

APPENDIX 2

NATURAL HERITAGE REPORT



NATURAL HERITAGE SUMMARY REPORT
FOR THE ROAD AND DRAINAGE IMPROVEMENTS ON REGIONAL ROAD 81
(KING STREET) BETWEEN GREENLANE AND LINCOLN AVENUE, IN THE
TOWN OF LINCOLN

Prepared for:

The Regional Municipality of Niagara

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1.0 INTRODUCTION

Colville Consulting Inc. was retained by The Regional Municipality of Niagara to prepare a Natural Heritage Summary Report as part of the Municipal Class Environmental Assessment (EA) for lands located between Greenlane Road and Lincoln Avenue along Regional Road 81 (King Street) in the Town of Lincoln. The intent of this report is to inventory and describe natural heritage features within and adjacent to Regional Road 81 (King Street), determine the extent of any significant natural areas and assess any impacts that may result from the proposed road and drainage improvements.

1.1 Description of the Study Area

The project involves approximately 2.3 km of road and drainage improvements for Regional Road 81(King Street) between Greenlane Road and Lincoln Avenue. A round-about associated with Durham Road and Greenlane Road delineates the western reach of the Study Area and continues 100 m east of the Lincoln Avenue and Regional Road 81(King Street) intersection. The approximate location of the Study Area is illustrated in Figure 1.

Regional Road 81 (King Street) through the Study Area currently consists of a two lane road, with a single lane in each direction and granular shoulders associated with the travelled surface. There are no sidewalks within the Study Area however, Regional Road 81 (King Street) is classified as a Regional Bicycle Route. Land use adjacent to Regional Road 81 (King Street) through the Study Area primarily consists of residential dwellings, commercial buildings and rural agriculture.

Based on our review of background mapping, natural heritage features located within or adjacent to the Study Area consist of Thirty Mile Creek and the associated valley, as well as tributaries to Lake Ontario Tributary 24 and Konkle Creek. In addition to these features, a large number of trees line Regional Road 81 (King Street) sporadically within the Study Area. The approximate extents of mapped natural heritage features within the Study Area are illustrated in Figure 2.

1.2 Description of Proposed Development

The proposed development consists of drainage and road improvements of approximately 5.6 km of Regional Road 81 between Greenlane Road and Lincoln Avenue in the Town of Lincoln. Road reconstruction consists of widening the shoulders on each side of the road to facilitate a bicycle lane. It is understood that drainage improvements are associated with the replacement of a 200 diameter (cast iron) watermain between the Durham/Greenlane round-about and Mountain Road in addition to a number of culverts. For the purpose of this assessment, it is anticipated the required works will affect the majority of lands within the road allowance.

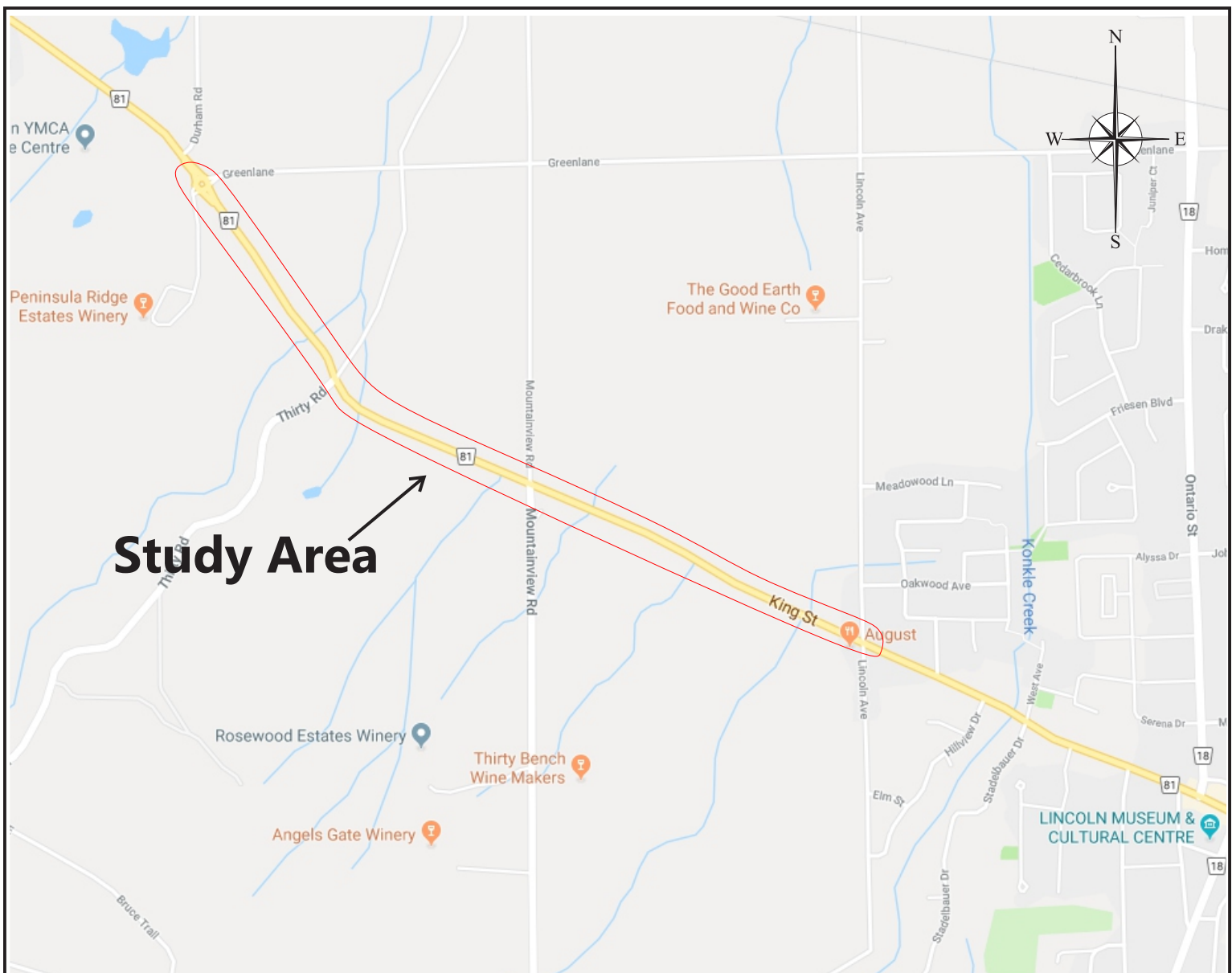


Figure 1 Location Map

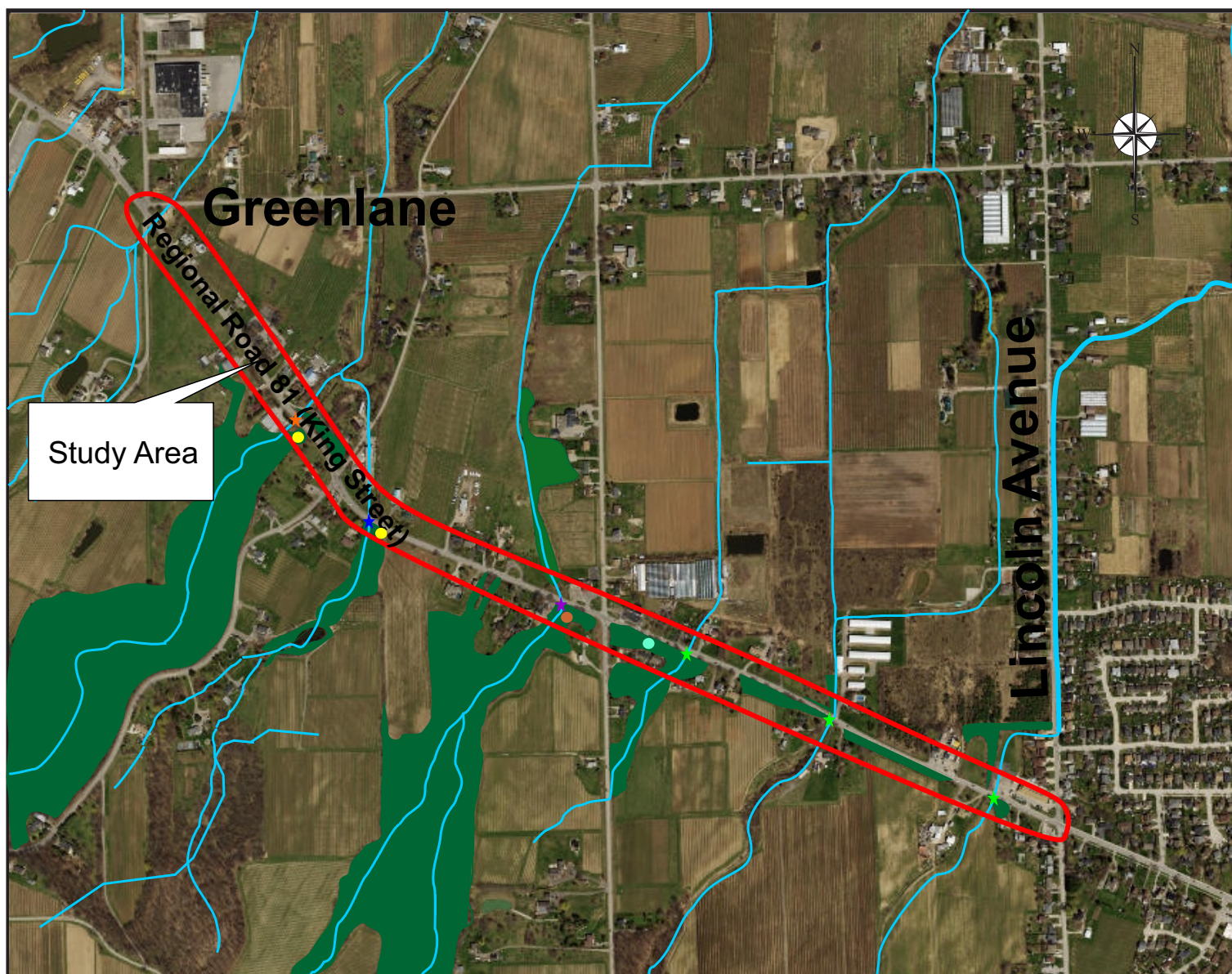
Regional Road 81 (King Street)
Road and Drainage Improvements EA

Prepared for: Regional Municipality of Niagara

Prepared by: **COLVILLE**
CONSULTING INC.

Date: October 2018

FILE: C15074



Legend

- Study Area
- Watercourse
- Woodland
- ★ Watercourse 1
- ★ Watercourse 2
- ★ Watercourse 3
- ★ Watercourse 4
- Woodland location 1
- Woodland location 2
- Woodland location 3

Figure 2
Mapped Natural Heritage Features
on the Subject Lands

Regional Road 81 (King Street)
road and drainage improvements EA

Prepared for: **Regional Municipality**
of Niagara

Prepared by: **COLVILLE**
CONSULTING INC. 

October 2018

FILE: 15074

2.0 Study Approach

2.1 Background Review

Prior to the commencement of primary field inventories, a review of background material available for the Study Area and surrounding area was conducted. Some of the background information reviewed included:

- ◆ Niagara Region Official Plan (RMON 2014);
- ◆ Town of Lincoln Official Plan (Town of Lincoln 2014);
- ◆ NPCA Planning & Regulation Policies and Guidelines (NPCA 2011);
- ◆ Background data available from the NPCA and Ministry of Natural Resources and Forestry; and
- ◆ Niagara Natural Areas Inventory (NPCA 2010).

2.2 Field Inventories

In order to ensure all natural heritage features in the study area were assessed adequately, Colville Consulting conducted the following field assessments:

- 1) A single season breeding bird survey;
- 2) An assessment of watercourse and natural heritage features to determine the extent of any sensitive habitat or potential design constraints; and;
- 3) Documentation of any wildlife species observed on the properties.

The methods employed for each of the above components are provided in the appropriate sections below.

3.0 Study Findings

3.1 Wildlife and Wildlife Habitat

3.1.1 Breeding Bird Survey

Two breeding bird surveys were conducted on June 16th and July 3rd, 2016 to inventory breeding birds on the subject property. Surveys were completed at least 10 days apart, under suitable weather conditions with little to no wind or precipitation. A thorough search of the Study Area, including the woodland and thicket areas, was completed during both surveys between dawn and no later than 10:00 am. All birds seen or heard calling were recorded and the highest breeding evidence per species was determined in accordance with the criteria of the Atlas of the Breeding Birds of Ontario (Cadman et al. 2007).

A total of 5 species of birds were observed or heard on or above the Study Area. According to Ontario conservation status ranks (S-rank) designations, all recorded species are considered to be “secure” (S5 - common, widespread and abundant) or “apparently secure” (S4 - uncommon but not rare) or “not applicable” (SNA - conservation status rank is not applicable) in the province of

Ontario. The recorded species are also considered to be very common to common permanent or summer residents in the Niagara Region.

Table 1: Results of breeding bird surveys.

Species	S Rank	Niagara Status*	Study Area Woodland/ Thicket	Adjacent Lands	Highest Breeding Evidence**	Breeding Code***
American Robin	S5B	VC R	x		CO	FY
Black-capped Chickadee	S5	C P		x	PO	S
Brown-headed Cowbird	S4B	VC R	x	x	PO	H
Chipping Sparrow	S5B	C R		x	PO	H
House Sparrow	SNA	VC P	x	x	PO	H

* VC – very common; C – common; U – uncommon; P – permanent resident; R – summer resident (Niagara Natural Areas Inventory, 2010)

** OBS – observed, no evidence of breeding; PO – possible breeding; PR – probable breeding; CO – confirmed breeding

*** X – observed in its breeding season, no evidence of breeding

H – species observed in its breeding season in suitable nesting habitat

S – singing male present in its breeding season in suitable nesting habitat

P – pair observed in their breeding season in suitable nesting habitat

A – agitated behavior or anxiety calls of an adult

FY – recently fledged young

CF – adult carrying food for young

NY – nest with young

3.1.2 Incidental Wildlife Observations

Incidental wildlife observations including signs were recorded during both breeding bird survey visits. Observations within the Study Area were limited to Grey Squirrel.

3.1.3 Tree Inventory

As part of the scoping for this report, consultation with the Niagara Region Forestry staff took place and a tree inventory for the Study Area was obtained. Inventory data can be found in Appendix A. During this tree inventory, no provincially rare or locally rare plants were observed. Conditions and ages of trees varied throughout the Study Area but the dominating species consisted of Norway Maple and Manitoba Maple. Dead or dying trees were marked for future removal.

4.0 Assessment of Significant Natural Heritage Features

4.1 Species at Risk

4.1.1 Significant Habitat of Endangered and Threatened Species

No Endangered or Threatened species were documented in the Study Area during our studies.

4.1.2 Species of Conservation Concern

No Species of Special Concern were documented during our field surveys and no typical habitat of any Special Concern Species known to occur in the Town of Lincoln is thought to be present in the Study Area.

4.2 Significant Wildlife Habitat

4.2.1 Seasonal Concentration Areas

The Significant Wildlife Habitat Technical Guide (SWHTG) (OMNR 2000) identifies 14 types of seasonal concentrations of animals that may be considered significant wildlife habitat. These include, but are not limited to:

- ◆ winter deer yards;
- ◆ moose late winter habitat;
- ◆ colonial bird nesting sites;
- ◆ waterfowl stopover and staging areas;
- ◆ waterfowl nesting areas;
- ◆ shorebird migratory stopover areas;
- ◆ landbird migratory stopover areas;
- ◆ raptor winter feeding and roosting areas;
- ◆ Wild Turkey winter range;
- ◆ Turkey Vulture summer roosting areas;
- ◆ reptile hibernacula;
- ◆ bat hibernacula;
- ◆ bullfrog concentration areas; and
- ◆ migratory butterfly stopover areas.

Seasonal concentration areas are typically designated as significant wildlife habitat if it supports a species at risk or a large population may be lost if the habitat is destroyed. None of these types of seasonal concentrations of animals were observed or documented in the Study Area.

4.2.2 Rare or Specialized Habitat

Rare habitat includes those vegetation communities which are designated as extremely rare to uncommon in Ontario. Those areas that qualify as rare habitats are assigned an S-Rank of S1, S2 or S3 by the Natural Heritage Information Center.

The SWHTG defines 14 specialized habitats that may be considered significant wildlife habitat. They are:

- ◆ habitat for area-sensitive species;
- ◆ forests providing a high diversity of habitats;
- ◆ old-growth or mature forest stands;
- ◆ foraging areas with abundant mast;
- ◆ amphibian woodland breeding ponds;
- ◆ turtle nesting habitat;
- ◆ specialized raptor nesting habitat;
- ◆ moose calving areas;
- ◆ moose aquatic feeding areas;
- ◆ mineral licks;
- ◆ mink, otter, marten, and fisher denning sites;
- ◆ highly diverse areas;
- ◆ cliffs; and
- ◆ seeps and springs.

No rare or specialized habitat was identified in the Study Area.

4.2.3 Migration Corridors

The Significant Wildlife Habitat Technical Guide (SWHTG) defines animal movement corridors as elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another. To qualify as significant wildlife habitat, these corridors should be a critical link between habitats that are regularly used by wildlife.

Based on the surveys conducted, as well as from our assessment of air photos and mapping, it does not appear that natural heritage features within the Study Area are providing migration function for wildlife.

4.3 Significant Areas of Natural and Scientific Interest (ANSI)

No Areas of Natural and Scientific Interest are located on or adjacent to the Study Area.

4.4 Provincially Significant Wetlands

No wetlands are present on or within 120m of the Study Area.

4.5 Watercourses

Natural heritage mapping available for the Study Area indicates that several watercourse features traverse Regional Road 81 (King Street). A site investigation was conducted on November 7, 2016 by Colville Consulting Inc. to assess watercourse conditions and determine if the features provide sensitive habitat and essential ecological function. During our assessment, four survey sites were identified, these were a main channel of Thirty Mile Creek, a tributary to Thirty Mile Creek, a main channel of Lake Ontario tributary 24 and a tributary to Konkle Creek. For the purpose of this report, each watercourse has been designated as Watercourse 1-4. Conditions of each watercourse can be seen in the site photographs found in Appendix B.

Watercourse 1: Main Channel of 30 Mile Creek

The main channel of 30 Mile Creek within the Study Area is located west of 30 Road at municipal address 5536 King Street. This channel flows in northeastern direction originating south of the Grimsby Woodlot Wetland Complex and ultimately exiting into Lake Ontario. During our assessment, upstream and downstream conditions of the watercourse within the Study Area were assessed. Upstream, the watercourse bisects 5515 King Street and 5536 King Street downstream. At the time of our assessment, the water level was low and the rocky substrate could be seen downstream. The watercourse was surrounded by thick vegetation and woodland. Trees within the area are associated with a deciduous woodland primarily consisting of maple species.

No fish species or species at risk were observed during our assessment. Based on our assessment, conditions surrounding watercourse 1 do not provide suitable habitat for fish species. It is our understanding that fish may be using this watercourse in other areas but not within the Study Area due to current conditions. Any alteration or adjustment to this watercourse as a result of the road reconstruction is not likely to impact potential fish habitat further downstream or upstream.

Watercourse 2: Tributary to 30 Mile Creek

Watercourse 2 functions as a tributary to 30 Mile Creek and bisects the Study Area east of 30 Road and crosses Regional Road 81 (King Street) at 5480 King Street. The tributary convenes with the main channel of 30 Mile Creek approximately 124 metres north of Regional Road 81 (King Street) and continues southwest towards Grimsby Woodlot Wetland Complex and further south into additional tributaries.

The location of our assessment for this watercourse feature was downstream at 5480 King Street and upstream at 5477 King Street. Conditions surrounding the watercourse were similar to that of watercourse 1, however several Weeping Willows were adjacent to the watercourse. An abundance of leaf litter, fallen branches and man-made debris was observed close to the downstream culvert. Similar to Watercourse 1, Watercourse 2 does not provide sensitive habitat.

Watercourse 3: Main Channel of Lake Ontario Tributary 24

Watercourse 3 is a tributary associated with a main channel of Lake Ontario and crosses the Study Area at 5407 King Street. The tributary flows from the south through the Beamsville Escarpment West Wetland Complex north towards Lake Ontario. Our assessment of this watercourse was conducted west of the establishment located at 5407 King Street and on the south side of Regional Road 81 (King Street) east of 5418 King Street.

A cement culvert surrounded by confined rip rap can be seen on the north side of the road. Water was observed in a space between the road and culvert (approximately 1 metre in length) of. The watercourse continues underground through roughly 5m of manicured lawn and exits through a smaller secondary culvert where it continues flowing uncovered northward. At the time of our assessment water flow in Watercourse 3 was not observed and the channel was highly vegetated.

Watercourse 4: Tributary to Konkle Creek

Watercourse 4 functions as a tributary to Konkle Creek that is located east of Lincoln Avenue just outside of the Study Area boundary. Konkle Creek flows in a northerly direction towards Lake Ontario, has been readjusted multiple times to facilitate flow towards the lake and possesses a number of tributaries. The tributary that is located within the Study Area crosses Regional Road 81 (King Street) at three different locations. The most western crossing is located at 5359 King Street, followed by 5366 King Street and then 5310 King Street moving eastward. The tributary meets Konkle Creek at Greenlane roughly 1.29 km north of Regional Road 81 (King Street) and again further north at the Queen Elizabeth Way (QEW) 2.25 km from the Study Area.

Our assessment was conducted at the addresses mentioned above. The watercourse at 5359 King Street was located roughly 40 metres east of the driveway on the north side of Regional Road 81 (King Street). The watercourse in this area exits a small culvert and is approximately 2 metres at its widest. During our assessment, no water was observed and rocky substrate and thick vegetation lining the banks was noted.

A drainage ditch originating on the south side of Regional Road 81 (King Street) across from 5359 King Street enters watercourse 2 at 5366 King Street. This drainage ditch parallels the road and receives runoff from Regional Road 81 (King Street). This portion of the watercourse had very little water flow and appeared that the watercourse was being choked out by the overgrown vegetation.

The most eastern crossing assessment location was directly west of the driveway of 5310 Regional Road 81 (King Street). Water flows northward through a small round steel culvert and exits into a narrow rocky channel surrounded by trees. The water level of this portion of the tributary was very low and difficult to see through the abundance of leaves and other vegetation

Based on observations made in the field, water levels within the features range from dry to moderately shallow and historical air photographs for the Study Area indicate that the water

levels within each watercourse fluctuate between seasons. Several watercourses receive water runoff from Regional Road 81 (King Street) via drainage ditches paralleling the road. The watercourses were heavily vegetated, and in some areas, the thick vegetation appeared to be impeding water flow.

Based on these observations, it is our conclusion that the watercourse features within the Study Area are not considered sensitive habitat or suitable for aquatic dependent wildlife due to fluctuating water levels and thick vegetation. Adequate fish habitat was not observed within any of the watercourse features within the Study Area. Any fish habitat associated with the watercourses is likely intermittent and found in areas of the watercourses that provide more suitable conditions. It is our conclusion that any servicing or redirection of water required as part of the reconstruction work will not impact the function of any of the 4 watercourse features.

4.6 Woodlands

A tree inventory was conducted by the Niagara Region Forestry department that focused on assessing tree health and identifying trees within the road allowance. As this inventory only looked at trees, a more thorough vegetation assessment was conducted simultaneously with the watercourse assessments to determine if species at risk or species at risk habitat were present within the Study Area. Colville Consulting Inc. completed this assessment on November 7, 2016 in conjunction with the watercourse assessment.

Based on available mapping for the area, a single large contiguous woodland is located on and adjacent to the Study Area. As part of our assessments we screened for tree species at risk however, none of these species were observed within or adjacent to the Study Area. Through the Study area there is one large continuous woodland that encroached into the Study area at multiple locations. For clarity in this report these locations have been given the identifiers Location 1, 2 and 3.

In addition to the 3 locations mentioned above, intermittent trees parallel Regional Road 81 (King Street) on both sides within the Study Area. These trees are not considered to be providing significant habitat for species in the Niagara Region.

Location 1

The woodland at Location 1 crosses the Study Area twice, one point located west of 30 Road at 5536 King Street and the second location east of 30 Road at 5480 King Street. The entire woodland is situated south of Regional Road 81 (King Street). A small portion of this woodland encroaches into the Study Area but the majority of the woodland continues southward and westward. This woodland surrounds the southern reaches of Watercourses 1 and 2 within the Study Area.

Vegetation at 5536 King Street in Location 1 varied in age and condition. There was an abundance of understory bushes and shrubs as well as multiple Sugar and Manitoba Maple trees. Facing north, vegetation was similar to that of southward conditions with the addition of small coniferous shrubs in the understory and manicured lawn associated with the residential unit to the east. Based on our assessment, several trees with large canopies are within three metres of the

current road. It is our understanding that these trees may be removed or adjusted to facilitate the road reconstruction.

Location 2

The portion of woodland at Location 2 is situated at 5480 King Street on the south side of Regional Road 81 (King Street) and 5407 King Street on the north side. This portion of the woodland is continuous with Watercourse 3 and parallels the watercourse on either side. The northern side of the woodland is less dense and trees are not within 8 m of the current road. Aquatic vegetation and grasses were observed within the watercourse. A steep bank with an abundance of leaf litter, fallen branches and mature maple trees is located on the southern portion of the woodland. This portion of the woodland is primarily deciduous species consisting of mostly maple species.

Based on our assessments, the road construction is likely to impact only the southern portion of this section of the woodland. As mentioned previously, the trees on the north side of Regional Road 81 (King Street) are at a far enough distance that the road reconstruction will likely not impact them directly.

Location 3

The final treed area that encroaches into the Study Areas has been identified as Location 3, and is on the south side of Regional road 81 (King Street) at 5418 King Street. The trees parallel the road for approximately 145 metres and continues southward around residential dwellings for roughly 250 metres. This portion of the woodland has been fragmented from the large contiguous woodland by Mountainview Road and consists of similar vegetation communities mentioned above.

There are trees within 5m of the current road that will likely be removed or adjusted but we do not expect this to impact the remainder of the treed area.

Based on the assessment provided and our site investigations, multiple trees will need to be removed to facilitate the road reconstruction. Information provided in the tree inventory indicates that several trees can be retained if properly trimmed. By elevating the crowns of these trees, road function will not be impeded and impacts to the trees will be greatly reduced. To eliminate safety hazards, dead and dying trees within the Study Area should be removed. Additionally, based on our assessments, wildlife utilizing trees within the Study Area are common to the Niagara Region. It is expected that these species will continue to use the trees that remain within the Study Area post-construction and their required habitat will not be impacted by this project.

During our assessments it was determined that trees within the Study Area were not considered part of any sensitive habitat. It is anticipated that healthy trees removed will be either individuals or trees part of a small cluster and therefore not expected to impact ecological function of remaining trees within the Study Area.

5.0 POTENTIAL ECOLOGICAL IMPACTS

5.1 Direct Impacts

Based on our understanding of the proposed project, it is anticipated that potential direct impacts associated with the reconstruction of this portion Regional Road 81 (King Street) will be limited to the removal of vegetation. For the purpose of this assessment, it is assumed that the majority of vegetation within the road allowance will be removed or impacted to facilitate the reconstruction of the road and relocation of services; however it is likely that some trees on the peripheries of the road allowance can be retained.

The anticipated removal of vegetation has the potential to impact habitats of wildlife species using this portion of the Study Area. From our assessment, lands within and adjacent to the Study Area appear to be providing habitat for a number of wildlife species that are common within urban areas in this portion of the Niagara Region. Since the removal or alteration of vegetation in this area is anticipated to be relatively minor and the wildlife species in the area are adapted to the current lands uses in the study area, it is not anticipated that re-construction of Regional Road 81 (King Street) will impact wildlife species in the area.

As discussed previously, multiple watercourse features have been identified within the Study Area associated with Thirty Mile Creek, Lake Ontario and Konkle Creek. Road reconstruction will require new culverts to be installed to facilitate the change in width to Regional Road 81 (King Street). It is understood that the widening of the road will require a readjustment to existing culverts that may involve alteration to the watercourses. This will require vegetation removal and potential disturbance to the watercourse banks and substrate. This has the potential to alter the drainage patterns and overall hydrology of the watercourse in addition to impacting habitat of wildlife species. As indicated above, wildlife species will adapt to the vegetation loss and therefore it is our conclusion that the installation of new or additional culverts will not impact these species. In terms of altered drainage and overall hydrology, it is our assessment that if the mitigation measures mentioned below are followed, impacts related to construction will be negligible.

5.2 Indirect Impacts

Indirect impacts associated with road construction works can include stressors such as increases in light and noise. Since this project involves the reconstruction of an existing roadway within and urbanized area, and the wildlife species documented in the Study Area are adapted to urban land uses, it is not anticipated that any increase in noise and ambient light will impact species utilizing vegetation communities within the Study Area.

6.0 MITIGATION MEASURES

As discussed above, it is our expectation that any impacts associated with the reconstruction of Regional Road 81 (King Street) will be limited to minor watercourse adjustments and the removal of trees adjacent to the current road. To assist with limiting potential impacts associated with the

proposed works, it is recommended that the following mitigation measure be implemented during planning, design and reconstruction of Regional Road 81 (King Street).

- A sediment and erosion control plan should be established and implemented prior to any site alteration to prevent off-site movement of soil material during excavation and grading.
- Any stockpiled materials should be stored and stabilized in an area that will not impact trees outside of the work area.
- Vehicle and equipment re-fuelling and maintenance should be conducted in a manner to prevent petroleum based fluids from entering a watercourse.
- Any trees to remain adjacent to the reconstructed road should be clearly marked and protected by limit of work fence to minimize the potential for incident harm during construction.
- Any required vegetation removal should be conducted in a manner to avoid impacts to nesting birds that may be utilizing habitats within the Study Area. The breeding bird period for this area is generally March 15 to August 31. A survey for active bird nests should be conducted prior to any vegetation removal or site alteration planned to occur during this window.
- Where possible, retain trees adjacent to the road and elevate crowns in order to enable normal road operations.
- Any required tree removal be completed by a qualified arborist or tree management contractor to ensure trees to be retained will not be injured or impacted.
- Any tree roots encountered during excavation works should be cut flush with a sharp tool to encourage new root growth.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Colville Consulting Inc. was retained to complete a watercourse and natural heritage assessment to determine the extent of any sensitive habitat areas and potential design constraints. From our assessment, it is concluded lands, within and adjacent to the Study Area, are providing habitat for a variety of bird and wildlife species which are common in the Town of Lincoln. Although it is anticipated that some tree removal is required to facilitate the construction of the roadway and relocation of services, it is not anticipated that a minor reduction in the number of trees will impact the overall function of the woodlands in this area. Additionally, any alteration to watercourses within the Study Area is not anticipated to impact the overall function of each watercourse or the habitat surrounding the watercourses. To assist in minimizing potential impacts associated with this project, it is recommended that above noted mitigation measures be implemented during planning, design and construction of the required works.

Respectfully submitted by:



Ian Barrett, M.Sc.

Colville Consulting Inc.

8.0 LITERATURE CITED

Cadman, M. D., D. A. Sutherland, G. G. Beck, D. LePage and A. R. Couturier (eds.). 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.

Town of Lincoln. 2014. Town of Lincoln Official Plan. Town of Lincoln. 164pp.

Lee, H.T., W.D. Bakowsky, J.L. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Community Classification for Southern Ontario: First Approximation and Its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

Niagara Peninsula Conservation Authority. 2010. Niagara Natural Areas Inventory: Volume 2. 428pp.

Ontario Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Toronto, ON: Queen's Printer for Ontario. 384 pp.

Regional Municipality of Niagara. 2013. Core Natural Heritage Map.

Appendix A

Niagara Region Forestry Staff Tree Inventory

[illegible]

South Side of Road									
5570	King	west to round a bout	Norway maple	3	50cm	50'	healthy		elevate over road shoulder
5572	King	east of address	small natural area - med size trees & understory including Manitoba and Norway maple, locust	Multiple	10-35cm	4' to 30'	healthy		remove 1 marked maple for clearance over shoulder
5446	King	40m west of d/w	Norway maple	1	55cm	45ft	healthy		elevate crown over shoulder
5446	King	30m east of d/w	Norway maple	1	30cm	25ft	healthy		elevate crown over shoulder
5442	King -	15m east of d/w	small natural area - med size trees & understory including Norway maples, lilacs	Multiple	20cm	15-30ft	healthy		elevate crown over shoulder
5424	King	east of d/w	Norway maple	1	55cm	55ft	Poor	Extensive crown decline and vertical crack along main stem	removal - marked with an "x"

5418	King	east of d/w	Norway maple	1	60cm	55ft	Poor	Extensive decay evident, fruiting bodies at the base of tree	vertical depression along main stem - removal - marked with an "x"
5418	King St	east to Mountainview Rd	Various trees including understorey, maples, walnut Sumac	Multiple	10-30cm	15-40ft	Moderate		Remove 1 maple marked with an "x", elevate canopies over road shoulder
5366	King St	west to Mountainview Rd	Mixed deciduous stand - med to large trees, majority Norway maples, Sumac and understory shrubs	Multiple	10-50cm	15-40ft	healthy		Remove small trees and elevate larger trees for clearance over road shoulder
5328	King St	west of d/w	Norway maple	1	50cm	40'	Moderate	minor crown decline and hydro pruned	elevate over road shoulder
5328 to 5300	King	from 5328 east to 5300	Mixed deciduous stand med to large and understory shrubs	Multiple	10-50cm	10-45ft	healthy	1 dead ash	Remove small trees and elevate larger trees for clearance over road shoulder - remove ash just west of d/w at 5300.
5246 to 5220	King	from 5246 to 5220	Norway maple	2	35-40	30'	healthy		elevate over road shoulder

Appendix B

Site Photographs



Photo 1: Example of conditions surrounding the main channel of Thirty Mile Creek facing downstream.



Photo 2: Example of conditions surrounding the main channel of Thirty Mile Creek facing downstream.



Photo 3: Example of conditions surrounding the main channel of Thirty Mile Creek facing upstream.



Photo 4: Example of conditions surrounding the main channel of Lake Ontario tributary 24 facing downstream.



Photo 5: Example of conditions surrounding the main channel of Lake Ontario tributary 24 facing downstream.



Photo 6: Example of conditions surrounding the main channel of Lake Ontario tributary 24 facing upstream.



Photo 7: Example of conditions surrounding the tributary to Thirty Mile Creek facing downstream.



Photo 8: Example of conditions surrounding the tributary to Thirty Mile Creek facing upstream.



Photo 9: Example of conditions surrounding the tributary to Thirty Mile Creek facing upstream.



Photo 10: Example of conditions surrounding tributary to Konkle Creek facing downstream of 5310 King Street



Photo 11: Example of conditions surrounding tributary to Konkle Creek west of 5359 King Street.



Photo 12: Example of conditions surrounding tributary to Konkle Creek east of 5366 King Street.



Photo 13: Example of conditions surrounding tributary to Konkle Creek west of 5366 King Street.