	X	X		X		X	X	X	X	X				
*	*Cirsium arvense*	Canada thistle	G?	SE5			L+	X	X	X		X		X	X	X	X	X	X			
	Cirsium sp.	thistle									X											
*	*Cirsium vulgare*	bull thistle	G5	SE5			L+	X	X	X		X		X	X		X	X	X			
	Conyza canadensis	horseweed	G5	S5			L5	X	X		X			X	X	X	X		X			
	Erigeron philadelphicus var. *philadelphicus*	Philadelphia fleabane	G5T?	S5			L5	X	X								X					
	Erigeron strigosus	daisy fleabane	G5	S5			L5		X						X							
	Euthamia graminifolia	flat-topped bushy goldenrod	G5	S5					X			X			X	X	X		X			
*	*Helianthus tuberosus*	Jerusalem artichoke	G5	SE5			L5	X	X					X	X	X		X	X			
*	*Hieracium caespitosum*	field hawkweed		SE5			L+	X	X						X							
*	*Inula helenium*	elecampane	G?	SE5			L+	X	X		X							X	X			
*	*Lactuca serriola*	prickly lettuce	G?	SE5			L+	X	X	X	X			X	X	X			X			

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*	*Leucanthemum vulgare*	ox-eye daisy	G?	SE5			L+	X	X						X							
	Solidago canadensis	canada goldenrod	G5	S5			L5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Solidago canadensis var. *scabra*	tall goldenrod		S5			L5	X	X			X		X	X	X	X	X	X			
	Solidago gigantean	giant goldenrod	G5	S5			L5	X	X									X				
	Solidago juncea	early goldenrod	G5	S5			L4	X	U						X	X	X	X				
	Solidago nemoralis var. *nemoralis*	gray goldenrod	G5T?	S5			L5	X						X					X			
	Solidago rugosa ssp. *rugosa*	rough goldenrod	G5T?	S5			L5	X	U	X					X							
	Solidago sp.	goldenrod									X						X			X	X	
*	*Sonchus arvensis* ssp. *arvensis*	field sow-thistle	G?T?	SE5			L+	X	X	X	X	X		X	X	X	X	X	X		X	
*	*Sonchus asper* ssp. *asper*	spiny-leaved sow-thistle	G?T?	SE5			L+	X	X			X	X									
	Symphyotrichum lateriflorum var. *angustifolium*	calico aster	G5T?	S4?									X									
	Symphyotrichum novae-angliae	New England aster	G5	S5			L5	X	X	X	X	X	X	X	X		X	X	X		X	
*	*Tanacetum vulgare*	common tansy	G?	SE5			L+	X	X						X		X					
*	*Taraxacum officinale*	common dandelion	G5	SE5			L+	X	X	X		X		X	X	X	X	X	X			
*	*Tussilago farfara*	coltsfoot	G?	SE5			L+	X	X						X		X	X				
	JUNCACEAE	**RUSH FAMILY**																				
*	*Juncus compressus*	compressed rush	G5	SE5			L+	X	X					X								
	POACEAE	**GRASS FAMILY**																				
*	*Agrostis gigantea*	red-top	G4G5	SE5			L+	X	X	X		X		X			X	X				
	Agrostis hyemalis	tickle grass	G5	S1															X			
	Agrostis scabra	fly-away grass	G5	S5			L3	X	U	X												
*	*Bromus inermis* ssp. *inermis*	awnless brome	G4G5T?	SE5			L+	X	X	X		X		X	X	X	X	X	X			
*	*Bromus japonicus*	Japanese chess	G?	SE4			L+	X	X									X				
	Calamagrostis canadensis	blue-joint grass	G5	S5			L4	X	X	X		X		X	X	X	X					
*	*Dactylis glomerata*	orchard grass	G?	SE5			L+	X	X			X		X	X	X	X	X				
*	*Echinochloa crusgalli*	common barnyard grass	G?	SE5			L+	X	X	X		X	X	X		X			X			
*	*Elymus repens*	quack grass	G?	SE5			L+	X	X	X		X		X	X	X	X	X	X			
	Glyceria striata	fowl meadow grass	G5	S5			L5	X	X					X								
*	*Hordeum jubatum* ssp. *jubatum*	squirrel-tail grass	G5T?	SE5			L+	X	X	X		X		X	X		X	X				
*	*Lolium perenne*	English rye grass	G?	SE4			L+	X	X	X												
	Panicum capillare	witch grass	G5	S5			L5	X	X	X		X			X	X	X					
	Phalaris arundinacea	reed canary grass	G5	S5			L+?	X	X	X	X	X	X	X	X	X	X	X	X		X	X
*	*Phleum pratense*	timothy	G?	SE5			L+	X	X	X				X	X		X	X				

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	Phragmites australis	common reed	G5	S5			L+?	X	X	X					X	X	X	X			X	
	Poa compressa	Canada blue grass	G?	S5			L+	X	X									X	X			
	Poa palustris	fowl meadow grass	G5	S5			L5	X	X			X		X	X	X	X	X	X			
	Poa pratensis ssp. *pratensis*	Kentucky bluegrass	G5T	S5			L+	X	X	X		X		X	X	X	X	X	X			
*	*Setaria faberi*	giant foxtail	G?	SE4			L+			X		X		X	X	X	X	X	X			
*	*Setaria viridis*	green foxtail	G?	SE5			L+	X		X				X	X	X	X	X	X			
*	*Zea mays*	Indian corn	G?	SE2			L+	SR	X										X			
	TYPHACEAE	**CATTAIL FAMILY**																				
	Typha angustifolia	narrow-leaved cattail	G5	S5			L+	X	X	X		X		X	X	X	X	X	X		X	
	Typha latifolia	broad-leaved cattail	G5	S5			L4	X	X			X		X		X	X	X	X			
	LILIACEAE	**LILY FAMILY**																				
*	*Asparagus officinalis*	garden asparagus	G5?	SE5			L+	X	X							X	X					
*	*Hemerocallis fulva*	orange day-lily	G?	SE5			L+	X									X	X				

* Non-native species
x present

Refer to **Appendix D** for species rank definitions.

APPENDIX D

ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

APPENDIX D
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/OMNRF	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 (OMNRF) 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.

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

TRCA	Toronto and Region Conservation Authority
The TRCA assigns a level of conservation concern for flora and fauna (L1 to L5) in its watersheds (TRCA 2003). The L Rank is determined based on four factors: local occurrence, population trend, habitat dependence, and sensitivity to development.	
L-Rank	**Definition**
L5	Able to withstand high levels of disturbance; generally secure throughout the jurisdiction, including the urban matrix. May be of very localized concern in highly degraded areas.
L4	Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.
L3	Able to withstand minor disturbance; generally secure in natural matrix; considered to be of regional concern.
L2	Unable to withstand disturbance; some criteria are very limiting factors; generally occur in high-quality natural areas, in natural matrix; probably rare in the TRCA jurisdiction; of concern regionally.
L1	Unable to withstand disturbance; many criteria are limiting factors; generally occur in high-quality natural areas in natural matrix; almost certainly rare in the TRCA jurisdiction; of concern regionally.
LX	Extirpated from our region with remote chance of rediscovery. Presumably highly sensitive.
LH	Hybrid between two native species. Usually not scored unless highly stable and behaves like a species (e.g. *Equisetum x nelsonii*)
L+	Exotic. Not native to TRCA jurisdiction. Includes hybrids between a native species and an exotic
L+?	Origin uncertain or disputed, i.e. may or may not be native.

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 MNRF 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.	

APPENDIX E

TREE INVENTORY

Project: TA8288
Client: IBI Group
Collectors: LMC, SLL

Date: November 14 and 15, 2012 and June 19, 2014
Area: Airport Road between King Road and Mayfield Road

TAG#	Species Scientific Name	Species Common Name	DBH (cm)	CONDITION																Tree Protection Measures			COMMENTS
				TI	CS	CV	Radial Dripline (m)	Co-dominant stem	Included Bark	Lean, Dir.	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	Epicormic	EAB	Canker	CDB (%)	Remove	Protect	ESA/SARA	
1	*Acer negundo*	Manitoba maple	5, 2, 10, 6	F-G	G	G	3														x			multistem, growing through fence
2	*Quercus macrocarpa*	bur oak	55	G	G	G	5														x			epicormic
3	*Carya ovata*	shagbark hickory	37	F	F	G	4														x			pruned on east side, exposed roots
4	*Acer negundo*	Manitoba maple	10, 12, 6, 5, 4	G	G	G	3														x			multistem
5	*Robinia pseudoacacia*	black locust	13	G	G	G	3														x			
6	*Fraxinus pennsylvanica*	red ash	10,6, 5	F	F	F	2														x			
7	*Robinia pseudoacacia*	black locust	11	G	G	G	3														x			
8	*Robinia pseudoacacia*	black locust	12	G	G	G	3														x			
9	*Robinia pseudoacacia*	black locust	16	G	G	G	3														x			
10	*Robinia pseudoacacia*	black locust	24	G	G	G	3														x			
11	*Robinia pseudoacacia*	black locust	15	G	G	G	3														x			
12	*Robinia pseudoacacia*	black locust	13	G	G	G	3														x			
13	*Robinia pseudoacacia*	black locust	17, 4	G	G	G	3														x			
14	*Robinia pseudoacacia*	black locust	16, 3	F-P	F	F	3														x			
15	*Robinia pseudoacacia*	black locust	16, 19	G	G	G	3														x			
16	*Robinia pseudoacacia*	black locust	23	G	G	G	3														x			
17	*Robinia pseudoacacia*	black locust	23	G	G	G	3														x			
18	*Ulmus americana*	American elm	33	G	G	G	3														x			fence wrapped around trunk
19	*Fraxinus pennsylvanica*	red ash	34	P	P	P	3														x			marked as hazard
20	*Salix x sepulcralis*	willow hybrid	131.0																			x		Tree was removed in 2014
21	*Acer negundo*	Manitoba maple	20, 15, 12	G	F	F	4														x			epicormic, broken branches in canopy
22	*Populus tremuloides*	trembling aspen	15.0	G	G	F	3													5	x			
23	*Populus tremuloides*	trembling aspen	17.0	G	G	F	3													5	x			
24	*Populus tremuloides*	trembling aspen	16.0	G	G	F	3													5	x			
25	*Populus tremuloides*	trembling aspen	27.0	G	G	G	3													5	x			
26	*Acer platanoides*	Norway maple	26.0	G	G	G	4													5	x			
27	*Picea pungens*	blue spruce	20.0	G	G	G	3													5		x		
28	*Acer negundo*	Manitoba maple	14, 13	F	F	F	3														x			growing through fence
29	*Acer negundo*	Manitoba maple	13, 10, 6, 7	F	F	F	3														x			growing through fence, epicormic
30	*Acer negundo*	Manitoba maple	8, 11, 3, 8	G	G	G	3															x		
31	*Pinus sylvestris*	Scots pine	20, 7	G	G	G	3													10	x			
32	*Pinus sylvestris*	Scots pine	15, 15	G	G	G	3													10		x		
33	*Pinus sylvestris*	Scots pine	19, 8	G	G	G	3													10		x		
34	*Pinus sylvestris*	Scots pine	13.0	G	G	G	3													10		x		

TAG#	Species Scientific Name	Species Common Name	DBH (cm)	CONDITION																Tree Protection Measures			COMMENTS
				TI	CS	CV	Radial Dripline (m)	Co-dominant stem	Included Bark	Lean, Dir.	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	Epicormic	EAB	Canker	CDB (%)	Remove	Protect	ESA/SARA	
35	*Pinus sylvestris*	Scots pine	19.0	G	G	G	3													10		x		
36	*Pinus sylvestris*	Scots pine	21.0	G	G	G	3													10		x		
37	*Pinus sylvestris*	Scots pine	21.0	G	G	G	3													10		x		
38	*Pinus sylvestris*	Scots pine	22.0	G	G	G	3													10	x			
39	*Pinus sylvestris*	Scots pine	13.0	P	F	F	2													70	x			
40	*Pinus sylvestris*	Scots pine	12.0	P	P	P	2													90		x		
41	*Pinus sylvestris*	Scots pine	21.0	G	G	G	3													10		x		
42	*Quercus macrocarpa*	bur oak	29.0	G	G	G	3															x		
43	*Quercus macrocarpa*	bur oak	22.0	G	G	G	3														x			
44	*Picea glauca*	white spruce	19.0	G	G	G	3															x		
45	*Picea glauca*	white spruce	22.0	G	G	G	3															x		
46	*Picea glauca*	white spruce	19.0	G	G	G	3															x		
47	*Picea glauca*	white spruce	30.0	G	G	G	3															x		
48	*Picea glauca*	white spruce	21.0	G	G	G	3															x		
49	*Salix sp.*	willow	15.0	G	G	G	2													5		x		
50	*Salix sp.*	willow	31.0	F	P	P	4													60		x		
51	*Fraxinus pennsylvanica*	red ash	26.0	P	P	P	4													20		x		
52	*Acer platanoides*	Norway maple	24.0																			x		Dead
53	*Fraxinus pennsylvanica*	red ash	10.0	P	P	P	2													70		x		
54	*Fraxinus pennsylvanica*	red ash	16.0	P	P	P	3													70	x			epicormic
55	*Salix sp.*	willow	10.0	P	P	P	1														x			
56	*Gleditsia triacanthos var. inermis*	shademaster honey locust	23.0	F	F	F	4														x			
57	*Malus sp.*	apple	11, 9	F	F	F	3														x			epicormic
58	*Salix sp.*	willow	14, 6	G	G	G	2														x			
59	*Acer saccharinum*	silver maple	25, 23	G	G	G	4	X	X											20	x			
60	*Picea pungens*	blue spruce	18.0	G	G	G	3															x		
61	*Picea pungens*	blue spruce	21.0	G	G	G	3														x			
62	*Picea pungens*	blue spruce	15.0	F	P	P	2		L,E											70	x			
63	*Salix x sepulcralis*	willow hybrid	51.0	G	F	F	8															x		damage in crown
64	*Populus deltoidesssp. deltoides*	Eastern cottonwood	58.0	F	F	F	5													10		x		epicormic
65	*Populus deltoidesssp. deltoides*	Eastern cottonwood	32, 36																			x		Dead
66	*Populus deltoidesssp. deltoides*	Eastern cottonwood	39.0																			x		Dead
68	*Picea pungens*	blue spruce	17, 10	F	F	F	3													5		x		
69	*Ulmus americana*	American elm	37.0	G	G	G	4	X	X												x			
70	*Acer saccharinum*	silver maple	35, 26	G	G	G	4	X	X												x			
71	*Acer saccharinum*	silver maple	19.0	G	G	G	2								X							x		
72	*Acer saccharinum*	silver maple	37, 30	G	G	G	4	X	X													x		
73	*Acer saccharinum*	silver maple	32.0	G	F	F	4							X	X						x			

TAG#	Species Scientific Name	Species Common Name	DBH (cm)	CONDITION																Tree Protection Measures			COMMENTS
				TI	CS	CV	Radial Dripline (m)	Co-dominant stem	Included Bark	Lean, Dir.	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	Epicormic	EAB	Canker	CDB (%)	Remove	Protect	ESA/SARA	
74	*Acer saccharinum*	silver maple	22, 23	F	F	F	5							X	X							x		
75	*Acer saccharinum*	silver maple	69.0																			x		Dead
76	*Acer saccharinum*	silver maple	77.0	F	F	F	7	60						X	X							x		
77	*Picea pungens*	blue spruce	16.0	F	F	F	2														x			
78	*Picea pungens*	blue spruce	39.0	G	G	G	4														x			
79	*Fraxinus pennsylvanica*	red ash	26.0	G	G	G	3															x		
80	*Acer saccharinum*	silver maple	160.0	G	G	G	15	X	X													x		
81	*Acer saccharum ssp. saccharum*	sugar maple	67.0	G	G	G	2															x		
82	*Acer saccharinum*	silver maple	10, 16, 17, 25	G	G	G	3															x		
83	*Acer saccharinum*	silver maple	34.0	G	G	G	3															x		
84	*Acer saccharinum*	silver maple	25.0	G	G	G	4															x		one stem dead
85	*Acer saccharinum*	silver maple	29, 18, 16	G	G	G	4	X	X													x		
86	*Acer saccharinum*	silver maple	23, 22, 19	G	G	G	4															x		
87	*Ulmus pumila*	Siberian elm	18.0	G	G	G	4														x			
88	*Ulmus pumila*	Siberian elm	10.0	G	G	G	3														x			
89	*Ulmus pumila*	Siberian elm	10, 11	G	G	G	3														x			
90	*Ulmus pumila*	Siberian elm	12.0	G	G	G	3														x			
91	*Ulmus pumila*	Siberian elm	10.0	G	G	G	3														x			
92	*Picea pungens*	blue spruce	12.0	G	G	G	2															x		
93	*Picea pungens*	blue spruce	25.0	G	G	G	3														x			
94	*Salix x sepulcralis*	willow hybrid	75.0	G	G	G	8														x			
95	*Fraxinus pennsylvanica*	red ash	13.0	G	G	G	2														x			
96	*Populus deltoidesssp. deltoides*	Eastern cottonwood	56.0	P	P	P	4													90	x			
97	*Picea abies*	Norway spruce	45.0	G	G	G	5														x			
98	*Picea abies*	Norway spruce	32.0	G	G	G	4															x		
99	*Picea pungens*	blue spruce	27.0	G	F	F	3													20	x			
100	*Picea pungens*	blue spruce	26.0	G	F	F	3													20	x			
102	*Acer negundo*	Manitoba maple	24.0	P	P	P	3													99	x			epicormic, leader dead
103	*Salix x sepulcralis*	willow hybrid	78.0	F	F	F	8														x			wound in canopy
104	*Robinia pseudoacacia*	black locust	21, 20	G	G	G	4														x			
105	*Thuja occidentalis*	Eastern white cedar	12.0	G	F	F	3													40	x			
106	*Thuja occidentalis*	Eastern white cedar	18.0	G	F	F	3														x			
107	*Thuja occidentalis*	Eastern white cedar	16.0	G	F	F	3														x			
108	*Thuja occidentalis*	Eastern white cedar	14.0	G	F	F	3															x		
109	*Acer saccharum ssp. saccharum*	sugar maple	15.0	G	G	G	2														x			
110	*Acer saccharum ssp. saccharum*	sugar maple	54.0	P	P	P	5							X	X	X				40	x			
111	*Malus sp.*	apple	35.0	G	G	G	4														x			
112	*Salix x sepulcralis*	willow hybrid	130.0	F	F	F	7	X	X											40	x			wounds in canopy

TAG#	Species Scientific Name	Species Common Name	DBH (cm)	CONDITION																Tree Protection Measures			COMMENTS
				TI	CS	CV	Radial Dripline (m)	Co-dominant stem	Included Bark	Lean, Dir.	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	Epicormic	EAB	Canker	CDB (%)	Remove	Protect	ESA/SARA	
113	*Picea pungens*	blue spruce	30.0	G	G	G	3														x			
114	*Salix x sepulcralis*	willow hybrid	43.0	P	P	P	4	X	X				X	X							x			one stem dead
115	*Salix x sepulcralis*	willow hybrid	34.0	F	F	F	3													30	x			
116	*Acer negundo*	Manitoba maple	26, 15, 15, 14	G	G	G	3													30	x			
117	*Salix x sepulcralis*	willow hybrid	85.0	F	F	F	7						X	X							x			one stem dead
118	*Salix x sepulcralis*	willow hybrid	78.0	F	F	F	8							X						30	x			wounds in canopy
119	*Malus sp.*	apple	21.0	F	F	F	2			L,N				X								x		
120	*Malus sp.*	apple	21.0	F	F	F	2			L,N												x		
121	*Salix x sepulcralis*	willow hybrid	45, 50	F	F	F	7	X	X					X						30		x		wounds in canopy
122	*Fraxinus pennsylvanica*	red ash	31.0	G	G	G	1															x		
123	*Acer platanoides*	Norway maple	11, 13	G	G	G	2															x		
124	*Acer rubrum*	red maple	13.0	G	G	G	2															x		
125	*Acer rubrum*	red maple	13.0	G	G	G	3															x		
126	*Acer rubrum*	red maple	11.0	G	G	G	3															x		
127	*Acer rubrum*	red maple	14.0	G	G	G	2															x		
128	*Pinus nigra*	Austrian pine	14.0	G	G	G	2															x		
129	*Fraxinus sp.*	ash	25.0	G	G	G	3														x			
130	*Fraxinus sp.*	ash	33.0	G	G	G	4														x			
131	*Fraxinus sp.*	ash	~15	G	G	G	3														x			
132	*Fraxinus sp.*	ash	~20	G	G	G	2														x			
133	*Fraxinus sp.*	ash	~9, 11	G	G	G	3														x			
134	*Fraxinus sp.*	ash	~14	G	G	G	4														x			
135	*Betula papyrifera*	white birch	28.0	F	F	F	3			L,W											x			epicormic
136	*Picea pungens*	blue spruce	18.0	F	F	F	3													10	x			
137	*Picea pungens*	blue spruce	19.0	F	F	F	3													10	x			
138	*Gleditsia triacanthos var. inermis*	shademaster honey locust	27.0	G	G	G	4															x		
139	*Acer negundo*	Manitoba maple	36.0	G	F	F	5			L,S										40		x		wounds in canopy, epicormic
140	*Ulmus americana*	American elm	31, 31, 27	G	G	G	6														x			pruned on N side
141	*Fraxinus pennsylvanica*	red ash	42, 32, 23	F	F	F	4								X					40	x			bark sloughing, epicormic
142	*Ulmus americana*	American elm	31, 27	F	F	F	3													30	x			1 stem pruned off
143	*Acer saccharinum*	silver maple	35.0	G	G	G	5															x		
144	*Quercus macrocarpa*	bur oak	56.0	G	G	G	5														x			epicormic
145	*Acer negundo*	Manitoba maple	68.0	F	F	F	6							X	X						x			epicormic
146	*Aesculus hippocastanum*	horsechestnut	22.0	G	G	G	2								X						x			epicormic
147	*Acer negundo*	Manitoba maple	11, 23, 36	F	F	F	4															x		
148	*Picea pungens*	blue spruce	38.0	F	F	F	5													10		x		
149	*Acer negundo*	Manitoba maple	13.0	G	G	G	2														x			epicormic
150	*Acer negundo*	Manitoba maple	10.0	G	G	G	2														x			

TAG#	Species Scientific Name	Species Common Name	DBH (cm)	CONDITION																Tree Protection Measures			COMMENTS
				TI	CS	CV	Radial Dripline (m)	Co-dominant stem	Included Bark	Lean, Dir.	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	Epicormic	EAB	Canker	CDB (%)	Remove	Protect	ESA/SARA	
151	*Acer platanoides*	Norway maple	37.0	F	G	G	2								X						x			
152	*Acer platanoides*	Norway maple	23.0	F	G	G	2								X						x			
153	*Picea pungens*	blue spruce	16.0	G	G	G	2														x			
154	*Picea pungens*	blue spruce	16.0	G	G	G	2														x			
155	*Pinus nigra*	Austrian pine	29.0	G	F	F	3													20	x			
156	*Pinus nigra*	Austrian pine	20.0	F-P	P	P	3								X					40	x			topped, epicormic
157	*Pinus nigra*	Austrian pine	22.0	F-P	P	P	3								X					50	x			topped, epicormic
158	*Pinus nigra*	Austrian pine	10, 8, 18	F-P	P	P	3								X					60	x			topped, epicormic
159	*Pinus nigra*	Austrian pine	18.0	F-P	P	P	3								X					40	x			topped, epicormic
160	*Pinus nigra*	Austrian pine	19.0	F-P	P	P	3								X					40	x			topped, epicormic
161	*Pinus nigra*	Austrian pine	14.0	F-P	P	P	3								X					40	x			topped, epicormic
162	*Pinus nigra*	Austrian pine	19.0	F-P	P	P	3								X					50	x			topped, epicormic
163	*Pinus nigra*	Austrian pine	12.0	F-P	P	P	3								X					60	x			topped, epicormic
164	*Pinus nigra*	Austrian pine	15.0	F-P	P	P	3								X					40	x			topped, epicormic
165	*Pinus nigra*	Austrian pine	18.0	F-P	P	P	3								X					40	x			topped, epicormic
166	*Pinus nigra*	Austrian pine	16, 14	F-P	P	P	3								X					50	x			topped, epicormic
167	*Pinus nigra*	Austrian pine	19.0	F-P	P	P	3								X					60	x			topped, epicormic
168	*Pinus nigra*	Austrian pine	22.0	F-P	P	P	3								X					40	x			topped, epicormic
169	*Pinus nigra*	Austrian pine	13.0	F-P	P	P	3								X					50	x			topped, epicormic
170	*Pinus nigra*	Austrian pine	11.0	F-P	P	P	3								X					60	x			topped, epicormic
171	*Pinus nigra*	Austrian pine	16.0	F-P	P	P	3								X					60	x			topped, epicormic
172	*Pinus nigra*	Austrian pine	20, 9	F-P	P	P	3								X					40	x			topped, epicormic
173	*Pinus nigra*	Austrian pine	31.0	F-P	P	P	3								X					50	x			topped, epicormic
174	*Pinus nigra*	Austrian pine	21.0	F-P	P	P	3								X					60	x			topped, epicormic
175	*Pinus nigra*	Austrian pine	25.0	F-P	P	P	3								X					50	x			topped, epicormic
176	*Pinus nigra*	Austrian pine	24, 26	F-P	P	P	3								X					40	x			topped, epicormic
177	*Picea abies*	Norway spruce	28.0	G	G	G	3														x			
178	*Picea abies*	Norway spruce	21.0	G	G	G	2														x			
179	*Picea abies*	Norway spruce	22.0	G	G	G	3														x			
180	*Picea abies*	Norway spruce	27.0	G	G	G	3														x			
181	*Acer saccharinum*	silver maple	15, 18	G	G	G	3			L,S											x			epicormic
182	*Acer saccharinum*	silver maple	22.0	G	G	G	2														x			
183	*Acer saccharinum*	silver maple	59.0	G	G	G	4														x			
184	*Acer saccharinum*	silver maple	39.0	G	G	G	3														x			
185	*Elaeagnus angustifolia*	Russian olive	16, 14, 12	G	G	G	4														x			
186	*Picea pungens*	blue spruce	19.0	G	G	G	3														x			
187	*Acer platanoides*	Norway maple	45.0	G	G	G	5									X					x			
188	*Picea pungens*	blue spruce	15.0	G	G	G	2														x			

TAG#	Species Scientific Name	Species Common Name	DBH (cm)	CONDITION																Tree Protection Measures			COMMENTS
				TI	CS	CV	Radial Dripline (m)	Co-dominant stem	Included Bark	Lean, Dir.	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	Epicormic	EAB	Canker	CDB (%)	Remove	Protect	ESA/SARA	
189	*Acer platanoides*	Norway maple	26.0	G	G	G	3														x			
190	*Acer platanoides*	Norway maple	26.0	G	G	G	3									X					x			
191	*Fraxinus pennsylvanica*	red ash	36.0	G	F	F	3													30	x			
192	*Pinus sylvestris*	Scots pine	22.0	G	F	F	3													20	x			
193	*Pinus sylvestris*	Scots pine	19.0	G	F	F	3													20	x			
194	*Ulmus pumila*	Siberian elm	11.0	G	G	G	2														x			
195	*Ulmus pumila*	Siberian elm	12.0	G	G	G	2														x			
196	*Ulmus pumila*	Siberian elm	16.0	G	G	G	2														x			
197	*Acer saccharinum*	silver maple	30.0	G	G	G	3														x			
198	*Ulmus pumila*	Siberian elm	34, 18	G	G	G	4								X		X			20	x			
199	*Acer negundo*	Manitoba maple	13, 14, 11, 8	G	G	G	3														x			
200	*Pinus nigra*	Austrian pine	13.0	G	G	G	2														x			
201	*Pinus nigra*	Austrian pine	13.0	G	G	G	2			L,E											x			
202	*Pinus nigra*	Austrian pine	21.0	G	G	G	3														x			
203	*Pinus nigra*	Austrian pine	19.0	G	G	G	3														x			
204	*Acer negundo*	Manitoba maple	19.0	G	F	F	3															x		pollarding, epicormic
205	*Acer platanoides*	Norway maple	23.0	G	G	G	4															x		
206	*Ulmus pumila*	Siberian elm	50.0	G	G	G	6													10	x			
207	*Picea abies*	Norway spruce	63.0	G	G	G	5													10	x			pruned east side
208	*Picea abies*	Norway spruce	51.0	G	F	F	5													10	x			pruned east side
210	*Picea glauca*	white spruce	19.0	G	G	G	3	X	X											10	x			
211	*Ulmus americana*	White elm	39.0	G	G	G	3														x			
212	*Picea pungens*	blue spruce	22.0	G	G	G	3														x			
213	*Picea pungens*	blue spruce	26.0	G	G	G	3														x			
214	*Picea pungens*	blue spruce	13.0	G	G	G	1														x			
215	*Picea pungens*	blue spruce	17.0	G	G	G	2														x			
216		#N/A																						
217		#N/A																						
218		#N/A																						
219		#N/A																						
220		#N/A																						
221		#N/A																						
222		#N/A																						
223		#N/A																						
224		#N/A																						
225		#N/A																						
226		#N/A																						
227		#N/A																						

Brock, Liz

From: Allan Ortlieb <Allan.Ortlieb@IBIGroup.com>
Sent: July 27, 2015 5:57 PM
To: Rook, Sally
Cc: Brock, Liz
Subject: RE: updated. Structure analysis
Attachments: RSD Impact Eval Figures_combined.pdf; Airport Road RSD Impact Eval TableMNRF-Heaton comments-JMV.docx

Sally,

Attached is an updated table for Airport Road addressing MNRFs concerns. Mark asked whether the analysis assumes 3:1 slope..from which I assume he also means can any significant benefit be realized by using 2:1 slopes or retaining walls. The answer is that the alternatives already provide for new headwalls and retaining walls at each of the structures (extending 6m either side of the structure). We have added an assessment of tightening from 3:1 to 2:1 side slopes along the roadway beyond the immediate area of the structure were appropriate but it will not change the area of permanent disturbance and only slightly reduces the area of temporary impact. By definition the area of Permanent Disturbance for the purposes of assessing RSD impacts is the area of the new roadway, sidewalks, etc. (excluding slopes) that is permanently lost. Therefore, the answer is 'no' to his second question of whether retaining walls could further reduce the area of 'permanent impact'. This was confirmed by LGL.

I trust this is sufficient for MNRF to sign-off on Alternative 2 in each case.

Allan Ortlieb

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IBI Defining the cities of tomorrow

From: Rook, Sally [mailto:Sally.Rook@peelregion.ca]
Sent: Thursday, July 23, 2015 10:02 AM
To: Allan Ortlieb
Cc: Brock, Liz
Subject: updated. Structure analysis

Hi Allan,

Following up on the updates to the structures analysis. As you are aware this is the final piece required to file.

Thanks,
Sally

Sent from my BlackBerry 10 smartphone on the Bell network.

Airport Road Class Environmental Assessment (Evaluation of Alternatives at Major Watercourse Crossings)

Description					Impact to RSD and Fisheries Habitat					Other Factors				RECOMMENDATION
Title	**Crossing Type**	**Span (m)**	**ROW Across Structure/ Flood Plain (m)**	**Slope**	**[1] Permanent Disturbance (m2)**	**[2] Channel Impact (m2)**	**[3] MBW Impact (m2)**	**[4] MBW + 30 m Impact (m2)**	**[5] Gain of floodplain /MBW/ riparian area (m2)**	**[6] Area of Disturbance/ Fill within Floodplain (m2)**	**Cost ($)**	**Property Impacts**	**Drainage/ Hydrology**	
CROSSING # 2 (TRCA ID 2) - NORRIS BRIDGE (Sta. 1+122) Existing Conditions: Concrete rigid frame; 10.7m span; Built in 1955 with no signs of distress (overall deck width = 17.2m)														
Alternative 1 - Extend both sides of existing bridge / culvert	Bridge/ Culvert, with new headwalls and retaining walls	10.7m [L=29.9]	45m road ROW plus side slopes	3:1	1431.2	50.0	1702.5 437.2 P; 1265.3 T	2410.3 944.1 P; 1466.2 T	0	12,185	$0.59M	1,855 m^2 additional property required beyond 45m ROW limit.	Regional Storm overtops roadway (0.22m)	**Alternative 1** is not recommended for the following reasons: • Although the existing structure is in good condition, it has a limited service life • Hydrologic/hydraulic analysis shows need to replace existing structure to accommodate hydraulic requirements • Would provide less suitable conditions for Redside Dace habitat
Alternative 2 - Replace the culvert with Con-Span	Con-Span, with pre-cast headwall & retaining wall	14.6m (x 3.35/3.66 rise) [L=29.9]	45m road ROW plus side slopes	3:1	1431.2	50.0	1702.5 437.2 P; 1265.3 T	2410.3 944.1 P; 1466.2 T	43.0	12,185	$1.10M	1,855 m^2 additional property required beyond 45m ROW limit.	Overtopping eliminated during Regional Storm conditions	**Alternative 2:** Replacement of the existing structure with a precast 14.64m X3.35/3.66m rise Con span is recommended for the following reasons: • The structure replacement can be undertaken using precast elements to reduce environmental impacts during construction. • Opportunity for improved wildlife passage and provide suitable conditions for Redside Dace habitat as structure is larger and, potentially, will allow more light penetration thus increasing riparian vegetation growth under the structure. • Barn Swallow nest observed during initial field investigations is no longer present, so new structure will not remove any nesting habitat • Meets all hydrologic / hydraulic requirements. • Reasonably balances benefits versus impacts/costs.
				2:1	1431.2	50.0	1672.5 437.2 P; 1235.3 T	2230.3 944.1 P; 1286.2 T	43.0	11,975	$1.15M	1,850 m^2	As above	• As above, alternative provides for new headwalls and retaining walls at the structure (i.e. combined structure and retaining walls extend over 27m length each side); however provides for 2:1 side slopes along roadway beyond the immediate area of the structure. • No change to areas of permanent disturbance • Minor reduction to areas of temporary impact to RSD • Additional 300m of barrier protection required
Alternative 3 - Replace the culvert with 40m span Bridge	Bridge	40.0 [W=29.9]	45m road ROW plus side slopes	3:1	1431.2	50.0	829.6 437.2 P; 392.4 T	3568.5 944.1P; 2624.4 T	395.6	13,420	$4.99M	4,315 m^2 additional property required beyond 45m	Overtopping eliminated during Regional Storm conditions	**Alternative 3** is not recommended for the following reasons: • Though structure would span the meander belt, the fluvial geomorphology study indicates that geomorphic function would benefit from improvements to the channel form. • Significantly more vegetation removal on west side of Airport Road • Road profile at the bridge to be raised an additional1.5m (2.0m total) through the sag curve to accommodate CPCI 2300 girder depth (overall length of grade raise = 440m) • Substantial increase in property impacts/ ROW requirements (grading extends up to 37m east and west from the proposed centreline of the Airport Road in the vicinity of the structure and 44m in fill areas on both sides, which is 14.5m and 21.5m beyond designated 45.0m R.O.W respectively) • Substantial Cost ($3.59 M structure and $1.41M roadway) – more than four times greater than Alternative 2 • Minimal benefit versus impacts/costs
				2:1	1431.2	50.0	829.6 437.2 P; 392.4 T	3343.5 944.1P; 2399.4 T	395.6	13,195	$5.03M	4,040 m^2	As above	• As above, alternative provides for retaining walls at the end of the structure (i.e. combined structure and retaining walls extend over 52m length each side); however provides for 2:1 side slopes along roadway beyond the immediate area of the structure. • No change to areas of permanent disturbance • Minor reduction to areas of temporary impact to RSD beyond MBW • Additional 250m of barrier protection required

CROSSING # 2 (TRCA ID 4) - DEANS CULVERT (Sta. 3+040) Existing Conditions: Non-Rigid Open Footing culvert; 6.5m span; Built in 1955 with no signs of distress (overall length = 19.4m, along skew)														
Alternative 1 - Extend both sides of existing culvert	Culvert with new headwalls and retaining walls	6.5 [L=34.5, along skew]	45m road ROW plus side slopes	3:1	1713.5	72.5	1227.8 608.4 P; 619.4 T	2077.5 1032.6 P; 1044.9 T	0	8,393	$0.37M	Grading maintained within 45m ROW	Regional Storm overtops roadway (0.48m)	**Alternative 1** is not recommended for the following reasons: • Although the existing structure is in good condition, it has a limited service life. • Hydrologic/hydraulic analysis shows need to replace existing structure to accommodate hydraulic requirements • Would provide less suitable conditions for Redside Dace habitat
Alternative 2 - Replace the culvert with Con-Span	Con-Span, with pre-cast headwall & retaining wall	10.67 (x2.13/ 2.44rise) [L=31.6, along skew]	45m road ROW plus side slopes	3:1	1713.5	72.5	1227.8 608.4 P; 619.4 T	2077.5 1032.6 P; 1044.9 T	80.2	8,393	$1.01M	Grading maintained within 45m ROW	Overtopping eliminated during Regional Storm conditions	**Alternative 2** Replace the existing culvert with a precast open foot culvert (10.67m X2.13m/2.44m rise) is recommended for the following reasons: • The structure replacement could be undertaken using precast elements to reduce environmental impacts during construction • Opportunity for improved wildlife passage and provide suitable conditions for Redside Dace habitat as structure is larger and provides for more natural geomorphic processes • Meets all hydrologic / hydraulic requirement. Note: Alternative provides for new headwalls and retaining walls at the structure (i.e. combined structure and retaining walls extend over 27m length each side). Shallow cut/fill (<1m) limit opportunity and/or benefits of providing 2:1 side slopes along roadway beyond the immediate area of the structure and in turn any change the areas of permanent or temporary disturbance.
Alternative 3 - Replace the culvert with 40m span Bridge	Bridge	40.0 [W=29.9, perpendicular]	45m road ROW plus side slopes	3:1	1713.5	72.5	801.0 608.3 P; 192.7 T	2942.6 1032.7 P; 1909.9 T	555.5	10,603	$5.08M	4,072 m^2 additional property required beyond 45m ROW limit, plus one residential buy-out	Overtopping eliminated during Regional Storm conditions	**Alternative 3** is not recommended for the following reasons: • Given close spacing of watercourses, catchment area does not change. • Road profile will need to be raised 1.8m at both Salt Creek and Deans culvert to accommodate bridge girder depth (overall length of grade raise for both crossings = 1050m, Sta. 2+750 to Sta. 3+800; >500 m specific to this crossing) • Substantial increase in property impacts/ ROW requirements. Grading extends up to 28 m east and west from the proposed centreline of the Airport Road in the vicinity of the structure in fill areas, which is 5.5m beyond designated 45.0m R.O.W • Substantial Cost ($3.5 M structure and $1.58 M roadway) – more than five times greater than Alternative 2 • Minimal benefit versus impacts/costs
				2:1	1713.5	72.5	801.0 608.3 P; 192.7 T	2907.6 1032.7 P; 1874.9 T	555.5	10,568	$5.12M	3,930 m^2	As above	• As above, alternative provides for retaining walls at the end of the structure (i.e. combined structure and retaining walls extend over 52m length each side); however provides for 2:1 side slopes along roadway beyond the retaining walls • No change to areas of permanent disturbance • Very minor reduction to areas of temporary impact to RSD • Additional 250m of barrier protection required

CROSSING # 3 (TRCA ID 5) - SALT CREEK CULVERT (Sta. 3+440) Existing Conditions: Concrete rigid frame box culvert; 7.2m span; Built in 1960 with no signs of distress (overall length = 22.4m, along skew)														
Alternative 1 - Extend both sides of existing culvert	Culvert with new headwalls and retaining walls	7.2 [L=34.5, along skew]	45m road ROW plus side slopes	3:1	1994.2	27.0	1291.3 639.6 P; 651.7 T	3235.9 1327.7 P; 1908.2 T	0	8,640	$0.44M	Grading maintained within 45m ROW	Regional Storm overtops roadway (0.49m)	**Alternative 1** is not recommended for the following reasons: • Although the existing structure is in good condition, it has a limited service life • Hydrologic/hydraulic analysis shows need to replace existing structure to accommodate hydraulic requirements • Provide less suitable conditions for Redside Dace habitat
Alternative 2 - Replace the culvert with Con-Span	Con-Span, with pre-cast headwall & retaining wall	10.67 (x2.13/ 2.44rise) [L=34.5, along skew]	45m road ROW plus side slopes	3:1	1994.2	27.0	1291.3 639.6 P; 651.7 T	3235.9 1327.7 P; 1908.2 T	68.6	8,640	$1.06M	Grading maintained within 45m ROW	Overtopping eliminated during Regional Storm conditions	**Alternative 2:** Replacement of the existing culvert with a precast open foot culvert (10.67m X2.13m/2.44m rise) is recommended for the following reasons: • The structure replacement could be undertaken using precast elements to reduce environmental impacts during construction • Opportunity for improved wildlife passage and provide suitable conditions for Redside Dace habitat as structure is larger and provides for more natural geomorphic processes • Meets all hydrologic /hydraulic requirements Note: Alternative provides for new headwalls and retaining walls at the structure (i.e. combined structure and retaining walls extend over 27m length each side). Shallow cut/fill (<1m) limit opportunity and/or benefits of providing 2:1 side slopes along roadway beyond the immediate area of the structure and in turn any change the areas of permanent or temporary disturbance.
Alternative 3 - Replace the culvert with 40m span Bridge	Bridge	40.0 [W=29.9, perpendicular]	45m road ROW plus side slopes	3:1	1993.7	27.0	792.8 639.1 P; 153.7 T	4590.1 1327.6 P; 3262.5 T	610.0	10,070	$5.5M	4,870 m^2 additional property required beyond 45m ROW limit	Overtopping eliminated during Regional Storm conditions	**Alternative 3** is not recommended for the following reasons: • Given close spacing of watercourses, catchment area does not change. • Road profile will need to be raised 1.8m at both Salt Creek and Deans culvert to accommodate bridge girder depth (overall length of grade raise for both crossings = 1050m, Sta. 2+750 to Sta. 3+800; >650 m specific to this crossing) • Substantial increase in property impacts/ ROW requirements. Grading extends up to 27.5 m east and west from the proposed centreline of the Airport Road in the vicinity of the structure in fill areas, which is 5.0m beyond designated 45.0m R.O.W • Substantial Cost ($3.5M structure and $2.0M roadway) – more than five times greater than Alternative 2 • Minimal benefit versus impacts/costs
				2:1	1993.7	27.0	792.8 639.1 P; 153.7 T	4555.1 1327.6 P; 3227.5 T	610.0	10,035	$5.55M	4,730 m^2	As above	• As above, alternative provides for retaining walls at the end of the structure (i.e. combined structure and retaining walls extend over 52m length each side); however provides for 2:1 side slopes along roadway beyond the retaining walls. • No change to areas of permanent disturbance • Very minor reduction to areas of temporary impact to RSD • Additional 250m of barrier protection required

Notes:

1. Permanent Disturbance: area of the new roadway, sidewalks, etc. (excluding slopes) that is permanently lost
2. Channel Impact: area of the bankfull (high flow) channel enclosed by the new structure or requiring realignment
3. MBW Impact: area of the MBW (minus bankfull channel) impacted by grading, tree clearing, temporary construction access/staging, SWM outfalls, etc. P = permanent; T = temporary
4. MBW + 30 m Impact: area of the MBW + 30 m (minus MBW and bankfull channel) impacted by grading, tree clearing, temporary construction access/staging, SWM outfalls, etc. P = permanent; T = temporary
5. Gain of floodplain/MBW/riparian area: amount of habitat (minus the bankfull channel) that is gained under the new structure
6. Area of Disturbance/ Fill within Floodplain: area impacted by grading/fill within the Regulatory Flood Plain

LEGEND

- Permanently Disturbed
- Channel Impacts
- Meanderbelt Impacts
- Meanderbelt Plus 30 Impacts
- Watercourse

20 10 0 20 Metres

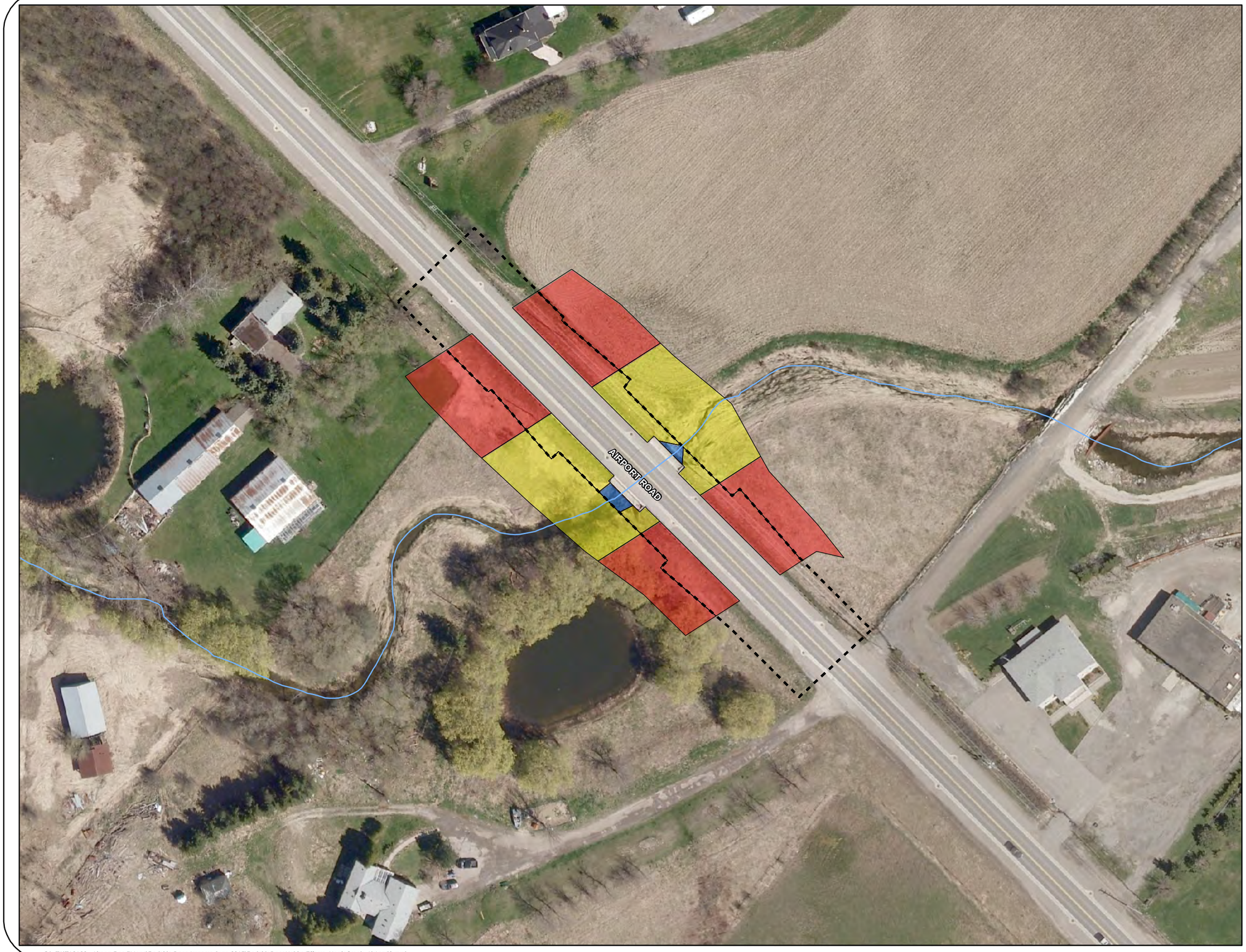
N

AREAS OF REDSIDE DACE
HABITAT EFFECTS (DO NOTHING)
NORRIS CREEK

LGL LIMITED
environmental research associates

Project: TA8188	**Figure:** 3b
Date: June, 2015	**Prepared By:** MWF
Scale: 1 : 1000	**Checked By:** JMV

C:_TA\TA8188 - Airport Road\Maps\Redside Dace Impacts June 2015\RedsideDaceHabitatEffects_NorrisCreek_DoNothing.mxd



LEGEND

- Permanently Disturbed
- Channel Impacts
- Meanderbelt Impacts
- Meanderbelt Plus 30 Impacts
- Watercourse

20 10 0 20 Metres

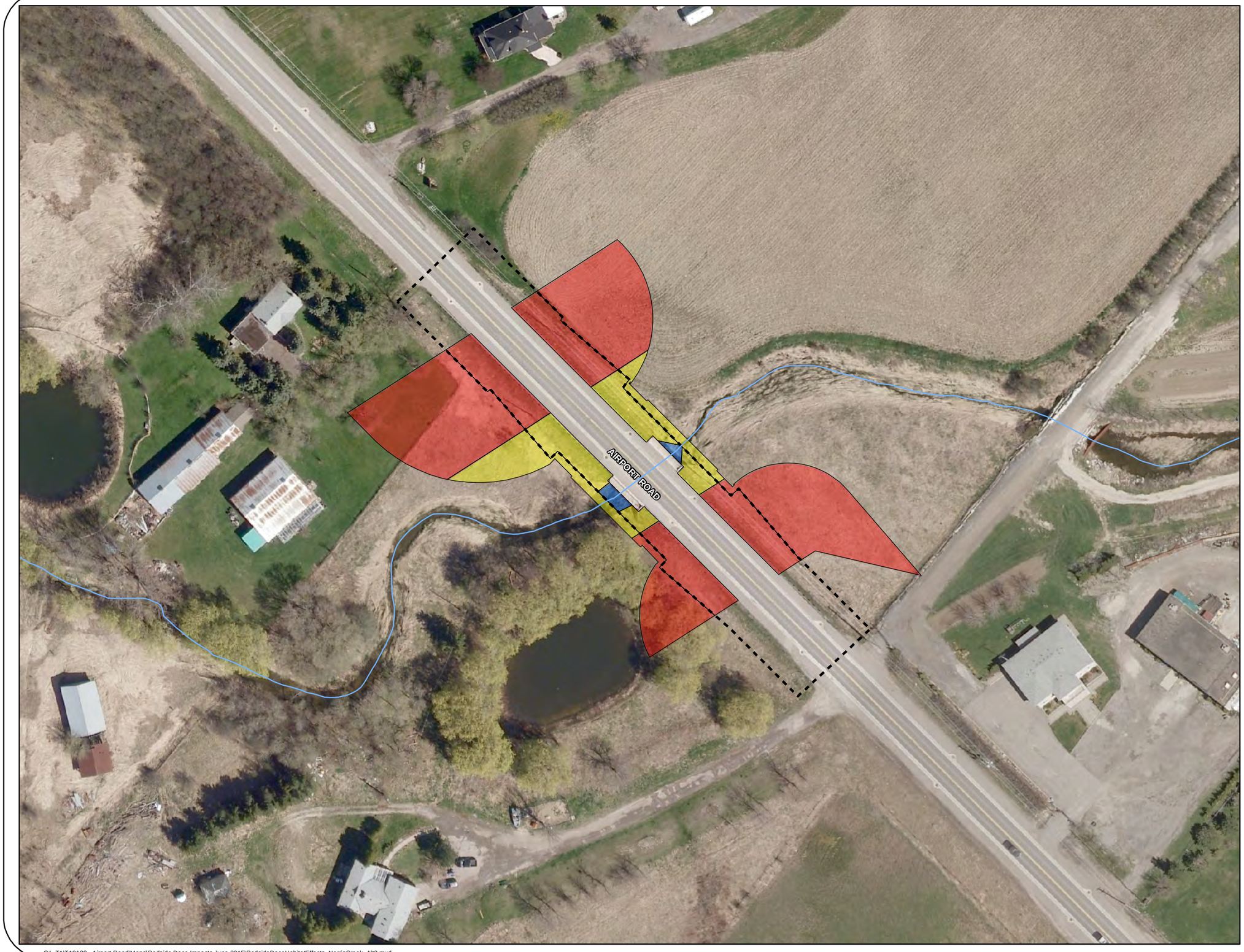
N

AREAS OF REDSIDE DACE
HABITAT EFFECTS (ALT. 1 AND 2)
NORRIS CREEK

LGL LIMITED
environmental research associates

Project: TA8188	**Figure:** 3b
Date: June, 2015	**Prepared By:** MWF
Scale: 1 : 1000	**Checked By:** JMV

C:_TA\TA8188 - Airport Road\Maps\Redside Dace Impacts June 2015\RedsideDaceHabitatEffects_NorrisCreek_Alt1and2.mxd



LEGEND

- Permanently Disturbed
- Channel Impacts
- Meanderbelt Impacts
- Meanderbelt Plus 30 Impacts
- Watercourse

20 10 0 20 Metres

N

AREAS OF REDSIDE DACE HABITAT EFFECTS (ALT. 3) NORRIS CREEK

LGL LIMITED
environmental research associates

Project: TA8188	**Figure:** 3b
Date: June, 2015	**Prepared By:** MWF
Scale: 1 : 1000	**Checked By:** JMV

C:_TA\TA8188 - Airport Road\Maps\Redside Dace Impacts June 2015\RedsideDaceHabitatEffects_NorrisCreek_Alt3.mxd

LEGEND

- Permanently Disturbed
- Channel Impacts
- Meanderbelt Impacts
- Meanderbelt Plus 30 Impacts
- Watercourse

20 10 0 20 Metres

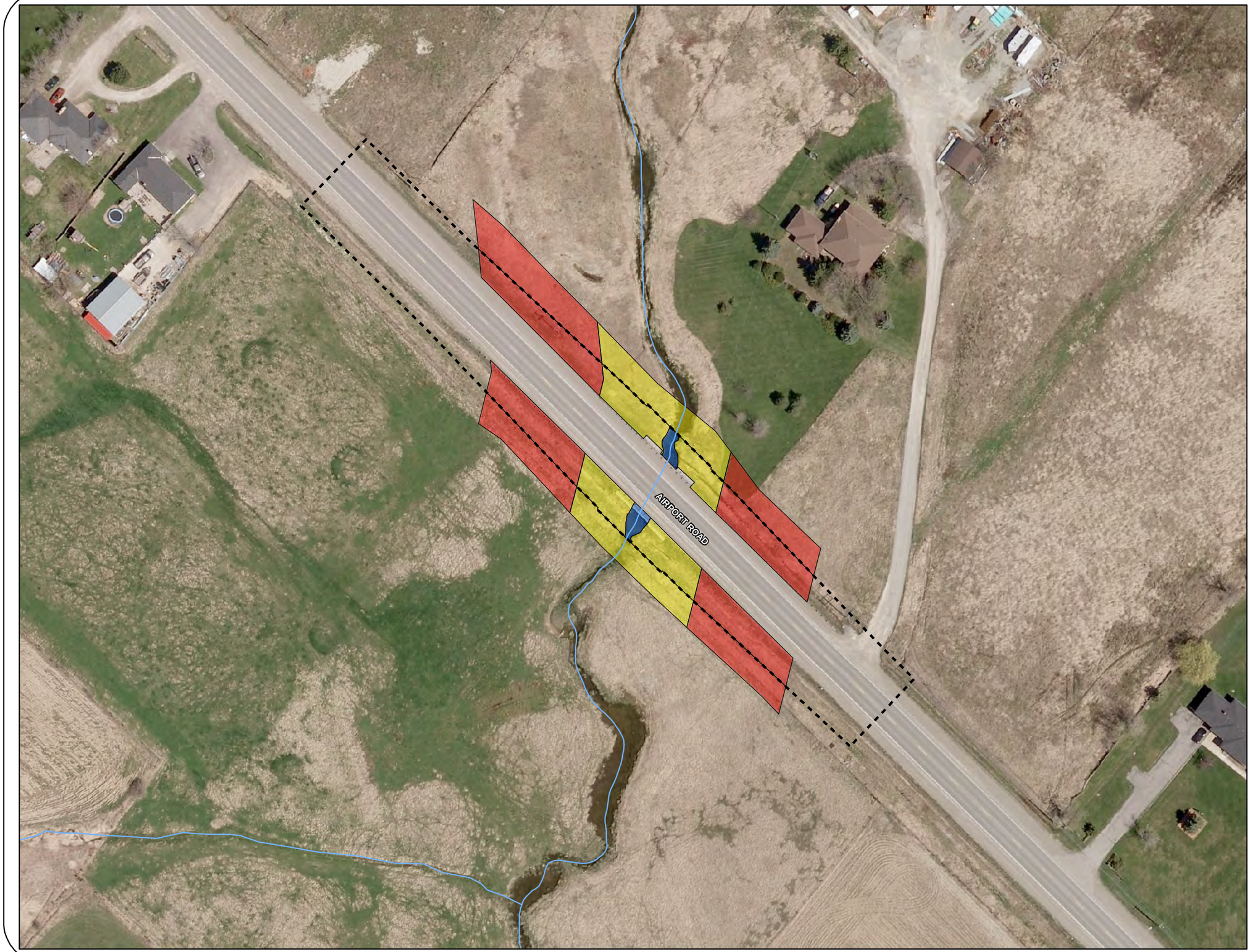
N

AREAS OF REDSIDE DACE
HABITAT EFFECTS (DO NOTHING)
DEANS CREEK

LGL LIMITED
environmental research associates

Project: TA8188	**Figure:** 3b
Date: June, 2015	**Prepared By:** MWF
Scale: 1 : 1000	**Checked By:** JMV

C:_TA\TA8188 - Airport Road\Maps\Redside Dace Impacts June 2015\RedsideDaceHabitatEffects_DeansCreek_DoNothing.mxd



LEGEND

- Permanently Disturbed
- Channel Impacts
- Meanderbelt Impacts
- Meanderbelt Plus 30 Impacts
- Watercourse

20 10 0 20 Metres

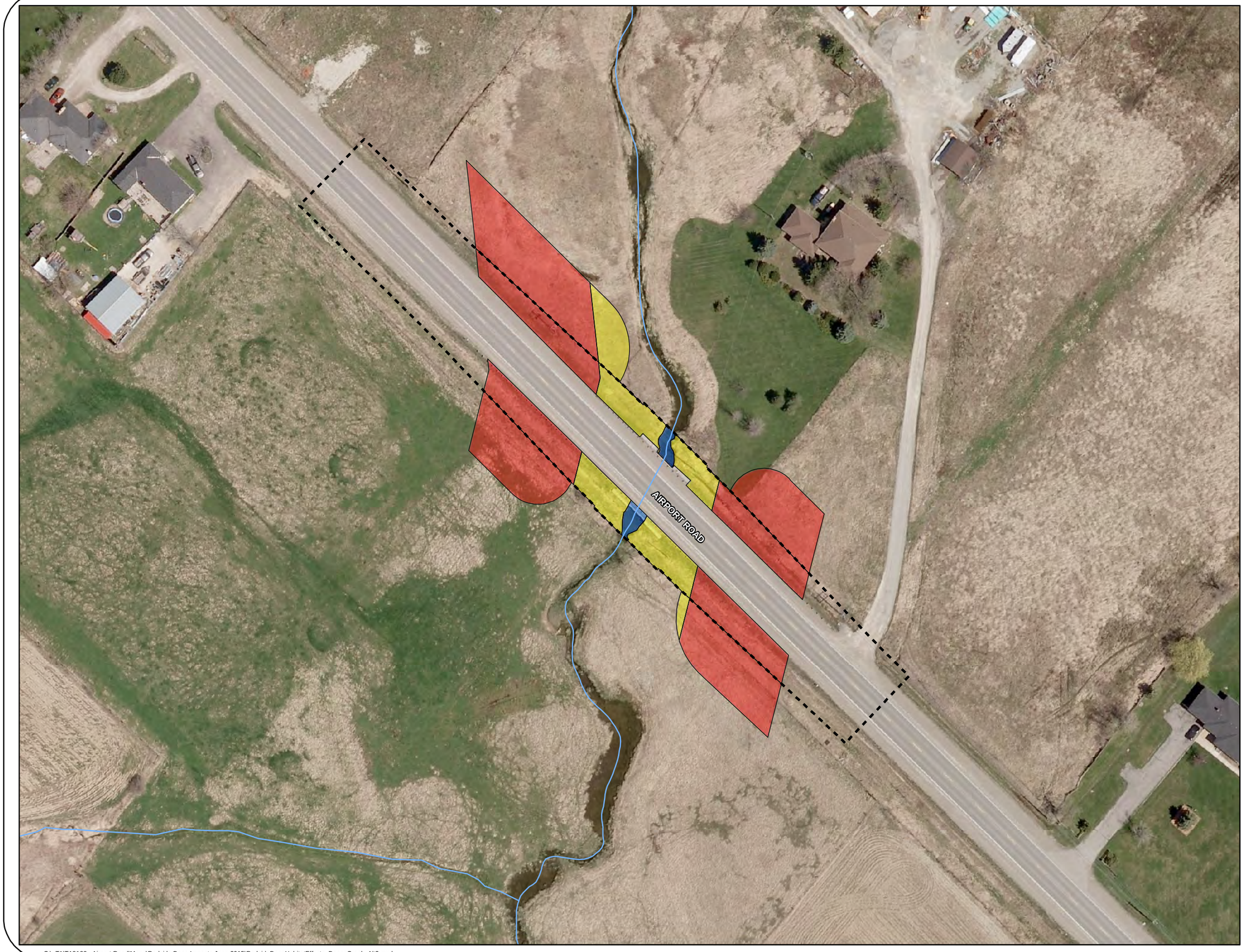
N

AREAS OF REDSIDE DACE HABITAT EFFECTS (ALT. 1 AND 2) DEANS CREEK

LGL LIMITED
environmental research associates

Project: TA8188	**Figure:** 3b
Date: June, 2015	**Prepared By:** MWF
Scale: 1 : 1000	**Checked By:** JMV

C:_TA\TA8188 - Airport Road\Maps\Redside Dace Impacts June 2015\RedsideDaceHabitatEffects_DeansCreek_Alt1and2.mxd



LEGEND

- Permanently Disturbed
- Channel Impacts
- Meanderbelt Impacts
- Meanderbelt Plus 30 Impacts
- Watercourse

20 10 0 20 Metres

N

AREAS OF REDSIDE DACE HABITAT EFFECTS (ALT. 3) DEANS CREEK

LGL LIMITED
environmental research associates

Project: TA8188	**Figure:** 3b
Date: June, 2015	**Prepared By:** MWF
Scale: 1 : 1000	**Checked By:** JMV

C:_TA\TA8188 - Airport Road\Maps\Redside Dace Impacts June 2015\RedsideDaceHabitatEffects_DeansCreek_Alt3.mxd

LEGEND

- Permanently Disturbed
- Channel Impacts
- Meanderbelt Impacts
- Meanderbelt Plus 30 Impacts
- Watercourse

20 10 0 20 Metres

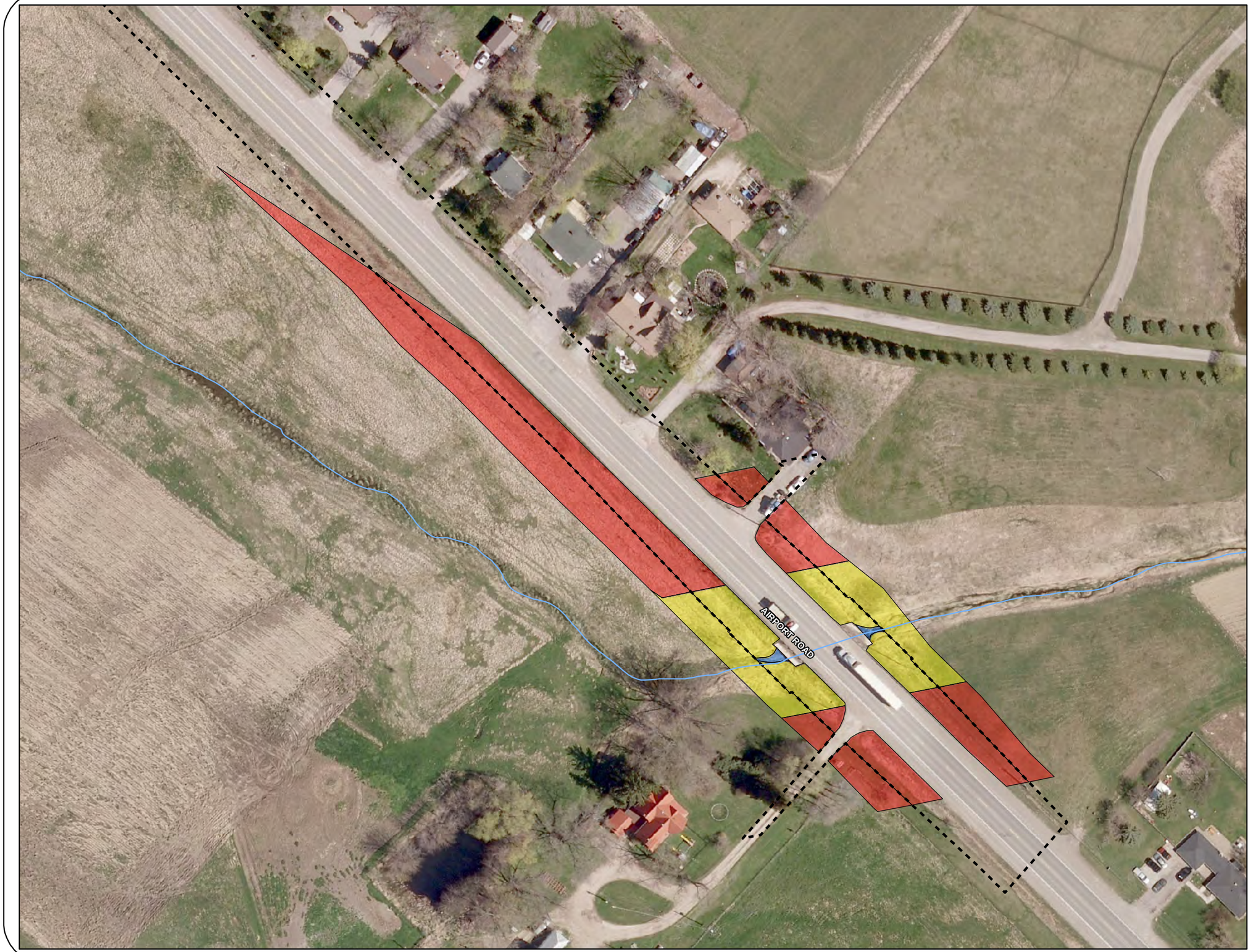
N

AREAS OF REDSIDE DACE HABITAT EFFECTS (DO NOTHING) SALT CREEK

LGL LIMITED
environmental research associates

Project: TA8188	**Figure:** 3b
Date: June, 2015	**Prepared By:** MWF
Scale: 1 : 1000	**Checked By:** JMV

C:_TA\TA8188 - Airport Road\Maps\Redside Dace Impacts June 2015\RedsideDaceHabitatEffects_SaltCreek_DoNothing.mxd



LEGEND

- Permanently Disturbed
- Channel Impacts
- Meanderbelt Impacts
- Meanderbelt Plus 30 Impacts
- Watercourse

20 10 0 20 Metres

N

AREAS OF REDSIDE DACE HABITAT EFFECTS (ALT. 1 AND 2) SALT CREEK

LGL LIMITED
environmental research associates

Project: TA8188	**Figure:** 3b
Date: June, 2015	**Prepared By:** MWF
Scale: 1 : 1000	**Checked By:** JMV

C:_TA\TA8188 - Airport Road\Maps\Redside Dace Impacts June 2015\RedsideDaceHabitatEffects_SaltCreek_Alt1and2.mxd

LEGEND

- Permanently Disturbed
- Channel Impacts
- Meanderbelt Impacts
- Meanderbelt Plus 30 Impacts
- Watercourse

20 10 0 20 Metres

N

AREAS OF REDSIDE DACE HABITAT EFFECTS (ALT. 3) SALT CREEK

LGL LIMITED
environmental research associates

Project: TA8188	**Figure:** 3b
Date: June, 2015	**Prepared By:** MWF
Scale: 1 : 1000	**Checked By:** JMV

C:_TA\TA8188 - Airport Road\Maps\Redside Dace Impacts June 2015\RedsideDaceHabitatEffects_SaltCreek_Alt3.mxd