

Appendix C Terrestrial Existing Conditions Report





**Terrestrial Ecosystems Existing
Conditions Report - Highway
401 Expansion from Cobourg
to Colborne**

Final Report
Preliminary Design and Class
Environmental Assessment
Agreement 4015-E-0033
Assignment 5

October 31, 2018

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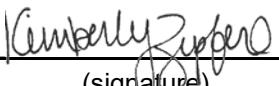
Sign-off Sheet

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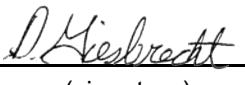
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Introduction
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1.0 INTRODUCTION

The Ontario Ministry of Transportation (MTO) retained Stantec Consulting Ltd. to undertake a Planning, Preliminary Design, and Class Environmental Assessment (Class EA) Study on Highway 401 for the replacement and rehabilitation of structures, interchange modifications, future widening of the highway, and commuter parking lot expansions, from 2 km east of Nagle Road to Percy Street (approximately 18 km). The purpose of the study is to identify a Recommended Plan that addresses current and future transportation needs in the study area as part of the Ministry's ongoing review of safety and operational needs for the provincial highway network. This study includes a review of existing conditions, development and evaluation of alternatives, identification of appropriate improvements, and development of environmental protection / mitigation measures. A Recommended Plan will be confirmed and designated (protected) at the completion of the study. An additional study is being undertaken for a new interchange near Nagle Road (GWP 4059-17-00). The Nagle Road interchange area is also covered in this report.

This Terrestrial Ecosystems Existing Conditions Report provides supporting documentation for the project, including a characterization of the terrestrial environment and terrestrial species for lands within 120 m of the highway right-of-way and within 400 m around interchanges (the Study Area). The report was completed in accordance with Section 3.2 - Terrestrial Ecosystems and Section 4 – Wildlife and Wildlife Management contained within the *Environmental Reference for Highway Design* (MTO 2013). With the exception of **Figure 1**, all figures referenced in this report are provided in **Appendix A**.

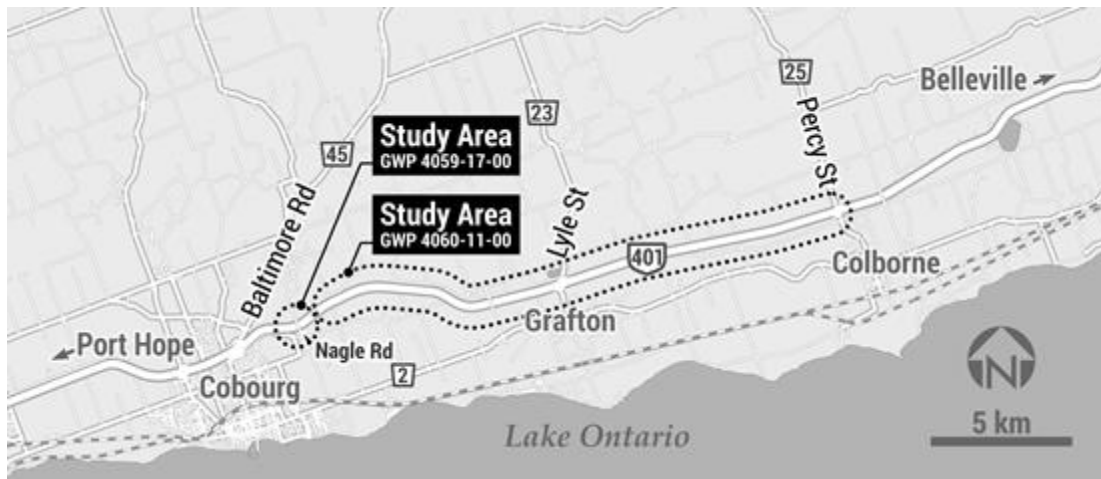


Figure 1: Highway 401 Planning Study from Cobourg to Colborne – Study Area



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2.0 METHODS

2.1 BACKGROUND DATA AND AGENCY CONSULTATION

The Study Area is located within the Peterborough District of the Ministry of Natural Resources and Forestry (MNRF) in Northumberland County. Consultation with MNRF is required to obtain available data for terrestrial ecosystems within the Study Area that is not available in public databases. Consultation has not occurred at this time but is necessary to confirm available public data and determine future requirements for significant features and Species at Risk (SAR). Aquatic resources are documented in *Fish and Fish Habitat Existing Conditions Report* (Stantec 2018). Background information was obtained from the following resources:

- MNRF's Natural Heritage Information Centre (NHIC) online database (MNRF 2018a)
- Land Information Ontario Natural Heritage Area Mapping tool (MNRF 2018b)
- Species at Risk Act (SARA), Schedule 1 (Government of Canada 2018)
- Species at Risk in Ontario (SARO) List (MNRF 2018c)
- The 2nd Ontario Breeding Bird Atlas (OBBA; Cadman et al. 2007)
- Atlas of Mammals of Ontario (AMO; Dobbyn 1994)
- Ontario Reptile and Amphibian Atlas (ORAA; Ontario Nature 2018)

2.2 FIELD DATA COLLECTION

Stantec conducted field investigations within the Study Area from August 12 – 16, 2017. Data was collected according to the *Environmental Reference for Highway Design* (MTO 2013). Field investigations focused on identifying and describing vegetation communities, wildlife habitat, flora and fauna species, and areas of potential Significant Wildlife Habitat. Investigations of adjacent private lands were conducted from the edge of the Highway 401 right-of-way (ROW). Investigations in the area extending 800 m east of Percy Road were restricted to desktop assessments.

2.2.1 Vegetation Communities and Floristic Survey

Detailed vegetation community mapping and botanical inventories were conducted using the Ecological Land Classification (ELC) system for southern Ontario (Lee et al. 1998). Vegetation communities were delineated on aerial photographs and then verified in the field. Investigations were conducted from within the highway ROW and publicly accessible lands.



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Scientific nomenclature and English names of plant species generally followed Newmaster *et al.* (2005), with updates taken from published volumes of the Flora of North America Editorial Committee (2000+) and Michigan Flora Online (Reznicek *et al.* 2015).

2.2.2 Wildlife and Wildlife Habitat

2.2.2.1 Nesting Bird Surveys

Bridges and other structures located in the Study Area were searched for signs of nesting by migratory birds, as defined by the *Migratory Bird Convention Act, 1994* (MBCA).

2.2.2.2 Significant Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (MNRF 2000) divides Significant Wildlife Habitat (SWH) in four categories:

1. Seasonal concentrations of wildlife
2. Rare vegetation communities or specialized habitat for wildlife
3. Habitat for species of conservation concern
4. Wildlife movement corridors

Field assessments for wildlife habitat focused on identifying candidate SWH following guidance provided in the Significant Wildlife Habitat Technical Guide and Ecoregion Criterion 6E Schedule (MNRF 2015). Investigations focused on features that may be associated with roads and road structures or nearby lands: including bat maternity colonies, snake hibernaculum, and turtle nesting and wintering areas. We documented all candidate SWH.

2.2.3 Significant Species

Significant species are considered at a number of levels, including globally, nationally and provincially. In Ontario, significant species include species that are provincially rare (with a Provincial S-rank of S1 to S3) or listed as Endangered, Threatened or Special Concern on the SARO list and/or Schedule 1 of the federal *Species at Risk Act, 2002*.

The Ontario *Endangered Species Act, 2007* (ESA) prohibits harm or harassment to Threatened or Endangered species, and damage or disturbance to their habitat. The ESA applies on all private and Crown owned lands in Ontario. Habitat protection under the ESA typically includes all habitats that directly or indirectly support SAR.

Federally protected Endangered, Threatened and Special Concern species are listed in Schedule 1 of SARA and apply only to federally owned lands. Fish species are protected under the *Fisheries Act, 1985* and migratory bird species are protected under the MBCA, both of which are afforded protection on all lands.



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Provincial ranks (S-ranks) are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number of occurrences in Ontario and are not legal designations. By comparing the global and provincial ranks, the status, rarity and the urgency of conservation needs can be determined. Species with provincial ranks of S1 to S3, and those tracked by the MNRF, are considered species of conservation concern. Provincial S-ranks are defined as follows:

- S1: Critically imperiled; usually fewer than 5 occurrences
- S2: Imperiled; usually fewer than 20 occurrences
- S3: Vulnerable; usually fewer than 100 occurrences
- S4: Apparently secure; uncommon but not rare, usually more than 100 occurrences
- S5: Secure, common, widespread and abundant

S-rank followed by a “?” indicates the rank is uncertain

We assessed the probability that a Significant Species would be present within the Study Area by comparing preferred habitat types to existing conditions as documented in the background review and field investigations. Significant Species with preferred habitat in the Study Area were considered likely to be present. Significant Species with no preferred habitat in the Study Area were assumed to be absent.

Identification of potentially sensitive plant species was based on the coefficient of conservatism value (C) assigned to each native species in southern Ontario (Oldham et al. 2001). The value of CC, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to natural habitats. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters and undisturbed environments.



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3.0 EXISTING ECOLOGICAL CONDITIONS

3.1 BACKGROUND DATA

3.1.1 Physiography and vegetation

The Study Area is located within the Lake Simcoe-Rideau Ecoregion (6E), specifically Ecodistrict 6E-13 (Oshawa-Cobourg), which is made up of the Iroquois Sand Plain. Approximately 27% of the ecodistrict consists of natural forest cover (deciduous, coniferous and mixed forests). Nearly 25% of the remaining natural cover is wetland, primarily swamp (Henson and Brodribb 2005).

The vegetation in this region is relatively diverse. Characteristic hardwood forest species dominated by sugar maple, American beech, white ash, eastern hemlock, and numerous other species (Crins et al. 2009).

3.1.2 Significant Natural Areas

There was one provincially significant natural area located within Study Area within 1km of the Study Area, the Cranberry Lake Provincially Significant Wetland (PSW). This feature is mapped on **Figure 7, Appendix A**.

3.1.3 Species at Risk and Provincially Rare Species

There were records of 19 SAR, Species of Special Concern, and Provincially Rare (S1-S3) Species with ranges that overlap with the Study Area (**Table 3.1**). There were four recent (1998+) records of SAR in the NHIC database (MNRF 2018a) within 1 km of the Study Area. Consultation with MNRF will be required to confirm which SAR have potential to be present in the Study Area.

Table 3.1: Atlas Review, Species of Conservation Concern

Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (COSEWIC)	Source
REPTILES					
Snapping Turtle	<i>Chelydra serpentina</i>	S3	SC	SC	ORAA
Blanding's Turtle	<i>Emydoidea blandingi</i>	S3	THR	THR	ORAA
Northern Map Turtle	<i>Graptemys geographica</i>	S3	SC	SC	NHIC
BIRDS					
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	S4B	THR	THR	OBBA
Chimney Swift	<i>Chaetura pelagica</i>	S4B, S4N	THR	THR	OBBA
Least Bittern	<i>Ixobrychus exilis</i>	S4B	THR	THR	OBBA
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S4B	SC	THR	OBBA



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Table 3.1: Atlas Review, Species of Conservation Concern

Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (COSEWIC)	Source
Eastern Wood-Pewee	<i>Contopus virens</i>	S4B	SC	SC	OBBA
Bank Swallow	<i>Riparia riparia</i>	S4B	THR	THR	OBBA
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	SC	THR	OBBA
Barn Swallow	<i>Hirundo rustica</i>	S4B	THR	THR	OBBA
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4B	SC	SC	OBBA
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	THR	THR	NHIC
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	THR	THR	NHIC
Canada Warbler	<i>Cardellina canadensis</i>	S4B	SC	THR	OBBA
Louisiana Waterthrush	<i>Parkesia motacilla</i>	S3B	THR	SC	NHIC
MAMMALS					
Little Brown Myotis	<i>Myotis lucifugus</i>	S4	END	END	AMO
Small-footed Myotis	<i>Myotis leibii</i>	S2, S3	END	-	AMO
Northern Myotis	<i>Myotis septentrionalis</i>	S3?	END	END	AMO
Tri-coloured Bat	<i>Perimyotis subflavus</i>	S3?	END	END	AMO

The reptile, bird, mammal and amphibian range maps do not contain precise locations or information on concentrations / densities of records (e.g. the Ontario Breeding Bird Atlas records are provided in 10 km by 10 km square grids). The NHIC database provides more precise mapping (1 km by 1km squares) and is a better indicator of occurrence of significant species, particularly when used in combination with MNRF correspondence. Results of Stantec's search of available wildlife atlases are provided in **Appendix B**.

3.2 FIELD INVESTIGATIONS

Results of field investigations of vegetation communities, flora, wildlife and wildlife habitat are presented below.

3.2.1 Vegetation Communities

Sixteen vegetation communities were observed within the Study Area. The locations of these vegetation communities are shown in **Figures 2-13, Appendix A**. Vegetation communities identified are discussed below. ELC data sheets were completed for every vegetation unit identified and are included in **Appendix C**. There were no vegetation communities of conservation concern or provincially rare vegetation communities



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within the Study Area. Because field investigations were restricted to the ROW and the area east of Percy Street was assessed by desktop, additional field investigations during detailed design may be warranted.

MEADOWS (ME):

- **Linear Meadow (MEMM3 & MEMM4)** communities dominated the highway ROW and often extended past the ROW fencing into adjacent natural features (e.g. regeneration thickets). Trees and shrubs were occasional, but sparse in the meadow ROW. European swallowwort (dog-strangling vine) was occasional to abundant throughout the ROW, often to the exclusion of other species. Various other common old field grasses, asters, goldenrods and weeds such as knapweed and sow-thistle dominated the meadow areas. Many steep dry slopes were present in the ROW (MEMM3), as well as lower meadows (MEMM4).

REGENERATION THICKETS (TH):

Regeneration thickets were common features in the Study Area and typically included areas of young regenerating tree species. Meadow was frequently mixed in with regenerating trees.

- **Coniferous Regeneration area (THC)** were typically dominated by Scots pine, eastern white cedar, eastern white pine and to a lesser extent eastern red cedar.
- **Mixed Regeneration area (THM)** were dominated by a mixture of eastern white cedar, ash and trembling aspen.
- **Deciduous Regeneration area (THD)** were mainly dominated by ash in the Study Area. Aspens and other poplars are also present in regen areas.

FOREST COMMUNITIES (FO):

- **Coniferous Forests (FOC)** – were typically dominated by eastern white cedar in the Study Area with associates such as eastern white pine, Scots pine, trembling aspen and ash. Coniferous forests dominated by eastern white pine and eastern hemlock were uncommon.
- **Mixed Forests (FOM)** – were similar to FOC forests in the prevalence of eastern white cedar. However, there was more a greater variety and abundance of hardwood species such as paper birch, sugar maple, trembling aspen, ash and basswood.
- **Deciduous Forest (FOD)** – upland forests in Study Area were dominated by sugar maple with associates of white ash, basswood, American beech, ironwood and red oak. Lowland deciduous forests in Study Area were dominated by red ash with associates of trembling aspen, basswood and paper birch.



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PLANTATION COMMUNITIES (TAG):

- **Coniferous Plantations (TAGM1)** were dominated by eastern white pine, red pine, Scots pine or white spruce in the Study Area
- **Mixed Plantations (TAGM2)** were rare in the Study Area. Scots pine, black locust and white spruce were present in the identified plantation.
- **Deciduous Plantations (TAGM3)** were rare in the Study Area. The one example of this plantation was dominated by eastern cottonwood or a hybrid of eastern cottonwood.

SWAMP COMMUNITIES (SW):

- **Thicket Swamps (SWT)** were rare in the Study Area. There was only one example of this community present.
- **Coniferous Swamps (SWC)** were dominated by eastern white cedar in the Study Area.
- **Mixed Swamps (SWM)** were similar to coniferous swamps in their prevalence of eastern white cedar. In mixed swamps, hardwoods such as paper birch and trembling aspen were more abundant.
- **Deciduous Swamps (SWD)** were rare in the Study Area. The lone example was somewhat disturbed and dominated by red ash, exotic willows, Manitoba maple, and to a lesser extent, eastern white cedar.

MARSH COMMUNITIES (MA):

- **Marshes (MA)** in the Study Area were mainly small and restricted to low areas in the ROW. Marshes were dominated by cattails and/or common reed (*Phragmites*) and in fewer cases by sedges. One exception was a large natural cattail marsh east of Shelter Valley Road on the north side of the highway. Another atypical marsh in the Study Area is a small seepage area on the south side of the highway at the bottom of a steep slope. This community is immediately west of Shelter Valley Road. Various sedges, rushes, shrub willows, cattail and spotted Joe Pye weed are dominant.

Common Reed, also known as Invasive *Phragmites* (*Phragmites australis australis*) was abundant within marsh communities along the ROW. Mapping specific locations and extent of phragmites occurrences was beyond the scope of this study. If phragmites control is being considered for this area, then detailed mapping of occurrences is recommended during detailed design.

3.2.2 Flora

A total of 212 species of vascular plants were recorded in the Study Area. This total includes taxa identified to species, subspecies (ssp.) and variation (var.) levels. One hundred and thirty-six of the recorded species are native to Ontario; 76 are exotic species not native to Ontario. One hundred and twenty-three native species had a provincial rank of S5, indicating they are common with a secure population in Ontario. Twelve native species have a provincial rank of S4, indicating they are uncommon, but not rare in the province and populations are apparently secure. One native species (grey-headed coneflower) is provincially rare with a



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rank of S3. It is rare in the Study Area, found only at the Danforth Road East overpass on the south side of the highway.

Three highly sensitive native species with a high C value of 8 or 9 were observed; red pine, butterfly milkweed and grey-headed coneflower. Red pine likely does not occur naturally in the Study Area; the species was present due to planted specimens. Butterfly milkweed occurred sparsely throughout the Study Area on dry slopes in the ROW meadow. Grey-headed coneflower was found only at the Danforth Road East overpass on the south side of the highway.

No Butternut or other SAR flora were observed in the Study Area. A detailed list of all plant species recorded is provided in **Appendix D**.

3.2.3 Wildlife and Wildlife Habitat

Nineteen migratory birds, five mammals, two amphibians, one reptile, 16 butterflies and 15 dragonflies were incidentally recorded in the Study Area. Most species that were observed were common species, which were expected in their respective habitat types. One SAR, a Barn Swallow was observed. The observation was of a single Barn Swallow flying over the ROW. A list of wildlife species observed is provided in **Appendix D**.

The following sections discuss wildlife and wildlife habitat results under separate headers for migratory bird nests, mammals and significant wildlife habitat.

3.2.3.1 Migratory Bird Nests

Two Eastern Phoebe were found at the Shelter Valley Creek bridge within the Study Area. Documentation of nests is provided in **Appendix C** on the Bridge-nesting Bird Datasheets.

3.2.3.2 Significant Wildlife Habitat

Seasonal Concentration Areas

Seasonal concentration areas are those sites where large numbers of a species gather together at one time of the year, or where several species congregate. Examples include deer yards, snake and bat hibernacula, waterfowl staging and molting areas, raptor roosts, bird nesting colonies, shorebird staging areas, and passerine migration concentrations. Only the best examples of these concentration areas are usually designated as SWH. Areas that support a SAR, or areas where a large proportion of the population may be lost if the habitat is destroyed, are examples of seasonal concentration areas which should be designated as significant (MNRF 2000).

Turtle Wintering Areas was the only type of candidate habitat for seasonal concentration areas that was identified within the Study Area. Open aquatic features with permanent water may provide habitat for wintering individuals. Confirmation of Turtle wintering habitat within the ROW of Highway 401 would require targeted surveys, which were beyond the scope of this report.



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Rare or Specialized Habitat

Rare or specialized habitats are two separate components. Rare habitats are those with vegetation communities that are considered rare in the province. Specialized habitats are microhabitats that are critical to some wildlife species. The SWH Ecoregion 6E Criteria Schedule (MNRF 2015) identifies features that could be considered specialized habitats, such as habitat for area-sensitive species, forests providing a high diversity of habitats, amphibian woodland breeding ponds, turtle nesting habitat, highly diverse sites, seeps and springs. The following candidate habitats for rare or specialized habitat were identified within the Study Area:

Amphibian Breeding Habitat: Ponds, wetlands and other temporary pools throughout the Study Area may provide suitable habitat for breeding amphibians. Targeted breeding surveys were not conducted. The highest quality candidate breeding features are located at the periphery or outside of the highway ROW.

Turtle Nesting Habitat: Suitable turtle nesting areas were present on road shoulders throughout the length of the Study Area when near aquatic features. Such areas contained loose gravel and exposed sand. Although gravel roadsides are generally suitable for turtles nesting, they do not qualify as candidate SWH. The highest quality candidate turtle nesting features are anticipated to occur outside of the highway ROW.

Animal Movement Corridors: Migration corridors are areas that are traditionally used by wildlife to move from one habitat to another, often in response to different seasonal habitat requirements. The SWH Region 6E Criterion (MNRF 2015) speaks specifically to amphibian movement corridors. These corridors are only considered when wetland breeding amphibian habitat is identified for Eastern Newt (*Notophthalmus viridescens*), American Toad (*Anaxyrus americanus*), Spotted Salamander (*Ambystoma maculatum*), Four-toed Salamander (*Hemidactylium scutatum*), Blue-spotted Salamander (*Ambystoma laterale*), Gray Treefrog (*Hyla versicolor*), Western Chorus Frog (*Pseudacris triseriata*), Northern Leopard Frog (*Lithobates pipiens*), Pickerel Frog (*Lithobates palustris*), Green Frog (*Rana clamitans*), Mink Frog (*Lithobates septentrionalis*) or American Bullfrog (*Lithobates catesbeianus*). Documentation of amphibian movement corridors is beyond the scope of this study; however, given the proximity of suitable breeding wetlands to the road, and random dispersal patterns of amphibians, regular road mortality is expected.

Documentation of movement corridors for mammals and reptiles was beyond the scope of this study. However, consultation with MNRF is recommended during future phases of this project to identify opportunities to enhance wildlife connectivity and reduce risks associated with the highway.

Special Concern and Rare Species:

The potential presence of habitat for special concern or rare species is discussed in **Table 3.2**.



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Table 3.2: Habitat Potential for Special Concern or Rare Species in the Study Area

Species Name	Provincial Status (ESA)	Habitat Requirements	Habitat Potential in the Study Area	Habitat Potential in the ROW
REPTILES				
Snapping Turtle (<i>Chelydra serpentina</i>)	SC	Snapping Turtles inhabit ponds, sloughs, streams, rivers, and shallow bays with slow moving water, aquatic vegetation, and soft bottoms. Females show strong nest site fidelity and nest in sand or gravel banks at waterway edges in late May or early June (COSEWIC 2008).	Suitable aquatic features are present in the Study Area.	Suitable aquatic features are generally absent; however, wetlands that are in close proximity to the ROW and drainage features or low lying areas may support this species in the ROW.
Northern Map Turtle (<i>Graptemys geographica</i>)	SC	Map turtles are highly aquatic and inhabit slow moving, large rivers and lakes with soft bottoms and abundant aquatic vegetation. Basking sites include rocks and deadheads adjacent to deep water (COSEWIC 2002) Nesting occurs in soft sand or soil and at a distance from the water, hibernation is communal and occurs at the bottoms of lakes (MacCulloch 2002). Females leave the water in June to nest (MacCulloch 2002).	Suitable aquatic habitat was not recorded during field investigations but may be present in the Study Area in areas that were not surveyed.	Suitable aquatic habitat was not present.
BIRDS				
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	SC	The Red-headed Woodpecker occupies a wide range of habitats, but most are characterized by open areas for feeding; snags for roosting, and a secure food supply. This species requires multiple snags for nesting, roosting, and foraging. Some of the habitats used are open deciduous and riparian woodlands, orchards, parks, agricultural lands, savanna-like grasslands, beaver ponds with snags, forest edges, burned forests, and flooded bottomland forests (National Audubon Society 2012, Smith et al. 2000).	Suitable nesting habitat was not recorded during field investigations but may be present in the Study Area.	Breeding is not anticipated to occur in the ROW due to disturbance from Highway 401.



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Table 3.2: Habitat Potential for Special Concern or Rare Species in the Study Area

Species Name	Provincial Status (ESA)	Habitat Requirements	Habitat Potential in the Study Area	Habitat Potential in the ROW
Eastern Wood-Pewee (<i>Contopus virens</i>)	SC	The Eastern Wood-Pewee is a forest bird of deciduous and mixed woods. Nest-site selection favors open space near the nest, typically provided by clearings, roadways, water, and forest edges. Nests are cryptic as they are covered with lichens, typically appearing like a knot on top of a branch and little is known about nesting behavior (McLaren 2007).	Woodland features within the Study Area are anticipated to provide breeding habitat.	Suitable nesting habitat was not present.
Wood Thrush (<i>Hylocichla mustelina</i>)	SC	Wood Thrush prefer deciduous and mixed forests in southern Ontario, ranging from small and isolated to large and contiguous woodlots. The presence of tall trees and a thick understory are preferred (Friesen 2007).	Woodland features within the Study Area are anticipated to provide breeding habitat.	Suitable nesting habitat was not present.
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	SC	The Grasshopper Sparrow inhabits drier more open grasslands than most other sparrows. It prefers short, sparse grass with patches of exposed ground. The Grasshopper sparrow prefers to nest rough or unimproved pastures and in drier, sparsely vegetated grasslands at least 30 ha in size (Earley 2007).	Grassland features within the Study Area are anticipated to provide breeding habitat.	Suitable breeding habitat is not anticipated to occur in the ROW due to disturbance from Highway 401.
Canada Warbler (<i>Cardellina canadensis</i>)	SC	The Canada Warbler is usually found in moist mixed deciduous-coniferous forests with a well-developed understory. It may also occur in shrub marshes, red maple stands, coniferous riparian woodlands, ravines and steep brushy slopes, and regenerating forests. Although relatively abundant in Ontario, this species has been identified at risk due to a steady decline in the breeding population (COSEWIC 2008, COSSARO 2009).	Woodland features within the Study Area are anticipated to provide breeding habitat.	Suitable nesting habitat was not present.



TERRESTRIAL ECOSYSTEMS EXISTING CONDITIONS REPORT - HIGHWAY 401 EXPANSION FROM COBOURG TO COLBORNE

Existing Ecological Conditions
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3.2.4 Habitat for Threatened or Endangered Species

The potential presence of habitat for threatened or endangered species is discussed in **Table 3.3**.

Table 3.3: Habitat Potential for Threatened or Endangered Species

Species Name	Provincial Status (ESA)	Habitat Requirements	Habitat Potential in the Study Area	Habitat Potential in the ROW
REPTILES				
Blanding's Turtle (<i>Emydoidea blandingi</i>)	THR	Blanding's Turtles frequent lakes, ponds, and marshes, and prefer shallow water with abundant aquatic vegetation and a soft bottom (MacCulloch 2002). They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults usually occupy open or partially vegetated sites, whereas juveniles occupy areas with thick aquatic vegetation including sphagnum, water lilies and algae. Nesting occurs in dry conifer or mixed hardwood forests, up to 410 m from any body of water, in loose substrates including sand, organic soil, gravel and cobblestone. Nesting may also occur along gravel roadways (COSEWIC 2005).	Suitable wetland features with abundant aquatic vegetation are present; however, it is unknown if these features support the species.	Suitable wetland features with abundant aquatic vegetation are generally absent; however, they occur in proximity to the ROW. Consultation with MNRF or targeted investigations may be needed to determine presence or absence during detailed design.
BIRDS				
Eastern Whip-poor-will (<i>Antrostomus vociferous</i>)	THR	Whip-poor-will favour open woodlands with frequent clearings. Its preferred nesting sites contain shaded leaf litter or pine needles and generally occur along wooded edges or in clearings without any herbaceous growth (Cadman et al. 1987). The species is area-sensitive, preferring 100 hectares of suitable habitat for breeding. Reasons for the decline in population are currently unknown and speculative with habitat loss and degradation, automobile collisions and changes in food supply listed as the leading threats (COSEWIC 2009).	Open woodlands within the Study Area may provide breeding habitat for this species. Disturbance from Highway 401 may be a limiting factor.	Disturbance from the highway is anticipated to prevent use of the ROW by this species.



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Existing Ecological Conditions
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Table 3.3: Habitat Potential for Threatened or Endangered Species

Species Name	Provincial Status (ESA)	Habitat Requirements	Habitat Potential in the Study Area	Habitat Potential in the ROW
Chimney Swift (<i>Chaetura pelagica</i>)	THR	Chimney Swift use chimneys for roosting and breeding, as well as walls, rafters, or gables of buildings and, less frequently, natural structures such as hollow trees, tree cavities and cracks in cliffs (Cadman 2007). Possible threats to this species include a loss of habitat, reduction in food supply, changes in weather patterns, and pesticide use (COSEWIC 2007).	Suitable nesting structures are anticipated to provide breeding habitat.	No suitable nesting habitat was recorded during field investigations.
Least Bittern (<i>Ixobrychus exilis</i>)	THR	The Least Bittern is a relatively small bird that nests in freshwater marshes where dense aquatic vegetation occurs with woody vegetation and open water. They are found most commonly in marshes greater than 5 ha in size (Gibbs et al. 1992). Most Least Bitterns that breed in Canada are found in Ontario. The species is designated threatened due to its very small and declining population that depends on high quality marsh habitats that are being lost and degraded across the species' range (NHIC 2007).	Suitable marsh habitat was not recorded during field investigations but may be present in the Study Area.	Suitable marsh habitat was not recorded during field investigations.
Bank Swallow (<i>Riparia riparia</i>)	THR	The Bank Swallow excavate nests in exposed earth banks along watercourses and lakeshores, roadsides, stockpiles of soil, and the sides of sand and gravel pits. Single nests may occur, although colonies are typical and range from two to several thousand. Adjacent grasslands and watercourses are used for foraging habitat (Sandilands 2007).	Suitable open sandy bluffs were not recorded during field investigations but may be present in the Study Area.	Suitable nesting habitat was not recorded during field investigations.
Barn Swallow (<i>Hirundo rustica</i>)	THR	Barn Swallows nest on walls or ledges of barns as well as on other human-made structures such as bridges, culverts or other buildings (Lepage 2007). Barn Swallows feed on aerial insects while foraging in open habitat (Heagy et al. 2014). Barn Swallows are generally considered grassland species, foraging over meadows, hay, pasture or even mown lawn. They will also frequently forage in woodland clearings, over wetland habitats or open water where insect prey is abundant.	Suitable nesting structures are anticipated to provide breeding habitat.	There were no Barn Swallow nests documented but structures may provide suitable habitat.



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Existing Ecological Conditions
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Table 3.3: Habitat Potential for Threatened or Endangered Species

Species Name	Provincial Status (ESA)	Habitat Requirements	Habitat Potential in the Study Area	Habitat Potential in the ROW
Louisiana Waterthrush (<i>Parkesia motacilla</i>)	THR	In Ontario, this species prefers deciduous and mixed forests with a strong Eastern Hemlock component, in deeply incised ravines (McCracken 2007). It will also inhabit large flooded tracts of mature deciduous swamp forest. It shows a preference for nesting along pristine headwater streams and associated wetlands occurring in large expanses of mature forest and less frequently inhabits wooded swamps (COSEWIC 2006).	Deep forest ravines are present; however, breeding densities are anticipated to be low in the Study Area.	Suitable nesting habitat was not recorded during field investigations.
Bobolink (<i>Dolichonyx oryzivorus</i>)	THR	The Bobolink is generally referred to as a "grassland species". It nests primarily in forage crops with a mixture of grasses and broad-leaved forbs, predominantly hayfields and pastures. Preferred ground cover species include grasses such as Timothy and Kentucky bluegrass and forbs such as clover and dandelion (COSEWIC 2010). Bobolink is an area-sensitive species, with reported lower reproductive success in small habitat fragments (Kuehl and Clark 2002, Winter et al. 2004).	Grassland features within the Study Area are anticipated to provide breeding habitat.	Breeding is not anticipated to occur in the ROW due to disturbance from Highway 401.
Eastern Meadowlark (<i>Sturnella magna</i>)	THR	Meadowlarks are ground nesting birds (Harrison 1975), which are often associated with human-modified habitats where they sing from prominent perches such as roadside wires, trees, and fenceposts. As a grassland species, they typically occur in meadows, hayfields and pastures. However, it will utilize a wider range of habitat than most grassland species, including mown lawn (e.g. golf course, parks), wooded city ravines, young conifer plantations and orchards (Peck and James 1983, Leckie 2007).	Grassland features within the Study Area are anticipated to provide breeding habitat.	Breeding is not anticipated to occur in the ROW due to disturbance from Highway 401.



TERRESTRIAL ECOSYSTEMS EXISTING CONDITIONS REPORT - HIGHWAY 401 EXPANSION FROM COBOURG TO COLBORNE

Existing Ecological Conditions
October 31, 2018

Table 3.3: Habitat Potential for Threatened or Endangered Species

Species Name	Provincial Status (ESA)	Habitat Requirements	Habitat Potential in the Study Area	Habitat Potential in the ROW
Little Brown Myotis (<i>Myotis lucifugus</i>)	END	This species up until recently was considered the most common bat species in Ontario, and most frequently found bat species in North America. The recent change in status is due to significant declines in recent years attributed to a condition referred to as White-nose Syndrome (WNS). The Little Brown Myotis is commonly found near waterbodies in buildings, attics, roof crevices and loose bark on trees or under bridges (COSEWIC 2012).	Structures or mature trees with associated cavities or peeling bark are anticipated to provide maternity roost habitat.	Mature trees with associated cavities or peeling bark occur irregularly at the periphery of the ROW.
Small-footed Myotis (<i>Myotis leibii</i>)	END	The Small-footed Myotis inhabits rocky features including crevices or outcroppings, and hibernates in caves and mines (Reid 2006).	Suitable rocky features may be present in the Study Area.	Suitable rocky features were not recorded during field investigations.
Northern Myotis (<i>Myotis septentrionalis</i>)	END	The Northern Myotis is a resident bat of upland forests of eastern North America, typically foraging for aerial insects in the forest understory. Maternity roosts are typically located under the bark of large trees and are rarely found in human-made structures. Hibernating colonies typically reside in cave crevices (COSEWIC, 2013). The precipitous population decline of this species in recent years is attributed to WNS.	Structures or mature trees with associated cavities or peeling bark are anticipated to provide maternity roost habitat.	Mature trees with associated cavities or peeling bark occur irregularly at the periphery of the ROW.



TERRESTRIAL ECOSYSTEMS EXISTING CONDITIONS REPORT - HIGHWAY 401 EXPANSION FROM COBOURG TO COLBORNE

Existing Ecological Conditions
October 31, 2018

Table 3.3: Habitat Potential for Threatened or Endangered Species

Species Name	Provincial Status (ESA)	Habitat Requirements	Habitat Potential in the Study Area	Habitat Potential in the ROW
Tri-Coloured Bat (<i>Perimyotis subflavus</i>)	END	The Tri-coloured Bat prefers partly open habitat such as fields with large trees or woodland edges while avoiding both denser and more open areas. In the summer, Tri-coloured Bats roost in trees or dead clusters of leaves on trees. In the winter, they often hibernate in the deepest part of the caves where temperature is the least variable and the humidity is high. Maternity colonies are usually found either in tree cavities or man-made structures, but in at least parts of their range they have also been recorded in large clumps of arboreal lichen (COSEWIC 2013). Populations have recently declined precipitously due to the rapid spread of WNS.	Mature trees with associated leaf clusters are anticipated to provide maternity roost habitat.	Mature trees with associated leaf clusters were not recorded during field investigations; however, new clusters may form on an annual basis.



TERRESTRIAL ECOSYSTEMS EXISTING CONDITIONS REPORT - HIGHWAY 401 EXPANSION FROM COBOURG TO COLBORNE

Conclusion
October 31, 2018

4.0 CONCLUSION

This Terrestrial Ecosystems Existing Conditions Report documented the natural heritage features and evaluated the potential species of conservation concern within the Study Area in accordance with the Environmental Reference for Highway Design (MTO 2013). The Study Area extends from 2 km east of Nagle Road, Cobourg, easterly to Percy Street/County Road 45/IC 497, Colborne, for a total distance of approximately 18 km.

One candidate Area of Natural and Scientific Interest (ANSI) was present within the Study Area, the Cranberry Lake PSW. None of the vegetation communities observed were considered provincially at risk or of conservation concern. A single Barn Swallow was observed (a provincially Threatened species), but it was a transient individual. Two Eastern Phoebe nests were found at the Shelter Valley Creek culvert. No Barn Swallow nests were found but the species may colonize structures in the area in future years.

There were no observations or evidence of SAR or provincially rare species. Candidate SWH identified in the ROW included turtle wintering and nesting areas, amphibian breeding habitat, animal movement corridors and Snapping Turtle habitat. Further investigations of these candidate features are recommended during detailed design.

An Impact Assessment report will be produced when design details are available. The Impact Assessment report will provide site specific mitigation recommendations to reduce the likelihood of negative impacts to significant natural features within the Study Area.



TERRESTRIAL ECOSYSTEMS EXISTING CONDITIONS REPORT - HIGHWAY 401 EXPANSION FROM COBOURG TO COLBORNE

References

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5.0 REFERENCES

- Cadman, M.D., P.F.J. Eagles, and F.M. Helleiner. 1987. Atlas of the Breeding Birds of Ontario. University of Waterloo Press.
- 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.
- Cadman, M.D., 2007. Chimney Swift, pp. 314-315, in Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier, eds. 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 +706pp.
- COSEWIC 2002. COSEWIC assessment and status report on the northern map turtle *Graptemys geographica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
- COSEWIC. 2005. COSEWIC assessment and update status report on the Blanding's Turtle *Emydoidea blandingii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp
- COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush *Seiurus motacilla* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp
- COSEWIC. 2007. COSEWIC assessment and status report on the Chimney Swift *Chaetura pelagica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 49pp.
- COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler *Wilsonia Canadensis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp.(www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle *Chelydra serpentina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
- COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will *Caprimulgus vociferous* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vi + 28 pp.
- COSEWIC. 2010. COSEWIC assessment and status report on the Bobolink *Dolichonyx oryzivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vi + 42pp.



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References

October 31, 2018

COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis *Myotis lucifugus*, Northern Myotis *Myotis septentrionalis* and Tri-colored Bat *Perimyotis subflavus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSSARO. 2009. COSSARO classifications from March 24-25 and May 27-29, 2009, reported to the Minister on June 11, 2009.

Crins, W.J., P.A. Gray, P.W.C.Uhlig, and M.C. Wester. 2009. The Ecosystems of Ontario, Part 1: Ecozones and Ecoregions. Ontario Ministry of Natural Resources, Science and Information Branch, Inventory, Monitoring and Assessment Section. Technical Report SIB TER IMA TR-01.

Department of Justice. 1994. Migratory Bird Convention Act. (<http://laws-lois.justice.gc.ca/eng/acts/M-7.01/>).

Department of Justice. 2007. Endangered Species Act. (http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm).

Dobbyn, J. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists.

Earley, C.G., 2007. Grasshopper Sparrow, pp. 550-551, in Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier, eds. 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 +706pp.

Friesen, L. 2007. Wood Thrush, pp. 440-441, in Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier, eds. 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 +706pp.

Gibbs, J. P., F. A. Reid, and S. M. Melvin. 1992. Least Bittern. In The Birds of North America, No. 17 (A. Poole, P. Stettenheim, and F. Gill, Eds.). Philadelphia: The Academy of Natural Sciences; Washington, DC: The American Ornithologists' Union

Government of Canada. 2018. Schedule 1 List of Wildlife Species at Risk. Species at Risk Public Registry, available online (accessed January 2018): http://www.registrelep-sararegistry.gc.ca/species/schedules_e.cfm?id=1

Harrison, H.H. 1975. A Field Guide to Birds' Nests. Houghton Mifflin Company, New York, New York. 257 pp.

Heagy, A., D. Badzinski, D. Bradley, M. Falconer, J. McCracken, R.A. Reid and K. Richardson. 2014. Recovery Strategy for the Barn Swallow (*Hirundo rustica*) in Ontario. Ontario Recovery Strategy



TERRESTRIAL ECOSYSTEMS EXISTING CONDITIONS REPORT - HIGHWAY 401 EXPANSION FROM COBOURG TO COLBORNE

References

October 31, 2018

- Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 64 pp.
- Henson, B.L. and K.E. Brodribb. 2005. Great Lakes Conservation Blueprint for Terrestrial Biodiversity. Vol 2: Ecodistrict Summaries. Nature Conservancy of Canada and Ontario Ministry of Natural Resources.
- Kuehl, A.K., and W. R. Clark. 2002. Predator activity related to landscape features in northern Iowa. *Journal of Wildlife Management* 66: 1224-1234
- Leckie, S. 2007. Eastern Meadowlark, pp. 590-591, in Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier, eds. *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 +706pp.
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. *Ecological Land Classification for Southwestern Ontario: first approximation and its application*.
- Lepage, D. 2007. Barn Swallow, pp. 398-399, in Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier, eds. *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 +706pp.
- MacCulloch, R.D. 2002. *The ROM field guide to Amphibians and Reptiles of Ontario*. McClelland & Steward Ltd. Toronto, Ontario. 168pp.
- McCracken, J. 2007. Louisiana Waterthrush, pp. 514-515, in Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier, eds. *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 +706pp.
- McLaren, M. A. 2007. Eastern Wood-Pewee, pp. 340-341, in Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier, eds. *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 +706pp.
- Minister of Justice. 2002. Species at Risk Act. (<http://laws-lois.justice.gc.ca/eng/acts/S-15.3/>).
- Minister of Justice. 1994. Fisheries Act. (<http://laws-lois.justice.gc.ca/PDF/F-14.pdf>).
- MTO 2013. Environmental Reference for Highway Design.



TERRESTRIAL ECOSYSTEMS EXISTING CONDITIONS REPORT - HIGHWAY 401 EXPANSION FROM COBOURG TO COLBORNE

References

October 31, 2018

- MNRF. 2018a. Ministry of Natural Resources Natural Heritage Information Centre, Biodiversity database, including provincial species rankings (S-ranks). Accessed January 2018. Available online at http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US
- MNRF. 2018b. Ontario Ministry of Natural Resources and Forestry, Land information Ontario database. Accessed January 2018. Available online at http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US
- MNRF. 2018c. Species at Risk in Ontario List. Accessed January 2018. Available online at <https://www.ontario.ca/environment-and-energy/species-risk-ontario-list>
- MNRF. 2015. Significant Wildlife Habitat Ecoregion 6E Criterion Schedule. http://www.ebr.gov.on.ca/ERS-WEB_External/displaynoticecontent.do?noticeId=MTE1ODc5&statusId=MTczNDGY
- MNRF. 2000. Significant wildlife habitat technical guide. 151pp.
- National Audubon Society. 2012. Red-headed Woodpecker *Melanerpes erythrocephalus*. Available Online at: <http://birds.audubon.org/species/redwoo>
- Natural Heritage Information Centre (NHIC). 2007. Provincial status of plants, wildlife and vegetation communities database. <http://www.mnr.gov.on.ca/MNR/nhic/nhic.html>. OMNR, Peterborough; and general background information checks, 2007.
- Newmaster, S.G., A. Lehela, P.W.C Uhlig, S. McMurray and M.J. Oldham. 2005. Ontario Plant List. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, ON, Forest Research Information Paper No. 123. 550 pp. + appendices.
- Oldham, M.J., W.D. Bakowsky and D.A. Sutherland. 2001. Floristic quality assessment for southern Ontario. OMNR, Natural Heritage Information Centre, Peterborough. 68 pp.
- Ontario Nature. 2018. Ontario Reptile and Amphibian Atlas [web application]. Toronto, Ontario. Available online at www.ontarionature.org/atlas<<http://www.ontarionature.org/atlas>> Accessed January 2018.
- Peck, G. K. and R. D. James. 1983. Breeding Birds of Ontario: Nidiology and Distribution. Volume 1: Nonpasserines. Royal Ontario Museum, Toronto, Ontario.
- Reid, F. 2006. The Peterson Field Guide Series: A Field Guide to Mammals of North America, 4th ed. Houghton Mifflin Company, New York, New York. 579 p.
- Reznicek, A. A., Voss, E.G., and B. S. Walters. 2015. Michigan flora online. University of Michigan. Available online at <http://michiganflora.net/>



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References

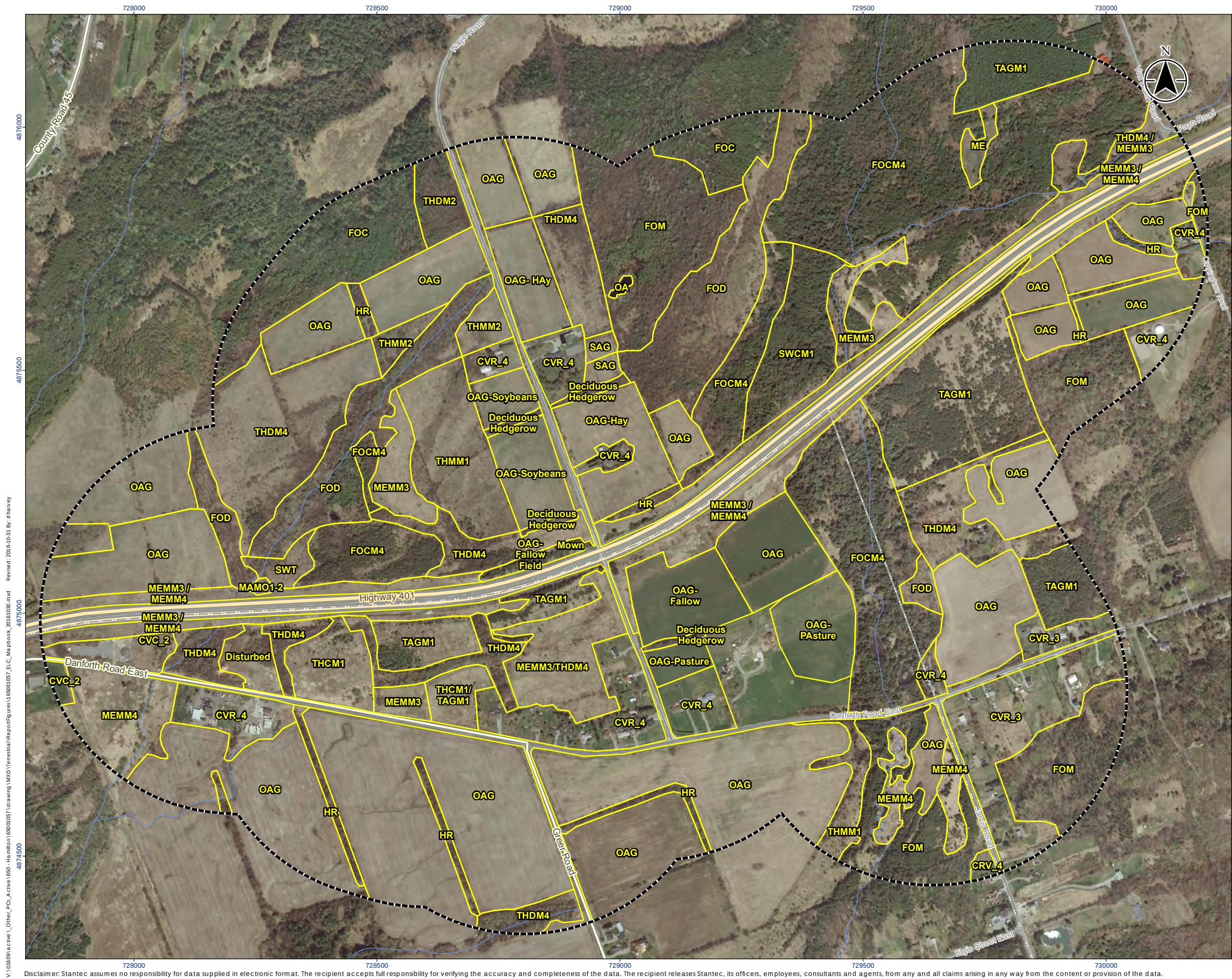
October 31, 2018

- Sandilands, A. 2007. Bank Swallow, pp. 394-395, in Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier, eds. 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 +706pp.
- Stantec. 2018. Draft Aquatic Ecosystems Existing Conditions Report - Highway 401 Expansion from Cobourg to Colborne. *In prep.*
- Smith, K. G., J. H. Withgott, and P. G. Rodewald. 2000. Red-headed Woodpecker (*Melanerpes erythrocephalus*). In The Birds of North America, No. 518 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA
- Winter, M., D.H. Johnson, J.A. Shaffer, and W.D. Svedarsky. 2004. Nesting biology of three grassland passerines in the northern tallgrass prairie. Wilson Bulletin 116:211-223.



APPENDIX A:

Figures



Legend

- Zone of Investigation (120 m)
- ELC Boundary
- Highway
- Major Road
- Minor Road
- Watercourse (Permanent)
- Watercourse (Intermittent)

ELC

CVC_2: Light Industry	MEMM4: Fresh - Moist Mixed Meadow
CVR_3: Single Family Residential	OA: Open Water
CVR_4: Rural Property	OAG: Open Agriculture
FOC: Coniferous Forest	SAG: Shrub Agriculture
FOCM4: Fresh - Moist White Cedar Coniferous Forest Ecosite	SWCM1: White Cedar Mineral Coniferous Swamp Ecosite
FOD: Deciduous Forest	SWT: Thicket Swamp
FOM: Mixed Forest	TAGM1: Coniferous Plantation
HR: Hedge Row	THCM1/ TAGM1: Dry - Fresh Coniferous Regeneration Thicket Ecosite/ Coniferous Plantation
MAMO1-2: Cattail Graminoid Organic Meadow Marsh Type	THCM1: Dry - Fresh Coniferous Regeneration Thicket Ecosite
ME: Meadow	THDM4: Dry - Fresh Deciduous Regeneration Thicket Ecosite
MEMM3 / MEMM4: Dry - Fresh Mixed Meadow/ Fresh - Moist Mixed Meadow	THMM1: Dry - Fresh Mixed Regeneration Thicket Ecosite
MEMM3/THDM4: Dry - Fresh Mixed Meadow Ecosite/ Dry - Fresh Deciduous Regeneration Thicket Ecosite	THMM1: Dry - Fresh Mixed Regeneration Thicket Ecosite
MEMM3/THDM4: Dry - Fresh Mixed Meadow Ecosite/ Dry Lowshrub Tallgrass Thicket Ecosite	THMM2: Fresh - Moist Mixed Thicket Ecosite
MEMM3: Dry - Fresh Mixed Meadow Ecosite	

0 50 100 200 Metres

1:8,000 (At original document size of 11x17)

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
- Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2017.
- Orthoimagery © First Base Solutions, 2017. Imagery Date, 2008.

Project Location
County of Northumberland

165001057 REVA
Prepared by DH on 2018-10-31
Technical Review by PW on 2017-04-27
Independent Review by ABC on yyyy-mm-dd

Client/Project
MTO
HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

Figure No.
2

Title
ELC Mapbook



Legend

- Zone of Investigation (120 m)
- ELC Boundary
- Highway
- Minor Road
- Watercourse (Permanent)

ELC

FOCM2-2: Dry – Fresh White Cedar
Coniferous Forest Type

FODM5: Dry – Fresh Sugar Maple
Deciduous Forest Ecosite

FOM: Mixed Forest

HR: Hedge Row

MEMM3 / MEMM4: Dry - Fresh
Mixed Meadow/ Fresh - Moist Mixed
Meadow

MEMM3/ THCM1: Dry - Fresh Mixed
Meadow Ecosite/ Dry - Fresh
Coniferous Regeneration Thicket
Ecosite

MEMM3/ THMM1: Dry - Fresh Mixed
Meadow Ecosite/ Dry - Fresh
Coniferous Regeneration Thicket
Ecosite

OAG: Open Agriculture

TAGM1: Coniferous Plantation

THDM4-1: Native Deciduous
Regeneration Thicket Type

0 50 100 200
Metres

1:6,000 (At original document size of 11x17)

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
- Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2017.
- Orthoimagery © First Base Solutions, 2017. Imagery Date, 2008.

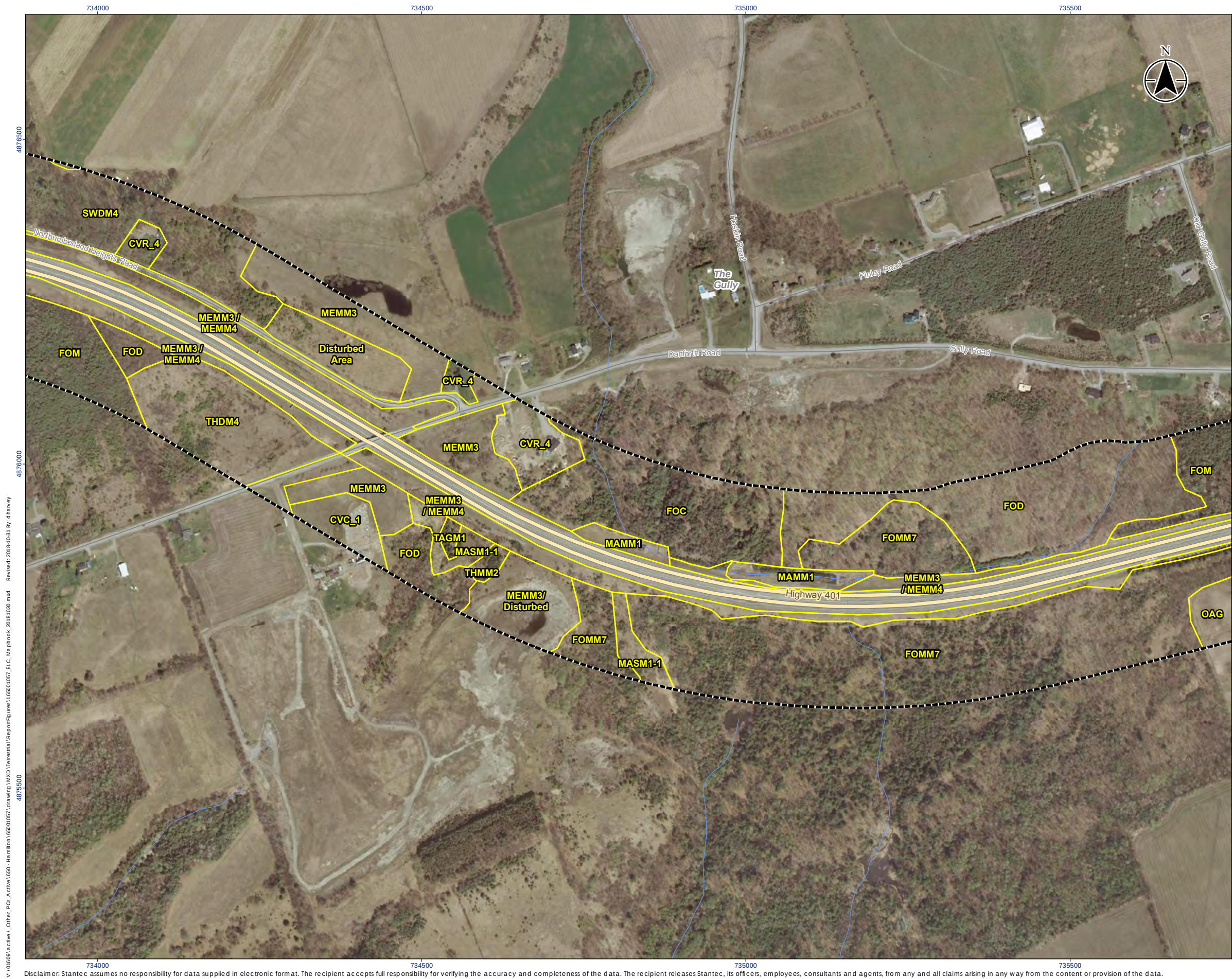
Project Location
County of
Northumberland

165001057 REVA
County of DH on 2018-10-31
Technical Review by PW on 2017-04-27
Independent Review by ABC on yyyy-mm-dd

Client/Project
MTO
HIGHWAY 401 WIDENING FROM COBOURG TO
COLBORNE

Figure No.
3

Title
ELC Mapbook





Legend

- Zone of Investigation (120 m)
- ELC Boundary
- Highway
- Minor Road
- Watercourse (Intermittent)
- Watercourse (Permanent)

ELC

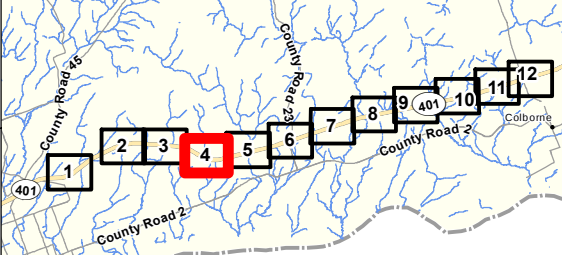
CVC_1: Business Sector	THMM2: Fresh - Moist Mixed Thicket Ecosite
CVR_4: Rural Property	
FOC: Coniferous Forest	
FOD: Deciduous Forest	
FOM: Mixed Forest	
FOMM7: Fresh - Moist White Cedar - Hardwood Mixed Forest Ecosite	
MAMM1: Graminoid Mineral Meadow Marsh Ecosite	
MASM1-1: Cattail Mineral Shallow Marsh Type	
MEMM3 / MEMM4: Dry - Fresh Mixed Meadow/ Fresh - Moist Mixed Meadow	
MEMM3/ Disturbed: Dry - Fresh Mixed Meadow Ecosite	
MEMM3: Dry - Fresh Mixed Meadow Ecosite	
OAG: Open Agriculture	
SWDM4: Mineral Deciduous Swamp Ecosite	
TAGM1: Coniferous Plantation	
THDM4: Dry - Fresh Deciduous Regeneration Thicket Ecosite	

0 50 100 200 Metres

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Notes

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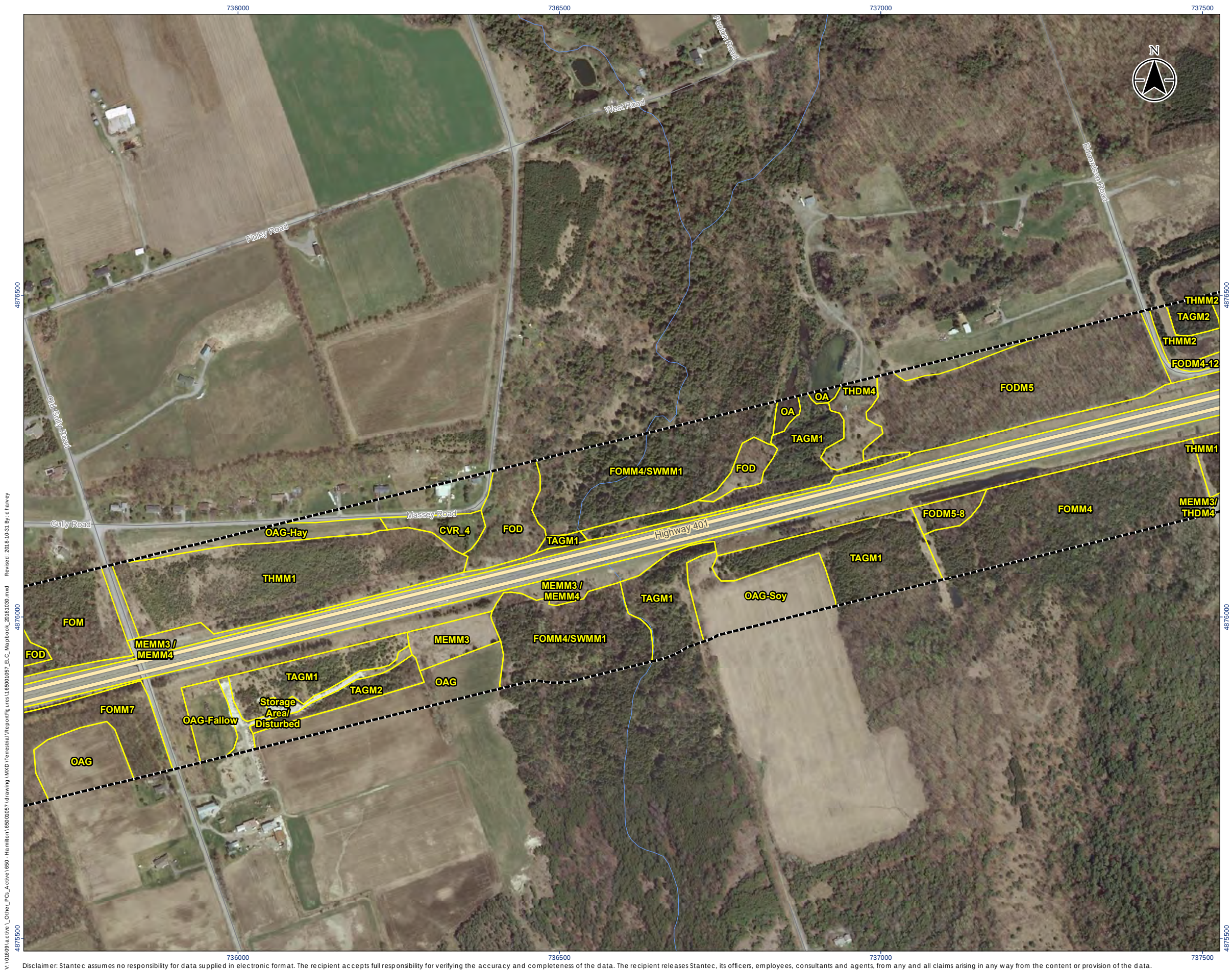


Project Location	165001057 REVA
County of Northumberland	Prepared by DH on 2018-10-31
	Technical Review by PW on 2017-04-27
	Independent Review by ABC on yyyy-mm-dd
Client/Project	
MTO	
HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE	
Figure No.	
5	
Title	
ELC Mapbook	

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Revised: 2018-10-31 By: dharvey

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Stantec

Legend

- Zone of Investigation (120 m)
- ELC Boundary
- Highway
- Minor Road
- Watercourse (Intermittent)
- Watercourse (Permanent)

ELC

CVR_4: Rural Property
FOD: Deciduous Forest
FODM4-12: Dry - Fresh Exotic Deciduous Forest Type
FODM5-8: Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type
FODM5: Dry - Fresh Sugar Maple Deciduous Forest Ecosite
FOM: Mixed Forest
FOMM4/SWMM1: Dry - Fresh White Cedar Mixed Forest Ecosite/ White Cedar Mineral Mixed Swamp Ecosite
FOMM4: Dry - Fresh White Cedar Mixed Forest Ecosite
FOMM7: Fresh - Moist White Cedar - Hardwood Mixed Forest Ecosite
MEMM3 / MEMM4: Dry - Fresh Mixed Meadow/ Fresh - Moist Mixed Meadow
MEMM3/ THDM4: Dry - Fresh Mixed Meadow Ecosite/ Dry - Fresh Deciduous Regeneration Thicket Ecosite

MEMM3: Dry - Fresh Mixed Meadow Ecosite
OA: Open Water
OAG: Open Agriculture
TAGM1: Coniferous Plantation
TAGM2: Mixed Plantation
THDM4: Dry - Fresh Deciduous Regeneration Thicket Ecosite
THMM1: Dry - Fresh Mixed Regeneration Thicket Ecosite
THMM2: Fresh - Moist Mixed Thicket Ecosite

0 50 100 200 Metres

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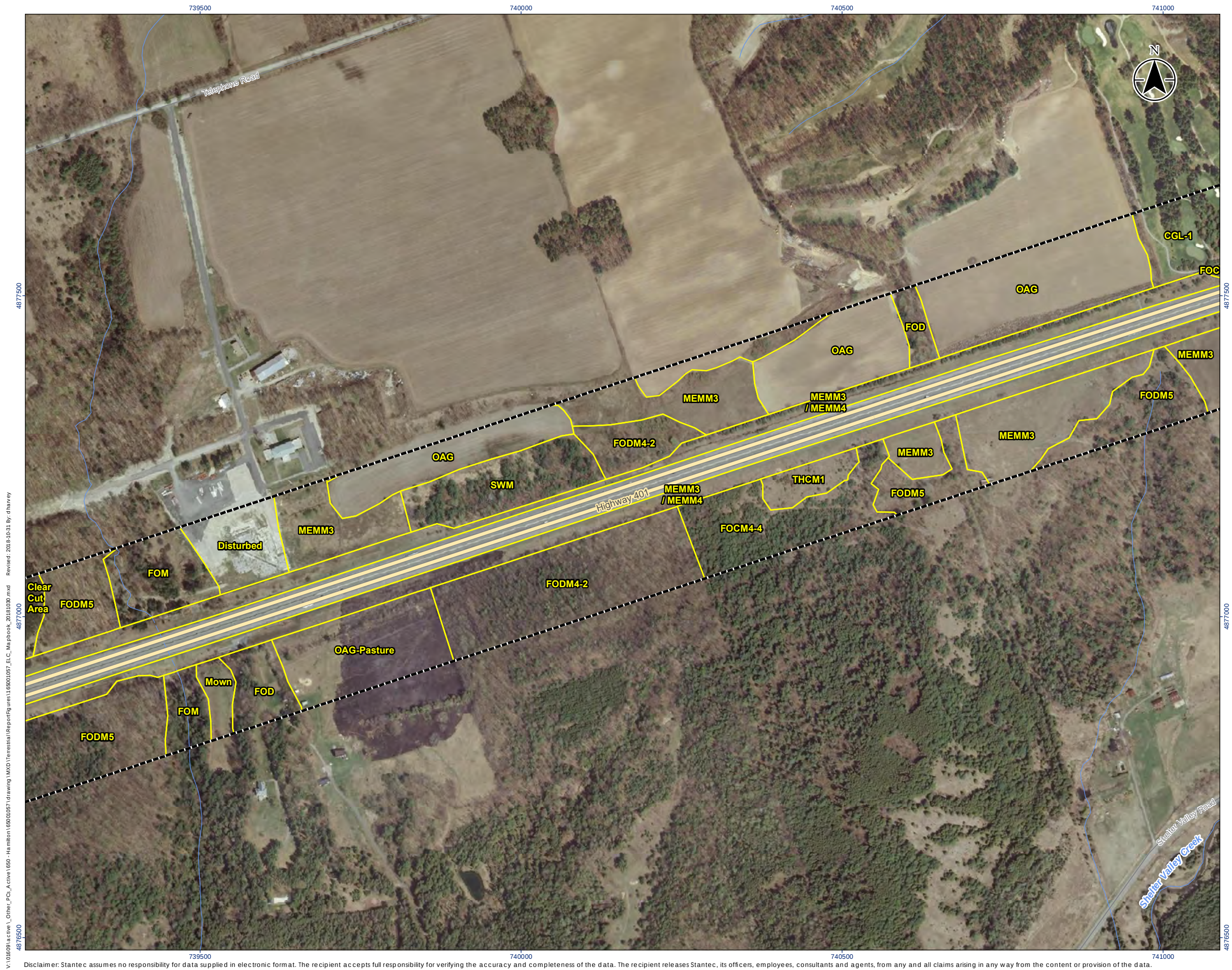
Project Location
County of Northumberland

165001057 REVA
Prepared by DH on 2018-10-31
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Client/Project
MTO
HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

Figure No.
6

Title
ELC Mapbook





Legend

- Zone of Investigation (120 m)
- ELC Boundary
- Highway
- Minor Road
- Watercourse (Intermittent)
- Watercourse (Permanent)

ELC

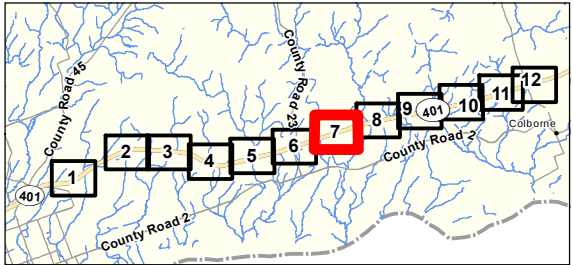
- CGL-1: Golf Course
- FOC: Coniferous Forest
- FOCM4-4: Fresh - Moist White Cedar - White Pine Coniferous Forest Type
- FOD: Deciduous Forest
- FODM4-2: Dry - Fresh White Ash - Hardwood Deciduous Forest Type
- FODM5: Dry - Fresh Sugar Maple Deciduous Forest Ecosite
- FOM: Mixed Forest
- MEMM3 / MEMM4: Dry - Fresh Mixed Meadow/ Fresh - Moist Mixed Meadow
- MEMM3: Dry - Fresh Mixed Meadow Ecosite
- OAG: Open Agriculture
- SWM: Mixed Swamp
- THCM1: Dry - Fresh Coniferous Regeneration Thicket Ecosite

0 50 100 200 Metres

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County of Northumberland

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HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

Figure No.
8

Title
ELC Mapbook

165001057 REVA

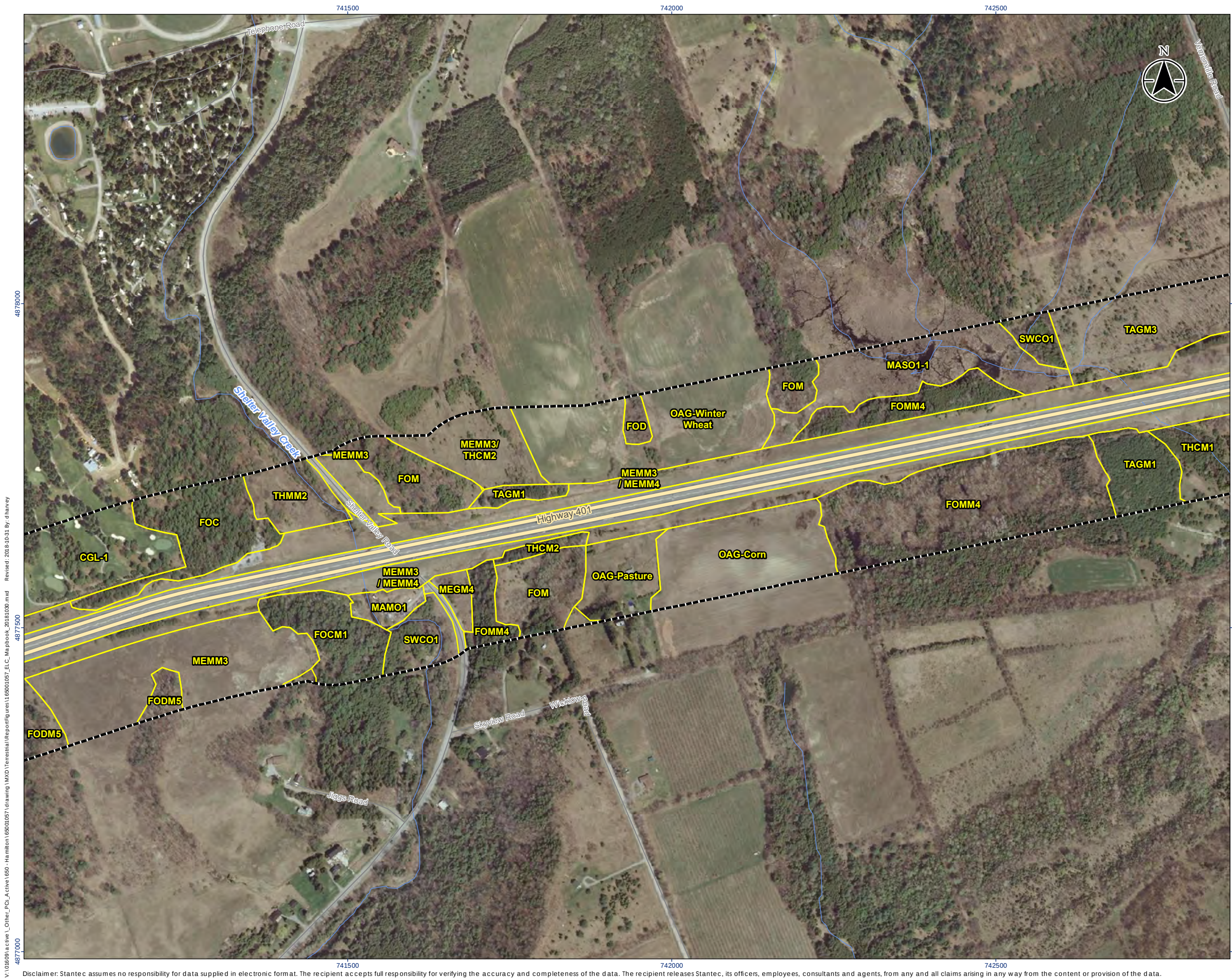
Prepared by DH on 2018-10-31

Technical Review by PW on 2017-04-27

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Stantec

Legend

Zone of Investigation (120 m)

Waterbody

ELC Boundary

Highway

Minor Road

Watercourse (Intermittent)

Watercourse (Permanent)

ELC

CGL-1: Golf Course

FOC: Coniferous Forest

FOCM1: Dry - Fresh Pine Coniferous Forest Ecosite

FOD: Deciduous Forest

FODM5: Dry - Fresh Sugar Maple Deciduous Forest Ecosite

FOM: Mixed Forest

FOMM4: Dry - Fresh White Cedar Mixed Forest Ecosite

MAMO1: Graminoid Organic Meadow Marsh Ecosite

MASO1-1: Cattail Organic Shallow Marsh Type

MEGM4: Fresh - Moist Graminoid Meadow Ecosite

MEMM3 / MEMM4: Dry - Fresh Mixed Meadow/ Fresh - Moist Mixed Meadow

MEMM3/ THCM2: Dry - Fresh Mixed Meadow Ecosite/ Fresh - Moist Coniferous Thicket Ecosite

MEMM3: Dry - Fresh Mixed Meadow Ecosite

OAG: Open Agriculture

SWCO1: White Cedar Organic Coniferous Swamp Ecosite

TAGM1: Coniferous Plantation

TAGM3: Deciduous Plantation

THCM1: Dry - Fresh Coniferous Regeneration Thicket Ecosite

THCM2: Fresh - Moist Coniferous Thicket Ecosite

THMM2: Fresh - Moist Mixed Thicket Ecosite

0

50

100

200

Metres

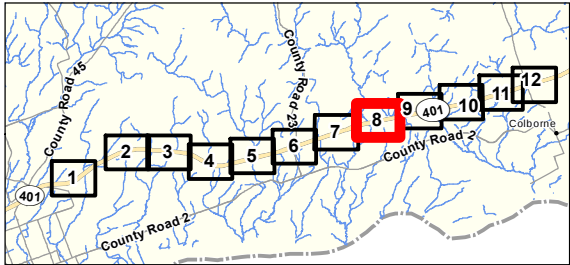
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Project Location

County of Northumberland

165001057 REVA

Prepared by DH on 2018-10-31

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Independent Review by ABC on yyyy-mm-dd

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HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

Figure No.

9

Title

ELC Mapbook

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Legend

Zone of Investigation (120 m)

ELC Boundary

Highway

Minor Road

Watercourse (Intermittent)

Watercourse (Permanent)

Waterbody

ELC

CVR_4: Rural Property

FOCM4-1: Fresh – Moist White Cedar Coniferous Forest Type

FOCM4-2: Fresh – Moist White Cedar – Hemlock Coniferous Forest Type

FODM8-1: Fresh – Moist Poplar – Sassafras Successional Deciduous Forest Ecosite

MAM: Meadow Marsh

MEMM3 / MEMM4: Dry - Fresh Mixed Meadow/ Fresh - Moist Mixed Meadow

MEMM3/THCM1: Dry - Fresh Mixed Meadow Ecosite/ Dry - Fresh Coniferous Regeneration Thicket Ecosite

MEMM3: Dry - Fresh Mixed Meadow Ecosite

OA: Open Water

OAG: Open Agriculture

SWM: Mixed Swamp

TAGM1: Coniferous Plantation

TAGM3: Deciduous Plantation

THCM1: Dry - Fresh Coniferous Regeneration Thicket Ecosite

THDM4: Dry - Fresh Deciduous Regeneration Thicket Ecosite

THMM2: Fresh - Moist Mixed Thicket Ecosite

0 50 100 200

Metres

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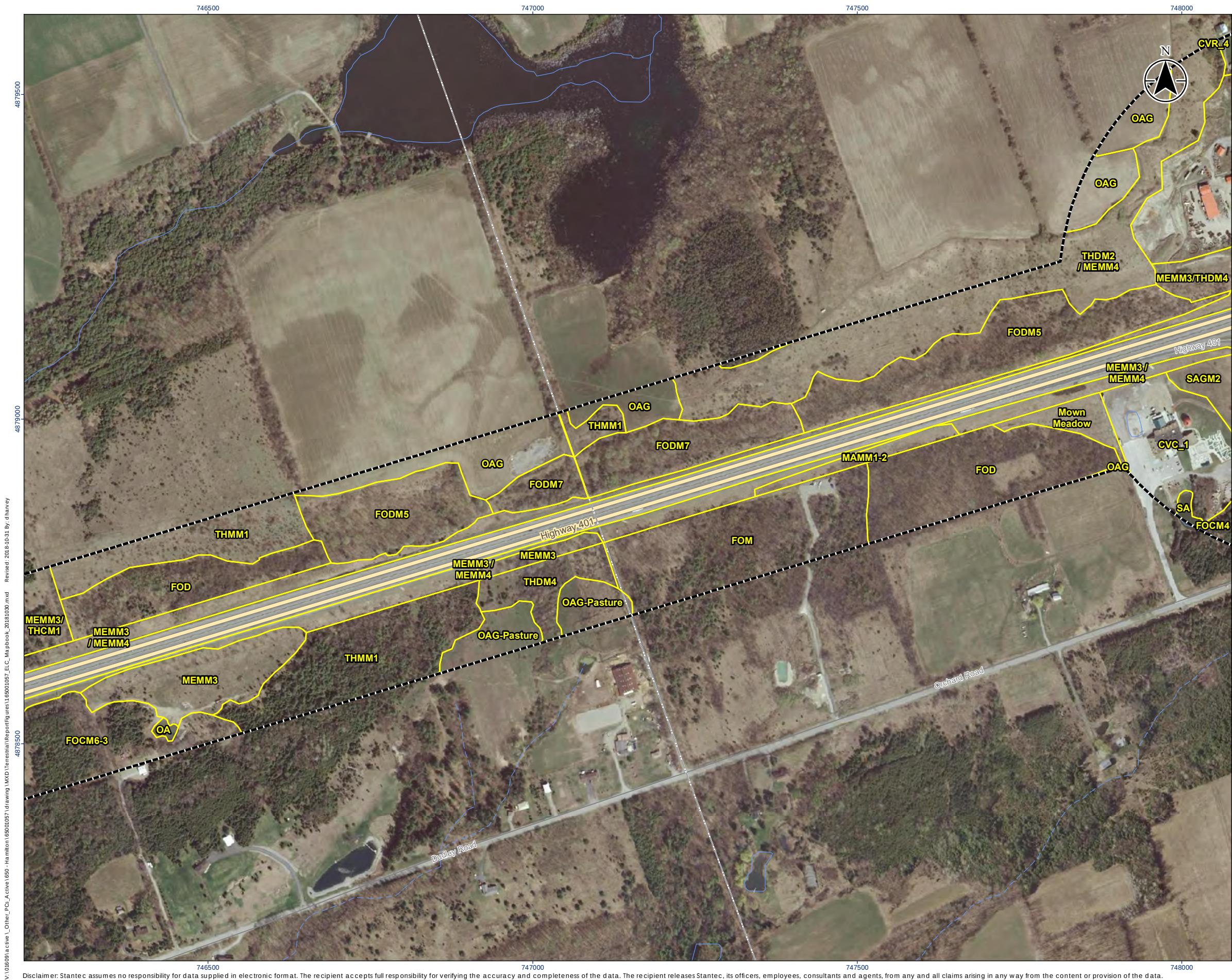
Project Location
County of
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165001057 REVA
County of
Northumberland
Prepared by DH on 2018-10-31
Technical Review by PW on 2017-04-27
Independent Review by ABC on yyyy-mm-dd

Client/Project
MTO
HIGHWAY 401 WIDENING FROM COBOURG TO
COLBORNE

Figure No.
10

Title
ELC Mapbook



Legend

- Zone of Investigation (120 m)
- ELC Boundary
- Highway
- Minor Road
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Waterbody

ELC

CVC_1: Business Sector	MEMM3/THDM4: Dry - Fresh Mixed Meadow Ecosite/ Dry - Fresh Deciduous Regeneration Thicket Ecosite
CVR_4: Rural Property	MEMM3: Dry - Fresh Mixed Meadow Ecosite
FOCM4: Fresh – Moist White Cedar Coniferous Forest Ecosite	OA: Open Water
FOCM6-3: Dry - Fresh Scotch Pine Naturalized Coniferous Plantation Type	OAG: Open Agriculture
FOD: Deciduous Forest	SA: Shallow Water
FODM5: Dry – Fresh Sugar Maple Deciduous Forest Ecosite	SAGM2: Orchard
FODM7: Fresh – Moist Lowland Deciduous Forest Ecosite	THDM2 / MEMM4: Dry - Fresh Deciduous Shrub Thicket Ecosite/ Fresh - Moist Mixed Meadow Ecosite
FOM: Mixed Forest	THDM4: Dry - Fresh Deciduous Regeneration Thicket Ecosite
MAMM1-2: Cattail Graminoid Mineral Meadow Marsh Type	THMM1: Dry - Fresh Mixed Regeneration Thicket Ecosite
MEMM3 / MEMM4: Dry - Fresh Mixed Meadow/ Fresh - Moist Mixed Meadow	
MEMM3/ THCM1: Dry - Fresh Mixed Meadow Ecosite/ Dry - Fresh Coniferous Regeneration Thicket Ecosite	

0 50 100 200 Metres

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County of	Prepared by DH on 2018-10-31
Northumberland	Technical Review by PW on 2017-04-27
	Independent Review by ABC on yyyy-mm-dd

Client/Project

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HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

Figure No.

12

Title

ELC Mapbook



Legend

	Zone of Investigation (120 m)		Watercourse (Permanent)
	ELC Boundary		Waterbody
	Highway		
	Major Road		
	Minor Road		
	Watercourse (Intermittent)		

ELC

CGL: Cemetery	MEMM3: Dry - Fresh Mixed Meadow Ecosite
CVC_1: Business Sector	OAG: Open Agriculture
CVC_2: Light Industry	SA: Shallow Water
CVI: Transportation and Utilities	SAGM2: Orchard
CVR_4: Rural Property	SWM: Mixed Swamp
FOCM4: Fresh - Moist White Cedar Coniferous Forest Ecosite	SWMO4: Conifer - Hardwood Organic Mixed Swamp Ecosite
FOD: Deciduous Forest	THCM1: Dry - Fresh Coniferous Regeneration Thicket Ecosite
FODM5: Dry - Fresh Sugar Maple Deciduous Forest Ecosite	THDM2 / MEMM4: Dry - Fresh Deciduous Shrub Thicket Ecosite/ Fresh - Moist Mixed Meadow Ecosite
FOM: Mixed Forest	THDM2/MEMM3: Dry - Fresh Deciduous Shrub Thicket Ecosite/ Dry - Fresh Mixed Meadow Ecosite
MAMM1-2: Cattail Graminoid Mineral Meadow Marsh Type	THDM4: Dry - Fresh Deciduous Regeneration Thicket Ecosite
MEGM4: Fresh - Moist Graminoid Meadow Ecosite	THMM1 / MEMM3: Dry - Fresh Mixed Regeneration Thicket Ecosite/ Dry - Fresh Mixed Meadow Ecosite
MEMM3 / MEMM4: Dry - Fresh Mixed Meadow/ Fresh - Moist Mixed Meadow	
MEMM3 / MEMM4: Dry - Fresh Mixed Meadow Ecosite/ Fresh - Moist Mixed Meadow Ecosite	
MEMM3/THDM4: Dry - Fresh Mixed Meadow Ecosite/ Dry - Fresh Deciduous Regeneration Thicket Ecosite	

0 50 100 200 Metres

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Notes

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An inset map showing a grid of numbered areas (1-12) with County Road 15, County Road 2, and County Road 401. Area 12 is highlighted with a red border. The map also shows 'Colborne' and 'St. Mary's Road'.

Project Location	165001057 REVA
County of	Prepared by DH on 2018-10-31
Northumberland	Technical Review by PW on 2017-04-27
	Independent Review by ABC on yyyy-mm-dd

Client/Project

MTO

HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

Figure No.

13

Title

ELC Mapbook

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APPENDIX B:

Atlas Review

Species Common Name	Species Scientific Name	S-Rank	Provincial Status (COSSARO)	National Status (COSEWIC)	Source
Northern Map Turtle	<i>Graptemys geographica</i>	S3	SC	SC	NHIC
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	THR	THR	NHIC
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	THR	THR	NHIC
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	S4B	THR	THR	OBBA
Chimney Swift	<i>Chaetura pelagica</i>	S4B, S4N	THR	THR	OBBA
Least Bittern	<i>Ixobrychus exilis</i>	S4B	THR	THR	OBBA
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S4B	SC	THR	OBBA
Eastern Wood-pewee	<i>Contopus virens</i>	S4B	SC	SC	OBBA
Bank Swallow	<i>Riparia riparia</i>	S4B	THR	THR	OBBA
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	SC	THR	OBBA
Barn Swallow	<i>Hirundo rustica</i>	S4B	THR	THR	OBBA
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4B	SC	SC	OBBA
Canada Warbler	<i>Cardellina canadensis</i>	S4B	SC	THR	OBBA
Snapping Turtle	<i>Chelydra serpentina</i>	S3	SC	SC	ORAA
Blanding's Turtle	<i>Emydoidea blandingi</i>	S3	THR	THR	ORAA
Little Brown Myotis	<i>Myotis lucifugus</i>	S4	END	END	AMO
Small-footed Myotis	<i>Myotis leibii</i>	S2, S3	END	-	AMO
Northern Myotis	<i>Myotis septentrionalis</i>	S3?	END	END	AMO
Tri-coloured Bat	<i>Perimyotis subflavus</i>	S3?	END	END	AMO

COSSARO: Committee on the Status of Species at Risk in Ontario

COSEWIC: Committee on the Status of Endangered Wildlife in Canada

S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure—Uncommon but not rare

S5: Secure—Common, widespread, and abundant in the province

S#B- Breeding status rank

S#N- Non Breeding status rank

END: Endangered

THR: Threatened

SC: Special Concern

NHIC: Natural Heritage Information Centre

OBBA: Ontario Breeding Bird Atlas

ORAA: Ontario Reptile and Amphibian Atlas

AMO: Atlas of Mammals of Ontario

APPENDIX C:

Field Forms

BOTANICAL INVENTORY FORM	PROJECT: Highway 401 → Cobourg to Colborne (#165001057)		
	SURVEY AREA: Species observed in Right-of-Way		
	UTM:		
	1 st Survey: August 14, 2017	2 nd Survey:	3 rd Survey:
	SURVEYOR(S): Brian Miller		SURVEYOR(S):

Brandon Holden

PLANT SPECIES	CANOPY	SUB-CANOPY	UNDERSTORY	GROUND LAYER	PLANT SPECIES	CHENO. GLAUC. SCHOEN.	PLANT SPECIES
TREES, SHRUBS & WOODY VINES					HERBACEOUS FLORA		
ULMUS PUMILA	x	x	x		Vince. ross	PRUN. VULG. VULG.	LYCO. AMER.
Pinus nigra		x	x		Knappweed	TRAG. DUBL.	Carex flava
Populus bals.			x	x	BROM. INER.	TYPHA ANGU.	RUDB. HIRTA
FRAX. PENS				x	Ratibida pinn.	HYP. PERF.	LOL. ARUN.
THUSA occi.			x		Verbena stricta	LEUC. VULG.	SYM. UROP.
Populus delt.	x				Vicia cracca	Cirsium vulg.	LIN. VULG.
Tilia amer.			x		ASCL. SYRI.	TUSS. FARE.	ERIG. STRL.
Pinus sylv.		x			DAUC. CARO	UAPA. CAPE.	RUM. CRISP.
FRAX. AMER.		x			SYM. NOVA.	URTI. DIDL.	DIA. ARME.
Acer. negu.				x	SYM. LANC.	SYM. PUNL.	Carex spic.
Picea glauca		x			SYM. ERIC.	PODO. PELT.	AGRO. STOL.
Ulmus amer.				x	AGRO. GIGA.	CIRS. ARVE.	PAST. SATI.
Picea abies		x			LYTH. SALI.	PHLEUM PRAT.	EUTR. MACU
RHUS TYPH.			x	x	Thalassia arun.	MEL. OFFI.	ONO. SENS.
Vitis ripa.					Carex cf. granularis	CORO. VARL.	JUNC. COMP.
Rhamnus cath.			x	x	Mentha cana.	CON. CANA.	EPIL. HIRS.
TOX. RADL.					Sonchus arve.	OEN. of. BIEN	DACT. GLOM.
Crataegus sp.				x	ASPA. OFFI.	APOC. ANDR.	ALFAHA.
Salix bebb.				x	Verbena hast.	TARA. OFFI.	THEL. PALU.
Cornus stol.				x	Anemone virg.	AMB. ARTE.	MED. LUPU.
LONI. TATA				x	Solidago nemo.	LOTUS CORN.	JUN. ARTI.
PRUNUS PENS?			x		Solidago cana.	APOC. CANN	SCHO. TABE.
VIB. LENT.			x		Penstemon cf. digi.	Plantago psyl.?	ECHI. MURI.
Salix erio.					POA COMP.	POT. RECTA	CIC. MACU.
SOL. DULC.					Chicory	ECHINO. LOBA.	BIDENS. CERN.
SYR. VULG.					EUTH. GRAM.	SOLI. GAIGA.	VERO. AQUA.
PINUS STRO.			x	x	ECH. VULG.	SYM. LATE.	AMPH. BRAC.
Alnus inca.			x		PLAN. LANC.	TANA. VULG.	LAPD. CANA
CORNUS ALTE.			x		MEL. ALBA.	POA PRAT.	TRIF. REPE.
Acer - Silver	x				Phragmites	SCIR. ATRO.	SAPO. OFFI.
					EQU. ARVE.	EUP. PERF.	JUN. BUFO.
					ACH. MILL.	Carex hyst.	SCIR. PEND.
					EQU. HYEM.	Juncus dudl.	

Signature:

Brian Miller
(Field Personnel)

Signature:

(Project Manager)

Relative Species Abundance: D = Dominant; A = Abundant; O = Occasional; R = Rare

Vegetation Height: Canopy = > 20m; Sub-canopy = 10 - 20m; Understory = 2 - 10m; Ground Layer = < 2m

Page ___ of ___

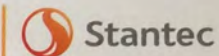
BOTANICAL INVENTORY FORM	PROJECT: Highway 401 → Cobourg to Colborne (#165001057)		
	SURVEY AREA: Plant Plant Species Observed		
	in highway Right-of-Way		UTM:
	1 st Survey: August 15, 2017	2 nd Survey:	3 rd Survey:
SURVEYOR(S): Brian Miller		SURVEYOR(S):	

August 16, 2017 Brandon Holden

VASCULAR PLANT SPECIES	CANOPY	SUB-CANOPY	UNDERSTORY	GROUND LAYER	VASCULAR PLANT SPECIES	GROUND LAYER	VASCULAR PLANT SPECIES	GROUND LAYER
TREES, SHRUBS & WOODY VINES					HERBACEOUS FLORA			
CRAT. MONO.			x	x	Verbena stricta		THEL. PALU.	
Juniperus comm.				x	Pteridium aquil.		Scirpus cyperinus	
Prunus virg.				x	SYM. VROP.			
Juniperus virg.			x		ASCL. TUBE.		Epipactis helle.	
Populus grand.			x		Hieracium spp.		Juncus alpino.	
Carya cord.			x		Silene ant		EUPH. MACU.	
Rubus occi.				x	Panicum capi.		Agalinis tenuifolia	
ROBI. PSUE.			x		Lactuca seri.			
Acer x free.	x				Carduus aranth.		Carex brevior	
Cornus race.			x	x	TRIF. PRAT.		Centaurium pulchellum	
Rubus strig.				x	Inula helle.		Euphorbia davidii	
Salix petio.				x	Lysimachia arve.?			
Salix cf. alba	x				Carex granularis		Juncus cf.	
Picea pungens		x			Juncus cf. torreyi		marginatus	
Salix amyg.		x			Epilobium cf. parv.			
Acer negundo		x			Monarda fist.		53	
Russian Olive		x			Carex vulpinoidea		→ To Be	
Parthenocissus				x	Desmodium cf. cana		Confirmed	
Rosa cf. blanda				R	Physalis cf. hete.			
Larix laricina					MELI. OFFI.			
Salix interior		xR			Eragrostis sp.			
SPIRAEA ALBA				R	Euphorbia cf. virg.			
					Bidens fron. or. vulg.			
					Silene vulg.			
					HORDEUM TUBA.			
					EQUIS. VARI.?			
					URTICA DIOI			
					Lycopus unifl.			
					Convolvulus arve.			
					Carex cf. bebbii			
					Carex retrorsa			
					Onoclea sens.			
					Carex cristatella			

Signature: Brian Miller
(Field Personnel)

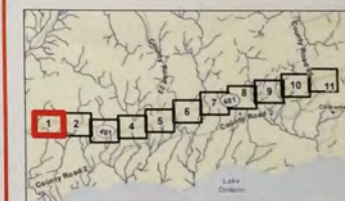
Signature: _____
(Project Manager)



- Legend**
- Zone of Investigation (120 m)
 - Hwy 401 MTO Right of Way
 - Site Location
 - Highway
 - Minor Road
 - Watercourse (Permanent)
 - Wetland, Not evaluated per OWES

0 0.35 km
1:5,000 (At original document size of 11x17)

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base Features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2017
 3. Orthomaps © First Base Solutions, 2017. Imagery Date: 2008



Project Location

County of Northumberland

Client/Project

MITO
HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

Figure No.

1

Title

Terrestrial Field Mapbook



Stantec

Legend

- Zone of Investigation (120 m)
- Hwy 401 MTO Right of Way
- Site Location
- Highway
- Minor Road
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Wetland, Not evaluated per OWES

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
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Project Location
County of Northumberland

Client/Project
MTO
HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

Figure No.
2

Title
Terrestrial Field Mapbook

Scale
1:6,000 (At original document size of 11x17)

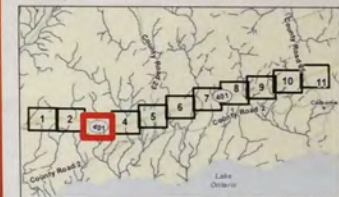
Mapbook Index
A grid of 11 numbered boxes (1-11) with box 2 highlighted in red.

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- Legend**
- Zone of Investigation (120 m)
 - Hwy 401 MTO Right of Way
 - Site Location
 - Highway
 - Minor Road
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Wetland, Not evaluated per OWES

0 0.35
1:6,000 (At original document size of 11x17)

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2017.
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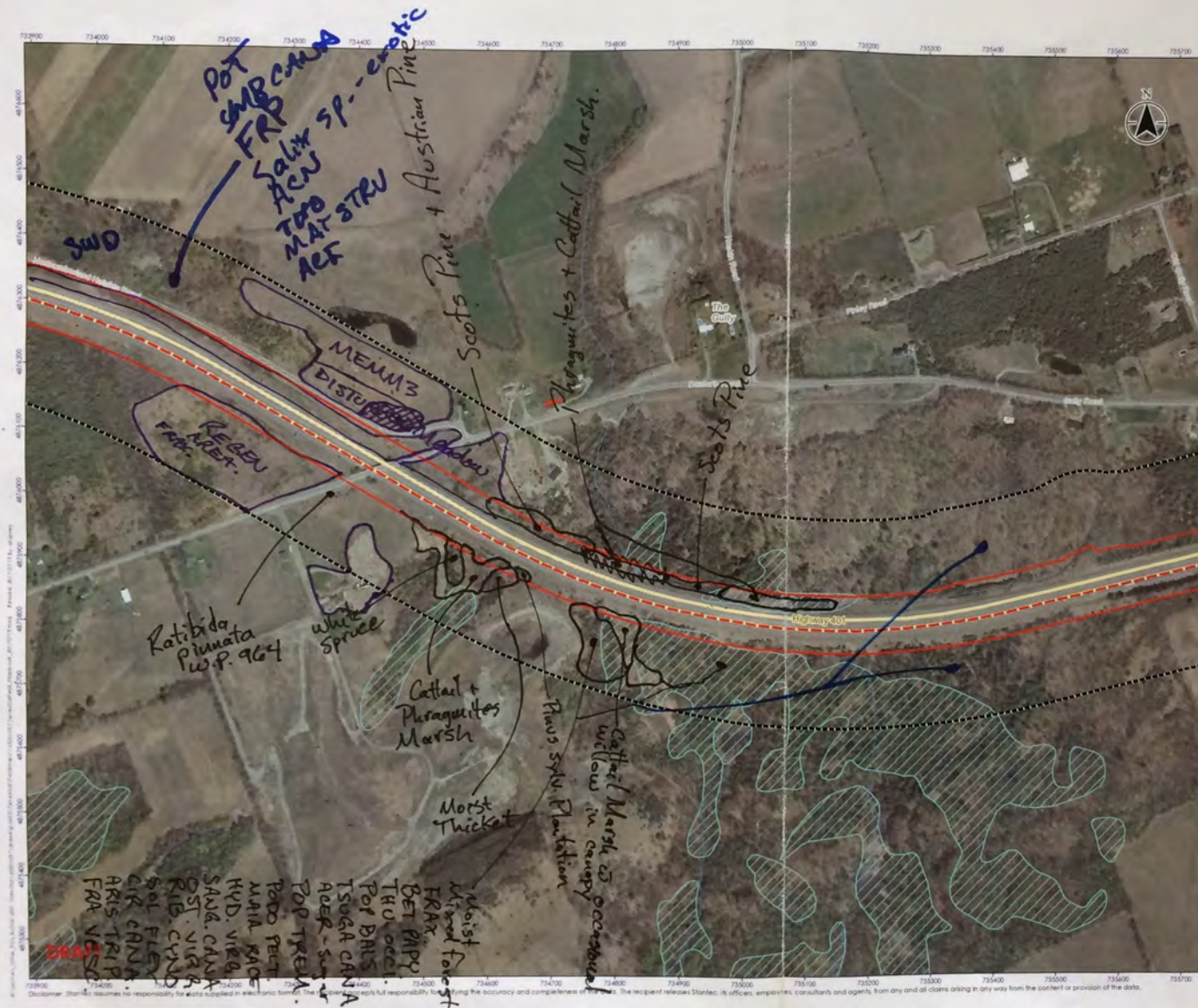
Project Location
County of Northumberland
Prepared by 04 on 2017-07-19
Technical Review by FW on 2017-04-27
Independent Review by ABC on yyyy-mm-dd

Client/Project
MTO
HIGHWAY 401 WIDENING FROM COBourg TO COLBORNE

Figure No.

3

Title
Terrestrial Field Mapbook



- Legend**
- Zone of Investigation (120 m)
 - Hwy 401 MTO Right of Way
 - Site Location
 - Highway
 - Major Road
 - Minor Road
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Waterbody
 - Wetland, Provincially Significant
 - Wetland, Not evaluated per OWES

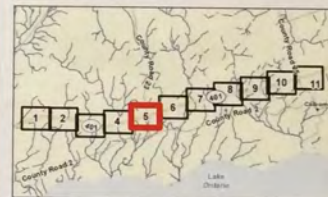
MID-AGED - FOD:

FRAX
CRAT SP.
QUERUBR.
OST. VIRG.
Acer-sugar
Carex spp.
SOL. GIGA.
TOX RADI
PODO FELT
PIN STRO

POPTREM
BET PAPY
TIL AMER
POP GRAN.

1:6,000 (At original document size of 11x17)

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry & Queen's Printer for Ontario, 2017
 3. Orthorectified by First Base Solutions, 2017. Imagery Date: 2008



Project Location
County of
Northumberland

Prepared by DR on 2017-07-19
Technical Review by PW on 2017-04-27
Independent Review by ABC on yyyy-mm-dd

Client/Project
MTO
HIGHWAY 401 WIDENING FROM COBOURG TO
COLBORNE

Figure No.
5

Terrestrial Field Mapbook

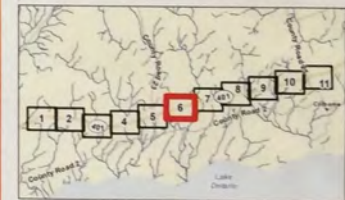


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- Legend**
- Zone of Investigation (120 m)
 - Hwy 401 MTO Right of Way
 - Site Location
 - Highway
 - Minor Road
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Wetland, Not evaluated per OWES

0 0.35 km
1:6,000 (At original document size of 11x17)

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base Features produced under license with the Ontario Ministry of Natural Resources and Forestry (© Queen's Printer for Ontario, 2017)
 3. Orthomosaic © First Base Solutions, 2017. Imagery Date: 2008



Project location: County of Northumberland
 Prepared by: 163001057-REV4
 Technical Review by: DH on 2017-07-19
 Independent Review by: ASL on 2017-04-27

Client/Project: MTO
 HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

Figure No.

6

Title: Terrestrial Field Mapbook



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- Legend**
- Zone of Investigation (120 m)
 - Hwy 401 MTO Right of Way
 - Site Location
 - Highway
 - Minor Road
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Waterbody
 - Wetland, Not evaluated per OWES

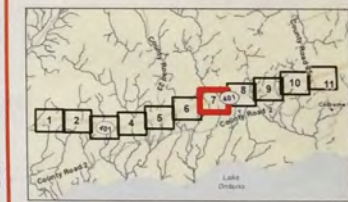
POP DELT - canopy planted
 ↳ PNST + Picea sp. understory

PCAB

FOC - THU - OCCI - S

1:4,000 (At original document size of 11x17)

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2017
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Project Location
 County of
 Northumberland

Client/Project
 MTO
 HIGHWAY 401 WIDENING FROM COBOURG TO
 COLBORNE

Figure No.
 7

Title
 Terrestrial Field Mapbook



DRAFT

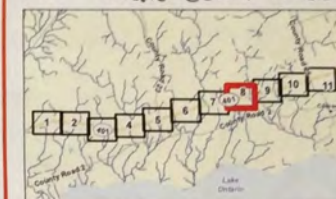
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- Legend**
- Zone of Investigation (120 m)
 - Very 401 MTO Right of Way
 - Site Location
 - Highway
 - Minor Road
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Waterbody
 - Wetland, Not evaluated per OWES

0 0.35 km
1:6,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry's Forest Inventory Data, 2017
3. Cartography © GeoSpace Solutions, 2017. Imagery date: 2008

FOC - white Cedar fresh-moist



Project Location
County of
Northumberland
Prepared by DH on 2017-07-19
Technical Review by PHE on 2017-04-27
Independent Review by ASIC on 2017-04-27

Client/Project
MTO
HIGHWAY 401 WIDENING FROM COBourg TO
COLBORNE

Figure No.

8

Title

Terrestrial Field Mapbook

PICEA ABIES

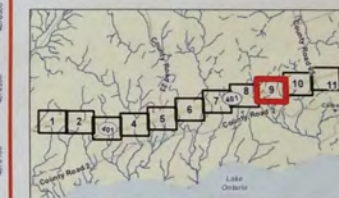


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- Legend**
- Zone of Investigation (120 m)
 - Hwy 401 MTO Right of Way
 - Site Location
 - Highway
 - Minor Road
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Wetland, Not evaluated per OWES

0 0.35 km
1:6,000 (At original document size of 11x17)

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2015.
 3. Orthomage © First Base Solutions, 2017. Imagery Date: 2008.



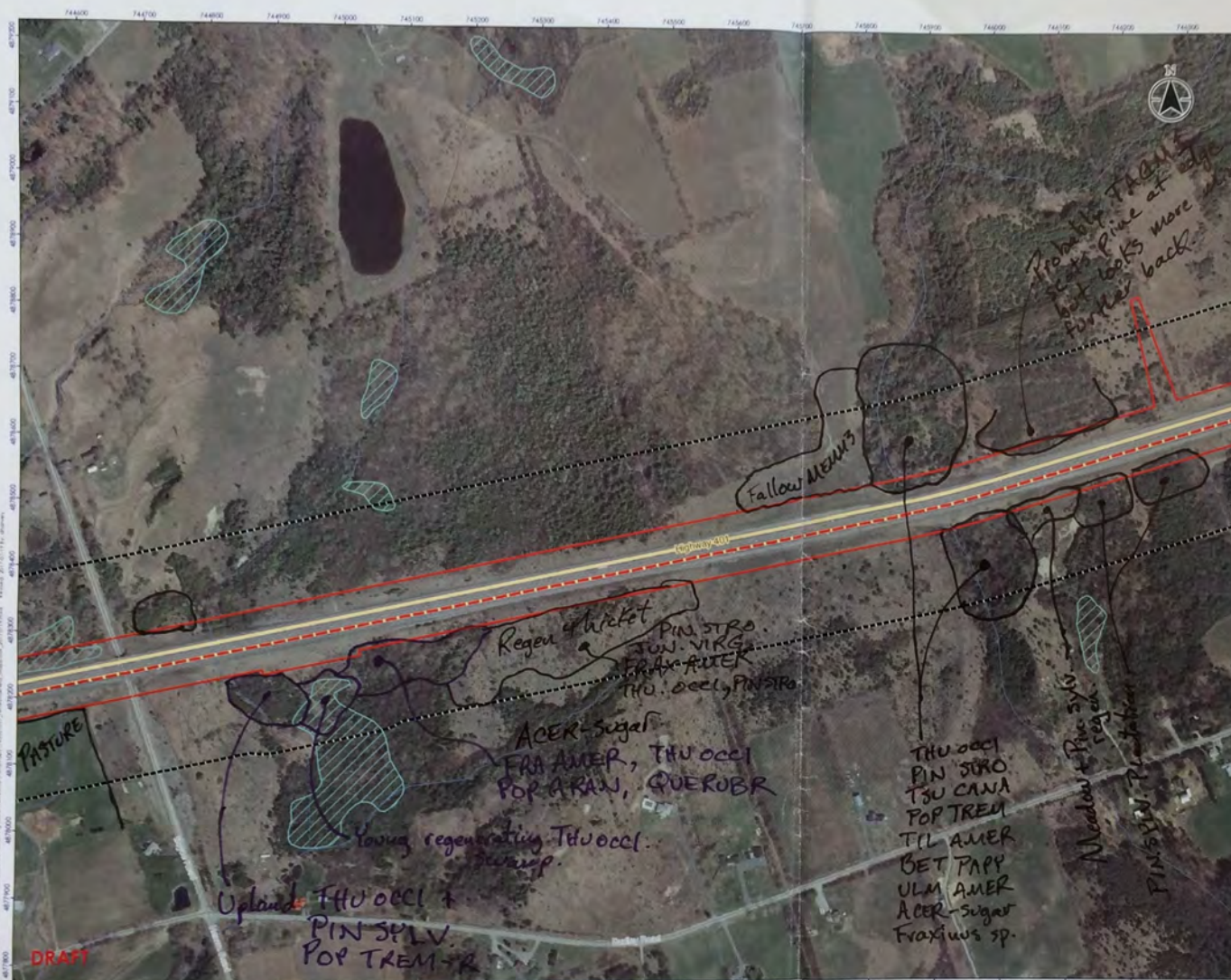
Project Location: 163001057 REVA
County of: Northumberland
Prepared by: DH on 2017-01-19
Technical Review by: PHS on 2017-04-27
Independent Review by: ABC on yyyy-mm-dd

Client/Project:
MTO
HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

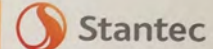
Figure No.

9

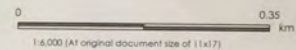
Title:
Terrestrial Field Mapbook



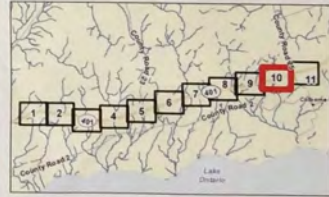
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- Legend**
- Zone of Investigation (120 m)
 - Hwy 401 MTO Right of Way
 - Site Location
 - Highway
 - Minor Road
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Waterbody
 - Wetland, Not evaluated per OWES



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
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Project Location: 165001057, REVA
 County of: Northumberland
 Prepared by: DH on 2017-07-19
 Technical Review by: PH on 2017-04-27
 Independent Review by: ABC on yyyy-mm-dd

Client/Project:
 MTO
 HIGHWAY 401 WIDENING FROM COBOURG TO COLBORNE

Figure No:
10

Title:
Terrestrial Field Mapbook

DRAFT

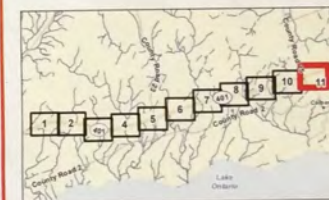
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- Legend**
- Zone of Investigation (120 m)
 - Hwy 401 MTO Right of Way
 - Site Location
 - Highway
 - Major Road
 - Minor Road
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Waterbody
 - Wetland, Not evaluated per OWES

0 0.35
km
1:6,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2017
3. Orthomagey © First Base Solutions, 2017. Imagery Date: 2008.



Project Location: 165001/057 REV A
County of: Prepared by DH on 2017-07-19
Northumberland Technical Review by PW on 2017-04-27
Independent Review by ABC on yyyy-mm-dd

Client/Project:
MTO
HIGHWAY 401 WIDENING FROM COBOURG TO
COLBORNE

Figure No.

11

Terrestrial Field Mapbook



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Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT (current)	PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 0/

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30 x 3 x 3
Total Culvert LENGTH (m) Maximum Culvert HEIGHT (m) Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100
HORIZONTAL (%)

100
VERTICAL (%)

100
HOLES (%)

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: **BARS** = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert
(metres)

COMMENTS:

Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions: TEMP (°C) WIND CLOUD PPT (current) PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 02

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30 x 3 x 3
Total Culvert LENGTH (m) Maximum Culvert HEIGHT (m) Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100
HORIZONTAL (%)

100
VERTICAL (%)

100
HOLES (%)

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: **BARS** = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert
(metres)

COMMENTS:

Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions: TEMP (°C) WIND CLOUD PPT (current) PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 03

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30
Total Culvert LENGTH (m)

x

3
Maximum Culvert HEIGHT (m)

x

3
Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100
HORIZONTAL (%)

100
VERTICAL (%)

100
HOLES (%)

BIRD DATA

Species Detected: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert
(metres)

COMMENTS:

Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions: TEMP (°C) WIND CLOUD PPT (current) PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 0 4

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30
Total Culvert LENGTH (m)

x

3
Maximum Culvert HEIGHT (m)

x

3
Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100
HORIZONTAL (%)

100
VERTICAL (%)

100
HOLES (%)

BIRD DATA

Species Detected: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:

Birds (5 min observation):

Apparently active nests:

Old nests:

Nest scars:

Nest holes observed active:

Nest Holes not observed active:

Other species observed nesting:

	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert
(metres)

COMMENTS:

Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions: TEMP (°C) WIND CLOUD PPT (current) PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 0 S

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30
Total Culvert LENGTH (m)

x

3
Maximum Culvert HEIGHT (m)

x

3
Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100
HORIZONTAL (%)

100
VERTICAL (%)

100
HOLES (%)

BIRD DATA

Species Detected: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert
(metres)

COMMENTS:

Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions: TEMP (°C) WIND CLOUD PPT (current) PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 0 6

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30
Total Culvert LENGTH (m)

x

3
Maximum Culvert HEIGHT (m)

x

3
Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100
HORIZONTAL (%)

100
VERTICAL (%)

100
HOLES (%)

BIRD DATA

Species Detected: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert
(metres)

COMMENTS:

Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions: TEMP (°C) WIND CLOUD PPT (current) PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 07

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30
Total Culvert LENGTH (m)

x

3
Maximum Culvert HEIGHT (m)

x

3
Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100
HORIZONTAL (%)

100
VERTICAL (%)

100
HOLES (%)

BIRD DATA

Species Detected: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert
(metres)

COMMENTS:

Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions: TEMP (°C) WIND CLOUD PPT (current) PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 0 8

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30
Total Culvert LENGTH (m)

x

3
Maximum Culvert HEIGHT (m)

x

3
Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100
HORIZONTAL (%)

100
VERTICAL (%)

100
HOLES (%)

BIRD DATA

Species Detected: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert
(metres)

COMMENTS:

Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions: TEMP (°C) WIND CLOUD PPT (current) PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 0 9

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

(Indicate on map)

UTM Coordinates: See map

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30

Total Culvert LENGTH (m)

x

3

x

3

Maximum Culvert HEIGHT (m)

Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100

HORIZONTAL (%)

100

VERTICAL (%)

100

HOLES (%)

BIRD DATA

Species Detected: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:

Birds (5 min observation):

Apparently active nests:

Old nests:

Nest scars:

Nest holes observed active:

Nest Holes not observed active:

Other species observed nesting:

	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert

(metres)

COMMENTS:

Project Number: 165001057 Project Name: MTO Hwy 401 Cobourg
 Date: 12-16 August 2017 Field Personnel: B Holden, B Miller

Weather Conditions: TEMP (°C) WIND CLOUD PPT (current) PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 1 Start/End times (24 hr): /
 Location: See map Orientation (0 to 179°): ~180

Feature ID: See map UTM Coordinates: See map
 (Indicate on map) Zone Easting Northing

CULVERT DATA

Culvert runs under: Highway 401
 (road, rail, other)

Construction: ☐ Open-bottom arch ☐ Enclosed arch ☐ Cylindrical
☒ Open-bottom box ☐ Enclosed box ☐ Other

Number of arches or boxes: 1

Material: Concrete
 (wood, metal, concrete, stone, or other)

Culvert Dimensions: 30 x 3 x 3
 Total Culvert LENGTH (m) Maximum Culvert HEIGHT (m) Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO Suitable vertical surface? ☐ YES / ☐ NO
 Other suitable surfaces? ☒ YES / ☐ NO ☐ Bolts / ☐ Holes / ☐ Other
 Artificial nest platform/ledge? ☐ YES / ☒ NO If yes, describe:
 Visibility of potential nest sites: 100 100 100
 HORIZONTAL (%) VERTICAL (%) HOLES (%)

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO
 Nests Observed: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO Maximum width of water in culvert: Same as culvert
 (metres)

COMMENTS:

Project Number: 165001057

Project Name: MTO Hwy 401 Cobourg

Date: 12-16 August 2017

Field Personnel: B Holden, B Miller

Weather Conditions:

TEMP (°C)	WIND	CLOUD	PPT (current)	PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 1

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30 x 3 x 3
Total Culvert LENGTH (m) Maximum Culvert HEIGHT (m) Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100
HORIZONTAL (%)

100
VERTICAL (%)

100
HOLES (%)

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: **BARS** = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:

Birds (5 min observation):

Apparently active nests:

Old nests:

Nest scars:

Nest holes observed active:

Nest Holes not observed active:

Other species observed nesting:

	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert
(metres)

COMMENTS:

Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions:

TEMP (°C)	WIND	CLOUD	PPT (current)	PPT (last 24 hrs)
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Watercourse Name: Unnamed Tributary 1

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30

x

3

x

3

Total Culvert LENGTH (m)

Maximum Culvert HEIGHT (m)

Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100

HORIZONTAL (%)

100

VERTICAL (%)

100

HOLES (%)

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: **BARS** = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:

Birds (5 min observation):

Apparently active nests:

Old nests:

Nest scars:

Nest holes observed active:

Nest Holes not observed active:

Other species observed nesting:

	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert

(metres)

COMMENTS:

Project Number: 165001057

Date: 12-16 August 2017

Project Name: MTO Hwy 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions:

TEMP (°C)	WIND	CLOUD	PPT (current)	PPT (last 24 hrs)

Watercourse Name: Unnamed Tributary 13

Start/End times (24 hr): /

Location: See map

Orientation (0 to 179°): ~180

Feature ID: See map

UTM Coordinates: See map

(Indicate on map)

Zone

Easting

Northing

CULVERT DATA

Culvert runs under: Highway 401

(road, rail, other)

Construction: ☐ Open-bottom arch

☐ Enclosed arch

☐ Cylindrical

☒ Open-bottom box

☐ Enclosed box

☐ Other

Number of arches or boxes: 1

Material: Concrete

(wood, metal, concrete, stone, or other)

Culvert Dimensions: 30 x 3 x 3
Total Culvert LENGTH (m) Maximum Culvert HEIGHT (m) Maximum Culvert WIDTH (m)

Culvert Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☐ NO

Other suitable surfaces? ☒ YES / ☐ NO

☐ Bolts / ☐ Holes / ☐ Other

Artificial nest platform/ledge? ☐ YES / ☒ NO

If yes, describe:

Visibility of potential nest sites: 100
HORIZONTAL (%)

100
VERTICAL (%)

100
HOLES (%)

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: **BARS** = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of culvert

HABITAT DATA

Water in culvert? ☒ YES / ☐ NO

Maximum width of water in culvert: Same as culvert
(metres)

COMMENTS:

Project Number: 165001061 Project Name: MTO 401 Cobourg
 Date: 12-16 August 2017 Field Personnel: B Holden, B Miller

Weather Conditions: _____
 TEMP (°C) _____ WIND _____ CLOUD _____ PPT (current) _____ PPT (last 24 hrs) _____

River Name & Section: Road - *Nagle* Start/End times (24 hr): _____ / _____
 Location: Highway 401 Orientation (0 to 179°): ~90

Feature ID: See map UTM Coordinates: _____
 (Indicate on map) Zone _____ Easting _____ Northing _____

BRIDGE DATA

Bridge Type: Road (road, rail, other) Over: road (water, road, land)
 Construction: ☒ Beam ☐ Truss ☐ Arch ☐ Suspension ☐ Tied Arch ☐ Cable-stayed

Bridge Length (m): 30 m
 TOTAL

Bridge Width (m): 15 m each m

Bridge Height (m): 10 m
 MAXIMUM

Both EBL and WBL bridges

Bridge Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO
 Suitable vertical surface? ☐ YES / ☒ NO
 Other suitable surfaces? ☐ YES / ☒ NO ☐ Bolts / ☐ Holes / ☐ Other: _____

% Visibility of potential nest sites: 100 % 100 100 %
 HORIZONTAL VERTICAL HOLES

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO
 Nests Observed: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							

Other species observed nesting: _____

Within 50m of bridge

HABITAT DATA

River width: It's not a river

COMMENTS:

Project Number: 165001061

Date: 12-16 August 2017

Project Name: MTO 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions:

TEMP (°C)

WIND

CLOUD

PPT (current)

PPT (last 24 hrs)

River Name & Section: Road -

Location: Highway 401

Start/End times (24 hr): /

Orientation (0 to 179°): ~90

Feature ID: See map

(Indicate on map)

UTM Coordinates:

Zone

See map

Easting

Northing

BRIDGE DATA

Bridge Type: Road

(road, rail, other)

Over: road

(water, road, land)

Construction: ☒ Beam

☐ Truss

☐ Arch

☐ Suspension

☐ Tied Arch

☐ Cable-stayed

Bridge Length (m): 30 m

TOTAL

Bridge Width (m): 15 m each m

Bridge Height (m): 10 m

MAXIMUM

Both EBL and
WBL bridges

Bridge Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☒ NO

Other suitable surfaces? ☐ YES / ☒ NO

☐ Bolts / ☐ Holes / ☐ Other:

% Visibility of potential nest sites: 100 %

HORIZONTAL

100 %

VERTICAL

100 %

HOLES

BIRD DATA

Species Detected: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:

Birds (5 min observation):

Apparently active nests:

Old nests:

Nest scars:

Nest holes observed active:

Nest Holes not observed active:

Other species observed nesting:

	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							

Within 50m of bridge

HABITAT DATA

River width: It's not a river

COMMENTS:

Project Number: 165001061 Project Name: MTO 401 Cobourg
 Date: 12-16 August 2017 Field Personnel: B Holden, B Miller

Weather Conditions: _____
 TEMP (°C) _____ WIND _____ CLOUD _____ PPT (current) _____ PPT (last 24 hrs) _____

River Name & Section: Road - *Cully* Start/End times (24 hr): _____ / _____
 Location: Highway 401 Orientation (0 to 179°): ~90

Feature ID: See map UTM Coordinates: See map
 (Indicate on map) Zone Easting Northing

BRIDGE DATA

Bridge Type: Road (road, rail, other) Over: road (water, road, land)
 Construction: ☒ Beam ☐ Truss ☐ Arch ☐ Suspension ☐ Tied Arch ☐ Cable-stayed
 Bridge Length (m): 30 m TOTAL
 Bridge Width (m): 15 m each m
 Bridge Height (m): 10 m MAXIMUM Both EBL and WBL bridges

Bridge Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO
 Suitable vertical surface? ☐ YES / ☒ NO
 Other suitable surfaces? ☐ YES / ☒ NO ☐ Bolts / ☐ Holes / ☐ Other: _____

% Visibility of potential nest sites: 100 % 100 100 %
 HORIZONTAL VERTICAL HOLES

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO
 Nests Observed: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of bridge

HABITAT DATA

River width: It's not a river

COMMENTS:

Project Number: 165001061 Project Name: MTO 401 Cobourg
 Date: 12-16 August 2017 Field Personnel: B Holden, B Miller

Weather Conditions: _____
 TEMP (°C) _____ WIND _____ CLOUD _____ PPT (current) _____ PPT (last 24 hrs) _____

River Name & Section: Road - R223 Start/End times (24 hr): _____ / _____
 Location: Highway 401 Orientation (0 to 179°): ~90

Feature ID: See map UTM Coordinates: See map
 (Indicate on map) Zone Easting Northing

BRIDGE DATA

Bridge Type: Road (road, rail, other) Over: road (water, road, land)
 Construction: ☒ Beam ☐ Truss ☐ Arch ☐ Suspension ☐ Tied Arch ☐ Cable-stayed
 Bridge Length (m): 30 m TOTAL
 Bridge Width (m): 15 m each m
 Bridge Height (m): 10 m MAXIMUM Both EBL and WBL bridges

Bridge Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO
 Suitable vertical surface? ☐ YES / ☒ NO
 Other suitable surfaces? ☐ YES / ☒ NO ☐ Bolts / ☐ Holes / ☐ Other: _____

% Visibility of potential nest sites: 100 % 100 100 %
 HORIZONTAL VERTICAL HOLES

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO
 Nests Observed: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							

Other species observed nesting: _____

Within 50m of bridge

HABITAT DATA

 River width: It's not a river
COMMENTS:

Project Number: 165001061 Project Name: MTO 401 Cobourg
 Date: 12-16 August 2017 Field Personnel: B Holden, B Miller

Weather Conditions: _____
 TEMP (°C) _____ WIND _____ CLOUD _____ PPT (current) _____ PPT (last 24 hrs) _____

River Name & Section: Road - Shelter Valley Start/End times (24 hr): _____ / _____
 Location: Highway 401 Orientation (0 to 179°): ~90

Feature ID: See map UTM Coordinates: See map
 (Indicate on map) Zone Easting Northing

BRIDGE DATA

Bridge Type: Road Over: road
 (road, rail, other) (water, road, land)

Construction: ☒ Beam ☐ Truss ☐ Arch ☐ Suspension ☐ Tied Arch ☐ Cable-stayed

Bridge Length (m): 30 m
 TOTAL

Bridge Width (m): 15 m each m

Bridge Height (m): 10 m
 MAXIMUM

Both EBL and WBL bridges

Bridge Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO
 Suitable vertical surface? ☐ YES / ☒ NO
 Other suitable surfaces? ☐ YES / ☒ NO ☐ Bolts / ☐ Holes / ☐ Other: _____

% Visibility of potential nest sites: 100 % 100 100 %
 HORIZONTAL VERTICAL HOLES

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO
 Nests Observed: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							

Other species observed nesting: _____

Within 50m of bridge

HABITAT DATA

River width: It's not a river

COMMENTS:

Project Number: 165001061

Date: 12-16 August 2017

Project Name: MTO 401 Cobourg

Field Personnel: B Holden, B Miller

Weather Conditions:

TEMP (°C)

WIND

CLOUD

PPT (current)

PPT (last 24 hrs)

River Name & Section: Road -

Vermontville

Start/End times (24 hr): /

Location: Highway 401

Orientation (0 to 179°): ~90

Feature ID: See map

(Indicate on map)

UTM Coordinates:

Zone

See map

Easting

Northing

BRIDGE DATA

Bridge Type: Road

(road, rail, other)

Over: road

(water, road, land)

Construction: ☒ Beam

☐ Truss

☐ Arch

☐ Suspension

☐ Tied Arch

☐ Cable-stayed

Bridge Length (m): 30 m

TOTAL

Bridge Width (m): 15 m each m

Bridge Height (m): 10 m

MAXIMUM

Both EBL and
WBL bridges

Bridge Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO

Suitable vertical surface? ☐ YES / ☒ NO

Other suitable surfaces? ☐ YES / ☒ NO

☐ Bolts / ☐ Holes / ☐ Other:

% Visibility of potential nest sites: 100 %

HORIZONTAL

100 %

VERTICAL

100 %

HOLES

BIRD DATA

Species Detected: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Nests Observed: BARS = ☐ YES / ☒ NO

CLSW = ☐ YES / ☒ NO

NRWS = ☐ YES / ☒ NO

Number of:

Birds (5 min observation):

Apparently active nests:

Old nests:

Nest scars:

Nest holes observed active:

Nest Holes not observed active:

Other species observed nesting:

	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							

Within 50m of bridge

HABITAT DATA

River width: It's not a river

COMMENTS:

Project Number: 165001061 Project Name: MTO 401 Cobourg
 Date: 12-16 August 2017 Field Personnel: B Holden, B Miller

Weather Conditions: _____
 TEMP (°C) _____ WIND _____ CLOUD _____ PPT (current) _____ PPT (last 24 hrs) _____

River Name & Section: Road - *Wern* Start/End times (24 hr): _____ / _____
 Location: Highway 401 Orientation (0 to 179°): ~90

Feature ID: See map UTM Coordinates: See map
 (Indicate on map) Zone Easting Northing

BRIDGE DATA

Bridge Type: Road Over: road
 (road, rail, other) (water, road, land)

Construction: ☒ Beam ☐ Truss ☐ Arch ☐ Suspension ☐ Tied Arch ☐ Cable-stayed

Bridge Length (m): 30 m
 TOTAL

Bridge Width (m): 15 m each m

Bridge Height (m): 10 m
 MAXIMUM

Both EBL and WBL bridges

Bridge Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO
 Suitable vertical surface? ☐ YES / ☒ NO
 Other suitable surfaces? ☐ YES / ☒ NO ☐ Bolts / ☐ Holes / ☐ Other: _____

% Visibility of potential nest sites: 100 % 100 100 %
 HORIZONTAL VERTICAL HOLES

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO
 Nests Observed: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							

Other species observed nesting: _____

Within 50m of bridge

HABITAT DATA

River width: It's not a river

COMMENTS:

Project Number: 165001061 Project Name: MTO 401 Cobourg
 Date: 12-16 August 2017 Field Personnel: B Holden, B Miller

Weather Conditions: _____
 TEMP (°C) _____ WIND _____ CLOUD _____ PPT (current) _____ PPT (last 24 hrs) _____

River Name & Section: Road - R R 25 Start/End times (24 hr): _____ / _____
 Location: Highway 401 Orientation (0 to 179°): ~90

Feature ID: See map UTM Coordinates: See map
 (Indicate on map) Zone _____ Easting _____ Northing _____

BRIDGE DATA

Bridge Type: Road (road, rail, other) Over: road (water, road, land)
 Construction: ☒ Beam ☐ Truss ☐ Arch ☐ Suspension ☐ Tied Arch ☐ Cable-stayed

Bridge Length (m): 30 m
 TOTAL

Bridge Width (m): 15 m each m

Bridge Height (m): 10 m
 MAXIMUM

Both EBL and WBL bridges

Bridge Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO
 Suitable vertical surface? ☐ YES / ☒ NO
 Other suitable surfaces? ☐ YES / ☒ NO ☐ Bolts / ☐ Holes / ☐ Other: _____

% Visibility of potential nest sites: 100 % 100 100 %
 HORIZONTAL VERTICAL HOLES

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO
 Nests Observed: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:							
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							

Other species observed nesting: _____

Within 50m of bridge

HABITAT DATA

 River width: It's not a river
COMMENTS:

Project Number: 165001061 Project Name: MTO 401 Cobourg
 Date: 12-16 August 2017 Field Personnel: B Holden, B Miller

Weather Conditions: _____
 TEMP (°C) _____ WIND _____ CLOUD _____ PPT (current) _____ PPT (last 24 hrs) _____

River Name & Section: Shelter Valley Creek Start/End times (24 hr): _____ / _____
 Location: Highway 401 Orientation (0 to 179°): ~90

Feature ID: See map UTM Coordinates: See map
 (indicate on map) Zone Easting Northing

BRIDGE DATA

Bridge Type: Curved (road, rail, other) Over: creek (water, road, land)
 Construction: ☐ Beam ☐ Truss ☒ Arch ☐ Suspension ☐ Tied Arch ☐ Cable-stayed

Bridge Length (m): 30 m
 TOTAL

Bridge Width (m): 30 m

Bridge Height (m): 10 m
 MAXIMUM

Bridge Suitability for Nesting

Suitable horizontal ledges? ☐ YES / ☒ NO
 Suitable vertical surface? ☐ YES / ☒ NO
 Other suitable surfaces? ☒ YES / ☐ NO ☐ Bolts / ☐ Holes / ☒ Other: surface

% Visibility of potential nest sites: 100 % 100 100 %
 HORIZONTAL VERTICAL HOLES

BIRD DATA

Species Detected: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO
 Nests Observed: **BARS** = ☐ YES / ☒ NO **CLSW** = ☐ YES / ☒ NO **NRWS** = ☐ YES / ☒ NO

Number of:	CLSW	BARS	EAPH	AMRO	ROPI	HOSP	NRWS
Birds (5 min observation):							
Apparently active nests:							
Old nests:			2				
Nest scars:							
Nest holes observed active:							
Nest Holes not observed active:							
Other species observed nesting:							

Within 50m of bridge

HABITAT DATA

River width: 8 m

COMMENTS:

Lots of human activity in here

**Stantec**

Stantec Consulting Ltd.
70 Southgate Drive
Guelph, Ontario, Canada
N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Wildlife Habitat and Incidental Wildlife Observation Form

Project Number 165001057Project Name: Hwy 401 CobourgDate / Time: 1 4 Aug 2017Field Personnel: B Holden, B Miller**Weather Conditions:**

Temp:

24-26

Wind:

1-2

Cloud:

30-70

PPT:

✓

PPT in last 24 hrs:

✓

Wildlife Habitat

List specific microhabitats present (snags, logs, hibernacula, vernal pools etc.) and what community they were encountered in (use ELC code where applicable).

- Several Gray Treefrog E. of Danforth, S of 401
- Bat trees in Row?
- Seep; Spring escape locations.

Incidental Species Observations

List species and type of observation:

(TK = track, SC = scat, VO = vocalization, OB = observed, DP = distinctive parts, FE = feeding evidence, CA = carcass, FY = eggs, nest, HO = house/den, SI = other sign)

Birds	Mammals	Herps	Butterflies / Dragonflies	Other
i.e. AMRO/VO AMGO RBBG RTAA TUV BAES CEDW BLTA AMRO RWBL COBA CONA	Coyote WT Deer E. chipmunk	Gray Treefrog	Black Swallowtail Cabbage White Monarch Wild Indigo Dusky wing Question Mark Dun Skipper Viceroy Sw. Aeshma Darters	12 spot Skimmer Ebony Sandwing C.G. Darter E. Forktail WF Meadowhawk C. Whitetail Swarming

Quality Control: This form is complete () & legible ().

Signature: [Signature]

(Field Personnel)

Signature: _____

(Project Manager)

Page 1 of

REV: May, 07 Form 006

**Stantec**

Stantec Consulting Ltd.
70 Southgate Drive
Guelph, Ontario, Canada
N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Wildlife Habitat and Incidental Wildlife Observation Form

Project Number 165001057Project Name: Hwy 401 CobourgDate / Time: 1 5 Aug 2017Field Personnel: B Holden, B Miller**Weather Conditions:**

Temp:

18-24

Wind:

1-2

Cloud:

10-90

PPT:

PPT in last 24 hrs:

Wildlife Habitat

List specific microhabitats present (snags, logs, hibernacula, vernal pools etc.) and what community they were encountered in (use ELC code where applicable).

Brown-bellied Bumblebee**Incidental Species Observations**

List species and type of observation:

(TK = track, SC = scat, VO = vocalization, OB = observed, DP = distinctive parts, FE = feeding evidence, CA = carcass, FY = eggs, nest, HO = house/den, SI = other sign)

Clouds Supher

Birds	Mammals	Herps	Butterflies / Dragonflies	Other
<i>i.e. AMRO/VO</i> AMPO WOA COYE SOSP RWBL AMBO AMEN REVI BCOH RTRA TUVU	WT Deer Raccoon	A. Tard.	Tawny edged Skipper Crescent Monarch Cabbage White Black Swallowtail C. Wood Nymph Halloween Pennant Giant Swallowtail F. Ringlet G.S. Antillary Viceroy Least Skipper Eastern Tailed Blue	Vidua Sinner W. Meadowlark Long-billed Darter Bald-winged Meadowlark G. Pondhawk Slender Sparrow 12 spot Sparrow C.G. Darter Black Noddy

Quality Control: This form is complete () & legible ().

Signature: _____

(Field Personnel)

Signature: _____

(Project Manager)

REV: May, 07 Form



Stantec

Stantec Consulting Ltd.
70 Southgate Drive
Guelph, Ontario, Canada
N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Wildlife Habitat and Incidental Wildlife Observation Form

Project Number 165001057

Project Name: Hwy 401 Cobourg

Date / Time: 1 6 Aug 2017

Field Personnel: B Holden, B Miller

Weather Conditions:

Temp:

17

Wind:

2-3

Cloud:

PPT:

PPT in last 24 hrs:

Rain

Wildlife Habitat

List specific microhabitats present (snags, logs, hibernacula, vernal pools etc.) and what community they were encountered in (use ELC code where applicable).

Incidental Species Observations

List species and type of observation:

(TK = track, SC = scat, VO = vocalization, OB = observed, DP = distinctive parts, FE = feeding evidence, CA = carcass, FY = eggs, nest, HO = house/den, SI = other sign)

Birds	Mammals	Herps	Butterflies / Dragonflies	Other
<i>i.e. AMRO/VO</i> COGR AMBO AMRO TURV SOSP RTHA FIS P EAPH	Vole sp.	PATU - sandhill	Den skipper Monarch Wild Indigo Duskywing? Clouded Sulphur C. White C. Ringlet White Admiral C. Wood Nymph	Common White tail WF-Meadowhawk Long-tipped Darter Familiar Blue C.G. Darter Ruby Meadowhawk Broad-winged Meadowhawk Viceroy Common

Quality Control: This form is complete () & legible ().

Signature: [Signature]
(Field Personnel)

Signature: _____
(Project Manager)

Page _____ of _____

REV: May

2112 3717
5A 326 3717

Page 3 of 3

APPENDIX D:

Species Lists

VASCULAR PLANT LIST - MTO Highway 401 Cobourg to Colborne, ON

Plant species observed by Brian Miller on August 14, 15, 16 and 17, 2017 in Highway 401
Right-of-Way and adjacent natural features

Scientific Name	Common Name	Establishment Means	Coefficient of Conservatism	OWES Wetland Plant Species	Provincial Status (S-rank)
PTERIDOPHYTES (FERNS & FERN ALLIES)					
Equisetum arvense	field horsetail	native	0	T	S5
Equisetum hyemale ssp. affine	common scouring-rush	native	2	T	S5
Equisetum variegatum	variegated scouring-rush	native	5	I	S5
Matteuccia struthiopteris	ostrich fern	native	5	T	S5
Onoclea sensibilis	sensitive fern	native	4	I	S5
Pteridium aquilinum	eastern bracken fern	native	2		S5
Thelypteris palustris var. pubescens	eastern marsh fern	native	5	I	S5
GYMNOSPERMS (CONIFERS)					
Juniperus communis	ground juniper	native	4		S5
Juniperus virginiana	eastern red cedar	native			S5
Larix laricina	tamarack	native	7	I	S5
Picea abies	Norway spruce	introduced			SE3
Picea glauca	white spruce	native	6	T	S5
Picea pungens	blue spruce	introduced			SE1
Pinus nigra	Austrian pine	introduced			SE3
Pinus resinosa	red pine	native	8		S5
Pinus strobus	eastern white pine	native	4	T	S5
Pinus sylvestris	Scotch pine	introduced			SE5
Thuja occidentalis	eastern white cedar	native	4	T	S5
Tsuga canadensis	eastern hemlock	native	7	T	S5
ANGIOSPERMS (DICOTS)					
Acer xfreemanii	Freeman maple	native	5	I	S5
Acer negundo	Manitoba maple	native	0	T	S5
Acer saccharinum	silver maple	native	5	I	S5
Acer saccharum	sugar maple	native	4		S5
Achillea millefolium	common yarrow	introduced			SE
Agalinis tenuifolia	slender agalinis	native	7		S4S5
Alnus incana ssp. rugosa	speckled alder	native	6	I	S5
Ambrosia artemisiifolia	common ragweed	native	0		S5
Amphicarpaea bracteata	American hog peanut	native	4	T	S5
Anemone acutiloba	sharp-lobed hepatica	native	6		S5
Anemone cylindrica	long-headed anemone	native	7		S4
Anemone virginiana	Virginia anemone	native	4		S5

VASCULAR PLANT LIST - MTO Highway 401 Cobourg to Colborne, ON

Plant species observed by Brian Miller on August 14, 15, 16 and 17, 2017 in Highway 401
Right-of-Way and adjacent natural features

Scientific Name	Common Name	Establishment Means	Coefficient of Conservatism	OWES Wetland Plant Species	Provincial Status (S-rank)
<i>Apocynum androsaemifolium</i>	spreading dogbane	native	3		S5
<i>Apocynum cannabinum</i>	hemp dogbane	native			S5
<i>Asclepias syriaca</i>	common milkweed	native	0		S5
<i>Asclepias tuberosa</i>	butterfly milkweed	native	8		S4
<i>Betula papyrifera</i>	paper birch	native		T	S5
<i>Bidens cernua</i>	nodding beggarticks	native	2	I	S5
<i>Bidens frondosa</i>	devil's beggarticks	native	3	I	S5
<i>Carduus acanthoides</i>	spiny plumeless thistle	introduced			SE5
<i>Carya cordiformis</i>	bitternut hickory	native	6		S5
<i>Centaurea</i> sp.	knapweed species	introduced			
<i>Centaurea pulchellum</i>	branched centaury	introduced			SE3
<i>Cichorium intybus</i>	wild chicory	introduced			SE5
<i>Cicuta maculata</i>	spotted water-hemlock	native	6	I	S5
<i>Circaea canadensis</i>	enchanter's nightshade	native	3		S5
<i>Cirsium arvense</i>	Canada thistle	introduced			SE5
<i>Cirsium vulgare</i>	bull thistle	introduced			SE5
<i>Convolvulus arvensis</i>	field bindweed	introduced			SE5
<i>Cornus alternifolia</i>	alternate-leaved dogwood	native	6		S5
<i>Cornus racemosa</i>	grey dogwood	native	2	T	S5
<i>Cornus stolonifera</i>	red-osier dogwood	native	2	I	S5
<i>Crataegus</i> sp.	hawthorn species				
<i>Crataegus monogyna</i>	English hawthorn	introduced			SE4
<i>Cynanchum rossicum</i>	European swallowwort	introduced			SE5
<i>Daucus carota</i>	wild carrot	introduced			SE5
<i>Desmodium canadense</i>	Canada tick-trefoil	native	5		S4
<i>Dianthus armeria</i>	Deptford pink	introduced			SE5
<i>Echinocystis lobata</i>	wild cucumber	native	3	T	S5
<i>Echium vulgare</i>	common viper's bugloss	introduced			SE5
<i>Elaeagnus angustifolia</i>	Russian olive	introduced			SE3
<i>Epilobium hirsutum</i>	hairy willowherb	introduced		I	SE5
<i>Epilobium parviflorum</i>	small-flowered willowherb	introduced		T	SE4
<i>Erigeron canadensis</i>	Canada horseweed	native	0		S5
<i>Erigeron strigosus</i>	rough fleabane	native	0		S5
<i>Eupatorium perfoliatum</i>	common boneset	native	2	I	S5
<i>Euphorbia davidii</i>	David's spurge	introduced			SE4
<i>Euphorbia esula</i>	leafy spurge	introduced			SE1?

VASCULAR PLANT LIST - MTO Highway 401 Cobourg to Colborne, ON

Plant species observed by Brian Miller on August 14, 15, 16 and 17, 2017 in Highway 401
Right-of-Way and adjacent natural features

Scientific Name	Common Name	Establishment Means	Coefficient of Conservatism	OWES Wetland Plant Species	Provincial Status (S-rank)
<i>Euphorbia maculata</i>	spotted spurge	introduced			SE5
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	native	2		S5
<i>Eutrochium maculatum</i>	spotted Joe Pye weed	native	3	I	S5
<i>Fagus grandifolia</i>	American beech	native	6		S4
<i>Fragaria vesca</i>	woodland strawberry	native	4		S5
<i>Fraxinus americana</i>	white ash	native	4		S4
<i>Fraxinus pennsylvanica</i>	red ash	native	3	T	S4
<i>Hieracium</i> spp.	hawkweed species				
<i>Hydrophyllum virginianum</i>	Virginia waterleaf	native	6		S5
<i>Hypericum perforatum</i>	common St. John's-wort	introduced			SE5
<i>Impatiens capensis</i>	spotted jewelweed	native	4	I	S5
<i>Inula helenium</i>	elecampane	introduced		T	SE5
<i>Lactuca serriola</i>	prickly lettuce	introduced			SE5
<i>Laportea canadensis</i>	Canada wood nettle	native	6	T	S5
<i>Leucanthemum vulgare</i>	oxeye daisy	introduced			SE5
<i>Linaria vulgaris</i>	butter-and-eggs	introduced			SE5
<i>Lonicera tatarica</i>	Tartarian honeysuckle	introduced			SE5
<i>Lotus corniculatus</i>	garden bird's-foot trefoil	introduced			SE5
<i>Lycopus americanus</i>	American water-horehound	native	4	I	S5
<i>Lycopus uniflorus</i>	northern water-horehound	native	5	I	S5
<i>Lysimachia arvensis</i>	scarlet pimpernel	introduced			SE4
<i>Lythrum salicaria</i>	purple loosestrife	introduced		I	SE5
<i>Medicago lupulina</i>	black medick	introduced			SE5
<i>Medicago sativa</i>	alfalfa	introduced			SE5
<i>Melilotus albus</i>	white sweet-clover	introduced			SE5
<i>Melilotus officinalis</i>	yellow sweet-clover	introduced			SE5
<i>Mentha canadensis</i>	Canada mint	native	3	I	S5
<i>Monarda fistulosa</i>	wild bergamot	native	6		SU
<i>Oenothera</i> cf. <i>biennis</i>	common evening primrose	native	0		S5
<i>Ostrya virginiana</i>	ironwood	native	4		S5
<i>Oxybasis glauca</i>	oak-leaved goosefoot	introduced			SE5
<i>Parthenocissus</i> cf. <i>vitacea</i>	thicket creeper	native	3		S5
<i>Pastinaca sativa</i>	wild parsnip	introduced			SE5
<i>Penstemon digitalis</i>	foxglove beardtongue	introduced	6		S4S5
<i>Physalis heterophylla</i>	clammy ground-cherry	native	3		S4
<i>Plantago arenaria</i>	sand plantain	introduced			SE4

VASCULAR PLANT LIST - MTO Highway 401 Cobourg to Colborne, ON

Plant species observed by Brian Miller on August 14, 15, 16 and 17, 2017 in Highway 401
Right-of-Way and adjacent natural features

Scientific Name	Common Name	Establishment Means	Coefficient of Conservatism	OWES Wetland Plant Species	Provincial Status (S-rank)
<i>Plantago lanceolata</i>	English plantain	introduced			SE5
<i>Podophyllum peltatum</i>	May-apple	native	5		S5
<i>Populus balsamifera</i>	balsam poplar	native	4	T	S5
<i>Populus deltoides</i> ssp. <i>deltoides</i>	eastern cottonwood	native	4	T	S5
<i>Populus grandidentata</i>	large-toothed aspen	native	5		S5
<i>Populus tremuloides</i>	trembling aspen	native		T	S5
<i>Potentilla recta</i>	sulphur cinquefoil	introduced			SE5
<i>Prunella vulgaris</i> ssp. <i>vulgaris</i>	common self-heal	introduced			SE3
<i>Prunus pensylvanica</i>	pin cherry	native	3		S5
<i>Prunus virginiana</i>	chokecherry	native	2		S5
<i>Quercus rubra</i>	northern red oak	native	6		S5
<i>Ratibida pinnata</i>	grey-headed coneflower	native	9		S3
<i>Rhamnus cathartica</i>	European buckthorn	introduced		T	SE5
<i>Rhus typhina</i>	staghorn sumac	native	1		S5
<i>Ribes cynosbati</i>	eastern prickly gooseberry	native	4		S5
<i>Robinia pseudoacacia</i>	black locust	introduced			SE5
<i>Rosa</i> cf. <i>blanda</i>	smooth rose	native	3		S5
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	American red raspberry	native	0		S5
<i>Rubus occidentalis</i>	black raspberry	native	2		S5
<i>Rubus odoratus</i>	purple-flowering raspberry	native	3		S5
<i>Rudbeckia hirta</i>	black-eyed Susan	native	0		S5
<i>Rumex crispus</i>	curled dock	introduced		T	SE5
<i>Salix</i> cf. <i>alba</i>	white willow	introduced		T	SE4
<i>Salix amygdaloides</i>	peach-leaved willow	native	6	T	S5
<i>Salix bebbiana</i>	Bebb's willow	native	4	I	S5
<i>Salix discolor</i>	pussy willow	native	3	I	S5
<i>Salix eriocephala</i>	cottony willow	native	4	T	S5
<i>Salix interior</i>	sandbar willow	native	3	T	S5
<i>Salix petiolaris</i>	meadow willow	native	3	I	S5
<i>Sambucus canadensis</i>	common elderberry	native	5	T	S5
<i>Sanguinaria canadensis</i>	bloodroot	native	5		S5
<i>Saponaria officinalis</i>	bouncing-bet	introduced			SE5
<i>Securigera varia</i>	purple crown-vetch	introduced			SE5
<i>Silene antirrhina</i>	sleepy catchfly	native	3		S5
<i>Silene vulgaris</i>	bladder campion	introduced			SE5
<i>Solanum dulcamara</i>	bittersweet nightshade	introduced		T	SE5

VASCULAR PLANT LIST - MTO Highway 401 Cobourg to Colborne, ON

Plant species observed by Brian Miller on August 14, 15, 16 and 17, 2017 in Highway 401
Right-of-Way and adjacent natural features

Scientific Name	Common Name	Establishment Means	Coefficient of Conservatism	OWES Wetland Plant Species	Provincial Status (S-rank)
<i>Solidago canadensis</i>	Canada goldenrod	native	1		S5
<i>Solidago flexicaulis</i>	zigzag goldenrod	native	6		S5
<i>Solidago gigantea</i>	giant goldenrod	native	4	T	S5
<i>Solidago nemoralis</i>	grey-stemmed goldenrod	native	2		S5
<i>Sonchus arvensis</i>	field sow-thistle	introduced			SE5
<i>Spiraea alba</i>	white meadowsweet	native	3	I	S5
<i>Symphyotrichum ericoides</i>	white heath aster	native			S5
<i>Symphyotrichum lanceolatum</i>	white paniced aster	native	3	I	S5
<i>Symphyotrichum lateriflorum</i>	calico aster	native	3	T	S5
<i>Symphyotrichum novae-angliae</i>	New England aster	native	2		S5
<i>Symphyotrichum puniceum</i>	purple-stemmed aster	native	6	I	S5
<i>Symphyotrichum urophyllum</i>	arrow-leaved aster	native	6		S4
<i>Syringa vulgaris</i>	common lilac	introduced			SE5
<i>Tanacetum vulgare</i>	common tansy	introduced			SE5
<i>Taraxacum officinale</i>	common dandelion	introduced			SE5
<i>Thalictrum dioicum</i>	early meadow-rue	native	5		S5
<i>Tilia americana</i>	basswood	native	4		S5
<i>Toxicodendron radicans</i>	western poison ivy	native	5	T	S5
<i>Tragopogon dubius</i>	yellow goatsbeard	introduced			SE5
<i>Trifolium pratense</i>	red clover	introduced			SE5
<i>Trifolium repens</i>	white clover	introduced			SE5
<i>Tussilago farfara</i>	coltsfoot	introduced		T	SE5
<i>Ulmus americana</i>	white elm	native	3	T	S5
<i>Ulmus pumila</i>	Siberian elm	introduced			SE3
<i>Urtica dioica</i> ssp. <i>gracilis</i>	slender stinging nettle	native	2	T	S5
<i>Verbena hastata</i>	blue vervain	native	4	I	S5
<i>Verbena stricta</i>	hoary vervain	native	7		S4
<i>Veronica anagallis-aquatica</i>	water speedwell	introduced		I	SE5
<i>Viburnum lentago</i>	nannyberry	native	4	T	S5
<i>Vicia cracca</i>	tufted vetch	introduced			SE5
<i>Vitis riparia</i>	riverbank grape	native	0		S5
ANGIOSPERMS (MONOCOTS)					
<i>Agrostis gigantea</i>	redtop	introduced		T	SE5
<i>Agrostis stolonifera</i>	creeping bentgrass	introduced		T	SE5
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit	native	5	T	S5

VASCULAR PLANT LIST - MTO Highway 401 Cobourg to Colborne, ON

Plant species observed by Brian Miller on August 14, 15, 16 and 17, 2017 in Highway 401
Right-of-Way and adjacent natural features

Scientific Name	Common Name	Establishment Means	Coefficient of Conservatism	OWES Wetland Plant Species	Provincial Status (S-rank)
<i>Asparagus officinalis</i>	garden asparagus	introduced			SE5
<i>Bromus inermis</i>	smooth brome	introduced			SE5
<i>Carex albursina</i>	white bear sedge	native	7		S5
<i>Carex bebbii</i>	Bebb's sedge	native	3	I	S5
<i>Carex brevior</i>	short-beaked sedge	native	7		S4S5
<i>Carex cristatella</i>	crested sedge	native	3	I	S5
<i>Carex flava</i>	yellow sedge	native	5	I	S5
<i>Carex granularis</i>	limestone meadow sedge	native	3	T	S5
<i>Carex hitchcockiana</i>	Hitchcock's sedge	native	6		S5
<i>Carex hystericina</i>	porcupine sedge	native	5	I	S5
<i>Carex retrorsa</i>	retorse sedge	native	5	I	S5
<i>Carex rosea</i>	rosy sedge	native	5		S5
<i>Carex</i> spp.					
<i>Carex spicata</i>	spiked sedge	introduced			SE5
<i>Carex vulpinoidea</i>	fox sedge	native	3	I	S5
<i>Dactylis glomerata</i>	orchard grass	introduced			SE5
<i>Echinochloa</i> cf. <i>muricata</i>	rough barnyard grass	native	4	I	S5
<i>Elymus hystrix</i>	bottlebrush grass	native	5		S5
<i>Epipactis helleborine</i>	broad-leaved helleborine	introduced			SE5
<i>Eragrostis</i> sp.	lovegrass species				
<i>Glyceria striata</i>	ridged mannagrass	native	3	I	S5
<i>Hordeum jubatum</i>	foxtail barley	native			S5
<i>Juncus alpinoarticulatus</i>	alpine rush	native	5	I	S5
<i>Juncus articulatus</i>	jointed rush	native	5	I	S5
<i>Juncus bufonius</i>	toad rush	native	1	T	S5
<i>Juncus compressus</i>	compressed rush	introduced		T	SE5
<i>Juncus dudleyi</i>	Dudley's rush	native	1	T	S5
<i>Juncus torreyi</i>	Torrey's rush	native	3	T	S5
<i>Lolium arundinaceum</i>	tall fescue	introduced			SE5
<i>Maianthemum racemosum</i>	large false Solomon's seal	native	4		S5
<i>Maianthemum stellatum</i>	starry false Solomon's seal	native	6		S5
<i>Panicum capillare</i>	common panicgrass	native	0		S5
<i>Phalaris arundinacea</i>	reed canarygrass	native	0	T	S5
<i>Phleum pratense</i>	common timothy	introduced			SE5
<i>Phragmites australis</i> ssp. <i>australis</i>	European reed	introduced		T	SE5
<i>Poa compressa</i>	Canada bluegrass	introduced			SE5

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Scientific Name	Common Name	Establishment Means	Coefficient of Conservatism	OWES Wetland Plant Species	Provincial Status (S-rank)
<i>Poa pratensis</i>	Kentucky bluegrass	introduced			SE5
<i>Schoenoplectus tabernaemontani</i>	soft-stemmed bulrush	native	5	I	S5
<i>Scirpus atrovirens</i>	dark-green bulrush	native	3	T	S5
<i>Scirpus cyperinus</i>	common woolly bulrush	native	4	I	S5
<i>Scirpus pendulus</i>	hanging bulrush	native	3	I	S5
<i>Trillium grandiflorum</i>	white trillium	native	5		S5
<i>Typha angustifolia</i>	narrow-leaved cattail	introduced	3	I	SE5

FLORISTIC SUMMARY	TOTAL
Total Species	212
Native Species	136
Introduced (exotic) species	76
Species at Risk in Ontario (END, THR or SC)	0
Rare in Ontario (S1, S2 or S3)	1
Uncommon to common in Ontario (S4)	12
Common to very common in Ontario (S5)	123
Highly sensitive plant species with C value greater than 7	3
Wetland Tolerant (T) Plant Species as identified in OWES Manual	45
Wetland Indicator (I) Plant Species as identified in OWES Manual	41

Wildlife List

<i>Species Common Name</i>	<i>Species Scientific Name</i>	S-Rank	Provincial Satus (COSSARO)	National Status (COSEWIC)
ODONATA				
Ebony Jewelwing	<i>Calopteryx maculata</i>	S5		
Slender Spreadwing	<i>Lestes rectangularis</i>	S5		
Familiar Bluet	<i>Enallagma civile</i>	S5		
Eastern Forktail	<i>Ischnura verticalis</i>	S5		
Lance-Tipped Darner	<i>Aeshna constricta</i>	S5		
Common Green Darner	<i>Anax junius</i>	S5		
Halloween Pennant	<i>Celithemis eponina</i>	S4		
Eastern Pondhawk	<i>Erythemis simplicicollis</i>	S5		
Widow Skimmer	<i>Libellula luctuosa</i>	S5		
Twelve-Spotted Skimmer	<i>Libellula pulchella</i>	S5		
Common Whitetail	<i>Plathemis lydia</i>	S5		
White-faced Meadowhawk	<i>Sympetrum obtrusum</i>	S5		
Ruby Meadowhawk	<i>Sympetrum rubicundulum</i>	S5		
Band-winged Meadowhawk	<i>Sympetrum semicinctum</i>	S4		
Black Saddlebags	<i>Tramea lacerata</i>	S4		
BUTTERFLIES				
Wild Indigo Duskywing	<i>Erynnis baptisiae</i>	S4		
Least Skipper	<i>Ancyloxypha numitor</i>	S5		
Tawny-edged Skipper	<i>Polites themistocles</i>	S5		
Dun Skipper	<i>Euphyes vestris</i>	S5		
Black Swallowtail	<i>Papilio polyxenes</i>	S5		
Giant Swallowtail	<i>Papilio cresphontes</i>	S3		
Cabbage White	<i>Pieris rapae</i>	SNA		
Clouded Sulphur	<i>Colias philodice</i>	S5		
Eastern Tailed Blue	<i>Everes comyntas</i>	S5		
Great Spangled Fritillary	<i>Speyeria cybele</i>	S5		
Tawny Crescent	<i>Phyciodes batesii</i>	S4		
Question Mark	<i>Polygonia interrogationis</i>	S5		
Viceroy	<i>Limenitis archippus</i>	S5		
Common Ringlet	<i>Coenonympha tullia</i>	S5		
Common Wood-Nymph	<i>Cercyonis pegala</i>	S5		
Monarch	<i>Danaus plexippus</i>	S4B, S2N	SC	SC
AMPHIBIANS				
American Toad	<i>Anaxyrus americanus</i>	S5		
Tetraploid Gray Treefrog	<i>Hyla versicolor</i>	S5		
REPTILES				
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S5		
BIRDS				
Turkey Vulture	<i>Cathartes aura</i>	S5B		
Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5	NAR	NAR
Eastern Phoebe	<i>Sayornis phoebe</i>	S5B		
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B		
Blue Jay	<i>Cyanocitta cristata</i>	S5		
American Crow	<i>Corvus brachyrhynchos</i>	S5B		
Common Raven	<i>Corvus corax</i>	S5		
Barn Swallow	<i>Hirundo rustica</i>	S4B	THR	THR
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5		
American Robin	<i>Turdus migratorius</i>	S5B		
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B		
American Goldfinch	<i>Spinus tristis</i>	S5B		
Field Sparrow	<i>Spizella pusilla</i>	S4B		
Song Sparrow	<i>Melospiza melodia</i>	S5B		
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S4		
Common Grackle	<i>Quiscalus quiscula</i>	S5B		
Common Yellowthroat	<i>Geothlypis trichas</i>	S5B		
Northern Cardinal	<i>Cardinalis cardinalis</i>	S5		
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	S4B		

Wildlife List

<i>Species Common Name</i>	<i>Species Scientific Name</i>	S-Rank	Provincial Satus (COSSARO)	National Status (COSEWIC)
MAMMALS				
Eastern Chipmunk	<i>Tamias striatus</i>	S5		
Coyote	<i>Canis latrans</i>	S5		
Raccoon	<i>Procyon lotor</i>	S5		
White-tailed Deer	<i>Odocoileus virginianus</i>	S5		
Vole Species	-	-		
COSSARO: Committee on the Status of Species at Risk in Ontario				
COSEWIC: Committee on the Status of Endangered Wildlife in Canada				
S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)				
S4: Apparently Secure—Uncommon but not rare				
S5: Secure—Common, widespread, and abundant in the province				
S#B- Breeding status rank				
S#N- Non Breeding status rank				
END: Endangered				
THR: Threatened				
SC: Special Concern				