



DRAFT PLAN OF SUBDIVISION
PART OF LOT 27, CONCESSION 3
TOWNSHIP OF SARAWAK
TOWNSHIP OF GEORGIAN BLUFFS

CHURCH SIDEROAD EAST AND GREY ROAD 1
GREY COUNTY

ENVIRONMENTAL IMPACT ASSESSMENT

Prepared for:	Murray J. & Associates Ltd.
Submitted by:	Niblett Environmental Associates Inc.
File:	PN 17-056
Date:	November 27, 2017





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November 27, 2017

PN 17-056

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**Subject: Environmental Impact Assessment for Draft Plan of Subdivision
Part of Lot 27, Concession 3,
Township of Sarawak; Township of Georgian Bluffs
Church Sideroad East and Grey Road 1,
Grey County, Ontario**

Dear Mr. Davenport:

Please find enclosed the Environmental Impact Assessment for the proposed draft plan of subdivision in Grey County. This document is a summary of NEA's field results, potential impacts and mitigation measures for the proposed project design.

If you have any questions or comments, we would be pleased to provide additional assistance as needed.

Sincerely,

Chris Ellingwood
President and Sr. Terrestrial/Wetland Biologist

ACKNOWLEDGEMENT

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**DRAFT PLAN OF SUBDIVISION
PART OF LOT 33, CONCESSION 2
CHURCH SIDEROAD EAST AND GREY ROAD 1
GREY COUNTY**

ENVIRONMENTAL IMPACT STUDY

1.0 Introduction

1.1 Background

Niblett Environmental Associates Inc. (NEA) was retained by Mr. Davenport to complete an Environmental Impact Assessment (EIS) in support of securing the necessary approvals for a proposed draft plan of subdivision for residential development. The subject property is located at Church Sideroad East and Grey Road 1, in Grey County.

The property is located partially within the Grey Sauble Conservation Authority (GSCA) regulated area. The property also includes lands designated as 'Special Policy Karst' in the County of Grey Official Plan (2013).

The report has been prepared to satisfy the policies of the County of Grey and the GSCA. It provides a description of the existing natural environment features of the property, outlines the potential impacts of the proposed development on the natural environment, and makes recommendations to minimize and mitigate those impacts.

1.2 Property Description

1.2.1 Property Location

The property is located along the south side of Church Sideroad East, east of Grey Sideroad 1, in the County of Grey. There is no waterfront access from this property; it is separated from Georgian Bay by Balmy Beach Road, which lies to the east. The existing total lot size is approximately 3.912 ha (9.67 acres). The proposed plan of subdivision includes 8 lots. Single-family dwellings are proposed for each of the new lots except for the one lot containing an existing residential dwelling, garage and septic.

1.2.2 Study Area

The study area includes the entirety of the existing lot. This includes the maintained lands around the existing residence as well as the surrounding forest, wetland, and successional habitats.

2.0 Applicable Policies

2.1 Provincial Policy Statement (PPS)

The Provincial Policy Statement (PPS 2014) provides province-wide land use planning direction from the provincial government. Sections 2.1.4-2.1.6 of the PPS apply to this project.

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 7E¹;*
- b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);*
- c) significant valleylands in Ecoregion 6E and 7E (excluding islands in Lake Huron and the St. Marys River);*
- d) significant wildlife habitat;*
- e) significant areas of natural and scientific interest unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.*

2.1.7 Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

2.2 County of Grey Official Plan (June 25, 2013 Consolidation)

The subject property is mainly designated as 'Secondary Settlement Area' (called the East Linton area in the Township mapping – see Section 2.3 of this report) with a strip along the east edge (slope down to Balmy Beach Road) as 'Hazard Land' in the County of Grey Official Plan (OP), Schedule A: Land Use Designations.

Section 2.8.1 of the OP outlines the meaning of 'Hazard Lands' in this context:

Hazard Lands are taken from the mapping provided from each of the Conservation Authorities in Grey County and are shown on Schedule A. These include floodplains, steep or erosion prone slopes, organic or unstable soils, poorly drained areas, and lands along the Georgian Bay shoreline impacted by flooding, erosion, and/or dynamic beach hazards. While these lands are intended to be regulated so as to avoid natural hazards, they also contribute to the environmental amenities of the County.

Section 2.8.2 provides more detail on the land uses and developments allowed in 'Hazard Lands'. Specifically, subsection 9 details the requirements of new developments:

(9) In the Hazard Lands designation new development and site alterations will only be considered if all of the following can be satisfied:

- (i) The hazards can be safely addressed and new hazards are not created or existing ones aggravated;*
- (ii) No adverse environmental impacts will result, The County, in consultation with the Conservation Authority, may require an Environmental Impact Study to be prepared at the proponent's expense, in accordance with this Plan;*
- (iii) Vehicles and people have a way of safely entering and exiting at all times; policies of Section 2.8. Non-habitable buildings connected with public parks, such as picnic shelters, may be permitted.*

Schedule B shows that 'Significant Woodlands' are associated with the treed areas on the east half of the subject property. Section 2.8.1 details:

Significant Woodlands mapping as shown on Appendix B has now been developed by the County of Grey in concert with the Ministry of Natural Resources. It is acknowledged that there may be inaccuracies in the mapping; however it does show areas of environmental constraint. Further the policies are in place to correct for any inaccuracies in the mapping. No development and site alteration is permitted within Significant Woodlands and the associated adjacent lands unless it has been

demonstrated through an Environmental Impact Study that there will be no negative impacts on the natural features or on their ecological functions. Fragmentation of the woodlands is generally discouraged.

Appendix A shows that 'Special Policy Area (Karst)' is present in a large swath that runs north-south through the central portion of the property. Section 2.8.1 details:

Special Policy Areas as shown on Appendix A are taken from mapping provided by the Ministry of the Environment and Energy. The Special policy Area identifies land consisting of shallow overburden with karst topography. It has been indicated that the mapping may not be totally accurate, however it does show areas of potential environmental constraint to development that must be addressed prior to development occurring.

Each of the natural feature types present, hazard lands, significance woodlands, and karst, need to be addressed prior to development. Specifically, hazard lands and significant woodlands require completion of an EIS. In relation to hazard lands, the EIS will be reviewed by both the County and the GSCA.

2.3 Township of Georgian Bluffs Official Plan (February 24, 2014)

Schedule A-7 provides detailed land use mapping for the East Linton Secondary Settlement Area. Within the secondary settlement area, the subject property is shown as 'Future Development', excluding a strip of land designated 'Environmental Hazard' along the east edge of the property (congruent with mapping in the County OP – Section 2.2 of this report).

3.0 Study Approach

3.1 General Approach

NEA's approach to the preparation of the EIS consisted of three distinct phases.

In the first phase, available background information on the site was collected and reviewed, including recent air photography, key natural features GIS mapping, wetland mapping, natural heritage and SAR element occurrence records, official plans, and correspondence with GSCA and Ministry of Natural Resources and Forestry.

The second phase consisted of site visits by NEA terrestrial and wetland biologists on May 10th, June 20th, and July 4th, 2017 to confirm the data collected in the literature review and to collect site-specific ground-verified information on vegetation community classification, wetland and woodland boundaries, and species inventories for vegetation, birds, mammals and herpetozoa. Visits included surveys for botanical inventory, delineation and mapping of Ecological Land Classification (ELC) community boundaries, eastern meadowlark (*Sturnella magna*) and bobolink (*Dolichonyx oryzivorus*) habitat, breeding birds, observations of wildlife and their sign (e.g., calls, tracks, scat, dens, browse), wildlife corridors and linkages, and presence of significant species including Species at Risk. The presence of possible Species at Risk on or adjacent to the subject property was derived from both our field investigations and background literature.

In the final phase, the literature and data collected was compiled and analyzed to complete the EIS report. The content of the EIS was based on the requirements of the PPS and the local OPs. Recommendations regarding the hazard lands and significant woodland, including buffers and setbacks, are included. This report includes a figure that shows the location of all of the natural features and recommended setbacks and buffers.

3.2 Detailed Study Methodology

3.2.1 Background Information Review

Prior to field surveys, background information for the study area and surrounding lands from a variety of sources were reviewed to provide context for the setting and sensitivity of the site. Background information sources included:

- Aerial imagery
- County of Grey Official Plan (consolidated June 25, 2013),

- the Township of Georgian Bluffs Official Plan (February 24, 2014)
- MNR Land Information Ontario (LIO) database mapping and Natural Heritage Information Centre (NHIC) 'Make- a- Map' tool
- Ontario Breeding Bird Atlas data (Bird Studies Canada (BSC) 2001-2005 field data)
- Ontario Reptile and Amphibian Atlas (Ontario Nature)

3.2.2 Vegetation

Prior to field visits the main vegetation community boundaries were delineated on aerial imagery.

In the second stage, field visits on May 10th, June 20th, and July 4th, 2017 included collection of detailed inventories of the plant species present and more detailed delineation of vegetation communities. Specimens were collected of species requiring verification and/or photos taken of unusual species.

General notes on disturbance, topography, soil, and state of each community were also compiled. The forest, hazard lands, and successional communities were each examined as part of the field surveys.

Plant lists for each community and a master plant list were compiled from field notes in the final phase. Naming of the vegetation community types was based on the Ecological Land Classification for Southern Ontario (ELC, Lee et al., 1998) and was done to the community type level where applicable. Wetland boundaries were confirmed in the field following the methodologies in the Ontario Wetland Evaluation System Southern Manual, Third Edition (OMNR, 2013 and updates, version 3.2)

Species significance or rarity on a national and provincial levels was based on published literature and standard status lists including COSEWIC (2017) and COSSARO (2017). No regional status plant list is available for the Grey County area.

3.2.3 Birds

3.2.3.1 Species At Risk - Grassland Birds

Targeted field surveys were conducted within the project area to actively search for the species of interest - bobolink and eastern meadowlark. Eastern meadowlark and bobolink use similar habitat types, namely open fields during migration and for breeding.

Surveys were conducted in the morning during the breeding season on May 10th and June 20th, 2017, on and adjacent to the subject property. The May survey was used to determine if the habitat was suitable and if birds were present in the study area. The June site visit was used to determine if the birds maintained a territory and successfully nested (fledged young can often be flushed during surveys that take place later in the breeding season). All surveys were conducted by biologists with experience in conducting meadowlark and bobolink surveys.

Methodology for the surveys followed the MNRF protocol (August 2013). The protocol includes the need for three (3) site visits between the end of May and the first week of July to confirm the presence/absence of birds. Targeted surveys were conducted on May 10th, June 20th and July 4th, 2017.

Based on the width of the meadow habitat that runs along the driveway south of Church Sideroad East (approx. 175-220 m), one transect was established north to south through the centre of the hayfield. Three stations were established at approximately 200 m intervals. The transect bearing line was walked through the habitat looking for courtship, nesting and other territorial behaviour, as well as completing the three 10-minute point counts to document the number of birds and the number of territories. During the second survey on June 20th, 2017, a secondary transect was established to follow the south boundary of the property, into the wooded area. Three additional point count stations were surveyed within this area.

When meadowlark and bobolink were identified on site, the following information was recorded:

- Location of bird (GPS and/or bearing and approximate distance to observation)
- Number of males
- Breeding evidence (based on OBBA codes, e.g. C-courtship)
- Behaviour
- General habitat characteristics
- Name of surveyors and qualifications
- Level of effort table (time of day, duration, staff etc.)
- Weather during surveys
- Time and date
- Photo documentation of habitat, species and nests (if found)

3.2.3.2 *Breeding Bird Surveys*

General breeding bird surveys (i.e., not targeting particular species) were conducted on June 20th and July 4th, 2017, during the peak of the breeding bird window (May to August). All habitats in the study area were surveyed.

In addition, a breeding bird species list was generated from the 1st and 2nd Atlas of the Breeding Birds of Ontario (Cadman et al., 1987 and OBBA, 2005) for the 10 x 10 km atlas square (17QK04) that contains the study area. Records of any special concern, threatened or endangered species were solicited from MNR.

Bird species significance on a national, provincial, regional and local level was based on published literature and current status lists. These included COSEWIC (2017), COSSARO (2017), ESA (2007 and updates) and Bird Studies Canada (2005).

3.2.4 Mammals and Herpetofauna

Incidental observations of mammals and herpetofauna (snakes, turtles) were made during all surveys. Observations included direct sightings and indirect evidence such as calls, tracks, scat, burrows, dens and browse. Species significance on a national, provincial, regional and local level was based on COSEWIC (2017), COSSARO (2017) and Dobbyn (1994).

4.0 Resource Inventory

4.1 Designated Natural Features

The property is generally downward sloping from east to west, with a small watercourse present at the west edge of the property. Significant woodlands and special policy karst areas have been identified by the County of Grey, as outlined in Section 2.2 of this report. No Provincially Significant Wetlands (PSW) or Areas of Natural and Scientific Interest (ANSI) are found within 120 m of the property. However, some unevaluated wetland features were identified on site by NEA biologists, as described in the following sections.

4.2 Vegetation

A total of nineteen (19) vegetation communities were delineated within the study area, as described below and shown on Figure 1. A total of 146 plant species were recorded during the field surveys. Most of the species recorded are common national, provincially and locally (COSEWIC, 2017; COSSARO, 2017; SARA, 2017). No species at risk (SAR) were found. A complete plant species list is provided in Appendix I-A.

Community 1: Gravel Driveway (no applicable ELC code)

Community 1 represents the periodically mowed vegetation growing in and along the gravel driveway off Church Sideroad East. This community includes common, disturbance tolerant grasses and forbs such as smooth brome grass (*Bromus inermis*), orchard grass (*Dactylis glomerata*), common dandelion (*Taraxacum officinale*), common strawberry (*Fragaria virginiana*), Queen Anne's lace (*Daucus carota*), ox-eye daisy (*Chrysanthemum leucanthemum*), black medick (*Medicago lupulina*), bird's-foot trefoil (*Lotus corniculatus*), cow vetch (*Vicia cracca*), and common yarrow (*Achillea millefolium*). This community also includes several common wetland species that were growing in the ditches along the driveway such as red-osier dogwood (*Cornus stolonifera*), narrow-leaved cattail (*Typha angustifolia*), marsh bedstraw (*Galium palustre*) and path rush (*Juncus tenuis*).



Photo 1: View looking south at Community 1. Photo date: June 20th, 2017

Community 2: Dry – Moist Old Field Meadow (ELC Code: CUM1-1)

Community 2 comprises the meadow area to the west of the driveway, immediately south of Church Sideroad East. This community is dominated by grasses, including awnless brome, orchard grass, fowl meadow grass (*Poa palustris*), and timothy (*Phleum pratense*). A variety of common, disturbance tolerant forbs are also present including tall buttercup (*Ranunculus acris*), cow vetch, common strawberry, Queen Anne's lace, bird's-foot trefoil, common milkweed (*Asclepias syriaca*), red clover (*Trifolium pratense*) and tall goldenrod (*Solidago altissima*). Some young trees and shrubs are also regenerating in this area including white ash (*Fraxinus americana*), apple (*Malus domestica*), American elm (*Ulmus americana*), red-osier dogwood, hawthorn (*Crataegus* sp.) and European buckthorn (*Rhamnus cathartica*).



Photo 2: View looking west at Community 2. Photo date: June 20th, 2017

Community 3: Dry – Moist Old Field Meadow (ELC Code: CUM1-1)

Community 3 comprises the meadow area to the west of the driveway, south of Community 2. This area is characterized by a larger percentage of forbs such as tall buttercup (*Ranunculus acris*), cow vetch, common strawberry, Queen Anne's lace, bird's-foot trefoil, red clover, tall goldenrod, New England aster (*Symphyotrichum novae-angliae*), chicory (*Cichory intybus*), and wild teasel (*Dipsacus fullonum*). Tree and shrub regeneration is limited to a few white ash, red-osier dogwood, choke cherry (*Prunus virginiana*) and European buckthorn.



Photo 3: View looking south at Community 3. Photo date: June 20th, 2017

Community 4: Mineral Cultural Thicket (ELC Code: CUT1)

This community is located along the east side of the driveway, immediately south of Church Sideroad East. It is dominated by European buckthorn, apple and green ash (*Fraxinus pennsylvanica*). The ground layer includes a similar mix of common, tolerant forbs and grasses as the nearby meadow communities such as bird's-foot trefoil, red clover, awnless brome grass, common strawberry, tall buttercup, common milkweed, common yarrow, timothy, wild basil (*Clinopodium vulgare*), white bedstraw (*Galium mollugo*) and butter-and-eggs (*Linaria vulgaris*).



Photo 4: View looking east at Community 4. Photo date: June 20th, 2017

Community 5: Fresh – Moist Poplar Deciduous Forest (ELC Code: FOD8-1)

This community represents a small naturalized cluster of trees located within Community 4. It is dominated by trembling aspen (*Populus tremuloides*) in the canopy, with American elm and green ash also present. The understory includes European buckthorn, apple and choke cherry. The ground cover includes common species typical of fields and edges such as common yarrow, Queen Anne's lace, tall buttercup, common strawberry, awnless brome grass, black medick, field hawkweed (*Hieracium caepitosum*), late goldenrod and orange hawkweed (*Hieracium aurantiacum*).



Photo 5: View looking east at Community 5. Photo date: June 20th, 2017

Community 6: Dry – Moist Old Field Meadow (ELC Code: CUM1-1)

Community 6 is comprised of two pockets within the larger meadow area to the west of the driveway that are dominated by grasses. These areas are dominated by Canada bluejoint grass (*Calamagrostis canadensis*), reed canary grass (*Phalaris arundinacea*) and fowl meadow grass. A number of species typical of dry field conditions are also present such as wild teasel, tall buttercup, cow vetch, common strawberry, Queen Anne's lace, bird's-foot trefoil, red clover and quack grass (*Elymus repens*). Some green ash is also present.



Photo 6: View looking west at Community 6 (foreground). Photo date: June 20th, 2017

Community 7: Manicured Area Around House (No ELC Code Applicable)

Community 7 is comprised of the mowed and manicured lawn area surrounding the existing house at the end of the driveway off Church Sideroad East. This area is dominated by Kentucky blue grass (*Poa pratensis*) with several other common lawn species present such as common dandelion, bird's-foot trefoil, chicory, ox-eye daisy, red clover and narrow-leaved plantain (*Plantago lanceolata*). Several landscape trees are also present including Scot's pine (*Pinus sylvestris*), green ash, and trembling aspen.



Photo 7: View looking northeast at manicured area surrounding existing residential dwelling.

Photo date: June 20th, 2017

Community 8: Green Ash Mineral Deciduous Swamp (ELC Code: SWD2-2)

This community represents a small pocket of treed swamp habitat immediately south of the mowed lawn area around the house. It is dominated by green ash in the canopy with American elm and red maple (*Acer rubrum*) also present. The understory includes slender willow (*Salix petiolaris*) and European buckthorn. The ground cover is dominated by red maple seedlings and awl-fruited sedge (*Carex stipata*). Other species present in the ground layer include reed canary grass, marsh bedstraw, fowl manna grass (*Glyceria striata*), great water dock (*Rumex orbiculatus*), bladder sedge (*Carex intumescens*) and few-fruited sedge (*C. oligocarpa*).



Photo 8: Community 8. Photo date: June 20th, 2017

Community 9: Green Ash Mineral Deciduous Swamp (ELC Code: SWD2-2)

This community is similar to and adjacent to Community 8 but with fewer trees and more edge species that are disturbance-tolerant. It is dominated by green ash in the canopy with American elm, red maple and apple also present. The understory includes European buckthorn, tartarian honeysuckle (*Lonicera tatarica*), hawthorn and wild grape (*Vitis riparia*). The ground cover includes awl-fruited sedge, bladder sedge, few-fruited sedge, Bebb's sedge (*Carex bebbii*), true forget-me-not (*Myosotis scorpioides*), tall buttercup, wild basil (*Clinopodium vulgare*), ox-eye daisy, red clover, yellow avens (*Geum aleppicum*), and common dandelion.



Photo 9: View looking east at Community 9. Photo date: June 20th, 2017

Community 10: Mineral Cultural Woodland (ELC Code: CUW1)

This community represents a small pocket of trees, disjunct from Communities 8 and 9. It includes Scot's pine, green ash, trembling aspen, apple, and crabapple (*Malus pumila*) in the canopy, with hawthorn, common juniper (*Juniperus communis* var. *depressa*) and European buckthorn in the understory. The ground cover includes tall buttercup, western poison-ivy (*Rhus rydbergii*), bird's-foot trefoil, common strawberry, king devil hawkweed (*Hieracium x floribundum*), reed canary grass, common dandelion, common yarrow and common gromwell (*Lithospermum officinale*).



Photo 10: View looking east at Community 10. Photo date: June 20th, 2017

Community 11: Green Ash Mineral Deciduous Swamp (ELC Code: SWD2-2)

This community is located along the west edge of the property. It is dominated by green ash in the canopy, with eastern white cedar (*Thuja occidentalis*), Scot's pine, red maple and American elm also present. The understory includes European buckthorn, common juniper, hawthorn, narrow-leaved meadowsweet (*Spiraea alba*) and choke cherry. The ground cover is abundant in western poison-ivy and also includes reed canary grass, path rush, Canadian rush (*Juncus canadensis*), fowl meadow grass, marsh bedstraw, awl-fruited sedge, yellow avens, timothy (*Phleum pratense*), tall buttercup, Queen Anne's lace and ox-eye daisy.



Photo 11: View looking west at Community 11. Photo date: June 20th, 2017

Community 12: Hedgerow (No ELC Code Applicable)

This community represents a hedgerow along the south border of the property, west of the forested area. It includes American elm, green ash and apple in the canopy. The understory is comprised of European buckthorn, red-osier dogwood, hawthorn, pussy willow (*Salix discolor*) and wild grape. The ground cover includes a mix of common dry field and wet meadow species typical of disturbed areas, such as western poison-ivy, reed canary grass, tall buttercup, rough bedstraw (*Galium asprellum*), common yarrow, tall goldenrod, common strawberry, path rush, red clover, orchard grass and awl-fruited sedge.



Photo 12: View looking southeast at hedgerow along southern property boundary.
Photo date: June 20th, 2017

Community 13: Mineral Cultural Thicket (ELC Code: CUT1)

This community is located in a pocket adjacent to Community 12 (hedgerow). Scattered apple, green ash, American elm and eastern white cedar are present in the canopy. The understory is the dominant layer, comprised mainly of European buckthorn, hawthorn, and young apple and green ash. The ground cover is comprised mainly of disturbance tolerant edge and field species, such as red clover, orchard grass, tall buttercup, white bedstraw, ox-eye daisy, cow vetch, timothy and path rush.



Photo 13: View looking east at Community 13. Photo date: June 20th, 2017

Community 14: Fresh – Moist Lowland Ash Forest (ELC Code: FOD7-2)

Community 14 represents the majority of the central forested area, which is contiguous with the forest on the adjacent property to the north. This area is dominated by green ash in the canopy, with other species such as Scot's pine, sugar maple (*Acer saccharum ssp. saccharum*), American elm and apple also present. The understory is dominated by European buckthorn and hawthorn, with choke cherry, prickly gooseberry (*Ribes cynosbati*), Alleghany blackberry (*Rubus alleghaniensis*), Virginia creeper and wild grape also present. The ground cover includes Pennsylvania sedge (*Carex pennsylvanica*), western poison-ivy, common strawberry, tall goldenrod, white avens (*Geum canadensis*), common dandelion and tall buttercup. A small wetland inclusion within Community 14 is characterized by red-osier dogwood and a variety of grass and sedge species that are common throughout the site, as well as common rush (*Juncus effusus*), spotted jewelweed (*Impatiens capensis*) and other common wetland species.



Photo 14: View looking northeast into Community 14. Photo date: June 20th, 2017

Community 15: Fresh – Moist Sugar Maple – Ash Lowland Forest (ELC Code: FOD6-1)

Community 15 comprises several pockets within Community 14 that have a higher proportion of sugar maple than the surrounding forest. This area is dominated by sugar maple in the canopy, with green ash, white ash and American elm also present. The understory is dominated by alternate-leaved dogwood (*Cornus alternifolia*), with round-leaved dogwood (*C. rugosa*), red currant (*Ribes rubrum*), choke cherry, European buckthorn and wild grape also present. The ground cover includes dog violet (*Viola conspersa*), herb Robert (*Geranium robertianum*), wild geranium (*G. maculatum*), Pennsylvania sedge, few-fruited sedge, western poison-ivy, common strawberry, yellow avens and common dandelion.



Photo 15: View looking east into Community 15. Photo date: June 20th, 2017

Community 16: Dry – Fresh Sugar Maple Deciduous Forest (ELC Code: FOD5-1)

Community 16 is located along the east edge of the property and extends to Balmy Beach Road. The canopy is dominated by sugar maple and white ash, with green ash, white birch and ironwood (*Ostrya virginiana*). The understory includes a mix of European buckthorn, hawthorn, swamp red currant (*Ribes triste*), prickly gooseberry, wild red raspberry (*Rubus idaeus*), Alleghany blackberry and wild grape. The ground cover is dominated by sugar maple seedlings and also includes herb Robert, common dandelion, tall goldenrod, closely covered sedge (*Carex albicans*), tall buttercup, white-grained mountain rice (*Oryzopsis asperifolia*), and scarlet-fruited horse gentian (*Triosteum aurantiacum*).



Photo 16: View looking west into Community 16. Photo date: June 20th, 2017

Community 17: Forb Mineral Meadow Marsh (ELC Code: MAM2-10)

Community 17 represents a small seepage area within the forest associated with Communities 14 and 15. The canopy and understory are sparse including some green ash, American elm, red-osier dogwood, and hawthorn. The ground layer is dominant including a mix of common wetland species such as watercress (*Nasturtium officinale*), fowl meadow grass, marsh bedstraw, spotted jewelweed, meadow horsetail (*Equisetum pratense*), Canadian rush, awl-fruited sedge, American water-horehound (*Lycopus americanus*), true forget-me-not, fringed sedge (*Carex crinita*), greenish sedge (*Carex viridula*), beaked sedge (*Carex rostrata*), boneset (*Eupatorium perfoliatum*), spotted joe-pyeweed (*Eupatorium maculatum*), sensitive fern (*Onoclea sensibilis*) and tall goldenrod.



Photo 17: Community 17. Photo date: June 20th, 2017

Community 18: White Cedar – Hardwood Mixed Mineral Swamp (ELC Code: SWM1-1)

Community 18 is located along the west edge of the forested area, adjacent to open meadow. It is dominated by eastern white cedar and green ash in the canopy, with apple also present to a lesser extent. The understory includes young green ash, as well as hawthorn, European buckthorn, red-osier dogwood, narrow-leaved meadowsweet and wild grape. The ground layer includes a mix of common wetland, woodland and edge species such as marsh bedstraw, path rush, yellow avens, Bebb's sedge, grass-leaved goldenrod (*Euthamia graminifolia*), foam flower (*Tiarella cordifolia*), barren strawberry (*Waldsteinia fragarioides*), large-leaved aster (*Eurybia macrophylla*), Canada mayflower (*Maianthemum canadense*), western poison-ivy, orange hawkweed, common dandelion, tall buttercup, ox-eye daisy, Queen Anne's lace, common yarrow and tall goldenrod.

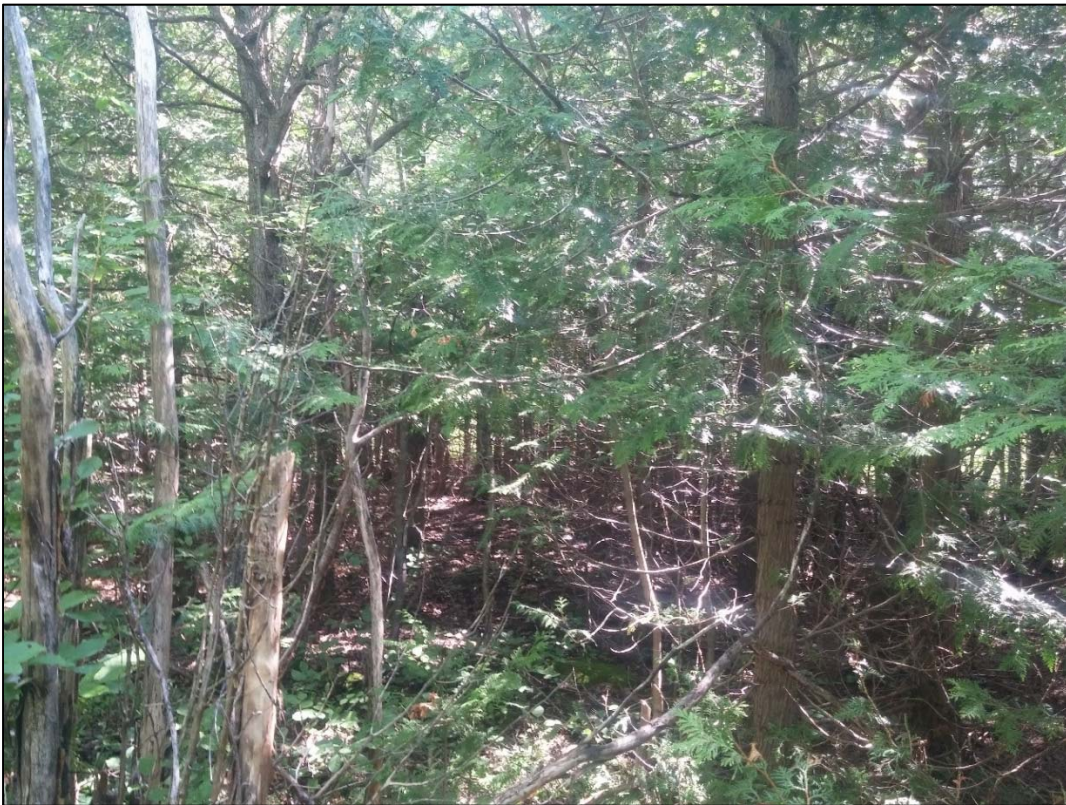


Photo 17: Community 18. Photo date: July 4th, 2017

Community 19: Mineral Cultural Thicket (ELC Code: CUT1)

Community 19 is located on the separate parcel of land to the west of the main property. This area contains scattered young trees including eastern red cedar (*Juniperus virginiana*), eastern white cedar, white ash, apple and Scot's pine. The understory layer is dominant, including abundant choke cherry and hawthorn along with red-osier dogwood, European buckthorn, pussy willow, common juniper and wild grape. The ground layer includes a suite of common field and edge species that are disturbance tolerant, such as white bedstraw, common yarrow, tall goldenrod, common strawberry, tall buttercup, reed canary grass, Queen Anne's lace, bird's-foot trefoil, cow vetch, common dandelion, red clover, chicory (*Cichorium intybus*) and orchard grass.



Photo 17: View looking west at Community 19. Photo date: July 4th, 2017

4.3 Birds

A total of fifty-six (56) bird species were recorded during field visits. Observations included species typical of field, edge, and forest habitats. Some of the species recorded include American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), red-winged blackbird (*Agelaius phoeniceus*), common grackle (*Quiscalus quiscula*), black-capped chickadee (*Poecile atricapillus*), cedar waxwing (*Bombycilla cedrorum*), tree swallow (*Tachycineta bicolor*), northern rough-winged swallow (*Stelgidopteryx serripennis*), black-and-white warbler (*Mniotilta varia*), American goldfinch (*Carduelis tristis*), song sparrow (*Melospiza melodia*), and yellow warbler (*Dendroica petechia*).

Five of the species recorded are of conservation concern. Four of these are SAR, protected provincially and federally – bobolink (*Dolichonyx oryzivorus*), eastern meadowlark (*Sturnella magna*), bank swallow (*Riparia riparia*), and barn swallow (*Hirundo rustica*). These are discussed further in Section 5.2. In addition, one species, the ovenbird (*Seiurus aurocapillus*) is considered to be area sensitive by the MNRF.

4.4 Mammals and Herpetozoa

Three mammal species were identified during the field surveys: white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), and eastern grey squirrel (*Sciurus carolinensis*). It is likely that the area supports a suite of common mammals typical of the landscape, such as eastern chipmunk (*Tamias striatus*), red squirrel (*Sciurus vulgaris*) and eastern cottontail (*Sylvilagus floridanus*).

One herpetozoa species was observed during the field surveys – northern leopard frog (*Lithobates pipiens*). It is likely that the area supports a suite of common herpetozoa typical of the landscape such as American toad (*Anaxyrus americanus*), spring peeper (*Pseudacris crucifer*) and eastern gartersnake (*Thamnophis sirtalis*).

5.0 Resource Significance

5.1 Vegetation

No nationally or provincially rare or significant plant species were recorded by NEA staff during the field surveys in 2017 (COSEWIC, 2017; COSSARO, 2017; SARA, 2017). In addition, no rare or significant vegetation communities were found in the area.

Four plant species of conservation concern are present in the NHIC database for the 1km by 1km square containing the study area (Square 17TNK0545) – beaked spikerush (*Eleocharis rostellata*), ram’s-head lady’s-slipper (*Cypripedium arietinum*), each ranked S3, smaller fern moss (*Rauiella scita*), ranked S2, and recurved plait moss (*Hypnum recurvatum*), ranked S1. None of these species were found on site.

5.2 Birds

A review of the list of breeding bird species recorded in the study area by NEA (Appendix II) found that four are considered significant nationally or provincially (COSEWIC, 2017; COSSARO, 2017).

- **Bank swallow** is listed as threatened provincially and federally (COSEWIC, 2017; COSSARO, 2017). This species breeds in a wide variety of natural and artificial sites with vertical banks, including riverbanks, lake and ocean bluffs, aggregate pits, road cuts, and stock piles of soil (COSEWIC, 2017). There is no suitable nesting habitat located on the subject lands. Foraging habitat is present in fields and open habitats in the western portion of the site as well as throughout the surrounding landscape.
- **Barn swallow** is listed as threatened provincially and federally (COSEWIC, 2017; COSSARO, 2017). This species prefers open rural and urban areas where bridges, culverts and buildings are found near rivers, lakes, marshes or ponds. No suitable nesting habitat is present on the subject property. The residential dwelling on the property, including the car port was inspected for possible nesting attempts however no nests were found. Foraging habitat is present in fields and open habitats in the western portion of the site as well as throughout the surrounding landscape.
- **Eastern meadowlark** is a threatened species provincially and nationally (COSSARO, 2017; COSEWIC, 2017). This species prefers grassy meadows and pastures; also in some croplands, weedy fields, grassy roadsides and old orchards. Suitable nesting and foraging habitat is present in fields and open habitats in the

western portion of the site as well as throughout the surrounding landscape. Several eastern meadowlark were observed in the fields on the subject property (Figure 2).

- **Bobolink** is listed as threatened on a provincial and national level (COSSARO, 2017; COSEWIC, 2017) and prefers tall, grassy meadows and ditches, hayfields and some croplands. Suitable nesting and foraging habitat is present in fields and open habitats in the western portion of the site as well as throughout the surrounding landscape. One bobolink was heard calling during the first survey, to the south in fields beyond the subject property boundary (Figure 3).

One bird SAR occurrence record was present in the NHIC database for the 1km by 1km square containing the study area (Square 17TNK0545) – eastern meadowlark. This species is already addressed above.

A review of the list of bird species recorded for the Ontario Breeding Bird Atlas within the 10km by 10km squares that includes the subject property (17QK12) found that ten (10) are significant on a national or provincial level. These species include: chimney swift (*Chaetura pelagica*), eastern wood-pewee (*Contopus virens*), bank swallow (*Riparia riparia*), barn swallow (*Hirundo rustica*), wood thrush (*Hylocichla mustelina*), Canada warbler (*Wilsonia canadensis*), golden-winged warbler (*Vermivora chrysoptera*), grasshopper sparrow (*Ammodramus savannarum*), bobolink (*Dolichonyx oryzivorus*) and eastern meadowlark (*Sturnella magna*). Four of these species (bank swallow, barn swallow, bobolink, and eastern meadowlark) were observed on site and are already addressed above. The other six species were not observed on site at the time of the field visits, but the suitability of habitat for each species and their potential to use the property based is examined in the following paragraphs.

- **Chimney swift** is listed as threatened provincially and federally (COSEWIC, 2017; COSSARO, 2017). It is usually found within 1 km of a waterbody and, as its name implies, predominantly nests within old chimneys in urban and suburban areas. Prior to European settlement, chimney swifts nested in old growth forests (COSEWIC, 2017). There is no suitable nesting habitat and no suitable waterbody for aerial foraging for this species on the property. The chimney on the residential dwelling is capped and therefore not suitable for chimney swift.
- **Eastern wood-pewee** is listed as special concern provincially and federally (COSEWIC, 2017; COSSARO, 2017). Breeding habitat for this species is typically open deciduous, mixed woods or pine plantations. They feed on insects and other

arthropods in flight and therefore usually inhabit woodlands with open sub-canopies to enable aerial foraging. The woodlands on the subject property provide suitable habitat for this species, however it was not found to be present during the surveys conducted by NEA.

- **Wood thrush** is listed as threatened federally (COSEWIC, 2017) and as Special Concern provincially (COSSARO, 2017). It breeds in deciduous and mixed forests where there are large trees, moderate understory, shade and abundant leaf litter for foraging. The woodlands on the subject property provide suitable habitat for this species, however it was not found to be present during the surveys conducted by NEA.
- **Canada warbler** is listed as special concern provincially (COSSARO, 2017) and is threatened on a national level (COSEWIC, 2017). The Canada warbler breeds in wet deciduous and coniferous forests with a thick shrub under-story. Nests are usually found on mossy logs or roots, along stream banks or hummocks (OMNR, 2009). The woodlands on the subject property provide suitable habitat for this species, however it was not found to be present during the surveys conducted by NEA.
- **Golden-winged warbler** is listed as a species of special concern provincially (COSSARO, 2017) and is a federally threatened species (COSEWIC, 2017). This species can be found in early successional habitat of old fields with low deciduous trees bordered by wooded swamps; alder bogs; and shrubby clearings amidst deciduous forests. It requires greater than 10 ha of suitable habitat. No suitable habitat for this species is present on the subject property.
- **Grasshopper sparrow** is of special concern provincially and federally (COSEWIC, 2017; COSSARO, 2017). This species lives in open grassland areas with well-drained, sandy soil. It will nest in hayfields, pasture, alvars, prairies and occasionally grain crops such as barley, but prefers areas that are sparsely vegetated. There is suitable habitat on the subject property however this species was not observed during targeted surveys.

5.3 Herpetozoa and Mammals

One herpetozoa species – northern leopard frog (*Lithobates pipiens*), was observed in the study area on June 20th, 2017.

The NHIC database did not reveal any herpetozoa occurrence records in the 1km by 1km square containing the study area (Square 17TNK0545). However, the Ontario Reptile and Amphibian Atlas (Ontario Nature) contains records of two SAR herpetozoa – snapping turtle (*Chelydra serpentina*) and eastern ribbonsnake (*Thamnophis sauritus sauritus*)

- **Snapping turtle** is listed as special concern provincially and federally (COSSARO, 2017; COSEWIC, 2017). Snapping turtles prefer shallow waters so they can hide under the soft mud and leaf litter, with only their noses exposed to the surface to breathe. During the nesting season, from early to mid-summer, females travel overland in search of a suitable nesting site, usually gravelly or sandy areas along streams, roadsides, or other man-made features. There is no surface water feature on site large enough to support snapping turtle, or nearby enough that the turtles may travel through the subject property (for instance, to find nesting habitat).
- **Eastern ribbonsnake** is listed as special concern provincially and federally (COSSARO, 2017; COSEWIC, 2017). It is usually found close to water, especially in marshes, where it hunts for frogs and small fish. While there is some wetland and evidence of amphibian habitat, no large marsh features are present on the subject property, therefore habitat for this species is marginal.

There are no records of significant mammal species in the area and no mammals were found during the site investigations in 2017.

5.4 Wetlands

There are no provincially or regionally designated wetlands present. However, several wetland communities were identified and mapped by NEA biologists during field surveys in 2017.

6.0 Proposed Development

Based on the most recent site plan, the current proposed development is for eight (8) lots on the northern portion of the subject property. Four (4) lots are located on each side of the existing driveway which will be required to be upgraded. According to the site plan provided by M.J. Davenport & Associates Ltd. Drawing No. 3969-DP, dated December 2016 (Appendix III), this new 'street' ends in a cul-de-sac immediately south of the existing residential dwelling. The lot with the existing residential dwelling is proposed to be retained. Each of the remaining 7 lots vary from 0.47 to 0.50 ha in size.

7.0 Impact Analysis

7.1 Overview

The proposed development area, excluding the parcel containing the existing residence, is comprised of open fields, cultural regenerating thickets and a small poplar woodland feature. The entire area is generally flat in topography. The impact of the development on the vegetation communities and natural features of the area have been thoroughly assessed and are presented Table 1 and detailed in the following sections.

Possible short-term impacts resulting from the clearing of the fields and thicket areas for the building envelopes are summarized in Table 1. Mitigation measures to augment the possible impacts will ensure that minimal long-term impacts occur.

The Natural Heritage Reference Manual (MNR 2010) has been used for the purpose of our assessment of impacts from pre-construction clearing, through construction and post-construction.

Table 1. Impacts of the Proposed Development and Mitigation Measures (adapted from MNR Natural Heritage Reference Manual 2010)

Activity	Impact	Mitigation
Vegetation removal of portion of open meadow, forest and thicket (communities 2, 3, 4, 5, and 6) for family residence building envelopes	Potential loss of wildlife habitat; permanent loss of vegetation; temporary disturbance to wildlife species	<ul style="list-style-type: none"> - Limit clearing to areas required for residence, septic, driveway and other necessities. - Time cutting/clearing outside of the April 15th to August 15th timing window; ensure that no bird nests are harmed - Re-vegetate and landscape with native species
Building construction	Disturbance to wildlife habitat; potential sediment transport to natural areas including wetland (located further to the south and east)	<ul style="list-style-type: none"> - Wherever possible, maintain a naturally vegetated buffer of 30 meters between proposed building envelopes and the wetland (Community 8) and woodlands (Community 14). - Isolate building envelopes during construction with silt/snow fence at 30 m wetland buffer line and/or along retained natural habitats to avoid potential sediment flow into the wetland and other natural areas.
Driveway & Street construction	Vegetation removal and loss of rainwater infiltration capacity	<ul style="list-style-type: none"> - Minimize total area of impervious materials to be used in driveway & roadway construction

7.2 Wetlands

Two unevaluated wetland communities were identified on the subject lands while conducting the field investigations (Community 8/9 and 11). The boundaries of these are distinct on aerial imagery and were delineated by using a hand-held Trimble GPS unit. One wetland area is located just south of existing residential dwelling with the other wetland located approximately 130m to the southwest of the residential dwelling (Figure 1). Wetlands are typically afforded a 30m buffer.

The retained lot will be the closest to the wetland feature and is currently within the buffer of wetland Community 8. There are no new lot lines proposed through this wetland. This lot with the existing residential dwelling will remain as is with the current entrance off the existing driveway. The wetland feature has not been evaluated by MNRF. However, given its small size and lack of notable features, and the lack of larger pockets and a diversity of

wetland types, it is highly unlikely to qualify as provincially significant if it were evaluated in the future. There are no provincially significant wetlands over 2.7 km from the property, which is well above the 750 m distance for complexing under the wetland manual.

A number of additional recommendations are included in this report to protect the wetland from disturbance and indirect impacts related to the future proposed development of the property. The remaining 7 lots are well beyond the 30m wetland buffers. The building envelope for each lot is to accommodate the house, septic, yard, garage and other uses. Driveways for each of the lots will be placed outside of the wetland and its 30m buffer.

The cul-de-sac at the end of the new road, extends into the treed swamp (Community 8). The radius of the circle is engineered and based on municipal requirements. Avoiding the wetland is not possible. As such, there will be a loss of wetland area on this pocket. The recommendation is to fence the construction envelope for the slope, fill in the wetland outside of the summer season and discuss options with the conservation authority. There is a large amount of undevelopable land on this property, where compensation could occur. As this is an isolated wetland with no inlet or outlet, the hydrology will not be impacted by the removal of a portion. Controlling runoff to the wetland, especially during construction is important to preventing impacts from sedimentation and debris. A heavy duty wire backed silt fence is to be installed along the construction line. Runoff towards the wetland should be controlled and filtered in some way to avoid changing the water quality of this wetland pocket.

The development of the property will not result in any changes or interference to the hydrology or hydrological function of the wetland.

7.3 Vegetation

The entire area of the proposed development is currently open fields with sporadic small trees and shrubs throughout. Based on NEA's surveys, these open meadows provided suitable habitat for at least two Species at Risk, the eastern meadowlark and bobolink (Figure 2 &3). As such a permit from MNRF will be necessary for the potential development of the property as per the Endangered Species Act (2007 and updates).

It is estimated that approximately 3.3 ha of eastern meadowlark/bobolink habitat will be removed and therefore will require a Notice of Activity to be completed and submitted to the OMNRF as this development will "result in the damage or destruction of an area of Bobolink or Eastern Meadowlark habitat that is equal to or less than 30 hectares".

Currently the subject property provides no opportunity for compensation to occur. Niblett Environmental Assoc. working on behalf of our client is seeking a location within the same region to compensate for the amount of eastern meadowlark/bobolink habitat that will be removed due to the proposed development.

No other areas of significant vegetation on the property were identified. No provincially rare or significant vegetation community types are present. No provincially or federally rare species were found during NEA surveys. No butternut trees were located on the property.

7.4 Wildlife

The wildlife habitat currently provided by the subject property includes forest, wetland, and thicket areas. The diversity of wildlife present is typical of rural and forested areas. The wetland feature on site is too small to provide any specialized habitat elements for turtles or wetland birds.

There will be a net loss of wildlife habitat with the change from rural land to residential. However, since tree removals will be limited to the area required for development of single-family residences, a large amount of forested habitat will remain intact and no forested areas will be fragmented from the surrounding landscape. No wildlife linkages will be interrupted as a result of the proposed development.

8.0 Conclusions

Other than the presence of the wetland features and the suitable habitat for eastern meadowlark and bobolink, no other constraints were identified on the property that would limit the location of a development/building envelope.

Proposed access for the development will be along the existing laneway ending in a cul-de-sac just south of the existing residential dwelling and outside of the 30m wetland buffer. This access roadway will require upgrades.

No specific buffer is recommended from the one wetland pocket (Community 8) as it is already located adjacent to the existing house, which will remain and its maintained lawn. Since the existing property surrounding the residential dwelling is inside the buffer area and is currently maintained, a reduced buffer in this area is recommended. It is however recommended that the manicured area not extend beyond the current limits to the south.

The cul-de-sac will require the filling of a portion of the wetland pocket. The options will be discussed with the conversation authority. The building envelopes on the remaining lots will be located more than 30 m from the unevaluated wetland, as recommended by NEA.

9.0 Recommendations

- 1) The boundaries of the development envelopes be clearly delineated on the ground and staked prior to any site preparation or construction activities.
- 2) Lot 5 with the existing house be fenced to identify the property line on the south side and to protect the wetland.
- 3) A heavy duty wire backed silt fence be installed and maintained along wetland edge.
- 4) The rear lot lines of lots 5-8 be fenced to prevent impacts to the woodland on the neighbouring property prior to any site preparation activities.
- 5) Grading of the site and removal or addition of fill be restricted to the area outside the setback fencing and buffer. Functioning sediment and erosion control measures must be in place prior to and during the construction phase, and remain in place until all bare or exposed soils have become stabilized (i.e., vegetated).
- 6) Clearing of vegetation (fields, shrubs and wetland) and tree cover must occur outside the peak breeding bird season as recommended by Environment Canada (April 15th to August 15th).
- 7) Stockpiling of material (stored or excavated), placing of stumps or any other works shall not be permitted within the wetland or its buffer.
- 8) Downspouts from the roof leaders should run onto the ground surface to promote infiltration.
- 9) Roadside drainage outlet to existing ditching and not the wetland pockets.

10.0 References

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Appendix I-A: Plant Species List

APPENDIX I - A Plant Species by Community

Families and genera for the plant species found in this appendix are listed in taxonomic order. The species are listed alphabetically by its scientific name within each genus.

Three standard reference works were used for the botanical nomenclature and taxonomy (Newmaster et. al., 1998; Gleason and Cronquist 1991; Voss 1980; 1985). Other published works for botanical names included; ferns (Cody and Britton 1989); grasses (Dore and McNeill 1980); orchids (Whiting and Catling 1986); shrubs (Soper and Heimbürger 1982) and trees (Farrar 1995).

Total: Number of communities where plant species was recorded
X : Plant species recorded

Common Name	Scientific Name	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PEAT MOSS FAMILY	SPHAGNACEAE																
sphagnum moss species	<i>Sphagnum spp.</i>	1									X						
HORSETAIL FAMILY	EQUISETACEAE																
field horsetail	<i>Equisetum arvense</i>	1															
meadow horsetail	<i>Equisetum pratense</i>	2															
WOOD FERN FAMILY	DRYOPTERIDACEAE																
evergreen wood-fern	<i>Dryopteris intermedia</i>	1															
sensitive fern	<i>Onoclea sensibilis</i>	1															
PINE FAMILY	PINACEAE																
Scot's pine	<i>Pinus sylvestris</i>	7			X	X			X			X	X			X	

		COMMUNITY NUMBER															
Common Name	Scientific Name	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CYPRESS FAMILY	CUPRESSACEAE																
common juniper	<i>Juniperus communis</i> var. <i>depressa</i>	4			X							X	X				
eastern red cedar	<i>Juniperus virginiana</i>	1															
eastern white cedar	<i>Thuja occidentalis</i>	4											X		X		
BUTTERCUP FAMILY	RANUNCULACEAE																
Canada anemone	<i>Anemone canadensis</i>	1														X	
thimbleweed	<i>Anemone virginiana</i>	1			X												
tall buttercup	<i>Ranunculus acris</i>	17		X	X	X	X	X	X	X	X	X	X	X	X	X	
ELM FAMILY	ULMACEAE																
American elm	<i>Ulmus americana</i>	11		X			X			X	X		X	X	X	X	X
BIRCH FAMILY	BETULACEAE																
white birch	<i>Betula papyrifera</i>	1															
ironwood	<i>Ostrya virginiana</i>	1															
BUCKWHEAT FAMILY	POLYGONACEAE																
curled dock	<i>Rumex crispus</i>	2												X		X	
great water dock	<i>Rumex orbiculatus</i>	2								X							
ST. JOHN'S-WORT FAMILY	GUTTIFERAE																
common St. John's-wort	<i>Hypericum perforatum</i>	1															
LINDEN FAMILY	TILIACEAE																
American basswood	<i>Tilia americana</i>	1															
VIOLET FAMILY	VIOLACEAE																
common blue violet	<i>Viola affinis</i> Le Conte	1															
dog violet	<i>Viola conspersa</i>	2															X
WILLOW FAMILY	SALICACEAE																
balsam poplar	<i>Populus balsamifera</i>	1			X												
trembling aspen	<i>Populus tremuloides</i>	4					X		X			X	X				
pussy willow	<i>Salix discolor</i>	3			X									X			
slender willow	<i>Salix petiolaris</i>	2	X							X							

		COMMUNITY NUMBER															
Common Name	Scientific Name	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MUSTARD FAMILY	BRASSICACEAE																
watercress	<i>Nasturtium officinale</i>	2														X	
PRIMROSE FAMILY	PRIMULACEAE																
moneywort	<i>Lysimachia nummularia</i>	2															X
GOOSEBERRY FAMILY	GROSSULARIACEAE																
prickly gooseberry	<i>Ribes cynosbati</i>	2														X	
red currant	<i>Ribes rubrum</i>	2															X
swamp red currant	<i>Ribes triste</i> Pallas	1															
SAXIFRAGE FAMILY	SAXIFRAGACEAE																
foam flower	<i>Tiarella cordifolia</i>	1															
ROSE FAMILY	ROSACEAE																
agrimony	<i>Agrimonia gryposepela</i>	2														X	
hawthorn species	<i>Crataegus</i> spp.	10									X	X	X	X	X	X	
common strawberry	<i>Fragaria virginiana</i>	16	X	X	X	X	X	X			X	X	X	X		X	X
yellow avens	<i>Geum aleppicum</i>	7					X				X		X				X
white avens	<i>Geum canadense</i>	1														X	
apple	<i>Malus domestica</i>	10		X		X	X				X	X		X	X	X	
common crabapple	<i>Malus pumila</i>	1										X					
silverweed	<i>Potentilla anserina</i>	2	X		X												
sulfur cinquefoil	<i>Potentilla recta</i>	2	X			X											
choke cherry	<i>Prunus virginiana</i>	9			X		X				X		X	X		X	X
Alleghany blackberry	<i>Rubus allegheniensis</i>	2														X	
wild red raspberry	<i>Rubus idaeus</i>	2														X	
narrow-leaved meadowsweet	<i>Spiraea alba</i>	3									X		X				
barren strawberry	<i>Waldsteinia fragarioides</i>	1															

		COMMUNITY NUMBER															
Common Name	Scientific Name	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PEA FAMILY	FABACEAE																
bird's-foot trefoil	<i>Lotus corniculatus</i>	10	X	X	X	X		X	X			X		X	X		
black medick	<i>Medicago lupulina</i>	3	X				X	X									
white sweet-clover	<i>Melilotus alba</i>	2		X											X		
low hop clover	<i>Trifolium agrarium</i>	1	X														
red clover	<i>Trifolium pratense</i>	10		X	X	X		X	X		X			X	X		
white clover	<i>Trifolium repens</i>	1													X		
cow vetch	<i>Vicia cracca</i>	10	X	X	X	X	X	X							X		
EVENING PRIMROSE FAMILY	ONAGRACEAE																
dwarf enchanter's nightshade	<i>Circaea alpina</i>	2														X	
DOGWOOD FAMILY	CORNACEAE																
alternate-leaf dogwood	<i>Cornus alternifolia</i>	1															X
round-leaved dogwood	<i>Cornus rugosa</i>	1															X
red-osier dogwood	<i>Cornus stolonifera</i>	9	X	X	X	X								X		X	
BUCKTHORN FAMILY	RHAMNACEAE																
European buckthorn	<i>Rhamnus cathartica</i>	15		X	X	X	X			X	X	X	X	X	X	X	X
GRAPE FAMILY	VITACEAE																
Virginia creeper	<i>Parthenocissus inserta</i>	3														X	
wild grape	<i>Vitis riparia</i>	7									X			X		X	X
MAPLE FAMILY	ACERACEAE																
red maple	<i>Acer rubrum</i>	4								X	X		X				
sugar maple	<i>Acer saccharum ssp.saccharum</i>	3														X	X
CASHEW FAMILY	ANACARDIACEAE																
western poison-ivy	<i>Rhus rydbergii</i>	9									X	X	X	X		X	X
GERANIUM FAMILY	GERANIACEAE																
wild geranium	<i>Geranium maculatum</i>	1															X
herb Robert	<i>Geranium robertianum</i>	3														X	X
TOUCH-ME-NOT FAMILY	BALSAMINACEAE																
spotted jewelweed	<i>Impatiens capensis</i>	2														X	

		COMMUNITY NUMBER															
Common Name	Scientific Name	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CARROT FAMILY	APIACEAE																
Queen-Anne's lace	<i>Daucus carota</i>	10	X	X	X	X	X	X			X		X				
MILKWEED FAMILY	ASCLEPIADACEAE																
common milkweed	<i>Asclepias syriaca</i>	3		X		X											
NIGHTSHADE FAMILY	SOLANACEAE																
bitter nightshade	<i>Solanum dulcamara</i>	1															
BORAGE FAMILY	BORAGINACEAE																
common gromwell	<i>Lithospermum officinale</i>	1										X					
true forget-me-not	<i>Myosotis scorpioides</i>	2									X						
MINT FAMILY	LAMIACEAE																
wild basil	<i>Clinopodium vulgare</i>	3				X					X						
American water-horehound	<i>Lycopus americanus</i>	3											X				
heal-all	<i>Prunella vulgaris</i> ssp. <i>Lanceolata</i>	2														X	
PLANTAIN FAMILY	PLANTAGINACEAE																
narrow-leaved plantain	<i>Plantago lanceolata</i>	4	X		X	X			X								
broad-leaved plantain	<i>Plantago major</i>	2	X														
OLIVE FAMILY	OLEACEAE																
white ash	<i>Fraxinus americana</i>	7	X	X	X												X
black ash	<i>Fraxinus nigra</i>	1			X												
green ash	<i>Fraxinus pennsylvanica</i> var. <i>subintegreri</i>	16			X	X	X	X	X	X	X	X	X	X	X	X	X
FIGWORT FAMILY	SCROPHULARIACEAE																
butter-and-eggs	<i>Linaria vulgaris</i>	1				X											
MADDER FAMILY	RUBIACEAE																
rough bedstraw	<i>Galium asprellum</i>	2									X			X			
white bedstraw	<i>Galium mollugo</i>	6			X	X									X	X	
marsh bedstraw	<i>Galium palustre</i>	7	X							X			X	X		X	
sweet scented bedstraw	<i>Galium triflorum</i>	2									X				X		

		COMMUNITY NUMBER															
Common Name	Scientific Name	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HONEYSUCKLE FAMILY	CAPRIFOLIACEAE																
tartarian honeysuckle	<i>Lonicera tatarica</i>	1									X						
scarlet-fruited horse-gentian	<i>Triosteum aurantiacum</i>	1															
high bush cranberry	<i>Viburnum trilobium</i>	1									X						
TEASEL FAMILY	DIPSACACEAE																
wild teasel	<i>Dipsacus fullonum ssp.sylvestris</i>	3			X			X									

Common Name	Scientific Name	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ASTER FAMILY	ASTERACEAE																
common yarrow	<i>Achillea millefolium</i>	8	X		X	X	X					X		X			
Russian knapweed	<i>Acroptilon repens</i>	3		X									X	X			
spotted knapweed	<i>Centaurea maculosa</i>	1			X												
ox-eye daisy	<i>Chrysanthemum leucanthemum</i>	11	X	X	X	X			X		X		X		X		
chicory	<i>Cichorium intybus</i>	4	X		X				X								
daisy fleabane	<i>Erigeron annuus</i>	1									X						
spotted joe-pyeweed	<i>Eupatorium maculatum</i>	1															
boneset	<i>Eupatorium perfoliatum</i>	1															
large-leaved aster	<i>Eurybia macrophylla</i>	1															
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	2														X	
orange hawkweed	<i>Hieracium aurantiacum</i>	1															
field hawkweed	<i>Hieracium caespitosum ssp.caespitosum</i>	2					X										
king devil hawkweed	<i>Hieracium x florbundum</i>	4					X				X	X					
tall goldenrod	<i>Solidago altissima</i>	9		X	X		X							X		X	
Canada goldenrod	<i>Solidago canadensis</i>	1			X												
late goldenrod	<i>Solidago gigantea</i>	2					X										
early goldenrod	<i>Solidago juncea</i>	1						X									
field sow thistle	<i>Sonchus arvensis ssp.arvensis</i>	1														X	
spiny-leaved sow thistle	<i>Sonchus asper</i>	1		X													
New England aster	<i>Symphyotrichum novae-angliae</i>	7			X	X					X		X				
purple-stemmed aster	<i>Symphyotrichum puniceum</i>	5		X	X	X		X									
common dandelion	<i>Taraxacum officinale</i>	12	X	X	X		X		X		X	X				X	X
common salsify	<i>Tragopogon porrifolius</i>	2				X											
coltsfoot	<i>Tussilago farfara</i>	3			X												
RUSH FAMILY	JUNCACEAE																
Canadian rush	<i>Juncus canadensis</i>	3											X	X			
common rush	<i>Juncus effusus</i>	1														X	
path rush	<i>Juncus tenuis</i>	6	X								X		X	X	X		

		COMMUNITY NUMBER															
Common Name	Scientific Name	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SEDGE FAMILY	CYPERACEAE																
closely-covered sedge	<i>Carex albicans</i> Willd. ex Spreng var. <i>albica</i>	1															
drooping wood sedge	<i>Carex arctata</i> Boott	3														X	X
Bebb's sedge	<i>Carex bebbii</i>	3									X						
fringed sedge	<i>Carex crinita</i>	1															
fescue sedge	<i>Carex festucacea</i>	1			X												
bladder sedge	<i>Carex intumescens</i>	2								X	X						
common lake sedge	<i>Carex lacustris</i>	2	X													X	
few-fruited sedge	<i>Carex oligocarpa</i>	5	X							X	X			X			X
Pennsylvania sedge	<i>Carex pensylvanica</i>	4														X	X
beaked sedge	<i>Carex rostrata</i>	1															
awl-fruited sedge	<i>Carex stipata</i>	9	X							X	X		X	X		X	
greenish sedge	<i>Carex viridula</i>	2	X														
fox sedge	<i>Carex vulpinoidea</i>	3	X											X		X	
softstem bulrush	<i>Scirpus validus</i>	2														X	
GRASS FAMILY	POACEAE																
awnless brome grass	<i>Bromus inermis</i> ssp. <i>inermis</i>	5	X	X	X	X	X										
Canada bluejoint grass	<i>Calamagrostis canadensis</i>	3						X						X	X		
orchard grass	<i>Dactylis glomerata</i>	9	X	X		X	X							X	X	X	
bottle-brush grass	<i>Elymus hystrix</i>	1														X	
quack grass	<i>Elymus repens</i>	2				X		X									
fowl manna grass	<i>Glyceria striata</i>	4								X						X	
rice cut grass	<i>Leersia oryzoides</i>	1															
white-grained mountain rice	<i>Oryzopsis asperifolia</i>	1															
reed canary grass	<i>Phalaris arundinacea</i>	6						X		X		X	X	X			
timothy	<i>Phleum pratense</i>	12	X	X	X	X	X			X			X		X	X	
fowl meadow grass	<i>Poa palustris</i>	9		X	X	X		X					X		X	X	
Kentucky blue grass	<i>Poa pratensis</i>	1							X								
false melic grass	<i>Schizachne purpurascens</i> (Torr.) Swallen	1													X		

		COMMUNITY NUMBER															
Common Name	Scientific Name	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CATTAIL FAMILY	TYPHACEAE																
narrow-leaved cattail	<i>Typha angustifolia</i>	1	X														
common cattail	<i>Typha latifolia</i>	1															
LILY FAMILY	LILIACEAE																
trout lily	<i>Erythronium americanum ssp. american</i>	1															
Canada mayflower	<i>Maianthemum canadense</i>	1															
ORCHID FAMILY	ORCHIDACEAE																
showy lady's slipper	<i>Cypripedium reginae</i>	1															
Total Number of Plant Species	146		28	23	35	27	21	15	11	14	32	17	27	28	21	44	21
			Number of Plant Species Per Community														

APPENDIX I - A Communities 16-19

		COMMUNITY NUMBER				
Common Name	Scientific Name	Total	16	17	18	19
PEAT MOSS FAMILY	SPHAGNACEAE					
sphagnum moss species	<i>Sphagnum spp.</i>	1				
HORSETAIL FAMILY	EQUISETACEAE					
field horsetail	<i>Equisetum arvense</i>	1	X			
meadow horsetail	<i>Equisetum pratense</i>	2		X	X	
WOOD FERN FAMILY	DRYOPTERIDACEAE					
evergreen wood-fern	<i>Dryopteris intermedia</i>	1		X		
sensitive fern	<i>Onoclea sensibilis</i>	1		X		
PINE FAMILY	PINACEAE					
Scot's pine	<i>Pinus sylvestris</i>	7				X
CYPRESS FAMILY	CUPRESSACEAE					
common juniper	<i>Juniperus communis var. depressa</i>	4				X
eastern red cedar	<i>Juniperus virginiana</i>	1				X
eastern white cedar	<i>Thuja occidentalis</i>	4			X	X
BUTTERCUP FAMILY	RANUNCULACEAE					
Canada anemone	<i>Anemone canadensis</i>	1				
thimbleweed	<i>Anemone virginiana</i>	1				
tall buttercup	<i>Ranunculus acris</i>	17	X	X	X	X
ELM FAMILY	ULMACEAE					
American elm	<i>Ulmus americana</i>	11	X	X		
BIRCH FAMILY	BETULACEAE					
white birch	<i>Betula papyrifera</i>	1	X			
ironwood	<i>Ostrya virginiana</i>	1	X			

COMMUNITY NUMBER

Common Name	Scientific Name	Total	16	17	18	19
BUCKWHEAT FAMILY	POLYGONACEAE					
curled dock	<i>Rumex crispus</i>	2				
great water dock	<i>Rumex orbiculatus</i>	2	X			
ST. JOHN'S-WORT FAMILY	GUTTIFERAE					
common St. John's-wort	<i>Hypericum perforatum</i>	1				X
LINDEN FAMILY	TILIACEAE					
American basswood	<i>Tilia americana</i>	1	X			
VIOLET FAMILY	VIOLACEAE					
common blue violet	<i>Viola affinis Le Conte</i>	1	X			
dog violet	<i>Viola conspersa</i>	2			X	
WILLOW FAMILY	SALICACEAE					
balsam poplar	<i>Populus balsamifera</i>	1				
trembling aspen	<i>Populus tremuloides</i>	4				
pussy willow	<i>Salix discolor</i>	3				X
slender willow	<i>Salix petiolaris</i>	2				
MUSTARD FAMILY	BRASSICACEAE					
watercress	<i>Nasturtium officinale</i>	2		X		
PRIMROSE FAMILY	PRIMULACEAE					
moneywort	<i>Lysimachia nummularia</i>	2		X		
GOOSEBERRY FAMILY	GROSSULARIACEAE					
prickly gooseberry	<i>Ribes cynosbati</i>	2	X			
red currant	<i>Ribes rubrum</i>	2	X			
swamp red currant	<i>Ribes triste Pallas</i>	1	X			
SAXIFRAGE FAMILY	SAXIFRAGACEAE					
foam flower	<i>Tiarella cordifolia</i>	1			X	
ROSE FAMILY	ROSACEAE					
agrimony	<i>Agrimonia gryposepela</i>	2			X	
hawthorn species	<i>Crataegus spp.</i>	10	X	X	X	X
common strawberry	<i>Fragaria virginiana</i>	16	X	X	X	X

COMMUNITY NUMBER

Common Name	Scientific Name	Total	16	17	18	19
yellow avens	<i>Geum aleppicum</i>	7	X	X	X	
white avens	<i>Geum canadense</i>	1				
apple	<i>Malus domestica</i>	10			X	X
common crabapple	<i>Malus pumila</i>	1				
silverweed	<i>Potentilla anserina</i>	2				
sulfur cinquefoil	<i>Potentilla recta</i>	2				
choke cherry	<i>Prunus virginiana</i>	9			X	X
Alleghany blackberry	<i>Rubus allegheniensis</i>	2	X			
wild red raspberry	<i>Rubus idaeus</i>	2	X			
narrow-leaved meadowsweet	<i>Spiraea alba</i>	3			X	
barren strawberry	<i>Waldsteinia fragarioides</i>	1			X	
PEA FAMILY	FABACEAE					
bird's-foot trefoil	<i>Lotus corniculatus</i>	10				X
black medick	<i>Medicago lupulina</i>	3				
white sweet-clover	<i>Melilotus alba</i>	2				
low hop clover	<i>Trifolium agrarium</i>	1				
red clover	<i>Trifolium pratense</i>	10			X	X
white clover	<i>Trifolium repens</i>	1				
cow vetch	<i>Vicia cracca</i>	10		X	X	X
EVENING PRIMROSE FAMILY	ONAGRACEAE					
dwarf enchanter's nightshade	<i>Circaea alpina</i>	2			X	
DOGWOOD FAMILY	CORNACEAE					
alternate-leaf dogwood	<i>Cornus alternifolia</i>	1				
round-leaved dogwood	<i>Cornus rugosa</i>	1				
red-osier dogwood	<i>Cornus stolonifera</i>	9		X	X	X
BUCKTHORN FAMILY	RHAMNACEAE					
European buckthorn	<i>Rhamnus cathartica</i>	15	X		X	X
GRAPE FAMILY	VITACEAE					
Virginia creeper	<i>Parthenocissus inserta</i>	3		X	X	

COMMUNITY NUMBER

Common Name	Scientific Name	Total	16	17	18	19
wild grape	<i>Vitis riparia</i>	7	X		X	X
MAPLE FAMILY	ACERACEAE					
red maple	<i>Acer rubrum</i>	4	X			
sugar maple	<i>Acer saccharum ssp. saccharum</i>	3	X			
CASHEW FAMILY	ANACARDIACEAE					
western poison-ivy	<i>Rhus rydbergii</i>	9		X	X	X
GERANIUM FAMILY	GERANIACEAE					
wild geranium	<i>Geranium maculatum</i>	1				
herb Robert	<i>Geranium robertianum</i>	3	X			
TOUCH-ME-NOT FAMILY	BALSAMINACEAE					
spotted jewelweed	<i>Impatiens capensis</i>	2		X		
CARROT FAMILY	APIACEAE					
Queen-Anne's lace	<i>Daucus carota</i>	10			X	X
MILKWEED FAMILY	ASCLEPIADACEAE					
common milkweed	<i>Asclepias syriaca</i>	3		X		
NIGHTSHADE FAMILY	SOLANACEAE					
bitter nightshade	<i>Solanum dulcamara</i>	1		X		
BORAGE FAMILY	BORAGINACEAE					
common gromwell	<i>Lithospermum officinale</i>	1				
true forget-me-not	<i>Myosotis scorpioides</i>	2		X		
MINT FAMILY	LAMIACEAE					
wild basil	<i>Clinopodium vulgare</i>	3			X	
American water-horehound	<i>Lycopus americanus</i>	3	X	X		
heal-all	<i>Prunella vulgaris ssp. Lanceolata</i>	2				X
PLANTAIN FAMILY	PLANTAGINACEAE					
narrow-leaved plantain	<i>Plantago lanceolata</i>	4				
broad-leaved plantain	<i>Plantago major</i>	2		X		
OLIVE FAMILY	OLEACEAE					
white ash	<i>Fraxinus americana</i>	7	X		X	X

COMMUNITY NUMBER

Common Name	Scientific Name	Total	16	17	18	19
black ash	<i>Fraxinus nigra</i>	1				
green ash	<i>Fraxinus pennsylvanica</i> var. <i>subintegra</i>	16	X	X	X	
FIGWORT FAMILY	SCROPHULARIACEAE					
butter-and-eggs	<i>Linaria vulgaris</i>	1				
MADDER FAMILY	RUBIACEAE					
rough bedstraw	<i>Galium asprellum</i>	2				
white bedstraw	<i>Galium mollugo</i>	6			X	X
marsh bedstraw	<i>Galium palustre</i>	7		X	X	
sweet scented bedstraw	<i>Galium triflorum</i>	2				
HONEYSUCKLE FAMILY	CAPRIFOLIACEAE					
tartarian honeysuckle	<i>Lonicera tatarica</i>	1				
scarlet-fruited horse-gentian	<i>Triosteum aurantiacum</i>	1	X			
high bush cranberry	<i>Viburnum trilobium</i>	1				
TEASEL FAMILY	DIPSACACEAE					
wild teasel	<i>Dipsacus fullonum</i> ssp. <i>sylvestris</i>	3				X
ASTER FAMILY	ASTERACEAE					
common yarrow	<i>Achillea millefolium</i>	8			X	X
Russian knapweed	<i>Acroptilon repens</i>	3				
spotted knapweed	<i>Centaurea maculosa</i>	1				
ox-eye daisy	<i>Chrysanthemum leucanthemum</i>	11		X	X	X
chicory	<i>Cichorium intybus</i>	4				X
daisy fleabane	<i>Erigeron annuus</i>	1				
spotted joe-pyeweed	<i>Eupatorium maculatum</i>	1		X		
boneset	<i>Eupatorium perfoliatum</i>	1		X		
large-leaved aster	<i>Eurybia macrophylla</i>	1			X	
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	2			X	
orange hawkweed	<i>Hieracium aurantiacum</i>	1			X	
field hawkweed	<i>Hieracium caespitosum</i> ssp. <i>caespitosu</i>	2			X	
king devil hawkweed	<i>Hieracium x florbundum</i>	4			X	

COMMUNITY NUMBER

Common Name	Scientific Name	Total	16	17	18	19
tall goldenrod	<i>Solidago altissima</i>	9	X	X	X	X
Canada goldenrod	<i>Solidago canadensis</i>	1				
late goldenrod	<i>Solidago gigantea</i>	2			X	
early goldenrod	<i>Solidago juncea</i>	1				
field sow thistle	<i>Sonchus arvensis ssp.arvensis</i>	1				
spiny-leaved sow thistle	<i>Sonchus asper</i>	1				
New England aster	<i>Symphyotrichum novae- angliae</i>	7		X	X	X
purple-stemmed aster	<i>Symphyotrichum puniceum</i>	5				X
common dandelion	<i>Taraxacum officinale</i>	12	X		X	X
common salsify	<i>Tragopogon porrifolius</i>	2				X
coltsfoot	<i>Tussilago farfara</i>	3		X	X	
RUSH FAMILY	JUNCACEAE					
Canadian rush	<i>Juncus canadensis</i>	3		X		
common rush	<i>Juncus effusus</i>	1				
path rush	<i>Juncus tenuis</i>	6			X	
SEDGE FAMILY	CYPERACEAE					
closely-covered sedge	<i>Carex albicans Willd. ex Spreng var.al</i>	1	X			
drooping wood sedge	<i>Carex arctata Boott</i>	3	X			
Bebb's sedge	<i>Carex bebbii</i>	3		X	X	
fringed sedge	<i>Carex crinita</i>	1		X		
fescue sedge	<i>Carex festucacea</i>	1				
bladder sedge	<i>Carex intumescens</i>	2				
common lake sedge	<i>Carex lacustris</i>	2				
few-fruited sedge	<i>Carex oligocarpa</i>	5				
Pennsylvania sedge	<i>Carex pensylvanica</i>	4	X		X	
beaked sedge	<i>Carex rostrata</i>	1		X		
awl-fruited sedge	<i>Carex stipata</i>	9		X	X	X
greenish sedge	<i>Carex viridula</i>	2		X		
fox sedge	<i>Carex vulpinoidea</i>	3				

COMMUNITY NUMBER

Common Name	Scientific Name	Total	16	17	18	19
softstem bulrush	<i>Scirpus validus</i>	2		X		
GRASS FAMILY	POACEAE					
awnless brome grass	<i>Bromus inermis ssp.inermis</i>	5				
Canada bluejoint grass	<i>Calamagrostis canadensis</i>	3				
orchard grass	<i>Dactylis glomerata</i>	9			X	X
bottle-brush grass	<i>Elymus hystrix</i>	1				
quack grass	<i>Elymus repens</i>	2				
fowl manna grass	<i>Glyceria striata</i>	4	X	X		
rice cut grass	<i>Leersia oryzoides</i>	1				X
white-grained mountain rice	<i>Oryzopsis asperifolia</i>	1	X			
reed canary grass	<i>Phalaris arundinacea</i>	6				X
timothy	<i>Phleum pratense</i>	12		X	X	X
fowl meadow grass	<i>Poa palustris</i>	9		X		X
Kentucky blue grass	<i>Poa pratensis</i>	1				
false melic grass	<i>Schizachne purpurascens (Torr.) Swall</i>	1				
CATTAIL FAMILY	TYPHACEAE					
narrow-leaved cattail	<i>Typha angustifolia</i>	1				
common cattail	<i>Typha latifolia</i>	1		X		
LILY FAMILY	LILIACEAE					
trout lily	<i>Erythronium americanum ssp. americ</i>	1	X			
Canada mayflower	<i>Maianthemum canadense</i>	1			X	
ORCHID FAMILY	ORCHIDACEAE					
showy lady's slipper	<i>Cypripedium reginae</i>	1			X	
Total Number of Plant Species	146		33	39	47	37

Number of Plant Species Per Community

Appendix II: Bird Status Report

APPENDIX II Bird Status Report

Bird species observed by NEA are listed in the order followed the American Ornithologists' Union (AOU) Check-list of North American birds (7th edition, 1999, 47th Supplement). Common and scientific nomenclature are based on those used by AOU. Breeding status and breeding evidence code are listed when observed. Any significant status for a species on national and provincial lists is displayed as well as those from relevant regional lists.

List Status :	END - endangered	A wildlife species facing imminent extirpation or extinction.
	END-R -endangered regulated	A wildlife species facing imminent extirpation or extinction in Ontario which has been regulated under Ontario's Endangered Species Act (ESA).
	THR - threatened	A wildlife species likely to become endangered if limiting factors are not reversed.
	SC - special concern	A wildlife species that may become threatened or an endangered species because of a combination of biological characteristics and identified threats.
	YES - Area Sensitive	A wildlife species that requires large areas of suitable habitat in order to sustain their population numbers.

*** Other status levels are not displayed**

List Sources:	COSEWIC	The Committee on the Status of Endangered Wildlife in Canada, May 2016.
	COSSARO	The Committee on the Status of Species at Risk in Ontario, June 2016.
	SARA	Species At Risk Act, Schedule 1, Government of Canada, 2016.
	Area Sensitive	Significant Wildlife Technical Guide, Appendix C, OMNR, Oct. 2000
	Region 6	Southern Ontario Wetland Evaluation Appendix 11B, Version 3.2, March 2013

Breeding Status:	B -species observed in breeding season in suitable habitat with some evidence of breeding
(Observed By NEA)	(confirmed, probable or possible as per Ontario Breeding Bird Atlas, 2002).
	F -species observed in breeding season but no evidence of breeding or suitable nest sites available
	on the study site (includes flyovers, migrants and foraging colonial breeders).
	M -species observed outside of breeding season for that species and in area outside of the known

Breeding Evidence Code: OBSERVED

(Observed By NEA)

X -species observed in its breeding season (no evidence of breeding).

POSSIBLE BREEDING

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

S -singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat

PROBABLE BREEDING

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

T -permanent territory presumed through registration of territorial song on at least 2days,
a week or more apart, at the same place

D -courtship or display between a male and a female or 2 males, including courtship feeding or copulation

V -visiting probable nest site

A -agitated behaviour or anxiety calls of an adult

B -brood patch on adult female or cloacal protuberance on adult male

N -nest-building or excavation of nest hole

CONFIRMED BREEDING

DD -distraction display or injury feigning

NU -used nest or egg shell found (occupied or laid within the period of study)

FY -recently fledged young or downy young, including young incapable of sustained flight

AE -adults leaving or entering nest site in circumstances indicating occupied nest

FS -adult carrying fecal sac

CF -adult carrying food for young

NE -nest containing eggs

NY -nest with young seen or heard

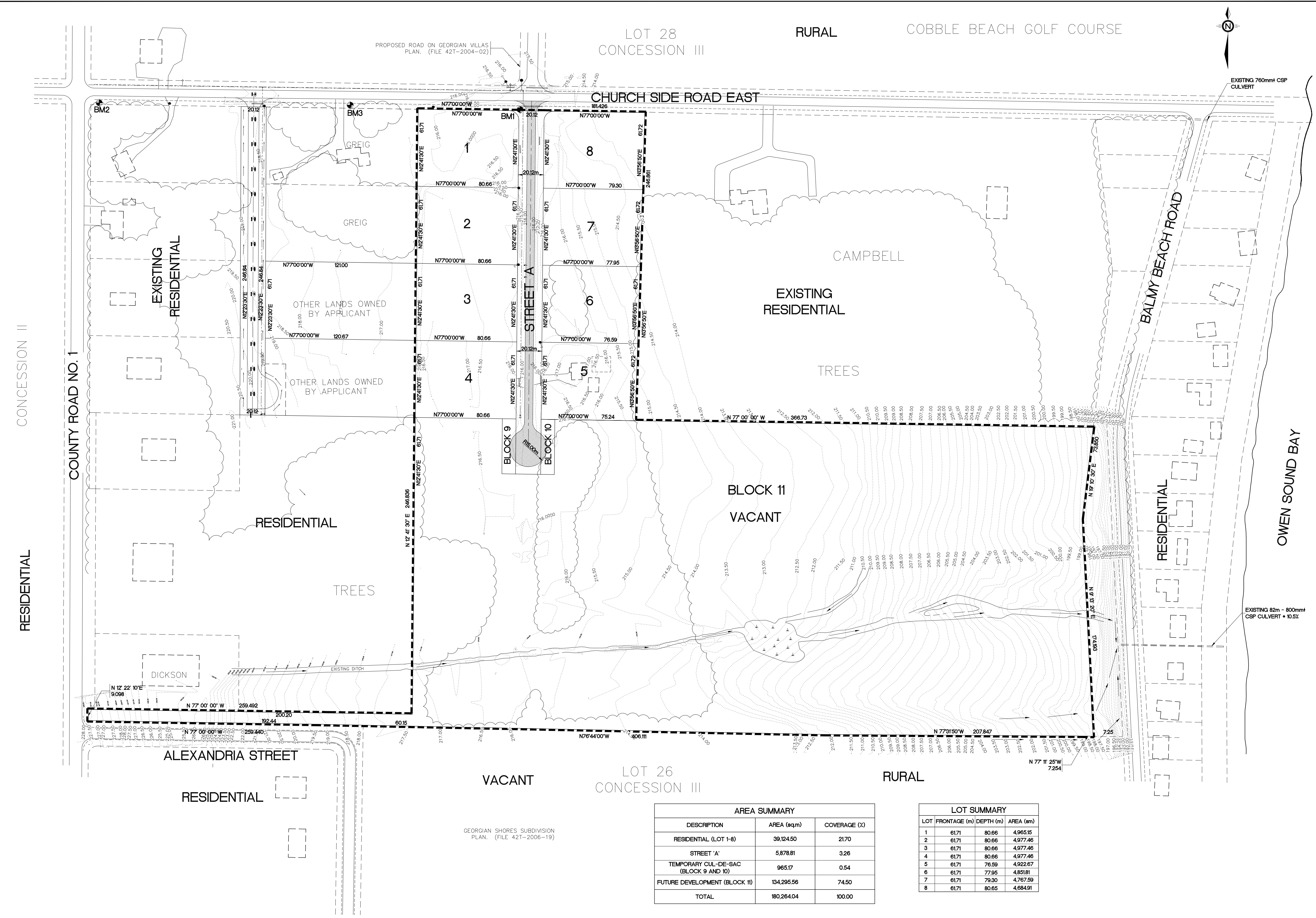
SOURCE: Ontario Breeding Bird Atlas March 2001

AOU Code	Common Name	Scientific Name	Observed Breeding Status	Breed Evidence Code	COSEWIC	COSSARO	SARA	Area Sensitive	Region 6		
MALL	Mallard	<i>Anas platyrhynchos</i>	B	None				No			
RUGR	Ruffed Grouse	<i>Bonasa umbellus</i>	B	None				No			
WITU	Wild Turkey	<i>Meleagris gallopavo</i>	B	H				No			
COLO	Common Loon	<i>Gavia immer</i>	M	None				No			
DCCO	Double-crested Cormoran	<i>Phalacrocorax auritus</i>	F	None				No			
GRHE	Green Heron	<i>Butorides virescens</i>	B	H				No			
TUVU	Turkey Vulture	<i>Cathartes aura</i>	B	None				No			
OSPR	Osprey	<i>Pandion haliaetus</i>	F	S				No			
KILL	Killdeer	<i>Charadrius vociferus</i>	B	None				No			
WISN	Wilson's Snipe	<i>Gallinago delicata</i>	B	H				No			
RBGU	Ring-billed Gull	<i>Larus delawarensis</i>	F	None				No			
MODO	Mourning Dove	<i>Zenaida macroura</i>	B	H				No			
DOWO	Downy Woodpecker	<i>Picoides pubescens</i>	B	H				No			
NOFL	Northern Flicker	<i>Colaptes auratus</i>	B	S				No			
WIFL	Willow Flycatcher	<i>Empidonax traillii</i>	B	S				No			
GCFL	Great Crested Flycatcher	<i>Myiarchus crinitus</i>	B	S				No			
EAKI	Eastern Kingbird	<i>Tyrannus tyrannus</i>	B	S				No			
REVI	Red-eyed Vireo	<i>Vireo olivaceus</i>	B	S				No			
BLJY	Blue Jay	<i>Cyanocitta cristata</i>	B	None				No			
AMCR	American Crow	<i>Corvus brachyrhynchos</i>	B	H				No			
PUMA	Purple Martin	<i>Progne subis</i>	F	None				No			
TRSW	Tree Swallow	<i>Tachycineta bicolor</i>	B	H				No			
NRWS	Northern Rough-winged S	<i>Stelgidopteryx serripenni</i>	B	H				No			
BANS	Bank Swallow	<i>Riparia riparia</i>	B	None	THR	THR		No			
BARS	Barn Swallow	<i>Hirundo rustica</i>	B	None	THR	THR		No			
BCCH	Black-capped Chickadee	<i>Poecile atricapillus</i>	B	S				No			

WBNU	White-breasted Nuthatch	<i>Sitta carolinensis</i>	B	S			No		
HOWR	House Wren	<i>Troglodytes aedon</i>	B	S			No		
EABL	Eastern Bluebird	<i>Sialia sialis</i>	B	P			No		
AMRO	American Robin	<i>Turdus migratorius</i>	B	FY			No		
GRCA	Gray Catbird	<i>Dumetella carolinensis</i>	B	None			No		
BRTH	Brown Thrasher	<i>Toxostoma rufum</i>	B	S			No		
EUST	European Starling	<i>Sturnus vulgaris</i>	B	None			No		
CEWX	Cedar Waxwing	<i>Bombycilla cedrorum</i>	B	P			No		
NAWA	Nashville Warbler	<i>Vermivora ruficapilla</i>	M	None			No		
YEWA	Yellow Warbler	<i>Dendroica petechia</i>	B	S			No		
YRWA	Yellow-rumped Warbler	<i>Dendroica coronata</i>	B	None			No		
BWWA	Black-and-white Warbler	<i>Mniotilta varia</i>	B	FY			No		
AMRE	American Redstart	<i>Setophaga ruticilla</i>	B	S			No		
OVEN	Ovenbird	<i>Seiurus aurocapillus</i>	B	S			Yes		
COYE	Common Yellowthroat	<i>Geothlypis trichas</i>	B	S			No		
EATO	Eastern Towhee	<i>Pipilo erythrophthalmus</i>	B	None			No		
CHSP	Chipping Sparrow	<i>Spizella passerina</i>	B	None			No		
FISP	Field Sparrow	<i>Spizella pusilla</i>	B	S			No		
SASP	Savannah Sparrow	<i>Passerculus sandwichensi</i>	B	S			No		
SOSP	Song Sparrow	<i>Melospiza melodia</i>	B	P			No		
WTSP	White-throated Sparrow	<i>Zonotrichia albicollis</i>	B	None			No		
NOCA	Northern Cardinal	<i>Cardinalis cardinalis</i>	B	None			No		
BOBO	Bobolink	<i>Dolichonyx oryzivorus</i>	B	H	THR	THR	No		
RWBL	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	B	CF			No		
EAME	Eastern Meadowlark	<i>Sturnella magna</i>	B	S	THR	THR	No		
COGR	Common Grackle	<i>Quiscalus quiscula</i>	B	CF			No		
BHCO	Brown-headed Cowbird	<i>Molothrus ater</i>	B	S			No		
BAOR	Baltimore Oriole	<i>Icterus galbula</i>	B	H			No		
PUFI	Purple Finch	<i>Carpodacus purpureus</i>	B	None			No		
AMGO	American Goldfinch	<i>Carduelis tristis</i>	B	P			No		

TOTAL SPECIES OBSERVED:	56	BREEDING SPECIES OBSERVED:	50	4	4	0	1	0	0	0
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Appendix III: Site Plan



PLAN

OF PROPOSED SUBDIVISION ON PART OF LOT 27, CONCESSION III IN THE TOWNSHIP OF SARAWAK IN THE TOWNSHIP OF GEORGIAN BLUFFS IN THE COUNTY OF GREY.

30 15 0 75 150
SCALE = 1 : 1 500

SURVEYOR'S CERTIFICATE:

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN ON THIS PLAN.

HEWETT AND MILNE LIMITED
ONTARIO LAND SURVEYORS
BOX 112,
302 8TH STREET EAST,
OWEN SOUND, ONT.
N4K 5P1

NEIL C. MILNE
ONTARIO LAND SURVEYOR

INFORMATION REQUIRED UNDER SECTION 51, SUBSECTION 17, OF THE PLANNING ACT.

A. EXISTING ROADS ARE AS SHOWN ON PLAN.
B. AREA INDICATED ON KEY PLAN SHOWS COMPLETE HOLDINGS OF SUBDIVIDER.
C. ADJOINING SUBDIVISIONS AND LOT LIMITS ARE AS SHOWN HEREON.
D. PROPOSED LOT USAGE - RESIDENTIAL
E. ADJACENT LOT USAGE - RESIDENTIAL, AGRICULTURAL, VACANT.
F. LOT DIMENSIONS ARE AS SHOWN ON PLAN.
G. TOPOGRAPHIC FEATURES ARE AS SHOWN ON PLAN.
H. WATER SUPPLY - MUNICIPAL
I. SOIL - RED CLAY
J. ALL CONTOURS ARE AS SHOWN ON PLAN.
K. MUNICIPAL WATER SUPPLY AND SEPTIC SYSTEMS
L. NO RESTRICTIVE COVENANTS OR EASEMENTS.

OWNER'S CERTIFICATE:

I AUTHORIZE M.J. DAVENPORT & ASSOCIATES LTD. TO SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE MINISTRY OF MUNICIPAL AFFAIRS.

DATE _____ PATRICIA A. DAVENPORT _____
DATE _____ MURRAY J. DAVENPORT _____
DATE _____ M.J.D. INVESTMENT (1986) INC. _____

KEY PLAN

1	NEW LOT ARRANGEMENT	25/04/17	JC	MJD
NO.	REVISIONS	DATE	BY	APP'D

BENCHMARKS

BM 1 ELEV. 216.32
NAIL IN EAST FACE OF HYDRO POLE LOCATED AT INTERSECTION OF SUBJECT PROPERTY ROADWAY AND CHURSIDE ROAD EAST.

BM 2 ELEV. 225.320
SPIKE IN FACE OF HYDRO POLE LOCATED AT INTERSECTION OF GREY COUNTY ROAD #1 AND CHURSIDE ROAD EAST.

BM 3 ELEV. 219.04
NAIL IN FACE OF HYDRO POLE 20.6m EAST TO NORTHWEST CORNER OF THE SUBJECT PROPERTY, SOUTH SIDE OF CHURSIDE ROAD EAST.

LEGEND

- PROPERTY LIMIT
- PHASE LIMIT
- NEW SANITARY SEWER
- NEW STORM SEWER
- NEW WATERMAIN
- PROPOSED DRAINAGE
- 100.00 PROPOSED LOT CORNER ELEVATION
- 100.00 PROPOSED ELEVATION AT HOUSE
- 100.00 PROPOSED SWALE ELEVATION
- EXISTING DRAINAGE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- 100.00 EXISTING LOT CORNER ELEVATION
- 100.00 EXISTING ELEVATION TO REMAIN THE SAME

M.J. DAVENPORT & ASSOCIATES LIMITED

P.O. BOX 2452 STN MAIN
LOCATION: 2010 KEENE ROAD
OTONABEE, ONTARIO
K0N 7Y8

TEL : (705) 745-6676
FAX : (705) 745-7326

DAVENPORT SUBDIVISION
PART OF LOT 27
CONCESSION III
TOWNSHIP OF SARAWAK
TOWNSHIP OF GEORGIAN BLUFFS

DRAFT PLAN

DESIGNED BY: **M.J. DAVENPORT**

DRAWN BY: **J. ZHOU**

DATE: **DECEMBER, 2016**

PROJECT NO.: **06-D-3969**

SCALE: **1 : 1500**

DRWG. NO.: **3969-DP**