



Environmental Impact Study for the Ainley Farm Property Township of Centre Wellington

Prepared for Black, Shoemaker, Robinson, Donaldson

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1.0 Introduction

In 2006, North-South Environmental Inc. (NSE) was retained by Black, Shoemaker, Robinson Donaldson Limited to provide an environmental impact study (EIS) for a proposed subdivision and access road on the Ainley Farm property adjacent to the Elora-Salem Urban Centre in the Township of Centre Wellington, County of Wellington. Development is proposed within 30 metres (m) of a non-provincially significant wetland, and is therefore subject to an EIS (GRCA 2005). The plans for the development were put on hold, and the EIS was not filed at the time. In 2010, the subject property was brought into the Urban Boundary by way of Official Plan Amendment 69.

The Ainley Farm property is legally described as Part of Lots 17 and 18, Concession 12, Township of Centre Wellington, County of Wellington. The property includes 21.46 hectares (ha) of land, with frontage on Gerrie Road to the east and access to the future extension of Walser Drive to the west.

In December 2014, NSE was retained to update the EIS, in the context of a new plan of subdivision. Field work was conducted in 2015 to ensure findings were up to date. The current report discusses the existing environment on the property, and the potential impacts to that environment from a proposed residential subdivision and an access road extending from Walser Street to the west.

1.1 Previous Designations

The wooded area of the Ainley Farm property, which includes interspersed forest and wetlands, is mapped as a non-provincially significant wetland by the Grand River Conservation Authority (GRCA). The Township of Centre Wellington Official Plan does not map the area in Core Greenlands (Township of Centre Wellington 2013 consolidation). An area of Core Greenlands is designated on the property by the County of Wellington Official Plan. The objective of the Greenlands System is to protect and enhance the natural heritage of Wellington County. The Greenlands System outlined within the Plan is intended to include those features and areas which are part of Wellington's natural heritage or areas in which natural or human-made conditions may pose a threat to public safety. It includes:

- wetlands;
- environmentally sensitive areas;
- streams and valley lands,
- ponds, lakes and reservoirs;
- areas of scientific and natural interest;
- woodlands;
- fish, wildlife and plant habitat;
- flood plains and hazardous lands; and
- threatened and endangered species.

The objectives of this updated study are to investigate the features and functions of the natural area on the Ainley Farm property, and to identify how wetland functions can be retained and how the natural area on the property can continue to function as part of the Greenlands System as the surrounding area is developed. Specifically, the objectives of the report are:

- to collect background information on environmental features;
- to map and classify vegetation community boundaries, particularly wetlands;
- to map the location and habitat of significant species, if any; and
- to identify impacts and mitigation associated with the proposed development.

1.2 Consultation

An earlier (2006) draft of the EIS report, and a proposed Terms of Reference for the 2015 studies, were provided to Jason Wagler at GRCA. Comments from GRCA (dated February 26, 2014) were used to refine the study through 2015. GRCA comments on the Terms of Reference are provided in Appendix 1.

1.3 Wetland Staking

The northern boundary of the wetlands (which is the only area in close proximity to proposed new residential development) was staked in the field and surveyed in February, 2007 with Anthony Zammit and Chris Powell of GRCA. The surveyed wetland boundary is shown in Figure 5, in Section 5. The boundary has not changed since the time it was surveyed, as the configuration of the depression excavated during the former gravel extraction dictated the boundary.

2.0 Site Setting and History

The Ainley Farm property is located on the northeast boundary of the Elora-Salem Urban Centre in Wellington County, Township of Centre Wellington. The surrounding landscape to the north and east is almost entirely under intensive cultivation, while the landscape to the south and west is undergoing rapid development to single family dwellings. Immediately to the east, along the opposite side of Gerrie Road is the Township of Centre Wellington Waste Transfer Station. (Figure 1)

The site was formerly used as a local pit that was quarried for sand in the 1930s (Keating 2005, pers. comm.), and the wetlands on the site are depressions left from quarrying. Figure 2 provides a view of the site in 1954 aerial photography, in which the faint outline of the quarried areas can be seen as lighter areas. The west half of the property is a mosaic of late-successional forest and shrubby wetlands, hereafter referred to as the “natural vegetation block”. The east half of the property consists of agricultural land used for crops

(Figure 1). The property is relatively isolated from other natural areas in the county. The nearest significant natural areas are provincially significant wetlands approximately 3.5 km to the west, but these are separated from the site by the Village of Elora.

A small ditch exits the site at the south end, and is channelized through the subdivisions to the south.

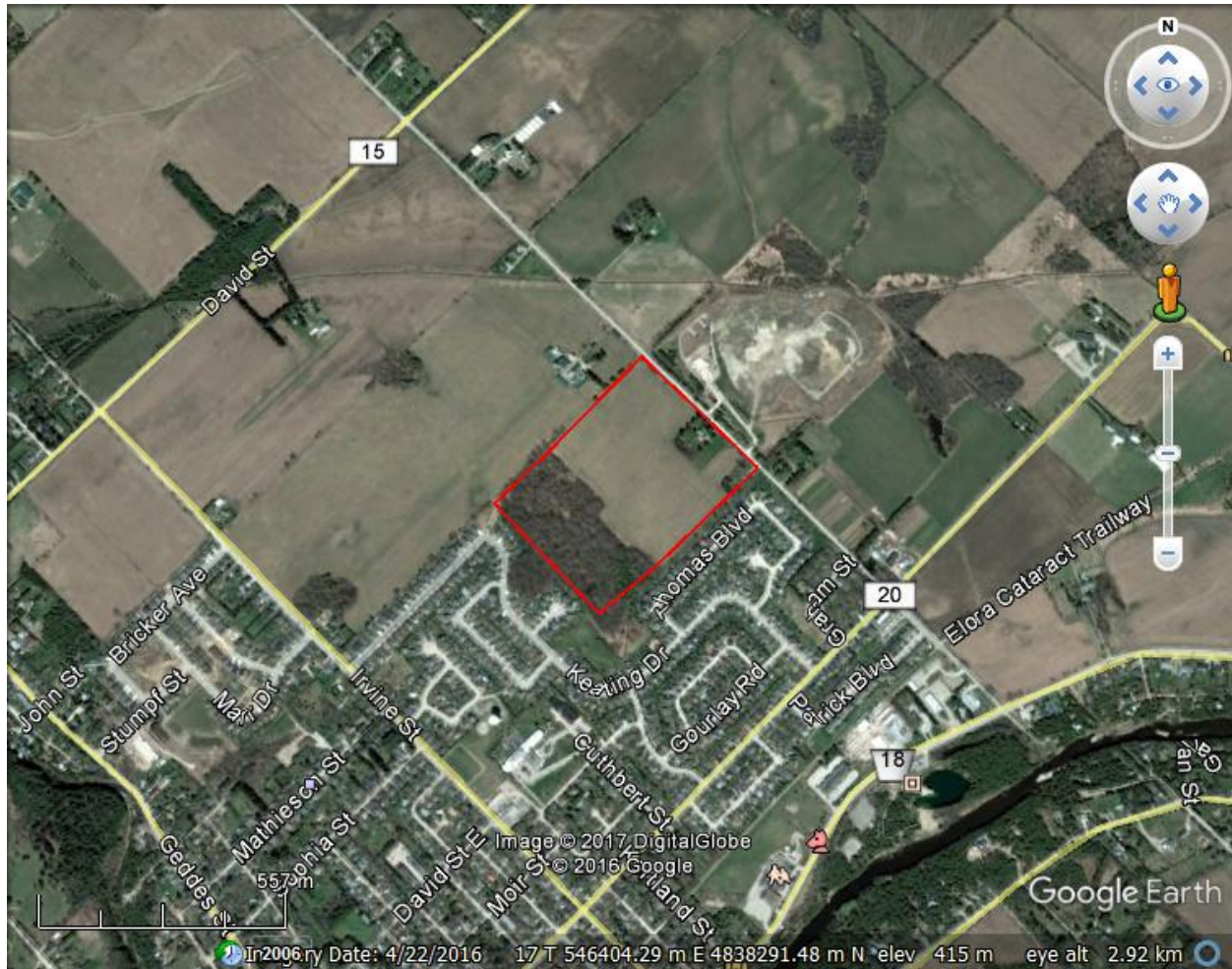


Figure 1. Google Earth™ Image of Site Setting within the Village of Elora

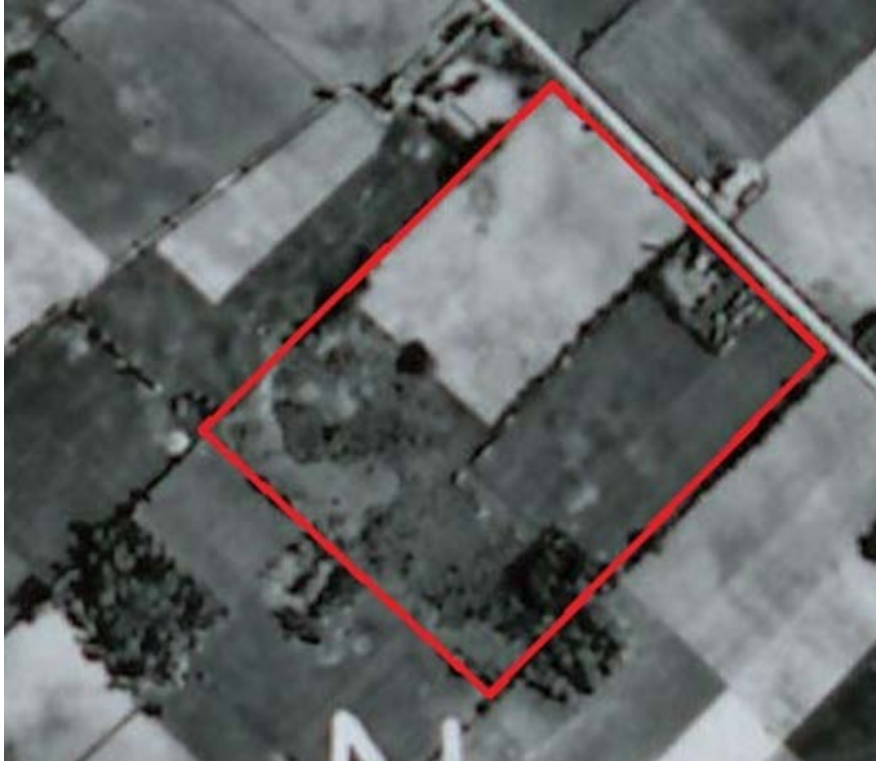


Figure 2. 1954 aerial photograph of the Ainley site

3.0 Applicable Policies

3.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) 2014 applies to significant natural features as follows:

“2.1 Natural Heritage

2.1.1 Natural features and areas shall be protected for the long term.

2.1.2 The diversity and connectivity of natural features in an area, and the long -term ecological function and biodiversity of natural heritage systems , should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.

2.1.3 Natural heritage systems shall be identified in Ecoregions 6E & 7E, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas.

2.1.4 Development and site alteration shall not be permitted in:

- a) significant wetlands in Ecoregions 5E, 6E and 7E; and
- b) significant coastal wetlands.

2.1.5 Development and site alteration shall not be permitted in:

- a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
- b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- c) significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- d) significant wildlife habitat;
- e) significant areas of natural and scientific interest; and
- f) coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b)

unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions."

3.2 GRCA Regulations and Wetlands Policy

GRCA Regulation Mapping (GRCA 2015; Figure 3) shows an unevaluated wetland within the feature on the western portion of the property. The extent of the "Regulated Area" on this property is mapped as 120 metres from the boundary of the wetland mapped by GRCA. This draft mapping is subject to change and refinement based on site observations and investigations. The recommended wetland buffer that should be considered as the regulated area on the basis of the revised mapping is discussed in Section 9.1.

Figure 3. GRCA mapping showing aerial photo mapping of wetland (purple) and regulated area of site (yellow)



The GRCA wetlands policy (2003) protects wetlands, though it may allow development of wetlands under some circumstances, as follows.

3.2.1 Protection - Fill, Construction and Alteration to Waterways Regulation

6.2.6 Where the GRCA has jurisdiction under the Conservation Authorities Act, it will protect wetlands from construction and placement of fill using the Fill, Construction and Alteration to Waterways Regulation.

6.2.7 Notwithstanding Section 6.2.6, the GRCA may grant approval of an application for a Fill, Construction and Alteration to Waterways Permit in each of the following circumstances:

6.2.7.1 Where a comprehensive plan demonstrates that all alternatives to avoid wetland loss have been considered and wetland loss is limited and unavoidable in order for the municipality to optimize site design or the provision of public infrastructure and/or to balance competing resource interests

6.2.7.2 Where a comprehensive plan demonstrates that a wetland provides minor and localized functional benefits, is not part of a Provincially Significant Wetland and its functions can be maintained or improved elsewhere within the subwatershed or planning area.

6.2.7.3 Where a comprehensive plan demonstrates that a proposed Storm Water Management (SWM) facility within a wetland will maintain or enhance water quality, sustain or improve the hydrological functions of the wetland, and restore natural functions.

6.2.7.4 Where a naturally-occurring wetland is less than 0.5 hectares, and is not:

- part of a Provincially Significant Wetland, or;*
- located within a floodplain or riparian community, or;*
- part of a Provincially or municipally designated natural heritage feature, a significant woodland, or hazard land, or;*
- a bog, fen, or;*
- fish habitat, or;*
- confirmed habitat for a Provincially or regionally significant species as determined by the Ministry of Natural Resources or as determined by the municipality, or;*
- part of an ecologically functional corridor or linkage between larger wetlands or natural areas, or;*
- part of a groundwater recharge area, or;*
- a groundwater discharge area associated with any of the above.*

6.2.7.5 Where an artificial wetland is less than 2 hectares and is not:

- part of a Provincially Significant Wetland, or;*
- located within a floodplain or riparian community, or;*
- part of a Provincially or municipally designated natural heritage feature, a significant woodland, or hazard land, or;*

- *fish habitat, or;*
- *confirmed habitat for a Provincially or regionally significant species as determined by the Ministry of Natural Resources or determined by the municipality, or;*
- *part of an ecologically functional corridor or linkage between larger wetlands or natural areas, or;*
- *part of a groundwater recharge area, or;*
- *a groundwater discharge area associated with any of the above,*
- *and it can be demonstrated that the wetland functions can be maintained or improved elsewhere within the subwatershed or planning area.*

6.2.7.6 Where wetlands have been created as part of a Storm Water Management (SWM) facility.

The GRCA Wetlands Policy (2007) notes that “Artificial Wetlands” means wetlands which have developed or have been created as a result of human influence on the landscape. Man-made ponds, lakes, lagoons, drainage courses, excavated pits, and other structures made to store or convey water on the landscape often become wetlands when they are left to naturalize. Similarly, artificial surface and subsurface drainage systems which are not well managed will cause wetland formation on some sites.

An “Interim Wetland Buffer Policy” was developed by GRCA (2003) as follows:

A 30 m buffer will be applied to all wetlands, Classes 1 through 7. It may be possible to provide some flexibility to this buffer if an Environmental Impact Statement is completed to the satisfaction of Authority staff.

3.3 County of Wellington Official Plan

Wetlands have been designated as “core greenlands” in the County of Wellington Official Plan, whereas the forested area of the site is designated “greenlands” (County of Wellington Official Plan Schedule 1; shown in Figure 2). Most of the block of natural vegetation was mapped as wetland by GRCA from aerial photographs, whereas ground-truthing during this study indicated that the wetlands were interspersed with patches of forest as shown in Figure 5 (see Section 5.1). There are no Regional Floodlines or Scheduled Areas identified on this property.

In the urban system (where the property is located), woodlands over 1 ha are considered significant. The County of Wellington Official Plan notes that significant woodlands will be protected from development or site alterations which would negatively impact the woodlands or their ecological functions.

Adjacent lands are considered those within 120 m of provincially significant features (as defined in the PPS). Adjacent lands cannot be developed unless it can be shown that there will be no impacts on the features and functions for which the area is identified.

3.4 Township of Centre Wellington

All provincially and locally significant wetlands are included in the Core Greenlands designation. The Township recognizes the hydrological, social, ecological and economic value of wetlands and their role within the natural environment. All other wetlands will be protected in large measure and development that would seriously impair their future ecological functions will not be permitted. The wetland on the property is considered an unevaluated wetland by GRCA (Wagler 2015, pers. comm.).

In the Township of Centre Wellington, the Core Greenlands designation includes only upland woodlands over 10 ha in area. Woodlands over 10 ha in area will be protected from development or site alterations that would negatively impact the woodlands or their ecological functions. Good forestry practices will be encouraged. The woodland on the property is not over 10 ha in size and has not been mapped as Core Greenland.



Figure 4. Core Greenlands (shown in dark green) and Greenlands (shown in light green) mapped on the property by the County of Wellington (Wellington County Official Plan Schedule 1).

4.0 Methods

Background information was obtained from the Wellington County Official Plan (Wellington County 2005), the Natural Heritage Information Centre (NHIC 2016) and the GRCA (Powell pers. comm., 2005; GRCA 2016). Lists of provincially rare species were obtained from the Natural Heritage Information Centre (NHIC 2016). Lists of species rare

in Wellington County were obtained for wildlife (Dougan and Associates, Draft 2005) and floral species (Frank and Anderson 2009).

Field work to inventory natural heritage features was conducted originally in 2006 and updated in 2015. The Ainley Farm property was first visited three times over the 2006 growing season to document natural features. The first visit was on April 16th in the evening, to look for breeding frogs. The next visit was conducted on July 4th to list early-to mid-summer flora and breeding bird species (the visit began at 0500, as recommended for breeding bird survey protocols by the Canadian Wildlife Service). The final visit was conducted on September 15th to complete Ecological Land Classification (ELC) and list fall floral species.

The surveys of the Ainley Farm property were updated in 2015. Amphibian surveys were conducted on April 14 and May 21, 2015, according to Bird Studies Canada Marsh Monitoring protocols. A third survey was not conducted as there was no standing water on the site at the time when a third survey would have been conducted (late June). Bird surveys and spring flora surveys were conducted on May 25th and June 18th, 2015. Vegetation surveys and summer flora surveys were conducted on July 22nd, 2015.

All areas of the site were visited during the early morning between 0500 and 0930, in fair weather with little wind, as recommended by the Canadian Wildlife Service protocols. Surveys were focused on obtaining evidence for breeding and determining the approximate number of territories in each habitat.

Breeding evidence was assessed for all bird species according to the following protocols developed by Bird Studies Canada (2001):

- **Observed** is defined as a species observed in its breeding season outside its nesting habitat (no evidence of breeding). Presumed migrants are not recorded.
- **Possible** breeding is defined as an observation of any of the following: 1) a species observed in its breeding season in suitable nesting habitat; and/or 2) singing male heard, and/or 3) breeding calls heard, in its breeding season in suitable nesting habitat.
- **Probable** breeding is defined as an observation of any of the following: (1) a pair in breeding season in suitable habitat; (2) permanent territory presumed through registration of territorial song on at least two days, a week or more apart, at the same place; or (3) courtship or display between a male and a female or two males, including courtship feeding or copulation; visiting probable nest site; agitated behaviour or anxiety calls of an adult; brood patch on an adult female or cloacal protuberance on an adult male; nest building or excavation of a nest hole.
- **Confirmed** breeding is defined as observation of any of the following: (1) a distraction display or injury feigning; (2) used nest or egg shell found (occupied or

laid within the period of the study); (3) recently fledged young or downy young, including young incapable of sustained flight; (4) adults entering or leaving nest site in circumstances indicating occupied nest (e.g., adult carrying fecal sac; adult carrying food for young); or (5) nest containing eggs, or nest with young seen or heard.

Vegetation surveys were updated on July 22nd, 2015. ELC followed standard protocols for southern Ontario (Lee *et al.* 1998). Soil samples were obtained using a Dutch auger. Plant communities were mapped on the aerial photograph in the field, and then digitized on to the map using Arcinfo software. Locations of significant features were either mapped on the aerial photographs, or locations were obtained using a hand-held Global Positioning System (GPS) receiver in the field, and the locations were digitized on the map from the recorded coordinates.

Floristic Quality Index (FQI) analysis was used to determine the quality of plant communities on the site. The FQI is a measure used to compare natural areas (Oldham *et al.* 1995). The FQI is derived from the assignment of a number between 1 and 10 to each native plant according to its habitat requirements (the Coefficient of Conservatism). The scores are averaged to obtain the Native Mean C and summed and divided by the square root of the number of species to obtain the FQI. Plants found in a diversity of habitats have low scores, and plants found only in a few, highly specific habitats have high scores. Therefore, very high quality habitats with a high diversity of species have higher FQIs and mean Coefficients of Conservatism (mean Cs).

5.0 Results of Field Inventories

5.1 Vegetation Communities

Vegetation communities were surveyed on July 22nd, 2015. The natural and cultural vegetation on the site is confined to a mosaic of woody upland and wetland vegetation types in a rectangular block on the western side of the property (Figure 5). The terrain is hilly as a result of previous quarrying operations. This mosaic mainly consists of upland communities, which surround three wetlands occupying much of the central portion of the mosaic (in this report, this mosaic is called the natural vegetation block for ease of reference). Table 1 shows the land area occupied by each community in the Ainley Farm property. None of the plant communities is considered rare in Ontario according to the Natural Heritage Information Centre.

Ainley Farm EIS

Figure 5: Ecological Land Classification and Significant Species

Legend

- Ecological Land Classification
 - CUM1** - Mineral Cultural Meadow
 - CUT1** - Mineral Cultural Thicket
 - CUW1** - Mineral Cultural Woodland
 - FOD8-1** - Fresh-Moist Poplar Deciduous Forest
 - SWM1-1** - White Cedar-Hardwood Mineral Mixed Swamp
 - SWT2-5** - Red-osier Mineral Thicket Swamp
 - SWT3-2** - Willow Organic Thicket Swamp
 - SWT3-5** - Red-osier Organic Thicket Swamp
- Provincial and Federal Species of Special Concern**
 - Eastern Wood-pewee
- Local Species of Conservation Concern**
 - American Redstart, 2006
 - American Redstart, 2016
 - Baltimore Oriole, 2016
 - Red-bellied Woodpecker, 2016
 - Red-breasted Grosbeak, 2016
 - Red-breasted Nuthatch, 2006
 - Swamp Sparrow, 2016
 - Veery, 2016
 - Vesper Sparrow, 2006
 - Vesper Sparrow, 2016
- Plants - Rare in Wellington**
 - Canada Clearweed
 - Sheathed Dropseed
 - Hop Sedge
 - Amphibian Breeding Habitat
 - Ephemeral Pool
- ~ Wetland Flagged with GRCA
- Property

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Table 1. Area covered by plant communities in the study area

Description	Area (ha)
Red-osier Organic Thicket Swamp (SWT3-5)	0.13
Willow Organic Thicket Swamp (SWT3-2)	0.77
Red-osier Mineral Thicket Swamp (SWT2-5)	0.80
White Cedar Mineral Mixed Swamp (SWM1-1)	0.30
Fresh-Moist Poplar Deciduous Forest (FOD8-1)	3.92
Cultural Woodland/Thicket (CUM1/CUT1)	1.60
Additional Off-site Woodland Area	0.54
Total “Woodland” Area (including treed swamp)	6.36
Total Natural Area	8.06
Total Agricultural Area	12.13

Fresh-Moist Poplar Deciduous Forest (FOD 8-1)

This community occupies the largest proportion of the natural vegetation. It is dominated by a well-stratified canopy of trembling aspen (*Populus tremuloides*) within a wide range of sizes, (mainly 10-40 cm dbh), with occasional American elm (*Ulmus americana*). The subcanopy consists of white ash (*Fraxinus americana*), and scattered American elm. The shrub layer mainly consists of common buckthorn (*Rhamnus cathartica*), one of the principal invasive non-native species in Canada (White *et al.* 1993). The ground layer mainly consists of young white ash, drooping sedge (*Carex gracillima*) and dwarf raspberry (*Rubus pubescens*), as well as a wide variety of predominantly native herbs such as late goldenrod (*Solidago gigantea*), and riverbank grape (*Vitis riparia*).

This community sustains occasional standing dead trees of a variety of sizes; large numbers of dead and dying ash trees affected by Emerald Ash Borer were noted in 2016. There are abundant undecayed and decaying logs on the forest floor. The terrain is relatively flat, with a few small wet depressions. Disturbances include evidence of human use including trails and bike ramps constructed out of soil mounds. The soils consist of silt loam to a depth of approximately 35 cm, over silty fine sand, with mottling at 35 cm indicating a moisture regime of moist.

Thicket Swamp (SWT)

Three types of thicket swamp are found on the property. The plant species assemblage within these areas is similar, so the plant species are listed in Appendix 2 for thicket swamp as a whole. The difference between the communities is mainly found in the proportions of each species and in the soil type, which varies from organic to mineral. No evidence of groundwater discharge such as iron deposits or active seepage was noted in these wetlands. However, two of the wetlands contained organic substrates, which can be an indication that there are groundwater inputs.

Red-osier Mineral Thicket Swamp (SWT 2-5)

This community is the most southerly of the three thicket swamps on the site (Figure 5). It is dominated by a dense cover of red-osier dogwood (*Cornus stolonifera*). There are a few scattered trees, mainly green ash (*Fraxinus pennsylvanica*). There are occasional openings supporting grasses, mainly creeping bent-grass (*Agrostis stolonifera*) and herbaceous species including joe-pye weed (*Eupatorium maculatum*), and swamp aster (*Symphyotrichum puniceum*).

Shallow water was noted pooling in this area in the spring, but the depth was generally less than 20 cm, and the wetland was not used by amphibians as breeding habitat. Soils consist of a silty clay over mottled clay loam (without the organic layer present in other areas of thicket swamp), with a moisture regime of very moist.

Willow Organic Thicket Swamp (SWT 3-2)

This wetland is similar to the mineral thicket swamp, but has greater plant diversity than other wetlands on site, and the substrate is organic. There is a very open canopy consisting of scattered trembling aspen and American elm. The dominating shrub layer consists of a variety of shrub willow species, including slender willow (*Salix petiolaris*), pussy willow (*S. discolor*) and heart-leaved willow (*S. eriocephala*). A dense cover of red-osier dogwood underlies the willows. Various herbs and grasses occur in the occasional openings in this community, mainly late goldenrod (*Solidago gigantea*), manna grass (*Glyceria striata*) and creeping bent-grass. These openings also support species that are rare in Wellington County (shown in Figure 5), including hop sedge (*Carex lupulina*) and Canada clearweed (*Pilea pumila*).

The terrain is flat in this unit. There are few snags, and little woody debris. The wetland is relatively undisturbed. There was an extensive area of water pooling (about 20 m x 30 m) in the early spring in the location shown in Figure 5, generally at a depth of approximately 30 cm but in places to a depth of 75 cm. Wood frogs were noted in this area in the early spring, and were probably breeding in that location. The water had dried up by the field visit at the beginning of July. Soils are patchy, in some places consisting of a layer of organic material to a depth of 45 cm over gleyed silty clay, and in other places mineral to the surface. The soil moisture regime is moderately wet.

Red-osier Organic Thicket Swamp (SWT 3-5)

This area of thicket swamp, near the northern boundary of the natural vegetation block, is the smallest and least diverse of the three thicket swamps on the Ainley Farm property. There is a cover of approximately 90% red-osier dogwood with a very few slender willow and American elm. One small opening in the wetland (likely an area where water pools in spring) sustains a few wetland sedges (one of which, hop sedge, is rare in Wellington County) and grasses.

The terrain within this wetland is relatively flat and the wetland is steep-sided. The current owner reports that this wetland occupies a site where sand was previously quarried on the property (Keating 2005, pers. comm.). There was some water noted pooling here in the spring, but the depth was less than 20 cm, and all standing water had dried up by the second field visit. Soils consist of a layer of organic material to a depth of 50 cm over gleyed silty clay, indicating a moisture regime of moderately wet. There is very little woody debris.

White Cedar-Hardwood Mineral Mixed Swamp (SWM 1-1)

This small mixed swamp was noted only in a small patch on the southeast corner of the natural vegetation block. The dense canopy consists of eastern white cedar (*Thuja occidentalis*), with occasional yellow birch (*Betula alleghaniensis*). Scattered trembling aspen stand above the cedar canopy. The sub-canopy and shrub layer consist of dense cedar and green ash. The ground layer is sparse, as is characteristic of cedar swamps, and consists of occasional ostrich fern (*Matteuccia struthiopteris*).

This community is relatively undisturbed. There are occasional standing snags and woody debris. The soil is similar to those in the southern mineral wetland, with a moisture regime of very moist.

Cultural Thicket/Cultural Woodland (CUT1/CUW1)

This community is patchy and variable. This area has become more densely vegetated with shrubs since the visit in 2006. Large trees such as sugar maple form an open canopy, with the largest maples concentrated in the northeast corner, probably the remnants of an old hedgerow. Shrubs and young trees are dense to occasional in an open sub-canopy, consistent mainly of non-natives such as domestic apple (*Malus pumila*), and Norway maple (*A. platanoides*), a highly invasive non-native species. White ash (*F. americana*) was formerly a common part of the canopy but most of the ash are dead and dying, probably as a result of Emerald Ash Borer. There are many dead and dying elms in the canopy and sub-canopy. The shrub layer is composed of common buckthorn, Tartarian honeysuckle (*Lonicera tatarica*), red raspberry (*Rubus idaeus*) and riverbank grape. The ground layer is composed of herbaceous species common to open cultural areas such as tall goldenrod (*S. altissima*) and a variety of aster species. There is one remaining open, grassy area vegetated with species adapted to dry fields, which is now dominated by Kentucky bluegrass (*Poa pratensis*), with a few native species of open habitats such as sheathed dropseed (which is rare in Wellington County), and black-eyed Susan (*Rudbeckia serotina*).

The terrain within this community appears disturbed, with some areas that appear to have been created by earth moving; likely a legacy of past quarrying. Soil samples were not obtained within this community as the classification is not based on soil moisture.

5.2 Floristics and Significant Species

A total of 184 plant species were noted on the Ainley Farm property in 2005 and 2015 (Appendix 2). None of these species is considered significant in Ontario, and none is considered Regionally rare (rare in the MNR former Central Region according to Riley 1989). A few species that are rare in Wellington County were noted, as described below in Table 2.

The vegetation in the wooded mosaic on the site is typical of small patches of woodland and wetland in southern Ontario, as indicated by the moderate proportion of non-native species for the site (44 non-native species: 24%). As a comparison, the flora of Ontario as a whole is similar: composed of 23% non-native species (Kaiser 1983). Table 2 provides a summary of the vegetation quality on the site as measured by native mean Coefficient of Conservatism and by the Floristic Quality Index (FQI: described further in the Methods section 4.0). The highest quality vegetation was noted in thicket swamp and mixed swamp, followed by the poplar forest. The lowest vegetation quality was found in the cultural meadow/cultural thicket on the north and east boundaries of the property.

Table 2. 2016 Floristic quality analysis for plant communities on the Ainley Farm property, Elora

Ecosite	Number of Plant Species				Native FQI	Native Mean Coefficient of Conservatism
	Number of Non-native Plants	Number of Native Plants	Number Identified to Genus	Total Number of Plants		
CUT/CUW	34	47 (57%)	2	83	17.21	2.51
FOD	17	63 (76%)	3	83	28.22	3.56
SWM	4	36 (88%)	1	41	22.83	3.81
SWT	9	66 (87%)	1	76	31.51	3.88

The quality of the native component of the communities on the site as a whole is moderate. The communities are composed of generalist species, as can be seen from the low Native Mean Coefficient of Conservatism (Table 2). The quality of individual communities is moderate to low. Thicket swamp and forest have the highest quality. As a comparison, communities in urban areas of Ontario, for example Mississauga, typically have FQIs in the 15-30 range. FQIs of 40 to 45 are fairly high for agricultural landscapes. A mean C under 4 indicates that the site is primarily vegetated with adaptable species that can withstand a variety of habitat changes. Areas with higher coefficients may be more sensitive to disturbance for example a change in water regime, influx of native species or canopy disturbance.

Three species found on the site are considered rare in Wellington County according to the draft list provided by Allen (updated 2008). These species and their habitats are shown in Table 3. Their locations are shown in Figure 5. The locations shown indicate several individuals in the general area. All these species are common and widespread in their respective habitats in other parts of southern Ontario.

Table 3. Plant species rare in Wellington County noted on the Ainley Farm property

Common Name	Scientific Name	Habitat on Site
Hop Sedge	<i>Carex lupulina</i>	Occasional in organic thicket swamp
Canada clearweed	<i>Pilea pumila</i>	Common in organic thicket swamp in location shown
Sheathed dropseed	<i>Sporobolus vaginiflorus</i>	Common in sandy open areas

5.3 Wildlife

Forty-two wildlife species were noted on the Ainley Farm property in 2006 and 2015. The most diverse group of wildlife was birds: a total of 36 species was noted, 32 for which there

was evidence of breeding. Wood duck, turkey vulture, belted kingfisher and savannah sparrow were also noted on the site but habitat for these species was not suitable for breeding. Three species of frog were noted on the property, as well as three common species of mammal. No reptiles were noted, though it is likely that ubiquitous species such as eastern gartersnake and Dekay's brownsnake occur on the site. All wildlife species encountered at the Ainley Farm property are noted in Appendix 3.

5.3.1 Amphibians

A small number of wood frogs (estimated at ten individuals) and one spring peeper were noted during the first field visit in 2015 in a large area of pooled water on the northern portion of the site within a large thicket swamp, as noted in Figure 5. Leopard frog (one individual) was noted on the second field visit. Other areas of pooled water were noted to the south on the site in early surveys (as shown in Figure 5) but did not harbour breeding frogs.

These results are similar to those obtained in 2006, though the number of wood frogs was higher in 2015 than in 2006 (it was previously estimated at four individuals). One leopard frog was noted in 2015, while two were noted in 2006. Spring peeper was noted only in 2015. The only amphibians noted on the site were frogs, though woody debris was searched often for salamanders.

Amphibian breeding pools can be considered Significant Wildlife Habitat (SWH) by the Ministry of Natural Resources and Forestry, as many amphibian species have relatively restricted habitat requirements for breeding. Ecoregion schedules for Ecoregion 6E (MNR 2015) note that 20 individuals of listed species (which include wood frog and spring peeper) would qualify an area as SWH, but this unit does not meet that threshold. Optimally, the pools must persist until late enough in the season for tadpoles to transform into adults (generally approximately mid-July), and must be deep enough to allow the tadpoles to grow and thrive, without predatory fish species. All the pools on the site had dried up by early July, so the wetlands on the site are marginal breeding habitat for frogs, likely drying up too early in some years.

5.3.2 Breeding Birds

Thirty-three species of birds were noted on the property, at a time and in habitat where they could be expected to breed, and so are considered possible breeding bird species. One species (belted kingfisher) was likely only foraging on the site (i.e. non-breeding), as suitable nesting habitat was not found. Most of the birds were noted in the mosaic of woodland and wetland within the natural vegetation block on the west side of the property, and so will not be affected by proposed development. Almost all these species are ubiquitous in small patches of woodland, wetland and fields in southern Ontario, whether these patches are within agricultural areas or in urban areas. The only wetland-dependent species noted (restricted to the thicket swamps in the portions of the property flooded in spring) were wood duck and common yellowthroat. Other species can utilize a variety of wooded and shrubby habitats. One species, vesper sparrow, was noted exclusively in the agricultural field on the east end of the property. This species is considered rare in

Wellington County (see below), but is dependent on hedgerows and woodland edges adjacent to large ploughed fields in broad agricultural landscapes. It is generally absent from patches of habitat within urbanizing areas.

5.3.3 Significant Species

Federal and Provincial Species of Special Concern

Eastern Wood-pewee

Eastern Wood-pewee is considered a species of Special Concern in Canada and Ontario. It nests in small and large woodlands throughout southern Ontario, and is still common and widespread in Ontario but is experiencing significant declines, possibly because of declines in the wintering habitat (COSEWIC 2013). It also nests in woodlands but is found in a wider range of habitats than the other species discussed here, as it can use younger woodlands for breeding. Two individuals (locations are shown in Figure 5) were noted during both breeding bird survey visits, in May and June, and so were considered a probable breeding observation.

One provincially rare species has been reported by NHIC (2016) in a general vicinity of 1 km near the site: black redhorse (a species of fish). There is no habitat for black redhorse (which requires large water bodies) on the site: this observation was certainly from the Grand River approximately 800 m from the site. Red-shouldered hawk (considered provincially rare in 2006) was recorded in the general vicinity of the site in 2006, but in 2016 this species is no longer considered provincially rare, though it is considered rare in Wellington County (Dougan and Associates (Draft) 2005). Red-shouldered hawk nests in large-canopied deciduous trees, usually in the vicinity of large wetlands as its primary food is amphibians. This species was not noted on the site or its vicinity, and there were no stick nests noted on the site in 2006 or 2015 that would indicate the presence of a nesting hawk.

Regionally Significant Species

Regionally significant fauna species (i.e. species noted by the Ontario Wetland Evaluation System as rare in Ecoregion 6E) were not noted on the site.

Locally Significant Species

Eight breeding bird species are considered locally significant in Wellington County according to a draft list of significant wildlife species by Dougan and Associates (2005), as listed in Table 4. One additional non-breeding significant species, belted kingfisher, was heard calling over the site. It nests in cavities in bluffs and stream banks near water and feeds mainly on small fish, though it occasionally takes other aquatic foods such as aquatic invertebrates and amphibians. No nesting sites were noted for this species on the site (and there is no fish habitat), though it may forage on the site occasionally. It was likely breeding along the Grand River.

Four of the significant breeding species are relatively specific in their habitat needs: American redstart, red-breasted nuthatch, veery and vesper sparrow. American redstart

was noted in the forest on the Ainley Farm property (Figure 5) in both 2006 and 2015. American redstart nests in open, successional woodlands and in shrubby areas at wetland edges. This species persists in forest habitats in urban areas (for example it is found in suitable habitat in Toronto and Mississauga). Red-breasted nuthatch is dependent on coniferous cover for nesting habitat. It also persists in small patches of pine plantation or cedar forest within urban areas.

Veery is an area-sensitive species that is usually found in much larger swamp and forested habitats, and was in atypical habitat on this site. It was found only on the first breeding bird visit in 2015, and was not noted in 2006. It was likely a late migrant on the site. Red-bellied woodpecker, rose-breasted grosbeak, swamp sparrow and Baltimore oriole are habitat generalists of forest and marsh, adapted to small patches of habitat in urban areas, and are expected to persist on the site after development.

Vesper sparrow is a species of open agricultural landscapes and does not persist in urban habitats. It is most often noted in hedgerows and edges of natural areas among large agricultural fields. This species is dependent on successional habitat: habitat that is by definition not stable. It colonizes habitats in an early stage of succession as the habitat becomes available, and then moves on as shrubs and trees invade and the habitat becomes unsuitable. It is thus adapted to finding new habitats when they become available. The habitat on the site will not be suitable for this species after development.

Table 4. Bird species considered rare in Wellington County by Dougan and Associates (Draft) 2005

Common Name	Habitat	Habitat Sensitivity	Probability of Breeding	Year(s) Noted
Federal and Provincial Species of Special Concern				
Eastern Wood-pewee	Forest and forest edges	Nests in a variety of forest habitats		2006 (observed only on migration), 2015
Red-bellied Woodpecker	Forest and forest edges	Nests in a variety of forest habitats	PO	2015
Red-breasted Nuthatch	Coniferous forest or plantation	Area-sensitive	PO	2006
Veery	Forest and swamp	Area-sensitive	PO	2015
American Redstart	Young forest and mature thicket	Area-sensitive	PR	2006, 2015
Rose-breasted Grosbeak	Forest and forest edges	Nests in a variety of forest habitats	PR	2015
Swamp Sparrow	Marshes and thicket swamps	Nests in a variety of open wetland habitats	PO	2015
Vesper Sparrow	Hedgerows and forest edges in open agricultural areas	Open agricultural habitats	PO	2006, 2015
Baltimore Oriole	Forest and forest edges	Nests in a wide variety of forest habitats	PO	2015

5.3.4 Mammals

Mammals noted on the site were common species of agricultural habitats, including white-tailed deer, woodchuck and eastern chipmunk. Other small mammal species likely include deer mouse or white-footed mouse.

6.0 Significant Wildlife Habitat

The wooded portion of the site meets the criteria for SWH because of the presence of Eastern Wood-pewee, a federal and provincial species of Special Concern. There is no indication that there are functions within the mosaic of woodlands and wetlands that would meet the criteria for other types of SWH according to MNR criteria for Ecoregion

6E (MNRF 2015). Though the site supports breeding amphibians, it does not support sufficient numbers or diversity of species to qualify as SWH for woodland or wetland breeding amphibians, as noted in Section 6. The natural area is not large enough, and does not support sufficient numbers of area-sensitive indicator species, to qualify as SWH for area-sensitive forest bird species. An analysis of candidate and confirmed SWH on the property is provided in Table 5.

In other respects, the site serves a function as a small, isolated area of predominantly edge habitat in a largely agricultural landscape. The low diversity of species is probably related to the small size of the block of natural vegetation, and the small size of the vegetation communities within it, particularly wetlands. The low diversity is also likely related to the fact that the natural vegetation block does not contain forest interior habitat (i.e., forest greater than 200 m from a forest edge). At its greatest extent, the natural vegetation block is only 200 m across, with intervening openings created by wetland areas.

The natural vegetation block mainly provides forest and wetland habitat for generalist wildlife and plant species that are adapted to a wide variety of conditions, with a small number of habitat-specific species. The willow thicket swamp provides breeding habitat for a small number of amphibians, likely those that move to the forested part of the habitat during the summer and winter. It is unlikely that it supplies breeding habitat for many individuals from greater distances as there are few other habitats in the vicinity that would support amphibians in summer and winter. The cultural areas and wetlands provide habitat for a few plant and bird species that have more specialized habitat needs. The agricultural portion of the site provides habitat only for a very low diversity of native species, but harbours one bird species rare in Wellington County.

The site has little function as linkage between other nodes of core habitat, because it is widely separated from extensive wetlands and forests within the county, and because it is not part of a continuous band of vegetation along a linear feature such as a stream. The watercourse that exits the site at the south end of the property is channelized through the subdivisions south of the site. The site is separated from other natural habitat not only by distance, but also by residential development to the south and west of the site. There are no well-developed hedgerows that connect the site to other habitat within the landscape.

Table 5. Analysis of SWH on the Ainley property, Elora

Type of Candidate SWH	Study Methods	Study Findings	SWH Present?
Colonial bird nesting habitat	Visual surveys for nests	No nests found	No
Woodland Raptor Nesting Area	Visual surveys for nests	No raptor nests found, no behaviour of raptors consistent with nesting	No
Amphibian Breeding Habitat	Amphibian call surveys Visual surveys of vernal pools for breeding adult salamanders	Wood Frog and Spring Peepers heard calling at low abundance; no salamanders found: criteria for SWH are: • Presence of breeding population of 1 or more of listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands.	No
Species of Conservation Concern	Incidental reptile surveys, breeding bird surveys, flora surveys	Eastern Wood-pewee (a species of special concern) noted in the natural vegetation block	Yes

7.0 Significant Woodlands

The natural vegetation block meets the criteria for a Significant Woodland in the urban system of Wellington County, as it is over 1 ha in size.

8.0 Description of the Development

The proposed residential development includes 122 residential lots and 4 future lots associated with the completion of the Walser subdivision, a multiple residential block, an apartment block, a park block and 2 stormwater management blocks along the east side of the natural vegetation block and a further stormwater management block along the north side of Walser Drive. The development area (shown in Figure 6) will be planned to avoid wetlands, and to avoid mature natural vegetation as much as possible. It will provide a 30 m buffer for the natural wetland area by leaving a large proportion of the surrounding forest. The development will mainly occupy areas that were previously used as agricultural land. Areas of edge, consisting of cultural woodland and thicket along the northwest and northeast side of the wooded area, will be removed for the Walser street extension and stormwater treatment, respectively, as described in more detail below. There will be some removal of vegetation for placement of a sanitary sewer line along the southeast edge of the woodland. The grading plan for the site is shown in Figure 7.

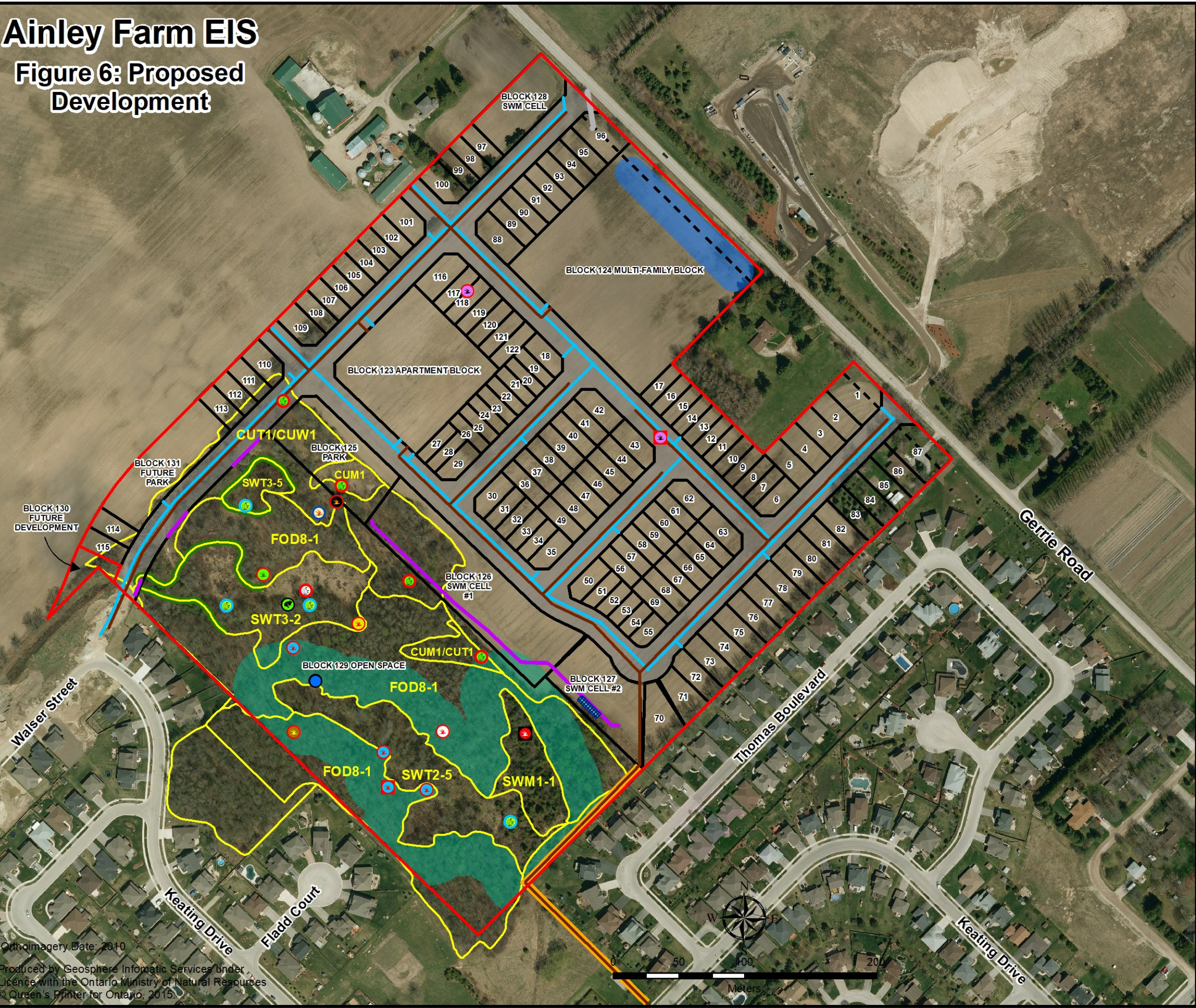
In order to connect the Ainley Farm property to the existing subdivision to the southwest, the access road to the site will occupy successional areas along the northwest side of the natural vegetation block. Development of storm water facilities along the northeast side of the natural vegetation block will also require removal of a portion of the successional vegetation along the northeastern boundary. The buffer between development and the wetland (along the northeast boundary) ranges from 10 m, at two points where the wetland extends eastward, to approximately 80 m, as shown in Figure 6. On the northwest side of the development, it will not be possible to maintain a buffer, because of the development of the Walser St. Extension.

8.1 Servicing

Sanitary sewer service will be provided to the site via the installation of a new 200mm diameter sanitary sewer on a 6m wide easement from Keating Drive, running along the south boundary of the vegetation block. This area was previously occupied by a municipal drain, which was modified at the time of the development to the south. Water service for the site will be provided by the installation of a new 200mm diameter watermain on Walser Street, connecting to the existing watermain on Walser Street. The implementation of services will require removal of very few trees.

Ainley Farm EIS

Figure 6: Proposed Development



Legend

- Ecological Land Classification
 - CUM1 - Mineral Cultural Meadow
 - CUT1 - Mineral Cultural Thicket
 - CUW1 - Mineral Cultural Woodland
 - FOD8-1 - Fresh-Moist Poplar Deciduous Forest
 - SWM1-1 - White Cedar-Hardwood Mineral Mixed Swamp
 - SWT2-5 - Red-osier Mineral Thicket Swamp
 - SWT3-2 - Willow Organic Thicket Swamp
 - SWT3-5 - Red-osier Organic Thicket Swamp
- Provincial and Federal Species of Special Concern
 - Eastern Wood-pewee
- Local Species of Conservation Concern
 - American Redstart, 2006
 - American Redstart, 2016
 - Baltimore Oriole, 2016
 - Red-bellied Woodpecker, 2016
 - Red-breasted Grosbeak, 2016
 - Red-breasted Nuthatch, 2006
 - Swamp Sparrow, 2016
 - Veery, 2016
 - Vesper Sparrow, 2006
 - Vesper Sparrow, 2016
 - Amphibian Breeding Habitat
- Plants - Rare in Wellington
 - Canada Clearweed
 - Sheathed Dropseed
 - Hop Sedge
 - Ephemeral Pool
- Wetland Flagged with GRCA
- Wetland - 30m Buffer
- Culvert
- Sanitary Sewer Line
- Watermain Line
- Stormwater Outlet
- Easement
- Future Pond
- Retaining Wall
- Setback 60m
- Streets
- Lots
- Property

Ainley Farm EIS

Figure 7: Preliminary Draft Grading Plan

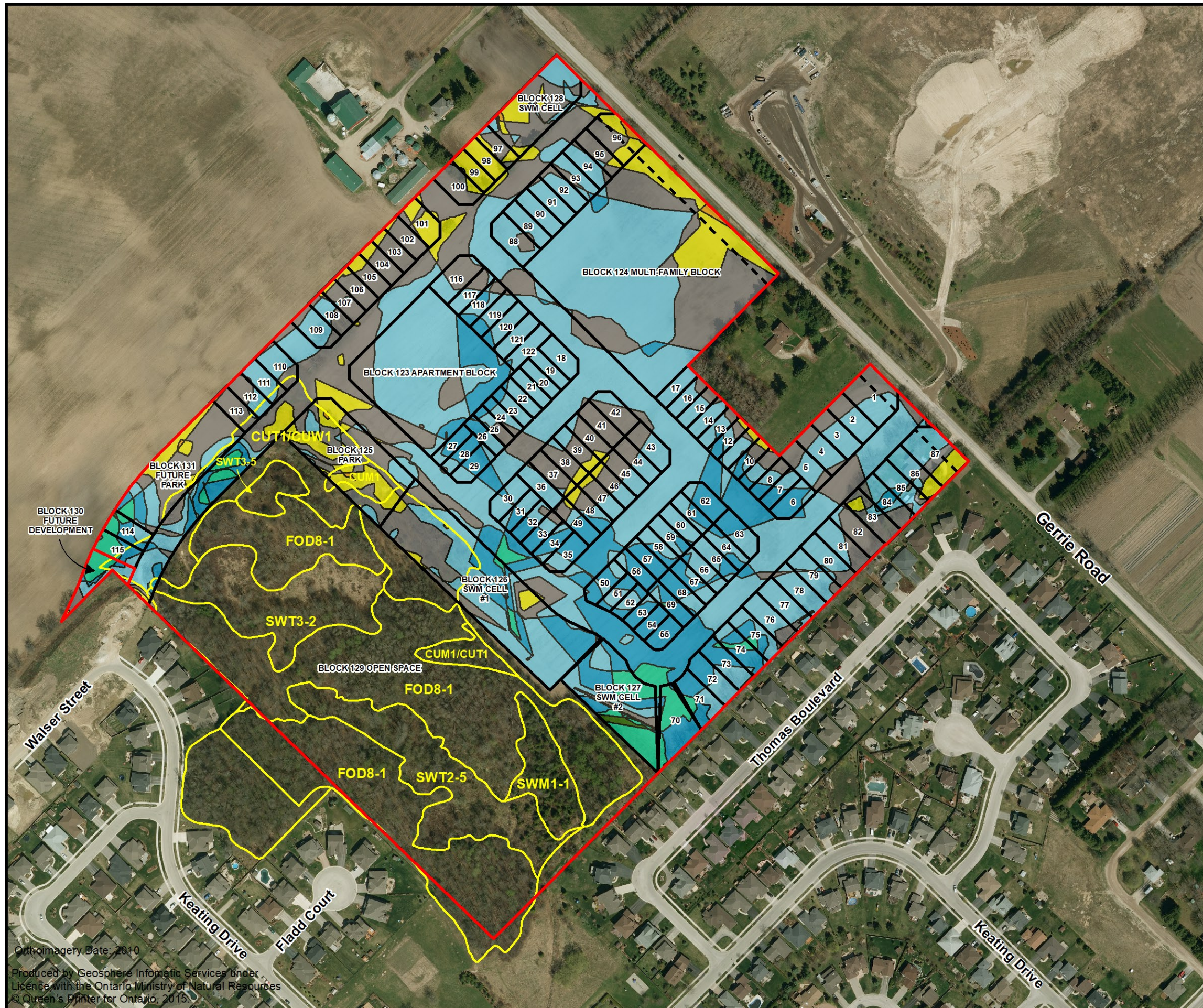
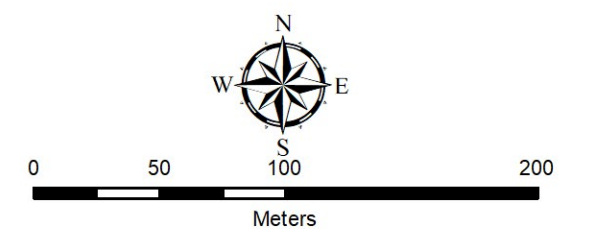
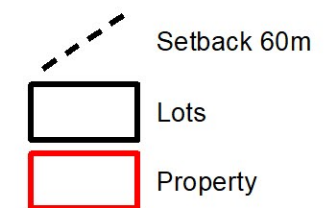
Legend

Cut and Fill (m)



Ecological Land Classification

- CUM1 - Mineral Cultural Meadow
- CUT1 - Mineral Cultural Thicket
- CUW1 - Mineral Cultural Woodland
- FOD8-1 - Fresh-Moist Poplar Deciduous Forest
- SWM1-1 - White Cedar-Hardwood Mineral Mixed Swamp
- SWT2-5 - Red-osier Mineral Thicket Swamp
- SWT3-2 - Willow Organic Thicket Swamp
- SWT3-5 - Red-osier Organic Thicket Swamp



8.2 Stormwater Management

Grit and oil will be removed from stormwater runoff generated from the site through the use of oil/grit separators (Stormceptors or approved equivalent) located upstream of the stormwater management facilities. In addition, the stormwater management facilities (shown in Figure 6) will provide secondary opportunity for sediment removal prior to discharge of the stormwater flows to the wetlands within the vegetation block and the tributary of the Grand River, north of the property.

8.3 Water Balance

A water balance has been prepared by GM Plan (GM Blue Plan 2017). There is a predicted decrease in recharge volume by 37%, and a 70% increase in runoff volume from the site to the wetland under post-development conditions.

The increase in runoff will result in the wetlands filling with water more frequently than at present. Though the depth of water will not increase, a larger portion of the wetlands will likely be flooded more frequently. Water will also remain in the wetland for a longer period than at present. In pre-development conditions following a 2-year to 100-year storm, water drains out of the wetlands in 6-7 hours respectively. In post-development conditions, water will drain out of the wetlands in 3-5 days following a two- to hundred-year storm, respectively.

9.0 Impacts and Mitigation

The impacts on the functions of natural features (the forest and associated wetlands) will be reduced as much as possible by keeping development limits away from them. Development limits largely incorporate the cultural vegetation and cropland on the Ainley Farm property, along the edge of the forest/wetland unit, as much as possible avoiding areas of wetland and forest. As shown on Figure 6, on the northeast side, the development area also largely stays outside the 30 m buffer (regulated by GRCA policy) from the major wetlands on the property. The exception is that the buffer area for the two swamps adjacent to the proposed road (and possibly the tip of a small lobe of the willow swamp wetland itself) will be developed along the northern boundary. The buffer area for the southern wetland will be temporarily removed for construction of the sanitary sewer. However, wetlands in the northern part of the property were created by quarrying. The total of all wetlands is less than 2 ha: the size at which the GRCA wetlands policy applies protection to artificial wetlands without special features. The northeastern wetland (SWT3-5) is well under 0.5 ha in size. The following describes the measures that should be employed to ascertain there are no impacts on functions of wetlands or on adjacent woodlands. Figure 8 provides an Environmental Management Plan that shows all mitigation measures noted in this section.

9.1 Impacts of Road Extension on Wetlands/Core Greenlands

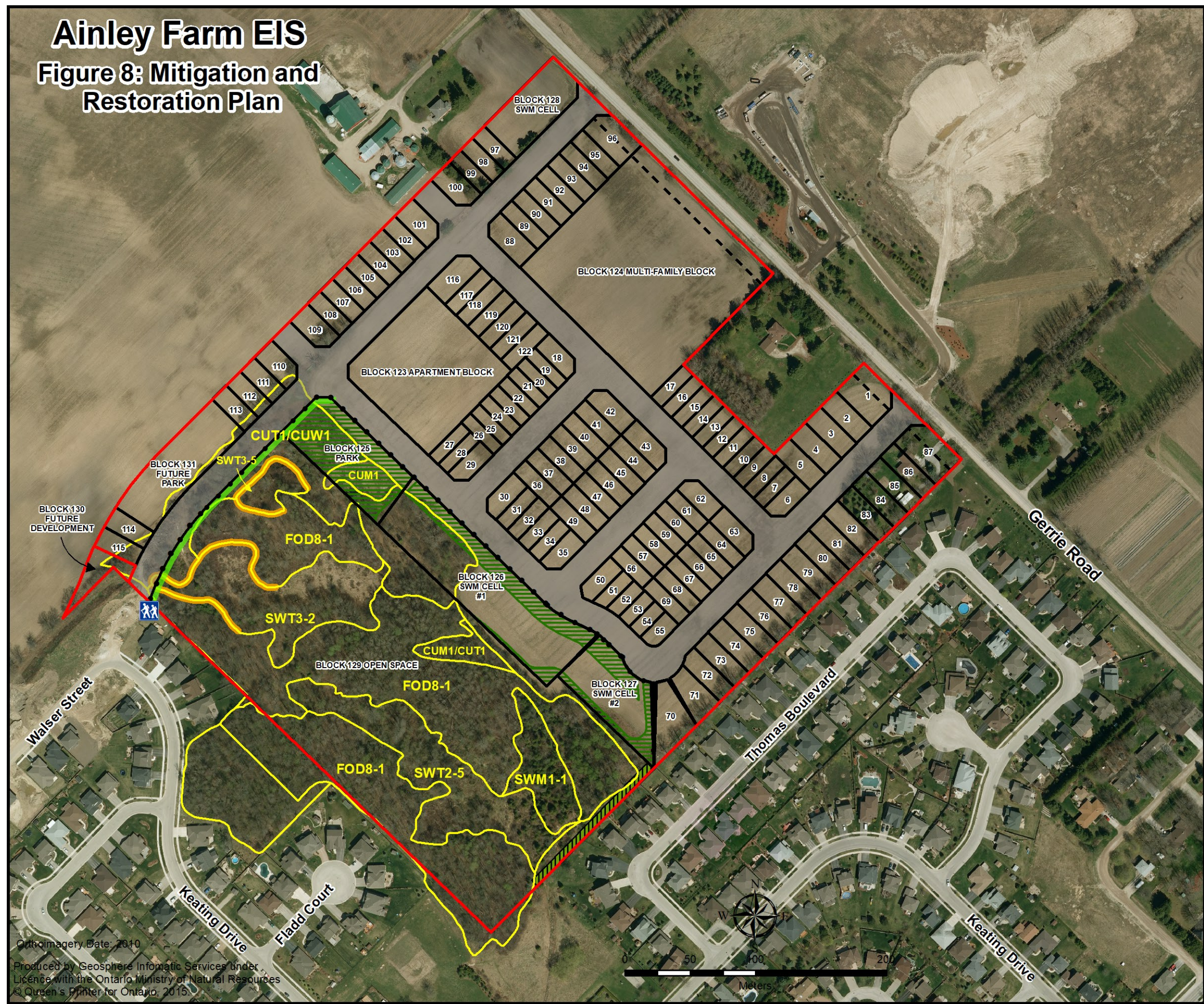
The construction of the Walser St. Extension and its embankment on the northwest side of the natural vegetation block will require fill and a retaining wall to be placed along the northwestern boundary of the natural vegetation block inside the boundary of the edge of the road (Figure 7 shows the maximum limit of the fill line). The fill will mainly require removal of an area of mid- to late-successional vegetation, but will also require the removal of some trees within the northwestern edge of the natural vegetation block. The fill has the potential to enter the northern limit of a lobe extending northward of the larger thicket swamp (SWT3-2). The road alignment will also require that fill be placed immediately adjacent to a small wetland at the northeast edge of the natural vegetation block (SWT3-5), which was apparently created as a result of quarrying. This wetland has an outlet to the wetlands on the southern portion of the block of natural vegetation.

As noted in Section 3.2.1, the GRCA Wetlands Policy (GRCA 2003) has stated that natural wetlands above 0.5 ha in size will be protected from construction and placement of fill. Artificial wetlands (as are the wetlands on the northern part of the site) will generally be protected from construction and placement of fill, except where the wetland is greater than 2 ha, and is not significant in other ways (for example, it is not part of a provincially significant wetland, and does not contain regionally or provincially significant plant species or contribute to groundwater recharge). The wetlands adjacent to the road construction on the northwest boundary (unit SWT3-5 and unit SWT3-2) are not naturally occurring (they have become established as a result of quarrying). The wetlands are well under 2 ha (0.13 ha and 0.77 ha respectively). Neither wetland is considered a rare plant community type by NHIC. The wetlands do not contain provincially or regionally significant species, though they support two species considered locally rare in Wellington County (which are, however, very common in southern Ontario). There were no signs that the wetlands protected significant groundwater discharge, though the organic substrate may be an indication that there are some groundwater inputs.

The most important potential impact to be addressed is the removal of the successional northwestern and northeastern edges of the natural vegetation block, and the potential for fill to enter the wetlands. The successional vegetation along the northwestern and northeastern edges is part of the 30 m recommended buffer around the naturally-occurring wetland to the south (SWT3-2, Figure 5). The successional vegetation likely has functioned to protect the wetlands by preventing sediment and contaminants from entering it from the ploughed agricultural land to the northwest and northeast. This area of successional vegetation may also have served other buffering functions. Impacts of removing the successional vegetation from this area are addressed in Sections 9.1, 9.2 and 9.5.

Ainley Farm EIS

Figure 8: Mitigation and Restoration Plan



- ### Legend
- Ecological Land Classification
 - CUM1 - Mineral Cultural Meadow
 - CUT1 - Mineral Cultural Thicket
 - CUW1 - Mineral Cultural Woodland
 - FOD8-1 - Fresh-Moist Poplar Deciduous Forest
 - SWM1-1 - White Cedar-Hardwood Mineral Mixed Swamp
 - SWT2-5 - Red-osier Mineral Thicket Swamp
 - SWT3-2 - Willow Organic Thicket Swamp
 - SWT3-5 - Red-osier Organic Thicket Swamp
 - Setback 60m
 - Streets
 - Lots
 - Trail Access
 - Tree Planting Areas
 - Recommended Screening Vegetation
 - Shrub Planting Area
 - Recommended Fence Line
 - Wetland Flagged with GRCA
 - Property



North-South Environmental Inc.
Specialists in Sustainable Landscape Planning



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December 4, 2017

Sediment-laden runoff from the filling associated with road construction (on both northwest and northeast sides) and stormwater facility construction could potentially cause siltation of the wetlands and forest south of the proposed road if not controlled. Uncontrolled construction vehicle traffic, storage of construction materials, or human traffic could also potentially compact soils and cause damage to vegetation (especially wetlands) adjacent to the construction area.

There is the potential for a few additional minor impacts in addition to the potential for sedimentation and the removal of the vegetation within the regulated area. One species rare in Wellington County (hop sedge) could be directly affected by fill placed for construction of the road through the north end of the site. However, this species occurs in the other wetlands on the site as well, where it will not be affected by development. The species is common and secure in Ontario (with a status of S5), and is not considered regionally rare in the former MNR Central region (Riley 1989).

Recommended Mitigation

- The fill limit should be “pinched in” to the minimum to avoid placing fill within the wetlands (SWT3-2 and SWT3-5) on the site. Construction vehicles and equipment should not enter the area adjacent to the wetlands unless absolutely necessary.
- The southern limits of fill placement for the road and stormwater facilities should be fenced with silt fencing, reinforced with paige wire fencing, prior to construction of the road, in order to prevent impacts from migrating south into the larger wetlands and forest. A fence in this area would ensure that fill was contained within the 7-15 m area necessary for the road bed, and would also ensure that human and vehicle traffic was constrained within that boundary. The recommended placement of fencing is shown in Figure 8.
The focus of erosion and sedimentation control during construction should also be to ensure that sediment does not enter the SWT3-2 and SWT3-5 units from placement of fill.
- The road embankment should be covered by an erosion blanket as soon as it is constructed. The embankment should be re-vegetated with native plant material and/or covered with coarse material such as cobble as soon as is feasible after construction.
- A screen of eastern white cedar or similar dense vegetation should be planted along the edge of the road adjacent to the wetlands.
- Construction materials should be stored in areas where tree roots will not be affected by compaction.
- Construction vehicle refuelling and turn-around points should be located outside the road alignment to open areas where natural vegetation will not be damaged by these activities.
- If hop sedge occurs in the northernmost part of the wetland lobe that might be affected by road construction, they should be removed and transplanted into areas where they will not be affected.

9.2 Short-term Impacts to Wetlands from Constructing Southern Sewer Connections

As noted in Section 8.1, sewer connections for the Ainley property will require a pipe to be installed along the southwest edge of the natural vegetation block. This will require excavation of a trench in the location of an existing drain. Impacts from this construction will be avoided in large part by keeping the excavation outside the treed area, in disturbed successional vegetation along the edge. The excavated area will be a previously disturbed area that is within the 30 m regulated area of the wetlands to the north (SWT2-5 and SWT3-2 on Figure 5).

Recommended Mitigation

- Impacts to the forest edge should be avoided as much as possible. The trench should be constructed outside the root zone of trees along the forested edge, leaving as much space as possible to avoid impacts to the root zones of edge trees. A tree preservation plan should be developed to determine which trees would potentially be affected by construction. An arborist should be on-site to determine how to preserve trees as much as possible.
- Trees along this edge should be monitored for the year after construction, and trees replaced if their condition appears to be declining because of root damage caused by the sewer construction.
- The shrubby forest edge vegetation in this area should also be maintained, or replaced with plantings of native shrub species if it is damaged by sewer construction.

9.3 Impacts to Wetlands from Stormwater Treatment Facility Outlet

The increase in water to the wetlands may result in a shift in vegetation from shrubby to herbaceous plants as shrubs are less tolerant of inundation than are herbs and grasses. Seeds of non-native plant species may enter the wetlands. The presence of additional flooding in the wetlands may increase breeding habitat for frogs that breed in these temporarily flooded areas in spring such as spring peeper and wood frog and leopard frog. However, there is the potential for dissolved contaminants that are not removed by treatment facilities, particularly road salt, to enter the wetlands.

Recommended Mitigation

- Alternatives to road salt should be used within this subdivision, as increases in electrical conductivity caused by salt are detrimental to breeding amphibians.
- Snow should not be stored adjacent to the wetlands where runoff could enter the wetlands from snow piles
- Non-native plants should be monitored and managed within the wetlands, particularly species such as Phragmites.

9.4 Long-term Impacts to Provincial Species of Special Concern

Eastern Wood-pewee, a federal and provincial species of Special Concern, was noted within the natural vegetation block south of the proposed development. However, this species is not area-sensitive and occurs in a wide variety of wooded habitats, and is still relatively common in Ontario. It will likely continue to breed in the natural vegetation block after construction of the subdivision.

Recommended Mitigation

As noted in Section 9.4, tree planting throughout the stormwater block is recommended to provide additional habitat for Eastern Wood-pewee. This species is very adaptable and is expected to persist in the natural vegetation block after development.

9.5 Impacts to Supporting Greenlands/Significant Woodland (Tree Protection)

The edge of the woodland area outlined as supporting Greenlands, which qualifies as a significant woodland in the urban system of Wellington County, will be removed for construction of the access road and for construction of stormwater facilities (Figure 6). The removal of this successional area will result in removal of a locally rare grass species, sheathed dropseed.

Impacts of road construction along the northwestern boundary of the natural vegetation block, and road and stormwater facility construction along the northeastern boundary, will largely involve loss of successional vegetation, much of which comprises the regulated area for the wetlands. As described in Section 5.1, this vegetation generally consists of dense shrubs with an open tree canopy, consisting in some areas largely of dead and dying ash and elm. Trees within this area were inventoried in 2006, and this inventory is provided in Appendix 4. Of the 120 trees surveyed, 90 trees were between 10 cm and 25 cm dbh, 20 trees were between 25 cm and 50 cm dbh, and 9 trees were greater than 50 cm dbh. The majority of the trees were between 10 cm and 25 cm in diameter. 44 trees were found to be in good condition, 63 in fair condition, 1 in fair to poor condition, and 12 in poor condition. Trees in good condition over 45 cm included 7 sugar maple, 2 American elm and one silver maple.

Many of the shrub species within this area are non-native but the vegetation performs a function as a protective edge to the wetlands and forest block. Wetlands may be vulnerable to impacts from surrounding human-related activities and contaminants from the road and from the proposed development to the northwest. The edge vegetation may also have served some function as a physical barrier to drying winds and direct sunlight, though this function is likely minor because the vegetation block is too small and patchy to support forest interior habitat that would most benefit from sheltering vegetation.

The cultural vegetation at the edge of the natural vegetation block also supports one plant species rare in Wellington County that requires open habitats, and therefore would not persist in the long term without active management (sheathed dropseed). Its habitat has become largely overgrown by shrubs since 2006. This species was found in several locations in 2006 (points shown in Figure 5 refer to many plants), but was not found in 2015. This species is common in sandy waste areas in other parts of southern Ontario. It is an annual, regenerating from the seed bank each year. This species can be weedy in disturbed habitats such as roadsides, and would persist if planted in dry open edge areas that were not developed.

Recommended Mitigation

- The protective effect of the cultural vegetation at the edge of the natural vegetation block should be maintained by planting dense native tree and shrub species (particularly cedar) on the embankment southeast of the Walser St. Extension and along the road outside the northeastern boundary, as shown in Figure 6.
- The remaining buffer areas should be planted with long-lived, native shrubs and trees wherever possible to restore the function of the edge vegetation and to restore the loss of trees shown in Appendix 4. Stormwater facilities should be vegetated as much as possible with native vegetation, including a mix of trees, shrubs and herbs, with openings that support species such as sheathed dropseed.
- The northwestern and northeastern boundary of the natural vegetation block should be fenced so that access is limited to a few access points (fencing of the northern boundary has already been recommended to limit migration of fill to the south).
- Sheathed dropseed should be seeded in open areas after construction is complete as part of native plantings to restore edge vegetation.

9.6 Loss of Agricultural Habitat and Related Significant Species

An area of 12.1 ha of agricultural habitat will be lost to development, and will result in the loss of one individual of a species rare in Wellington County (vesper sparrow). Vesper Sparrow is a species of open agricultural landscapes and does not persist in urban habitats. This species is dependent on successional habitat: habitat that is by definition not stable. It colonizes habitats in an early stage of succession as the habitat becomes available, and then moves on as shrubs and trees invade and the habitat becomes unsuitable. It is thus adapted to finding new habitats when they become available.

However, open agricultural habitat is still prevalent in the landscape around the village of Elora, and the Wellington County official plan does not include plans for development of agricultural land outside settlement areas in the short or long term.

Recommended Mitigation

It would not be possible to mitigate for this impact, as this species does not persist in urban habitat. No mitigation is proposed.

9.7 Potential Indirect Impacts

Small patches of natural habitat, particularly forest patches, within development areas are vulnerable to impacts from people. These intrusions could include building of tree forts, dumping of compost and other debris, and creation of paths (often with ramps for bikes). Cats and other pets are frequently allowed to roam in natural areas where they can affect numbers of birds and small mammals. The accessible portions of the habitat are likely to become trampled, with impacts on the vegetation including death of some species and invasion by non-native species. These types of impacts are already becoming evident as people from the houses to the west use the woodlot, particularly at the end of Walser Street where compost is regularly dumped and a well-established trail network has been formed. A well-used trail system through the wooded areas of the site is already in place, consisting of packed natural earth trails approximately 0.5-1.0 m wide throughout the natural vegetation block. The location of this trail access is shown in Figure 8.

Recommended Mitigation

- Fencing (as shown in Figure 8) has been recommended as a way of preventing silt from entering the natural vegetation block, and fencing would assist in preventing encroachment as well. The fencing should be backed by plantings of native shrubs and trees in order to buffer the natural vegetation block from development. Fencing should be sufficient to block cats and other pets from entering the woodlot.
- Formalization of a well-marked trail system within the woodlot would help to establish proper use of this natural area. Trails should be rationalized to reduce impacts. Signs would help to identify the functions of the area. Access to trails within the woodlot should be controlled to one or two points. BMX bikes should be discouraged.

9.7.1 Loss of Habitat for Area-sensitive Species

Though this is not Significant Wildlife Habitat for area-sensitive bird species, two area-sensitive species were noted within the woodlot. American redstart and red-breasted nuthatch are both listed by OMNR (2000) as area-sensitive, and so would be potentially sensitive to removal of a portion of the natural vegetation block. Neither of these species is considered an indicator species of Significant Wildlife Habitat for forest area-sensitive species according to the MNR/Ecoregion Schedules for Ecoregion 6E (MNR/E 2015) as they can be found in smaller patches of habitat in urban areas than are most area-sensitive species considered indicators by MNR/E.

Though veery was noted in the forested area of the site, this species was noted only once, early in the breeding bird season in 2015 and was not noted in 2006. This area is not

typical habitat for this species. It is likely that it was a late migrant on the site and was not breeding.

Recommended Mitigation

- All remaining buffer areas and stormwater facilities should be planted wherever possible with native shrubs and trees, as shown in Figure 8.

10.0 Compliance with Policies

The woodland/swamp complex on the site qualifies as a Significant Woodland according to County of Wellington criteria, as it is over 4 ha. It also qualifies as Significant Wildlife Habitat because of the presence of eastern wood-pewee, a provincial species of Special Concern. Under provincial policy, County of Wellington policy and Township of Centre Wellington policy, development is not permitted within the feature unless it can be shown that the development will not affect the features and functions for which the area is identified.

Three wetland areas occur within the woodland. Two of these, at the northern end of the woodlot, were artificially created by quarrying. The southern wetland appears to be natural in origin. Protection of artificial wetlands and the natural wetland complies with GRCA policies.

A major function identified within this feature is the provision of habitat for eastern wood-pewee. This species is relatively adaptable, and is not area-sensitive. Impacts from development of the Walser St. Extension will be mitigated by planting of screening vegetation along the roadway, prevention of siltation within the woodlands, and planting of vegetation within the buffer to replace the wooded area removed for development.

Impacts to the woodland's function to support locally significant bird species and wood frog will not be negatively impacted by the development, as access to the woodland by people and their pets is proposed to be restricted.

11.0 Summary and Conclusions

No provincially significant plant species or plant communities were found on the Ainley Farm property. The site supports one federally and provincially significant bird species of Special Concern: eastern wood-pewee. The natural vegetation block would be considered Significant Wildlife Habitat (SWH) according to MNRFP because it harbours a provincially significant species of Special Concern. SWH is protected by the Provincial Policy Statement (PPS), unless it can be shown that development will not result in negative impacts to the feature or function for which the area is identified. A small area of cultural woodland and cultural thicket is proposed to be removed along the edge of this feature to allow an access

road into the agricultural part of the site, where most of the development is proposed. There will be no negative impacts to the function of the woodlot to support eastern wood-pewee as a result of the development (see Section 9.4).

The site serves a function as a small mosaic of interspersed thicket swamp and fresh to moist poplar forest, with habitat mainly for generalist plant and wildlife species. However, three plant species and four wildlife species found on the site are more habitat-specific, and are considered locally rare in Wellington County. The vegetation mosaic provides a minor function as habitat for a small number of breeding wood frogs, as well as a leopard frog and spring peeper. Wood frogs are also a habitat-specific species, though the breeding population probably includes only those that spend the summer and winter in the forested areas of the Ainley Farm property. There is no evidence that woodland amphibian breeding habitat present on the Ainley Farm property support a large amphibian population that disperses to other habitats in the landscape, and the area does not qualify as SWH for breeding amphibians. There is no evidence that the wetlands provide regional breeding habitat for frogs in habitats at a distance from the site. The site is unlikely to serve a function as a linkage or buffer to significant habitat as it is relatively isolated in the landscape, and thus it does not qualify as SWH for amphibian movement corridors.

If mitigation is implemented as recommended, the mosaic of wetland and forest vegetation is likely to retain its main function after development, as a small area of habitat for generalist species (including eastern wood-pewee, a species of Special Concern), as well as habitat for a limited number of habitat specialists which are locally rare. One wildlife species that is rare in Wellington County, vesper sparrow, occurred on the agricultural part of the property. Nesting habitat for this species is likely to be lost to development, and this loss cannot be mitigated as this is a species of broad agricultural habitats. However, only one individual was noted in this area, and there is abundant habitat for this species in the surrounding landscape so the impact to the local population will be very small.

A small portion of the 30 m buffer surrounding the natural wetland on the property will be developed as part of the stormwater block. This area mainly serves a function in providing protection to the wetlands from contaminants and sediment, and buffering the wetlands to some extent from human-related activities. Water quality entering the wetland should be maintained to pre-development quality and quantity. The buffering function of the vegetation, especially within the 30 m buffer of the natural wetland, should be restored after construction by planting dense shrubs and trees (for example cedars) between the development and the natural vegetation block. Native trees and shrubs should be planted wherever possible.

Habitat for breeding amphibians will still be present in the wetland, and water levels may be more conducive to amphibian breeding post-development because of the increase in runoff. However, there is the potential for an increase in electrical conductivity in the water within the wetland from road salt dissolved in stormwater. Alternatives to road salt should be considered for this subdivision, and snow from road clearing should not be stored adjacent to the wetland.

12.0 References

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Appendix 1: GRCA Comments on Terms of Reference

Appendix 2: Plant Species

Appendix 2. Vascular Plant List, Ainley Property, Elora, Ontario.

	Scientific Name	Common Name	G Rank	S Rank	MNR	COSEWIC	Wellington	CUT/CUW	FOD	SWM	SWT
	Equisetaceae										
	<i>Equisetum arvense</i> L.	Field Horsetail	G5	S5				x	x		x
	Dennstaedtiaceae										
	<i>Pteridium aquilinum</i> (L.) Kuhn var. <i>latiusculum</i> (Desv.) L. Underw. ex A. Heller	Bracken Fern	G5	S5					x		
	Dryopteridaceae										
	<i>Dryopteris carthusiana</i> (Vill.) H.P. Fuchs	Spinulose Wood Fern	G5	S5					x	x	x
	<i>Dryopteris cristata</i> (L.) A. Gray	Crested Wood Fern	G5	S5							x
	<i>Matteuccia struthiopteris</i> (L.) Tod. var. <i>pensylvanica</i> (Willd.) C.V. Morton	Ostrich Fern	G5	S5						x	
	<i>Onoclea sensibilis</i> L.	Sensitive Fern	G5	S5					x	x	x
	Pinaceae										
	<i>Picea glauca</i> (Moench) Voss	White Spruce	G5	S5				x	x		
*	<i>Picea pungens</i> Engelm.	Blue Spruce	G5	SE1				x			
*	<i>Pinus sylvestris</i> L.	Scotch Pine	G?	SE5				x	x		
	<i>Tsuga canadensis</i> (L.) Carrière	Eastern Hemlock	G5	S5						x	
	Cupressaceae										
	<i>Thuja occidentalis</i> L.	Eastern White Cedar	G5	S5				x	x	x	x
	Ranunculaceae										
	<i>Ranunculus abortivus</i> L.	Kidney-leaved Buttercup	G5	S5					x		
*	<i>Ranunculus acris</i> L.	Tall Butter-cup	G5	SE5				x	x		
	<i>Ranunculus hispidus</i> Michx. var. <i>caricetorum</i> (Greene) T. Duncan	Swamp Buttercup	G5T5	S5							x
	Ulmaceae										
	<i>Ulmus americana</i> L.	American Elm	G5?	S5				x	x		x
	Urticaceae										
	<i>Boehmeria cylindrica</i> (L.) Sw.	False Nettle	G5	S5					x		
	<i>Pilea fontana</i> (Lunnell) Rydb.	Springs Clearweed	G5	S4							x
	<i>Pilea pumila</i> (L.) A. Gray	Canada Clearweed	G5	S5			R				x
	<i>Urtica dioica</i> L. ssp. <i>gracilis</i> (Aiton) Selander	American Stinging Nettle	G5T5	S5							x
	Fagaceae										
	<i>Quercus rubra</i> L.	Red Oak	G5	S5					x		
	Betulaceae										
	<i>Betula alleghaniensis</i> Britton	Yellow Birch	G5	S5						x	
*	<i>Betula pendula</i> Roth	European Weeping Birch	G?	SE4				x			
	<i>Corylus cornuta</i> Marshall ssp. <i>cornuta</i>	Beaked Hazel	G5	S5					x		
	Polygonaceae										
*	<i>Rumex crispus</i> L.	Curly Dock	G?	SE5							x
	Guttiferae										

	Scientific Name	Common Name	G Rank	S Rank	MNR	COSEWIC	Wellington	CUT/CUW	FOD	SWM	SWT
*	<i>Hypericum perforatum L.</i>	Common St. John's-wort	G?	SE5				x			
	Tiliaceae										
	<i>Tilia americana L.</i>	American Basswood	G5	S5					x		
	Violaceae										
?	<i>Viola sp.</i>	Violet	G?	S?					x		
	Cucurbitaceae										
	<i>Echinocystis lobata (Michx.) Torr. & A. Gray</i>	Wild Cucumber	G5	S5				x	x	x	x
	Salicaceae										
	<i>Populus balsamifera L. ssp. balsamifera</i>	Balsam Poplar	G5	S5					x		x
	<i>Populus tremuloides Michx.</i>	Trembling Aspen	G5	S5				x	x	x	x
	<i>Salix amygdaloides Anderss.</i>	Peach-leaved Willow	G5	S5							x
	<i>Salix bebbiana Sarg.</i>	Beaked Willow	G5	S5							x
	<i>Salix discolor Muhlenb.</i>	Pussy Willow	G5	S5							x
	<i>Salix eriocephala Michx.</i>	Heart-leaved Willow	G5	S5							x
	<i>Salix petiolaris Sm.</i>	Slender Willow	G5	S5				x			x
	Pyrolaceae										
	<i>Pyrola elliptica Nutt.</i>	Shinleaf	G5	S5					x		
	Primulaceae										
	<i>Lysimachia ciliata L.</i>	Fringed Loosestrife	G5	S5					x		
	Grossulariaceae										
	<i>Ribes americanum Miller</i>	Wild Black Currant	G5	S5					x	x	x
	<i>Ribes cynosbati L.</i>	Prickly Gooseberry	G5	S5					x		
*	<i>Ribes rubrum L.</i>	Northern Red Currant	G4G5	SE5					x		
	Rosaceae										
	<i>Agrimonia gryposepala Wallr.</i>	Tall Hairy Groovebur	G5	S5				x	x	x	
	<i>Amelanchier arborea (Michx. f.) Fern.</i>	Downy Serviceberry	G5	S5					x		
?	<i>Amelanchier sp.</i>	Serviceberry	G?	S?				x			
*	<i>Crataegus monogyna Jacq.</i>	English Hawthorn	G5	SE5				x	x		
	<i>Crataegus punctata Jacq.</i>	Dotted Hawthorn	G5	S5				x			
?	<i>Crataegus sp.</i>	Hawthorn	G?	S?					x		
	<i>Fragaria vesca L. ssp. americana (Porter) Staudt</i>	Woodland Strawberry	G5	S5					x		
	<i>Fragaria virginiana Miller ssp. glauca (S. Watson) Staudt</i>	Strawberry	G5	S5				x	x		
	<i>Fragaria virginiana Miller ssp. virginiana</i>	Virginia Strawberry	G5	SU				x			
	<i>Geum aleppicum Jacq.</i>	Yellow Avens	G5	S5				x	x	x	x
	<i>Geum canadense Jacq.</i>	White Avens	G5	S5					x		x
*	<i>Malus pumila Miller</i>	Common Crabapple	G5	SE5				x	x		
*	<i>Potentilla argentea L.</i>	Silvery Cinquefoil	G?	SE5				x			x

	Scientific Name	Common Name	G Rank	S Rank	MNR	COSEWIC	Wellington	CUT/CUW	FOD	SWM	SWT
*	<i>Potentilla recta</i> L.	Sulphur Cinquefoil	G?	SE5				x			
*	<i>Prunus avium</i> (L.) L.	Sweet Cherry	G?	SE4				x			
	<i>Prunus serotina</i> Ehrh.	Black Cherry	G5	S5				x	x		
	<i>Prunus virginiana</i> L.	Choke Cherry	G5	S5				x	x	x	
*	<i>Rosa multiflora</i> Thunb. ex Murray	Multiflora Rose	G?	SE4					x		
	<i>Rubus idaeus</i> L. ssp. <i>melanolasius</i> (Dieck) Focke	Red Raspberry	G5T5	S5				x	x	x	x
	<i>Rubus pubescens</i> Raf.	Dwarf Raspberry	G5	S5					x	x	
	<i>Sorbus decora</i> (Sarg.) C.K. Schneid.	Northern Mountain-ash	G4G5	S5				x			
	<i>Waldsteinia fragarioides</i> (Michx.) Tratt.	Barren Strawberry	G5	S5					x		
Fabaceae											
*	<i>Coronilla varia</i> L.	Crown-vetch	G?	SE5				x			
*	<i>Trifolium pratense</i> L.	Red Clover	G?	SE5				x			
*	<i>Vicia cracca</i> L.	Tufted Vetch	G?	SE5				x			
Onagraceae											
	<i>Circaea lutetiana</i> L. ssp. <i>canadensis</i> (L.) Aschers. & Magnusson	Enchanter's Nightshade	G5	S5					x		
	<i>Epilobium ciliatum</i> Raf. ssp. <i>ciliatum</i>	Hairy Willow-herb	G5	S5							x
*	<i>Epilobium hirsutum</i> L.	Great-hairy Willow-herb	G?	SE5						x	x
*	<i>Epilobium parviflorum</i> Schreb.	Small-flower Willow-herb	G?	SE4				x			
	<i>Oenothera biennis</i> L.	Common Evening-primrose	G5	S5				x			
Cornaceae											
	<i>Cornus alternifolia</i> L. f.	Alternate-leaf Dogwood	G5	S5					x		
	<i>Cornus stolonifera</i> Michx.	Red-osier Dogwood	G5	S5				x	x	x	x
Rhamnaceae											
*	<i>Rhamnus cathartica</i> L.	European Buckthorn	G?	SE5				x	x	x	
Vitaceae											
	<i>Parthenocissus inserta</i> (A. Kern.) Fritsch	Virginia Creeper	G5	S5				x	x		x
	<i>Vitis riparia</i> Michx.	Riverbank Grape	G5	S5				x	x	x	
Aceraceae											
	<i>Acer negundo</i> L.	Manitoba Maple	G5	S5				x		x	x
	<i>Acer pensylvanicum</i> L.	Striped Maple	G5	S5						x	
*	<i>Acer platanoides</i> L.	Norway Maple	G?	SE5				x			
	<i>Acer rubrum</i> L.	Red Maple	G5	S5					x		
	<i>Acer saccharinum</i> L.	Silver Maple	G5	S5					x		
	<i>Acer saccharum</i> Marshall ssp. <i>saccharum</i>	Sugar Maple	G5T5	S5				x			
Anacardiaceae											
	<i>Rhus radicans</i> L. ssp. <i>negundo</i> (Greene) McNeill	Climbing Poison-ivy	G5T5	S5						x	
	<i>Rhus rydbergii</i> Small ex Rydb.	Western Poison-ivy	G5	S5					x		

	Scientific Name	Common Name	G Rank	S Rank	MNR	COSEWIC	Wellington	CUT/CUW	FOD	SWM	SWT
	Simaroubaceae										
*	<i>Ailanthus altissima (Miller) Swingle</i>	Tree-of-heaven	G?	SE5							x
	Oxalidaceae										
	<i>Oxalis stricta L.</i>	Upright Yellow Wood-sorrel	G5	S5					x		
	Geraniaceae										
*	<i>Geranium robertianum L.</i>	Herb-robert	G5	SE5				x	x	x	
	Balsaminaceae										
	<i>Impatiens capensis Meerb.</i>	Spotted Jewel-weed	G5	S5					x	x	x
	Apiaceae										
	<i>Cicuta maculata L.</i>	Spotted Water-hemlock	G5	S5							x
*	<i>Daucus carota L.</i>	Wild Carrot	G?	SE5				x			
	Apocynaceae										
	<i>Apocynum androsaemifolium L.</i>	Spreading Dogbane	G5	S5				x	x		
	Asclepiadaceae										
	<i>Asclepias syriaca L.</i>	Common Milkweed	G5	S5				x			
	Solanaceae										
*	<i>Solanum dulcamara L.</i>	Climbing Nightshade	G?	SE5				x	x	x	x
	Verbenaceae										
	<i>Verbena urticifolia L.</i>	White Vervain	G5	S5							x
	Lamiaceae										
	<i>Clinopodium vulgare L.</i>	Field Basil	G5	S5				x			
*	<i>Leonurus cardiaca L.</i>	Motherwort	G?	SE5				x			
	<i>Lycopus americanus Muhlenb. ex Bartram</i>	American Bugleweed	G5	S5							x
*	<i>Lycopus europaeus L.</i>	European Bugleweed	G?	SE5							x
	<i>Mentha arvensis L.</i>	Field Mint	G5	S5							x
	<i>Prunella vulgaris L. ssp. lanceolata (W.C. Barton) Hultén</i>	Heal-all	G5T5	S5				x			
	<i>Scutellaria galericulata L.</i>	Hooded Skullcap	G5	S5							x
	<i>Scutellaria lateriflora L.</i>	Mad Dog Skullcap	G5	S5							x
	Plantaginaceae										
*	<i>Plantago lanceolata L.</i>	English Plantain	G5	SE5				x			
	Oleaceae										
	<i>Fraxinus americana L.</i>	White Ash	G5	S5				x	x		
	<i>Fraxinus nigra Marshall</i>	Black Ash	G5	S5						x	x
	<i>Fraxinus pennsylvanica Marshall</i>	Green Ash	G5	S5				x	x	x	x
	Scrophulariaceae										
*	<i>Linaria vulgaris Miller</i>	Butter-and-eggs	G?	SE5				x	x		
	<i>Mimulus ringens L.</i>	Square-stem Monkeyflower	G5	S5							x

	Scientific Name	Common Name	G Rank	S Rank	MNR	COSEWIC	Wellington	CUT/CUW	FOD	SWM	SWT
*	<i>Verbascum thapsus L.</i>	Great Mullein	G?	SE5				x			
*	<i>Veronica officinalis L.</i>	Gypsy-weed	G5	SE5					x		
	Rubiaceae										
	<i>Galium aparine L.</i>	Cleavers	G5	S5							x
	<i>Galium palustre L.</i>	Marsh Bedstraw	G5	S5					x		x
	<i>Galium trifidum L. ssp. trifidum</i>	Small Bedstraw	G5	S5					x	x	
	<i>Galium triflorum Michx.</i>	Fragrant Bedstraw	G5	S5							x
	Caprifoliaceae										
*	<i>Lonicera tatarica L.</i>	Tartarian Honeysuckle	G?	SE5				x	x		x
	<i>Sambucus canadensis L.</i>	Common Elderberry	G5	S5						x	x
	<i>Viburnum acerifolium L.</i>	Maple-leaved Viburnum	G5	S5					x		
	<i>Viburnum lentago L.</i>	Nannyberry	G5	S5				x	x		x
*	<i>Viburnum opulus L.</i>	Guelder Rose	G5	SE4				x	x		x
	<i>Viburnum trilobum Marshall</i>	Highbush Cranberry	G5T5	S5				x	x		x
	Asteraceae										
*	<i>Achillea millefolium L.</i>	Common Yarrow	G5T?	SE				x			
*	<i>Arctium minus (Hill) Bernh.</i>	Common Burdock	G?	SE5				x	x		
	<i>Bidens frondosa L.</i>	Devil's Beggar-ticks	G5	S5					x		
*	<i>Chrysanthemum leucanthemum L.</i>	Oxeye Daisy	G?	SE5				x			
	<i>Conyza canadensis (L.) Cronquist</i>	Canada Fleabane	G5	S5				x			
	<i>Erigeron annuus (L.) Pers.</i>	White-top Fleabane	G5	S5				x			
	<i>Eupatorium maculatum L. ssp. maculatum</i>	Spotted Joe-pye-weed	G5T?	S5						x	x
	<i>Eupatorium perfoliatum L.</i>	Common Boneset	G5	S5						x	
	<i>Euthamia graminifolia (L.) Nutt.</i>	Flat-top Fragrant-golden-rod	G5	S5				x			
*	<i>Hieracium piloselloides Vill.</i>	Tall Hawkweed	G?	SE5				x			
	<i>Rudbeckia hirta L.</i>	Black-eyed Susan	G5	S5				x			
	<i>Solidago altissima L. var. altissima</i>	Tall Goldenrod	G5T5	S5				x	x		
	<i>Solidago canadensis L.</i>	Canada Goldenrod	G5	S5				x			
	<i>Solidago flexicaulis L.</i>	Broad-leaved Goldenrod	G5	S5					x		
	<i>Solidago gigantea Aiton</i>	Smooth Goldenrod	G5	S5				x	x	x	x
	<i>Solidago nemoralis Aiton ssp. nemoralis</i>	Gray Goldenrod	G5T5	S5				x			
?	<i>Solidago sp.</i>	Goldenrod	G?	S?							x
	<i>Symphyotrichum ericoides (L.) Nesom var. ericoides</i>	White Heath Aster	G5T?	S5				x	x		
	<i>Symphyotrichum lanceolatum (Willd.) Nesom ssp. lanceolatum</i>	Panicked Aster	G5T?	S5							x
	<i>Symphyotrichum lateriflorum (L.) Löve & Löve var. lateriflorum</i>	One-sided Aster	G5T5	S5				x	x		
	<i>Symphyotrichum novae-angliae (L.) Nesom</i>	New England Aster	G5	S5				x			x
	<i>Symphyotrichum puniceum (L.) Love & Love</i>	Purple-stemmed Aster	G5	S5						x	x

	Scientific Name	Common Name	G Rank	S Rank	MNR	COSEWIC	Wellington	CUT/CUW	FOD	SWM	SWT
?	<i>Symphyotrichum</i> sp.	Aster	G?	S?						x	
*	<i>Taraxacum officinale</i> G. Weber	Common Dandelion	G5	SE5					x		
	Araceae										
	<i>Arisaema triphyllum</i> (L.) Schott	Jack-in-the-pulpit	G5	S5				x	x	x	
	<i>Calla palustris</i> L.	Water Arum	G5	S5						x	
	Lemnaceae										
	<i>Lemna minor</i> L.	Lesser Duckweed	G5	S5							x
	Juncaceae										
	<i>Juncus tenuis</i> Willd.	Path Rush	G5	S5				x			
	Cyperaceae										
	<i>Carex bebbii</i> (L.H. Bailey) Olney ex Fern.	Bebb's Sedge	G5	S5						x	x
	<i>Carex crinita</i> Lam.	Fringed Sedge	G5	S5						x	
	<i>Carex cristatella</i> Britton	Crested Sedge	G5	S5							x
	<i>Carex gracillima</i> Schwein.	Graceful Sedge	G5	S5				x	x		
	<i>Carex intumescens</i> Rudge	Bladder Sedge	G5	S5						x	
	<i>Carex lacustris</i> Willd.	Lake-bank Sedge	G5	S5							x
	<i>Carex lupulina</i> Muhlenb. ex Willd.	Hop Sedge	G5	S5			R				x
	<i>Carex projecta</i> Mack.	Necklace Sedge	G5	S5							x
	<i>Carex retrorsa</i> Schwein.	Retorse Sedge	G5	S5							x
	<i>Carex rosea</i> Schkuhr ex Willd.	Rosy Sedge	G5	S5					x		
	<i>Carex stipata</i> Muhlenb. ex Willd.	Stalk-grain Sedge	G5	S5						x	x
	<i>Carex stricta</i> Lam.	Tussock Sedge	G5	S5							x
	<i>Carex tuckermanii</i> Dewey	Tuckerman Sedge	G4	S4							x
	<i>Scirpus atrovirens</i> Willd.	Dark-green Bulrush	G5?	S5							x
	<i>Scirpus validus</i> L.	Softstem Bulrush	G?	S5							x
	Poaceae										
*	<i>Agrostis gigantea</i> Roth	Red-top	G4G5	SE5				x			
	<i>Agrostis stolonifera</i> L.	Spreading Bentgrass	G5	S5					x	x	x
*	<i>Bromus inermis</i> Leyss. ssp. inermis	Smooth Brome	G5T?	SE5				x			
*	<i>Dactylis glomerata</i> L.	Orchard Grass	G?	SE5				x	x		
*	<i>Elymus repens</i> (L.) Gould	Quack Grass	G5	SE5				x			
	<i>Glyceria grandis</i> S. Watson	American Manna-grass	G5	S4S5							x
*	<i>Glyceria maxima</i> (Hartm.) F.O. Holmb.	Reed Meadow-grass	G?	SE4							x
	<i>Glyceria striata</i> (Lam.) A. Hitchc.	Fowl Manna-grass	G5	S5					x	x	x
	<i>Leersia oryzoides</i> (L.) Sw.	Rice Cutgrass	G5	S5							x
?	<i>Panicum</i> sp.	Panic Grass	G?	S?				x	x		
	<i>Phalaris arundinacea</i> L.	Reed Canary Grass	G5	S5							x

	Scientific Name	Common Name	G Rank	S Rank	MNR	COSEWIC	Wellington	CUT/CUW	FOD	SWM	SWT
*	<i>Phleum pratense L.</i>	Meadow Timothy	G?	SE5				x			
	<i>Poa palustris L.</i>	Fowl Bluegrass	G5	S5							x
	<i>Poa pratensis L. ssp. pratensis</i>	Kentucky Bluegrass	G5T5?	S5				x			
	<i>Sporobolus vaginiflorus (Torr. ex A. Gray) Torr. ex Alph. Wood</i>	Sheathed Dropseed	G5	S4			R	x			
	Liliaceae										
	<i>Maianthemum racemosum (L.) Link ssp. racemosum</i>	False Solomon's Seal	G5	S5					x		
	<i>Maianthemum stellatum (L.) Link</i>	Starflower False Solomon's-seal	G5	S5					x		
	<i>Trillium erectum L.</i>	Red Trillium	G5	S5					x		
	<i>Uvularia grandiflora Sm.</i>	Large-flowered Bellwort	G5	S5				x			
	Iridaceae										
	<i>Iris lacustris Nutt.</i>	Dwarf Lake Iris	G3	S3							x
	Orchidaceae										
*	<i>Epipactis helleborine (L.) Crantz</i>	Eastern Helleborine	G?	SE5					x		
	<i>Platanthera hyperborea (L.) Lindl.</i>	Leafy Northern Green Orchid	G5	S5					x		

Appendix 3: Wildlife Species

Appendix 3. Wildlife List, Ainley Farm Property, Elora, Ontario.

Common Name	Scientific Name	Rarity Status						Breeding Evidence	Plant Communities			
		G Rank	S Rank	COSEWIC	MNR	Wellington	Area Sensitive		FOD	SWT	CUT/CUW	Agricultural
Birds												
Turkey Vulture	Cathartes aura	G5	S5B					O	✓			
American Woodcock	Scopolax minor	G5	S4B					PO		✓		
Wood Duck	Aix sponsa	G5	S5B					O		✓		
Mallard	Anas platyrhynchos	G5	S5B					O		✓		
Mourning Dove	Zenaida macroura	G5	S5B					PR	✓			
Belted Kingfisher	Ceryle alcyon	G5	S5B			Yes		O		✓		
Red-bellied Woodpecker	Melanerpes carolinus	G5	S4					PO	✓			
Downy Woodpecker	Picoides pubescens	G5	S5					PR	✓			
Horned Lark	Eremophila alpestris	G5	S5B					PR				✓
Eastern Wood-pewee	Contopus virens	G5	S5B,					PR	✓			
Great Crested Flycatcher	Myiarchus crinitus	G5	S5B					PR	✓			
Red-eyed Vireo	Vireo olivaceus	G5	S5B					PR	✓			
American Crow	Corvus brachyrhynchos	G5	S5B					O	✓			
Blue Jay	Cyanocitta cristata	G5	S5					PR	✓			
Cedar Waxwing	Bombycilla cedrorum	G5	S5					PO	✓	✓		
Black-capped Chickadee	Poecile atricapillus	G5	S5					PR	✓			
Red-breasted Nuthatch	Sitta canadensis	G5	S5B			Yes	Yes	PO	✓			
House Wren	Troglodytes aedon	G5	S5B					PR	✓			
American Robin	Turdus migratorius	G5	S5B					PR	✓		✓	✓
Gray Catbird	Dumetella carolinensis	G5	S5B					PR	✓			
European Starling	Sturnus vulgaris	G5	SE					PO	✓			
American Redstart	Setophaga ruticilla	G5	S5B			Yes	Yes	PR	✓			
Common Yellowthroat	Geothlypis trichas	G5	S5B					PR		✓		

Common Name	Scientific Name	Rarity Status						Plant Communities				
		G Rank	S Rank	COSEWIC	MNR	Wellington	Area Sensitive	Breeding Evidence	FOD	SWT	CUT/CUW	Agricultural
Yellow Warbler	Setophaga petechia	G5	S5B					PR	✓	✓		
Vesper Sparrow	Poocetes gramineus	G5	S4B			Yes		PO				✓
Song Sparrow	Melospiza melodia	G5	S5B,					PR	✓		✓	✓
Swamp Sparrow	Melospiza georgiana	G5	S5B					PO		✓		
Savannah Sparrow	Passerculus sandwichensis	G5	S5B					O				✓
Northern Cardinal	Cardinalis cardinalis	G5	S5					C	✓		✓	
Common Grackle	Quiscalus quiscula	G5	S5B					PO	✓			
Brown-headed Cowbird	Molothrus ater	G5	S5B					PR	✓			
Baltimore Oriole	Icterus galbula	G5	S4B					PO			✓	
American Goldfinch	Carduelis tristis	G5	S5B					PR		✓		
Rose-breasted Grosbeak	Pheucticus ludovicianus	G5	S4B					PR	✓			
Indigo Bunting	Passerina cyanea	G5	S4B					PR	✓	✓	✓	
Mammals												
Groundhog	Marmota monax	G5	S5					O			✓	
Eastern Chipmunk	Tamias striatus	G5	S5					O	✓			
Amphibians												
Northern Leopard Frog	Rana pipiens	G5	S5	NAR	NAR			VO		✓		
Wood Frog	Rana sylvatica	G5	S5					VO		✓		
Spring Peeper	Pseudacris crucifer	G5	S5					VO		✓		

Appendix 4: Tree Evaluation of Walser St. Extension (2006)

Ainley Property Tree Identification and Evaluation, Walser Street Extension

November, 2006

Prepared For:
James Keating Construction Limited

Prepared By:
North-South Environmental Inc.
35 Crawford Crescent, Suite U5,
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Introduction

North-South Environmental Inc. (NSE) was retained by James Keating Construction Limited to provide an evaluation of the trees affected by the extension of Walser Street, on the Ainley property adjacent to the Elora-Salem Urban Centre in the Township of Centre Wellington, County of Wellington. This report has been prepared to accompany the application for a tree cutting permit for the Township of Centre-Wellington. This report provides a list of the trees affected by the proposed extension of Walser Street as well as the size and condition of each.

The Ainley property is legally described as Part of Lot 18, Concession 12, Township of Centre Wellington, County of Wellington. The property includes approximately 19 hectares of land, with frontage on Gerrie Road to the east and access to the future extension of Walser Street to the west.

Methods

A field inspection was undertaken on August 27th, 2006. The methods for completing this tree evaluation follow the guidelines laid out in the Tree By-Law No. 3961-94. Diameters at breast height (dbh) were measured with a diameter measuring tape for all trees over 10 cm dbh within 30 m of the edge of the existing access road. As stated in Clause (c) of the By-Law, the circumference of each tree was measured at the highest possible point of measurement. The measurement height for each species of tree was determined to be 46 cm from the table in Section 2 of the By-Law. The overall condition of the tree was assessed by examining the trunk for defects and evidence of rot or damage.

Findings

The trees identified in the Tree Evaluation are those which will be impacted by the extension of Walser Street. They are shown in Table 1.

Of the 120 trees surveyed, 44 trees were found to be in good condition, 63 in fair condition, 1 in fair to poor condition, and 12 in poor condition. In terms of tree diameter, it was found that 90 trees were between 10 cm and 25 cm dbh, 20 trees were between 25 cm and 50 cm dbh, and 9 trees were greater than 50 cm dbh. This shows that the majority of the trees were between 10 cm and 25 cm in diameter.

Tree quality was determined by the occurrence of tree defects or damage. The trees in good condition typically had no growth problems, except for 4 trees which were coppiced, 3 trees which had vines in the canopy, and one tree which had minor canopy dieback. The trees in fair condition typically had minor growth problems such as leaning, growing crooked, coppicing, scars, some canopy dieback, and a few which have a weak crotch,

cavities at the base, and cankers. The trees in poor condition are those which are either almost dead or had extensive vines growing in the canopy.

There were a wide range of tree species which are in good condition. The majority of the trees in fair condition were Manitoba maple (*Acer negundo*). However, there were many other tree species which were in fair condition such as white elm (*Ulmus americana*), Trembling aspen (*Populus tremuloides*), sweet cherry (*Prunus avium*), black cherry (*Prunus serotina*), white ash (*Fraxinus americana*), and sugar maple (*Acer saccharum*). The majority of the trees in poor condition were trembling aspen (*Populus tremuloides*).

The tree diameters were highly variable. Of the trees in good condition, the majority (32) were between 10 cm and 25 cm dbh, 7 were between 26 cm and 50 cm dbh, and 5 were greater than 50 cm dbh. Two of the largest trees in the area affected by the proposed development were in good condition; one being a large sugar maple (121 cm dbh) and the other being a large silver maple (108 cm dbh). Of the trees in fair condition, 51 trees were between 10 cm and 25 cm dbh, 8 were between 26 cm and 50 cm dbh, and 4 were greater than 50 cm dbh. The third largest tree in the area in question was in fair condition; sugar maple (101 cm dbh). The one tree in fair to poor condition was between 10 cm and 25 cm dbh. Of the trees in poor condition, 7 trees were between 10 cm and 25 cm dbh, and 5 trees were between 26 cm and 50 cm dbh. There were no trees in poor condition greater than 50 cm dbh.

Table 1: Summary of trees potentially affected by the proposed development.

Species	Measurement Height (cm)	Diameter (cm)	Condition	Comments
Acer saccharum	46	17	Good	along northern property boundary
Acer saccharum	46	19	Good	along northern property boundary
Acer saccharum	46	49	Good	along northern property boundary
Acer saccharum	46	10	Good	along northern property boundary
Acer saccharum	46	71	Good	along northern property boundary
Acer saccharum	46	22	Good	along northern property boundary
Acer saccharum	46	49	Good	along northern property boundary
Acer saccharum	46	101	Fair	lean and scar

Species	Measurement Height (cm)	Diameter (cm)	Condition	Comments
Acer saccharum	46	89.5	Fair	lean and scar
Acer saccharum	46	89	Fair	scars, cankers, cavities at base
Acer saccharum	46	121	Good	
Ulmus americana	46	57.5	Good	vine in canopy
Prunus avium	46	15	Good	
Ulmus americana	46	46	Good	
Ulmus americana	46	30.5	Good	
Fraxinus americana	46	27	Good	
Acer saccharum	46	15	Good	
Ulmus americana	46	56.5	Fair	weak crotch, canopy dieback
Acer negundo	46	28	Fair	coppiced
Acer negundo	46	18	Fair	coppiced
Acer negundo	46	18	Fair - Poor	extensive vine in canopy
Acer negundo	46	18	Fair	coppiced
Acer negundo	46	20	Fair	coppiced
Acer negundo	46	19	Good	
Acer negundo	46	17	Good	
Acer negundo	46	11	Fair	coppiced
Acer negundo	46	18.5	Fair	lean
Acer negundo	46	15.5	Fair	lean
Acer negundo	46	23	Fair	lean
Acer negundo	46	21	Fair	crooked
Acer negundo	46	17.5	Fair	crooked
Acer negundo	46	18.5	Fair	crooked
Acer negundo	46	22	Fair	severe lean
Acer negundo	46	15.5	Fair	crooked
Acer negundo	46	27.5	Fair	crooked
Acer negundo	46	17	Fair	crooked
Acer negundo	46	21.5	Fair	lean
Acer negundo	46	28.5	Fair	coppiced
Acer negundo	46	34	Fair	coppiced

Species	Measurement Height (cm)	Diameter (cm)	Condition	Comments
Acer negundo	46	14	Fair	lean
Acer negundo	46	15.5	Fair	crooked
Ulmus americana	46	70	Good	minor canopy dieback
Ulmus americana	46	18.5	Good	
Acer negundo	46	14	Fair	lean
Acer negundo	46	22	Fair	lean
Acer negundo	46	16.5	Fair	lean
Acer negundo	46	16	Fair	lean
Acer negundo	46	13.5	Fair	lean
Acer negundo	46	19.5	Fair	crooked, vine in canopy
Acer negundo	46	16	Fair	crooked, vine in canopy
Acer negundo	46	14	Fair	crooked
Acer negundo	46	17.5	Fair	lean
Acer negundo	46	20	Fair	crooked
Acer negundo	46	13.5	Fair	crooked
Acer negundo	46	34	Fair	crooked
Acer negundo	46	14	Fair	lean, coppiced
Acer negundo	46	13	Fair	lean, coppiced
Acer negundo	46	14.5	Fair	lean, coppiced
Acer negundo	46	13.5	Fair	lean, coppiced
Acer negundo	46	12	Fair	lean, coppiced
Acer negundo	46	19	Fair	lean
Acer negundo	46	14	Fair	crooked
Acer negundo	46	11	Fair	crooked, coppiced
Acer negundo	46	10.5	Fair	lean, coppiced
Acer negundo	46	12	Fair	lean, coppiced
Ulmus americana	46	17	Fair	some canopy dieback
Ulmus americana	46	31	Fair	some canopy dieback
Prunus avium	46	36	Good	
Populus tremuloides	46	11.5	Good	

Species	Measurement Height (cm)	Diameter (cm)	Condition	Comments
Populus tremuloides	46	14	Good	
Populus tremuloides	46	22.5	Good	
Acer saccharinum	46	108	Good	coppiced above 2m
Populus tremuloides	46	23	Good	
Populus tremuloides	46	15	Fair	crooked
Populus tremuloides	46	18	Poor	almost dead
Prunus avium	46	15.5	Fair	crooked
Fraxinus americana	46	13.5	Fair	
Prunus avium	46	34	Fair	
Ulmus americana	46	12	Fair	some canopy dieback
Fraxinus americana	46	14	Good	
Prunus serotina	46	21	Good	
Ulmus americana	46	16	Fair	
Ulmus americana	46	17	Fair	
Populus tremuloides	46	19	Poor	almost dead
Populus tremuloides	46	30	Good	
Populus tremuloides	46	30	Poor	severe canopy dieback
Ulmus americana	46	16	Fair	some canopy dieback
Fraxinus americana	46	13.5	Good	coppiced
Fraxinus americana	46	10	Good	coppiced
Fraxinus americana	46	12.5	Good	coppiced

Species	Measurement Height (cm)	Diameter (cm)	Condition	Comments
Fraxinus americana	46	13	Good	
Fraxinus americana	46	10	Good	
Populus tremuloides	46	11	Good	
Populus tremuloides	46	19.5	Good	
Fraxinus americana	46	17.5	Good	
Thuja occidentalis	46	23.5	Good	
Thuja occidentalis	46	14	Good	
Populus tremuloides	46	20.5	Poor	almost dead
Populus tremuloides	46	16.5	Poor	almost dead
Populus tremuloides	46	12	Fair	lean
Prunus serotina	46	35.5	Fair	some canopy dieback
Ulmus americana	46	46	Poor	some canopy dieback
Populus tremuloides	46	12	Fair	lean
Populus tremuloides	46	17	Poor	almost dead
Prunus avium	46	27	Poor	extensive vine in canopy
Populus tremuloides	46	27	Poor	extensive vine in canopy
Populus tremuloides	46	25	Poor	extensive vine in canopy
Populus tremuloides	46	35.5	Poor	extensive vine in canopy
Acer negundo	46	16	Poor	extensive vine in canopy
Populus tremuloides	46	18	Good	

Species	Measurement Height (cm)	Diameter (cm)	Condition	Comments
Populus tremuloides	46	16	Good	
Populus tremuloides	46	15	Good	
Prunus avium	46	18	Fair	
Populus tremuloides	46	20	Good	
Populus tremuloides	46	17	Good	
Populus tremuloides	46	14	Good	
Populus tremuloides	46	13.5	Fair	crooked
Populus tremuloides	46	19.5	Fair	vine in canopy
Populus tremuloides	46	19	Fair	vine in canopy
Populus tremuloides	46	16.5	Good	