Environmental Impact Study
Marlwood Golf Course
Town of Wasaga Beach, Ontario
Simcoe County

Prepared for:
Loft Planning Inc.

Prepared by:
Azimuth Environmental
Consulting, Inc.

September 2017

AEC 15-273

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Assessments & Approvals

September 29, 2017 AEC 15-273

Loft Planning Inc.
308 Hurontario Street
Collingwood, ON
L9Y 2M3

Attention: Kristine Loft, MCIP RPP

Re: **Environmental Impact Study for Residential Development of Marlwood Golf Course. Town of Wasaga Beach, County of Simcoe.**

Dear Ms. Loft:

The Environmental Impact Study (EIS) was undertaken by Azimuth Environmental Consulting Inc. to investigate impacts associated with the proposed development of residential housing on the lands currently contained within Marlwood Golf Course. It is our understanding that an EIS was requested by the Nottawasaga Valley Conservation Authority due to the presence of Provincially Significant Wetland and unevaluated wetland in proximity to the area of proposed development.

The proposed use of the property appears consistent with the adjacent residential and tourism land use, and the existing natural heritage features and functions, wildlife habitat, fish habitat, and vegetation communities in the area are anticipated to remain unaffected post development. Further study is required to determine if the development will impact natural heritage features influenced by local hydrology and utilized by Species at Risk. A letter addendum will be provided to address these components once more information becomes available and additional studies are completed.

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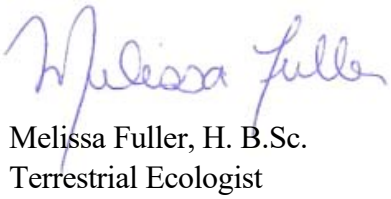
If there are any concerns regarding the results and conclusions of this study, please do not hesitate to contact us.

Yours truly
AZIMUTH ENVIRONMENTAL CONSULTING, INC.



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1.0 INTRODUCTION

Azimuth Environmental Consulting, Inc. (Azimuth) was retained by Loft Planning Inc. to prepare an Environmental Impact Study (EIS) for a property located at the Marlwood Golf Course in the Town of Wasaga Beach (Town), and the County of Simcoe (County). The approximate property location is outlined in Figure 1. Azimuth has completed the EIS, including background review and field work, as part of the submission requirements associated with the proposed development.

This report documents the environmental conditions present on the property and will assess the potential presence of key/sensitive natural heritage features. Information collected during the 2016 site visits and background information available from the Ministry of Natural Resources and Forestry (MNRF) are used to address the potential impacts associated with the proposed residential development. Further, the report outlines strategies to mitigate any potential impacts to the identified natural heritage features and their ecological functions.

2.0 PLANNING CONTEXT

2.1 Provincial Planning Policy

The *Provincial Policy Statement*, 2014 (PPS) provides policy direction related to natural heritage features and functions. The Ontario *Planning Act,* 1990 requires that planning and development decisions are consistent with the PPS. The following policies are relevant to this project.

According to Section 2.1.4, development and site alteration shall not be permitted in:

- Significant wetlands in Ecoregions 5E, 6E and 7E, and,
- Significant coastal wetlands.

According to Section 2.1.5, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions, development and site alteration shall not be permitted within:

- Significant woodlands in Ecoregions 6E and 7E;
- Significant valleylands in Ecoregions 6E and 7E;
- Significant wildlife habitat;
- Significant areas of natural and scientific interest; and
- Coastal wetlands in Ecoregions 5E, 6E and 7E that are not considered to be significant.

Section 2.1.6 of the PPS states that development and site alteration is not permitted in fish habitat except in accordance with federal and provincial requirements.

Section 2.1.7 of the PPS states that development and site alteration shall not be permitted in habitat of Endangered (END) and Threatened (THR) species, except in accordance with provincial and federal requirements.

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

Regarding natural heritage features and areas other than fish habitat, the PPS defines negative impact as "degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities".

Ecological integrity is defined in the Natural Heritage Reference Manual (NHRM; OMNR, 2010) as "the condition of an ecosystem in which (a) the structure, composition and function are unimpaired by the stresses from human activity, (b) natural ecological processes are intact and self-sustaining and (c) ecosystem evolution is occurring naturally".

It is the responsibility of the Province of Ontario and/or the Municipality to designate areas identified within Sections 2.1.4 and 2.1.5 of the PPS as 'significant'. In the absence of designated areas, the PPS, NHRM and Ecoregion 6E Significant Wildlife Habitat (SWH) Criteria Schedule (MNRF, 2015) have been used within this report to identify candidate significant natural heritage features considered applicable to the property and/or adjacent lands and assess potential negative impacts on those features and their ecological function(s).

2.2 Endangered Species Act

According to Section 9.(1)(a) of Ontario's *Endangered Species Act*, 2007 (ESA), "no person shall kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an Extirpated (EXT), END or THR species".

Section 10.(1) of the ESA prohibits damage to habitat stating that "no person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario List as an END or THR species; or a species that is listed on the Species at Risk in

Ontario List as an EXT species, if the species is prescribed by the regulations for the purpose of this clause".

As per Section 17.(1) of the ESA "the Minister may issue a permit to a person that, with respect to a species specified in the permit that is listed on the Species at Risk in Ontario List as an EXT, END or THR species, authorizes the person to engage in an activity specified in the permit that would otherwise be prohibited by Section 9 or 10".

2.3 County of Simcoe

Land Use Designations Schedule 5.1 of the County of Simcoe Official Plan (2016) show that the property is located within a designated "Settlement" area (Appendix A).

Section 3.5.7 of the County OP states in part that "Residential, commercial, industrial, institutional, and recreational land uses shall be developed within settlement area boundaries on land appropriately designated in a local municipal official plan for the use".

2.4 Town of Wasaga Beach

According to the Land Use Plan (Schedule A-6) of the Town of Wasaga Beach Official Plan (Town OP; 2016), the subject property is comprised of a mix of "Open Space", and "Tourism Accommodation" (Appendix A). Some undeveloped portions of the subject property (*i.e.* those that are contiguous with Marl Lake Area of Natural and Scientific Interest (ANSI) and Jack's Lake Complex Provincially Significant Wetland (PSW) are designated as "Natural Heritage System Category 1" and partially as "Natural Hazard" (Town OP Schedule D; Appendix A).

According to Section 7.2.1 of the Town OP, Tourism Accommodation "means the predominant use of land in this area shall be to provide accommodation for the traveling public and accommodation for seasonal residents. Various types of temporary accommodation such as motels, hotels, motor courts, rental cabins, rental cottages, time shares, and bed and breakfasts are included in defining accommodation for the traveling public. Condominium and townhouse type development is included in defining accommodation for seasonal residents and are subject to the policies of Section 5, Residential, of this Plan. Accessory restaurant, retail and entertainment facilities clearly accessory to the above uses are also permitted and should be included within the main building of the development".

Section 11.2.1 states that: "the Open Space designation shall mean that the use of land in the areas so designated shall be for active and passive recreational and conservation uses.

In addition, such uses as agriculture, nursery gardening, community gardens, forestry and cemeteries shall be permitted".

Section 12.3.1 states that Permitted Uses within the Natural Hazards designation includes: "development of residential and commercial uses on existing vacant lots of record". The OP document states that this bullet is considered a 'non-decision' by the County of Simcoe.

Section 12.3.2 states that Prohibited Uses within the Natural Hazards designation includes: "new lot development by plan of subdivision or consent, wholly within the Natural Hazards land use designation".

In regards to Natural Heritage System – Category 1 Lands, Section 13.3.1 states that:

a) The natural state of these areas is intended to be preserved and protected. Permitted uses on lands designated "Natural Heritage System - Category 1" as shown on Schedule "A" include existing agricultural uses, forestry, passive outdoor recreation, public works/uses, scientific research and education and wildlife management activities compatible with the conservation and preservation of the natural flora and fauna.
b) No development or site alteration shall be allowed in Natural Heritage System - Category 1 lands other than public works/uses and those structures necessary for flood or erosion control.

The property is also located within an area of High Aquifer Vulnerability and the 10-25 year Capture Zone of the Wellhead Protection Area (Schedule G; Appendix A). Section 18.1.4.2 of the Town OP states that "development within wellhead protection areas shall be restricted in the Comprehensive Zoning By-law, to ensure the sustained integrity of the municipal drinking water supply, the groundwater resource, and its hydrological function."

2.5 Nottawasaga Valley Conservation Authority

A portion of the property is in lands subject to Ontario Regulation (O. Reg.) 172/06, as per mapping prepared by the Nottawasaga Valley Conservation Authority (NVCA; Appendix B) due to the presence of Marl Lake ANSI and associated wetland units including Jack's Lake Complex PSW. A work permit will be required prior to any development and/or site alteration within the regulated lands.

2.6 Federal Fisheries Act

On November 25, 2013, amendments to the *Fisheries Act*, 1985 came into effect, which focused the *Fisheries Act*, 1985 on protecting the productivity of recreational,

commercial and Aboriginal fisheries. The *Fisheries Act*, 1985 requires projects to avoid causing 'serious harm to fish' unless authorized by the Minister of Fisheries and Oceans Canada (DFO). Projects include those being conducted in or near waterbodies that support a commercial, recreational or Aboriginal fisheries. During the design and construction phases of projects, efforts should be made to protect fish and fish habitat in order to comply with the *Fisheries Act*, 1985.

Under the current DFO review process, projects are to be evaluated under the Self-Assessment process to determine whether a project has the potential to result in 'serious harm to fish', and whether DFO review is required to obtain either a Letter of Advice or Authorization.

3.0 STUDY APPROACH

3.1 Study Area

The proposed development is located in Ecoregion 6E in the Nottawasaga River watershed. For the purpose of this study, the 'subject property' refers to the property on which development is being proposed, and all of the assessment parcels included. Direct field observations were confined to the property limits. "Study Area" refers to the lands specifically identified for development. General habitat features and their ecological functions were also recorded for lands adjacent to the Study Area based on aerial imagery interpretation, landscape knowledge and background data.

3.2 Background Data

A review of background documents provided information on site characteristics, habitat, wildlife, rare species and communities, and general cultural/historic aspects of the Study Area and adjacent lands. This background data review included:

- Aerial images (Google, VuMap);
- Atlas of the Breeding Birds of Ontario (OBBA) [website];
- The MNRF's Natural Heritage Information Centre (NHIC) Make-A-Map: Natural Heritage Areas application [website];
- Ontario Nature – Ontario Reptile and Amphibian Atlas [website];
- MNRF's Species at Risk Ontario list; and
- Dobbyn, J. (1994) – Atlas of the Mammals of Ontario.

3.3 Scope of Work

Azimuth contacted the NVCA with a proposed Terms of Reference (Appendix C), which included the following:

- Consult with the Town, NVCA and the Midhurst District MNRF, as required, to determine their concerns regarding the proposed development, their requirements regarding the scope of work, and obtain background information and environmental mapping for the property;
- Evaluate existing vegetation communities using Ecological Land Classification for Southern Ontario to vegetation type;
- Conduct three vascular plant surveys in spring, summer and fall;
- Conduct three evening calling amphibian surveys to determine if amphibian breeding habitat is present on or adjacent to areas proposed for development;
- Conduct two dawn breeding bird surveys;
- Delineate the boundary of the Jack's Lake PSW Complex with the MNRF;
- Complete a Butternut Health Assessment (BHA) for the Butternut trees found on the property;
- Complete a snag density survey of moderately decayed trees with diameter at breast height >25cm to assess for potential maternity roosting habitat for SAR bats;
- Undertake a SAR screening and inventory under the ESA and assess for potential habitat, including a targeted search for Butternut;
- Record wildlife observations and assess wildlife habitat function, including assessing the potential for SWH to occur;
- Provide a water balance assessment based on background data/published resources to evaluate the potential for the proposed development to impact the hydrology of the adjacent Jack's Lake PSW/aquatic resources;
- Map vegetation communities, environmental features, and the proposed development on current high quality ortho-air photos;
- Provide an assessment of the potential impacts of the proposed works on identified environmental features;
- Provide recommendations for the mitigation of potential impacts of the development on identified natural features;
- Provide recommendations for restoration and/or enhancement, if required; and
- Demonstrate conformity with the applicable policies, including those of the Town, NVCA, PPS, and the ESA.

3.4 Vegetation Surveys and Community Mapping

Vegetation communities on the subject property, and within certain adjacent lands on the subject property, were evaluated and mapped as per the EIS Terms of Reference. The field guide to Ecological Land Classification for Southern Ontario (Lee *et al*., 1998; ELC) was used as a general guide to the classification of vegetation community types.

Prior to undertaking field studies, Azimuth classified habitats using recent aerial photo imagery for the Study Area. General vegetation community types were confirmed and refined through on-site surveys conducted throughout the 2016 field season. In addition to observation data collected opportunistically during ELC surveys, three dedicated vascular plant surveys were conducted as per the EIS Terms of Reference on September 24, 2015, June 16, 2016 and August 31, 2016. ELC community descriptions and vegetation species information are presented in Tables 1 and 2.

3.5 Wildlife Surveys

3.5.1 Mammals

With the exception of bats, no mammals were specifically targeted for surveys; however, incidental observations were recorded opportunistically during the course of targeted surveys for vegetation and other wildlife taxa. Surveys were conducted to identify potential bat habitat within the Study Area, by mapping the locations of tree snags that might be utilized as habitat for bats during various life stages.

3.5.2 Birds

Two dawn breeding bird surveys were completed in 2016; on June 1st and June 16th, using point count protocol based on the Ontario Breeding Bird Atlas Guide for Participants (OBBA, 2001). Ten point count stations were established to cover all habitat types on the property and all birds identified through visual or auditory confirmation were recorded during a 5- minute period, at each station (Figure 2a). Any species observed while on-route to the next station were also recorded and included within our results. Breeding evidence was assessed based on the criteria of the OBBA (2001). Survey conditions are outlined within Table 3.

3.5.3 Amphibians

Azimuth completed three evening calling amphibian surveys as per the Marsh Monitoring Program (Bird Studies Canada, 2009) protocol. Surveys were completed at the four sampling locations as shown on Figure 2a. According to the methodology, surveys are to be conducted 3 times in a year, between April and July 5th, with at least 15 days between each survey. The surveys are to begin one half-hour after sunset and end by midnight during evenings with suitable conditions [light winds and minimum night air temperatures of 5ºC, 10ºC and 17ºC for each of the three respective survey periods]. An, observation period of 3 minutes is required at each point count station. Survey conditions are outlined within Table 4.

3.6 Species at Risk

A SAR habitat screening was completed to provide an analysis of the habitat requirements of SAR reported to occur in the area to identify those having potential to occur within or adjacent to the Study Area. Site assessments were considered appropriate effort to detect potential habitat for any provincially designated species, notably SAR as identified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and by the Committee on the Status of Species at Risk in Ontario (COSSARO). The MNRF Midhurst District was also contacted to request background and SAR information that may be relevant to this project (Appendix D).

Habitat requirements and appropriate designations (END, THR, or Special Concern [SC]) for all species that could potentially occur in the area are outlined in Table 5. Where it is determined that the species have potential habitat within the Study Area and adjacent lands, preliminary mapping has been created to determine if the proposed works can be carried out with a reasonable certainty that no impacts to the species or their habitat will be incurred as a result of the works.

3.6.1 Species Specific Surveys

At this time, species specific surveys have been completed for known SAR: Butternut, Tri-colored Bat, Northern Long-Eared Bat, and Little Brown Bat. Further, all Butternuts found on the property have been mapped and four have been assessed according to the BHA protocol (MNRF, 2013).

Bat Snag Assessments have occurred to document the location of candidate maternity roosting habitat for bat species within the impacted woodland areas (OMNR, 2011). Within small vegetation communities, each individual snag tree was identified and mapped. Within larger vegetation communities, 12.5m radius plots were established and all candidate trees within those plots were identified. Individual snag and plot locations for each of the affected woodland areas within the Study Area are presented in Figure 2b.

4.0 EXISTING CONDITIONS

4.1 Land Use

4.1.1 On-site Land Use

The subject property is primarily an existing golf course (Marlwood Golf Club), with associated club infrastructure, including clubhouse and outbuildings. The golf course lands represent an upland community with maintained course area and manicured 'natural' areas. The course lands transition eastward into the riparian

marshland/swampland on the west side of Marl Lake. A few hardwood communities of mixed maturity are scattered throughout the subject property.

4.1.2 Adjacent Land Use

The property is situated approximately 2.5 km inland from the shores of Nottawasaga Bay (Georgian Bay/Lake Huron). Wasaga Beach Provincial Park is located directly west of the proposed development, and is characterized largely by an inland dune system dominated by open, sandy oak-pine woodlands. Marl Lake ANSI and Jack's Lake PSW are located immediately east of the property (Appendix A). Residential development is present north and south of the property.

4.2 Terrestrial Resources

4.2.1 Vegetation

Table 1 describes the vegetation communities identified in the Study Area, including details about wetlands and woodlands. Figure 2a depicts these community locations. A complete list of the vascular plant species observed on the property is presented in Table 2. A survey for Butternut (END) was completed in conjunction with Azimuth's field investigations. Five Butternut (END) trees were documented (Figure 2a and 2b) within the subject property. A BHA has been completed for four of the trees. The additional tree not assessed is not located within 50m of the proposed development limit and has not been further considered in the context of this application. No other provincially-designated at-risk plant species were observed on the property.

4.2.2 Significant Woodland Assessment

Provincial Policy Statement

The area of forest cover in the southeastern portion of the Study Area has been assessed in accordance with the recommendations of the NHRM (OMNR, 2010). Table 6 reviews the criteria for this designation as outlined in the PPS. As there is approximately 32.6% forest cover within the NVCA watershed, a provincially significant woodland must be at least 50ha in size. The woodland extending within the subject property contributes is part of a 24.55ha woodland feature (Appendix E). Therefore, according to provincial guidelines, woodland habitat within the Study Area does not constitute significant woodland due to small size (Table 6).

Town of Wasaga Beach

A portion of the woodland habitat is contained within the mapped Natural Heritage System (NHS) Category 1 and 2 lands according to Schedule D (Natural Heritage System) of the Town OP. Woodland habitat within the golf course proper has not been incorporated into the Town NHS mapping. However, since the woodlands within the

Study Area are contiguous with the existing woodland extending off property (approximately 24ha in size; Appendix E), are in close proximity to other significant natural features (PSW and ANSI) and are not fragmented, we would consider the entire woodland community Candidate Significant Woodland as per Policy 13.4.10.4 (c) of the Town's OP. Thus this woodland is considered to be locally significant.

4.2.3 Mammals

Common mammal species confirmed to be utilizing the property included: Coyote (*Canis latrans*), Eastern Grey Squirrel (*Sciurus carolinensis*), Raccoon (*Procyon lotor*), Red Squirrel (*Sciurus vulgaris*), Beaver (*Castor canadensis*), Red Fox (*Vulpes vulpes*), Striped Skunk (*Mephitis mephitis*) and White-tailed Deer (*Odocoileus virginianus*). None of the species observed are of federal or provincial conservation concern.

Potential habitat for bat species is addressed and assessed within the SAR section of this report.

4.2.4 Birds

A total of 46 bird species were documented to be utilizing the property. One bird species of provincial conservation concern, the Eastern Whip-poor-will (THR), was heard calling during evening amphibian surveys, but from a distant location outside of the subject property. It is therefore not included with breeding bird data, but is considered in discussion and assessment of SAR. Details of Azimuth's 2016 dawn breeding bird surveys can be found in Table 3. No other species identified on the property are considered to be of federal or provincial conservation concern.

4.2.5 Amphibians

Much of the activity noted was confined to the wetland communities to east of the Study Area. However, additional (incidental) observations were noted from the water features contained within the maintained golf course area.

Western Chorus Frog was observed during Azimuth's field surveys and is ranked S3 provincially. The provincial rank S3 indicates that the species is 'vulnerable' in the nation or province due to a restricted range, relatively few populations, recent and widespread declines or other factors making the species vulnerable to extirpation. This species is discussed further under potential habitat for 'Special Concern and Rare Wildlife Species'. With the exception of Western Chorus Frog, none of the other amphibians observed are of provincial conservation concern. The details of Azimuth's 2016 evening amphibian surveys can be found in Table 4.

4.3 Species at Risk

The various schedules of the ESA identify SAR in Ontario. These include species listed as END, THR, and SC. As previously noted, only species listed as END and THR receive protection through the ESA from harm and destruction to habitat on which they depend. Several of these species have the potential to occur in the Study Area or adjacent lands.

Particular care was taken during the field work to detect any provincially designated species, notably SAR as identified by the COSSARO (MNRF, 2016). Habitat requirements for these species were assessed in relation to the habitat observed on the property. Our assessment confirmed the presence of one species (Butternut), and indicated that several additional species had potential to occur within the Study Area. A habitat analysis for all candidate species is presented in Table 5.

4.3.1 Species at Risk Summary

The following species were confirmed to occur on site, or may utilize habitat features of the Study Area and adjacent lands:

- Barn Swallow (THR) - potential/likely in the Study Area;
- Blanding's Turtle (THR) - potential/likely in the Study Area;
- Butternut (END) - confirmed in the Study Area;
- Eastern Hog-nosed Snake (THR) - potential/likely in the Study Area;
- Least Bittern (THR) - potential in the Study Area;
- Northern Myotis (END), Tri-colored Bat (END), Little Brown Myotis (END) - potential/likely in the Study Area; and
- Whip-poor-will (THR) - confirmed on adjacent lands.

4.4 Aquatic Habitat

Marl Lake borders the eastern edge of the Study Area, and is known to inhabit a warmwater fish community (Figure 2a). According to MNRF's Land Information Ontario (LIO) database), Marl Lake has a warmwater thermal regime and is known to inhabit Northern Pike, Pumpkinseed, Smallmouth Bass, Largemouth Bass, Bowfin, Iowa Darter, Central Mudminnow, and Common Carp. A portion of Marl Lake is also contained within Jack's Lake PSW. Therefore, given the presence of the PSW and fish community within Marl Lake (warmwater fish species), the lake can be characterized as a moderately sensitive feature that provides direct fish habitat.

There are also three pond features located within the Study Area as shown on Figure 2a (North, Central, and South features). It is our understanding that these features are water hazards associated with the golf course in the Study Area, and that they are all offline

features (*i.e.,* not connected to other watercourses). It would be anticipated that these features may provide habitat for a warmwater fish community. However, as per the Federal *Fisheries Act,* 1985 and in accordance with DFO's Projects Near Water website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html), commercial ponds that are not connected to a waterbody that contains fish at any time during any given year are not considered fish habitat under the *Act*..

5.0 NATURAL HERITAGE FEATURES AND FUNCTIONS

The results of our field surveys and a review of background information indicate the following existing and candidate natural heritage features to be located within or in close proximity to the Study Area, as revealed through the application of provincial and municipal guidelines for identification of significant natural heritage features and functions (*i.e.* NHRM, Significant Wildlife Habitat Ecoregion 6E Criterion Schedule, Town OP).:

5.1 Habitat for Threatened and Endangered Species

Significant habitats for the following SAR are potentially found within the Study Area based on criteria outlined in Table 5. Provided classifications for each species include COSSARO ranking and, if applicable, NatureServe rankings of provincial and global rarity (S3/G3 or lower):

- Potential Barn Swallow (THR) nesting and foraging habitat.
- Potential Blanding's Turtle (THR) nesting and foraging habitat.
- Confirmed Butternut (END) habitat.
- Potential Eastern Hog-nosed Snake (THR) movement corridor and foraging habitat.
- Potential Least Bittern (THR) general habitat.
- Potential END Bat Species nesting, roosting, and foraging habitat
- Potential Whip-poor-will (THR) category 3 habitat.

5.1.1 Barn Swallow

Habitat within the Study Area is potentially suitable for this species. Existing structures and areas of natural cover and open water features within and adjacent to the Study Area may provide a mix of nesting and foraging habitat.

5.1.2 Blanding's Turtle

Habitat within and adjacent to the Study Area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable habitat. Open upland habitat on the golf course and within Wasaga Beach

Provincial Park offers potentially-suitable nesting and basking habitat opportunities. The property is situated in an area with high potential for use as a movement corridor.

5.1.3 Butternut

Four Butternut specimens are located within the proposed development limits (Figures 2a, 2b and 3). One tree is located beyond the development footprint within the FOD community.

5.1.4 Eastern Hog-nosed Snake

Habitat adjacent to the Study Area is potentially suitable for this species' nesting requirements, *i.e.* sandy, oak forests in the Provincial Park. The property is situated in an area with high potential for use as supporting habitat for this species, and the Study Area may provide opportunities for foraging.

5.1.5 Least Bittern

Habitat adjacent to the Study Area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable habitat. The NHIC database contains a historic observation of Least Bittern within the vicinity of the Study Area (based on accuracy of $1km^2$).

5.1.6 Bat Species

Habitat within and adjacent to the Study Area is potentially suitable for this species guild. Forested and naturalized upland communities may provide opportunities for nesting and foraging, respectively. Snag density surveys have occurred within the affected woodland units; five communities contain high snag density (Figure 2b) and are considered to be Candidate Maternity Roosting Habitat. An unidentified species of bat was observed foraging during evening amphibian surveys, over amphibian survey station 3 (Figure 2a), confirming bat presence, though not SAR presence, on the property.

5.1.7 Eastern Whip-poor-will

Habitat within and adjacent to the Study Area is potentially suitable for this species. Forested and naturalized upland communities may provide opportunities for nesting and foraging. This species was documented once outside of Study Area via incidental observation (auditory).

5.2 Provincially Significant Wetland and Area of Natural and Scientific Interest

Marl Lake, the waterbody adjacent to the Study Area, is contained within the Jack's Lake PSW complex and Marl Lake ANSI. Multiple rare vegetation communities are associated with Marl Lake and the greater Jack's Lake PSW, including Great Lakes

coastal marsh communities, and localized fens associated with unique groundwater movement. Marl Lake also provides direct fish habitat to a warm/coolwater fish community. The boundary of the Jack's Lake PSW complex is situated directly east and north of areas of the proposed development (Figure 3). The aforementioned rare communities associated with this PSW have not been identified within the boundaries of the Study Area. The PSW limit immediately adjacent to the proposed development was confirmed with the MNRF on June 29, 2016 (Appendix F).

5.3 Significant Woodland (Town of Wasaga Beach)

The woodland located along the southern limit of the Study Area is contiguous with woodland habitat that is approximately 24ha in total. Thus, the entire unit is considered to be locally significant according to direction provided by the Town.

5.4 Significant Wildlife Habitat

There appear to be no municipally or provincially designated SWH functions associated with the Study Area and adjacent lands. Therefore, Candidate SWH was investigated where applicable as outlined within the Significant Wildlife Habitat Technical Guide (MNRF, 2000), Ecoregion 6E Criterion Schedules (MNRF, 2015) and summarized in Tables 7.1 – 7.6. The following presents a summary of the Candidate SWH associated with the Study Area.

5.4.1 Waterfowl Stopover and Staging Areas (Aquatic)

Habitat within and adjacent to the Study Area meets criteria for ELC community types. MAS3-1 communities on the western shore of Marl Lake are potentially suitable as aquatic waterfowl stopover and staging areas.

5.4.2 Bat Maternity Colonies

Habitat within the Study Area meets criteria for ELC community types. Forested communities (FOD, FOC) provide potentially suitable habitat for bat maternity colonies. Snag surveys indicate that sufficient snag density is present within five communities (Figure 2b); these communities are considered to be candidate SWH.

5.4.3 Turtle Wintering Areas

Habitat within and adjacent to the Study Area meets key criteria for ELC community types. Marl Lake and its associated swamp and marsh communities, as well as the water hazards of the golf course, are suitable turtle wintering areas.

5.4.4 Reptile Hibernaculum

Habitat within and adjacent to the Study Area meets criteria for ELC community types. Marl Lake and its associated swamp and marsh communities are suitable for reptilian overwintering.

5.4.5 Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat

Habitat in the Study Area meets key criteria for ELC community types directly adjacent to a water body. Specifically, the mixed swamp community adjacent to Marl Lake provides potentially suitable habitat for Bald Eagle and Osprey nesting, foraging, and perching habitat.

5.4.6 Turtle Nesting Areas

Suitable nesting habitat is present within 100m of a MAS3 ecosite (Figure 2). Exposed mineral soils are present throughout the Study Area, including within maintained portions of the golf course (sand traps) and Snapping Turtle nesting was confirmed on the property in June 2017, though not within 100m of the Study Area (Figure 2a).

5.4.7 Marsh Breeding Bird Habitat

Habitat within and adjacent to the Study Area meets criteria for ELC community types. MAS3-1 communities on the west shore of Marl Lake are potentially suitable for marsh breeding birds. Sandhill Crane was documented within Marl Lake in May 2016.

5.4.8 Terrestrial Crayfish

Habitat within and adjacent to the Study Area meets criteria for ELC community types. MAS3-1 and SWM4-1 communities on the western shore of Marl Lake are potentially suitable for terrestrial crayfish. These species are typically confined to SW Ontario, but the Nottawasaga watershed has resident populations of Digger Crayfish.

5.4.9 Special Concern and Rare Wildlife Species

The following Special Concern and Provincially Rare species are potentially present within and adjacent to the Study Area (Table 5). In addition to applicable designations of SC, NatureServe 'S' ranks are provided for those considered to be provincially 'rare/vulnerable', *i.e.* ranked S3 or lower.

- Bald Eagle
- Black Tern
- Eastern Musk Turtle
- Eastern Ribbonsnake
- Eastern Wood-pewee

- Northern Map Turtle
- Olive-sided Flycatcher
- Snapping Turtle
- Yellow Rail
- Western Chorus Frog

6.0 PROPOSED DEVELOPMENT

The proposed development is comprised of a subdivision infill along the western and southern limits of the property (Figure 3). The proposed plan includes the construction of numerous detached residential units and would form a contiguous system of residential housing along Master's Lane and Golf Course Rd., connecting developed sections to the north and south. Access to the development would be provided via the road network used for adjacent existing residential housing, with one additional access point to adjacent Golf Course Road. The southern lot fabric will include the conversion of an existing water hazard (South Feature as per Figure 2a) to a stormwater management pond (SWMP) north of the proposed residential lots (Figure 3). Minor infilling of the North Feature water hazard is also proposed to accommodate the residential lots.

All of the proposed lots will be municipally serviced for water and sewer (Burnside, 2017a; Burnside, 2017b)

The ten lots proposed north of the existing residential area are proposed to utilize locally sandy soils and promote onsite infiltration (via soakaway pits and grassed swales) of stormwater (Burnside, 2017a) as the preferred method of stormwater management during the majority of storm events. It is expected that large, infrequent rain fall events will utilize a proposed overland flow route that directs flows to an existing SWMP within the golf course facility (Burnside, 2017a).

The southern lots will utilize a treatment train approach for stormwater managed and will be designed to have both individual and collective stormwater treatment (Burnside, 2017b). Each lot will feature a soakaway pit which will permit onsite infiltration. Runoff from hard surfaces (*i.e.* driveways, proposed road system) will be directed to the storm sewer system, an overland flow route and eventually and the proposed SWMP.

It is expected that the proposed stormwater servicing will appropriately address all of the Ministry of the Environment and Climate Change (MOECC), Town and NVCA requirements for runoff quantity and quality control (Burnside, 2017a; Burnside, 2017b) though specific details are not available at this time.

Further details regarding servicing and stormwater management can be found in the respective Functional Servicing Reports prepared for the application (Burnside, 2017a; Burnside, 2017b).

7.0 IMPACT ASSESSMENT

The results of background data review, detailed site assessments and analysis revealed the following natural heritage and functions associated with the Study Area and adjacent lands:

- Potential and Confirmed Habitat for THR and END Species:
    - Barn Swallow (Potential);
    - Blanding's Turtle (Potential);
    - Butternut (Confirmed);
    - Eastern Hog-nosed Snake (Potential);
    - Least Bittern (Potential);
    - Bat Species (Potential); and
    - Eastern Whip-poor-will (Potential)
- Jack's Lake PSW/Marl Lake ANSI;
- Candidate Significant Woodland; and
- Candidate Significant Wildlife Habitat:
    - Waterfowl Stopover and Staging Areas (Aquatic)
    - Potential Bat Maternity Colony Habitat;
    - Turtle Wintering Area;
    - Potential Turtle Nesting Area;
    - Potential Reptile Hibernaculum;
    - Bald Eagle and Osprey Nesting, Foraging and Perching Habitat;
    - Marsh Breeding Bird Habitat;
    - Terrestrial Crayfish;
    - Habitat for Special Concern Species.
- Aquatic Habitat – Offline Water Hazards

In the following sections we assess the potential for negative ecological impact to these natural heritage and functions. In Section 8.0 we provide recommendations for mitigating impacts to these features/functions and environmental features in general.

7.1 Habitat for Threatened and Endangered Species

7.1.1 Barn Swallow

This species was not identified during Azimuth's breeding bird surveys. However, there is potential nesting habitat for this species associated with the existing buildings on the property. The proposed development will not require demolition of existing buildings,

thus potential nesting habitat will be retained post development. Though the species was not observed, potential foraging habitat exists within the open space areas of the golf course, within the Jack's Lake PSW wetland vegetation communities and Marl Lake. It is likely that, if present, the species would preferentially forage over habitat associated with the PSW, and not that regularly disturbed within the golf course property. Thus, loss of potential foraging habitat resulting from the proposed development is unlikely to impact the species or habitat availability, provided that the recommended measures, as outlined in Section 8.0, are implemented during construction. Further, some foraging habitat function is expected to be retained on the landscape, within the residential lands. Based on this assessment, the proposed development will not result in contravention of the ESA as it relates to Barn Swallow and their candidate habitat.

7.1.2 Blanding's Turtle

The proposed development will not directly impact foraging or nesting habitat that is ideally-suited for Blanding's Turtle. However, the proposed development may introduce a barrier within a potential movement corridor for the species, as they move between the overwintering and foraging habitat provided by wetland communities of Marl Lake/Jack's Lake PSW and the nesting habitat provided by the dune matrix of Wasaga Beach Provincial Park. Overwintering habitat for the species (golf course water hazards) may be altered to allow for development. Additional surveys for the species are occurring in 2017, and MNRF consultation is ongoing to determine potential implications of the development. If the species is not observed during the surveys, then there would be no supporting evidence that Jack's Lake PSW is being utilized by the species, and thus no habitat function would be associated with the property. Therefore, the proposed development may proceed without contravention of the ESA.

The development will affect multiple pond features and sand traps within of the golf course. Given the adjacent natural habitat, the regular disturbance associated with use of the golf course and the man made nature of the features, we would not consider the features to provide critical habitat function for the species. However, appropriate mitigation measures should be employed to ensure that incidental impact to the species does not occur during decommissioning of the features.

7.1.3 Butternut

Five Butternut were identified within the Study Area, as shown on Figures 2a, 2b and 3. Four of the Butternut were assessed as "non-retainable" (Appendix G) and thus, as per Section 23.7 of O. Reg. 242/08, no additional consideration of these individuals is required. One additional tree was observed within a forest community >50m east of the development limit - no impact to this tree is anticipated as a result of the proposed

development. Thus, there is no expectation that the proposed development would result in contravention of the ESA as it relates to the species or its potential habitat.

7.1.4 Eastern Hog-nosed Snake

The proposed development will not directly impact any overwintering or nesting habitat that is ideally-suited for Eastern Hog-nosed Snake. However, the proposed development will may introduce a barrier within a potential movement corridor for the species, as they move between the candidate overwintering habitat provided by wetland communities of Marl Lake/Jack's Lake PSW and the candidate nesting habitat provided by the dune matrix of Wasaga Beach Provincial Park. Further, the upland deciduous forest habitat may provide foraging habitat for the species (COSEWIC, 2007). Additional surveys for the species and consultation with the MNRF are ongoing to determine potential implications of the development.

In addition, the development will affect multiple water hazards within of the golf course that provide a population source of American Toad, the preferred food source of the species. Given the adjacent natural habitat, the regular disturbance associated with use of the golf course and the man made nature of the features, we would not consider the features to provide critical habitat function for the species. Further, no significant populations of toads have been documented within amphibian habitat provided by the natural lands (Table 4). Additional surveys have been completed within the 2017 field season to determine if the golf course's water hazards function as significant breeding habitat for the species. Preliminary data from these surveys does not indicate that significant toad populations are utilizing these features; this data will be further analyzed at the conclusion of the 2017 field season. Regardless, appropriate mitigation measures should be employed to ensure that incidental impact to the species does not occur during decommissioning of the features.

Regardless, if the species is not observed during the surveys, and if suitable habitat function is not identified on the property then there would be no supporting evidence to indicate that the Study Area is being utilized by the species, and thus no habitat function would be associated with the property. As a result, the proposed works may proceed without contravention of the ESA.

7.1.5 Least Bittern

The proposed development will not directly impact any natural wetland habitat that is suited for this species. The wetland, plus a 30m setback to the feature will be preserved post development. Thus, there is no expectation that the proposed development would result in contravention of the ESA as it relates to potential habitat for this species.

7.1.6 Endangered Bat Species

Bat snag surveys completed on the property have identified four areas within the proposed development footprint with snag density of more than 10 trees per hectare. Thus, the development, as proposed, may impact candidate maternity roosting habitat for Endangered bat species (Northern Long-eared Myotis, Tri-colored Bat and Little Brown Bat). Acoustic surveys were completed in June 2017 to quantify candidate habitat use, and determine if any SAR bats are present. If the Study Area is confirmed to provide habitat then a Permit would be required to move forward with the proposed development. Alternatively if assessment demonstrated no use of the potential habitat then the proposed development will be unlikely to result in a contravention of the ESA. Additional details will be provided in an update letter following completion of additional surveys.

7.1.7 Eastern Whip-poor-will

Whip-poor-will was heard calling south-west of the Study Area (May 19th and June 15, 16, and 27th, 2016) within the vicinity of Wasaga Beach Provincial Park. Given that a male was consistently identified in the same location offsite, the species has likely established territory in this location and may be nesting. As per the General Habitat Description for Eastern Whip-poor-will (OMNRF, 2013), areas within 20-170m and 170-500m meters of confirmed nesting sites are considered Category 2 and Category 3 habitats, respectively. Category 2 habitat is utilized for nesting, rearing young, feeding and resting and is typically comprised of a matrix of treed and open spaces. The species will tolerate a moderate level of alteration within Category 2 habitat. Category 3 habitat is primarily used for feeding and can tolerate a high level of alteration.

The exact nesting location of the Whip-poor-will was not determined, however, portions of the Study Area are within 500m of suitable nesting habitat. Though the golf course is certainly comprised of treed and open spaces, it is unlikely that the Study Area provides Category 2 habitat function due to disturbance associated with maintenance and recreational use of the lands. There is, however, potential for the species to utilize the Study Area, Marl Lake and Jack's Lake PSW during nocturnal foraging. This habitat will remain post development. Thus there is no expectation that the proposed development would result in contravention of the ESA as it relates to potential habitat for this species.

7.2 Jack's Lake Provincially Significant Wetland/Marl Lake Area of Natural and Scientific Interest

The limit of Jack's Lake PWS was delineated in June 2016. No site alteration or development is proposed to occur within 30m of the wetland limit (Figure 3). Thus, no direct impact to the wetland is anticipated as a result of the proposed development.

Azimuth has completed a preliminary water balance (Appendix H) to determine if groundwater contributions can be maintained pre to post development. It has been determined that based on the preliminary lot design, there will reduced infiltration, and increased runoff post-development, which may impact the local water table and thus the PSW and Marl Lake features. Further consideration of this potential impact is warranted during future design stages.

7.3 Significant Woodland

The woodland along the southern limit of the Study Area has been identified as part of a significant woodland according to Significant Woodland Policies of the Town (13.4.10.4 of the Town OP). The Town permits development and site alteration within Significant Woodlands, provided that the results of an EIS indicate that no negative impact will occur to the natural feature or ecological function. Approximately 2ha, or 8% of the available woodland habitat will be removed as a result of the proposed development. The woodland is quite narrow, and thus does not provide interior woodland habitat function. It does, however, provide nesting and foraging habitat for Special Concern Species, and may provide upland foraging habitat for local amphibians and reptiles. Though the woodland does provide some habitat function, 22ha, or 92% of comparable habitat will be retained in the landscape post development, and thus the ecological function of the overall feature will be preserved post development.

7.4 Significant Wildlife Habitat

7.4.1 Waterfowl Stopover and Staging Areas (Aquatic)

The proposed development will not directly impact any wetland habitat that would be utilized by waterfowl. Wetland habitat will be retained on the landscape, post development and will be protected from development and future disturbances by retained swamp habitat and the remnant golf course. Therefore, no impact to this SWH function is anticipated as a result of the proposed development.

7.4.2 Bat Maternity Colonies

Forested habitat proposed to be removed as part of the development is potentially providing maternity roosting habitat for multiple SAR and not-at-risk species. The removal of these forested communities would result in the direct loss of candidate maternity roosting habitat. Potential impact to maternity roosting habitat is currently under further investigation. Additional information regarding this habitat function will be provided via letter addendum following completion of the surveys.

7.4.3 Turtle Wintering Areas

The proposed development would result in no direct impact to high quality wetland communities that provide habitat for overwintering turtles. However, multiple golf course ponds would be disturbed or removed as a result of the proposed development. These areas are potentially suitable, but not optimal, overwintering habitat. No impact to the species is expected if these features are decommissioned during the species' active season (*i.e.* April - September). Therefore, no impact to this SWH function is anticipated as a result of the proposed development.

7.4.4 Turtle Nesting Areas

The proposed development would result in no direct impact to high quality nesting habitat available within Wasaga Beach Provincial Park. The sand trap features of the golf course could also provide nesting habitat for these species, though these are but not considered optimal given the regular disturbance of the feature during nesting season. No impact to the species is expected if these features are decommissioned outside of the species' nesting and incubation period (*i.e.* June - April). Therefore, no impact to this SWH function is anticipated as a result of the proposed development.

7.4.5 Reptile Hibernacula

The proposed development would result in no direct impact to high quality wetland communities that provide habitat for overwintering reptiles. Wetland habitat will be retained on the landscape, post development, and will be protected from development and future disturbances by the retained swamp habitat, a 30m setback and the remnant golf course. Therefore, no impact to this SWH function is anticipated as a result of the proposed development.

7.4.6 Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat

Though the proposed development would remove woodland habitat that could be utilized by the species, the works would not be expected to affect the species' ability to carry on life functions. Nesting, foraging and perching habitat, removed from the existing golf course and residential development, will be retained on the landscape and is likely preferred to that present within the Study Area. Further, no nests, evidence of past nesting, or individuals of these species were observed within the Study Area. Therefore, no impact to this SWH function is anticipated as a result of the proposed development.

7.4.7 Marsh Breeding Bird Habitat

The proposed development would result in no direct impact to high quality wetland communities that provide habitat for marsh breeding birds. Wetland habitat will be retained on the landscape, post development, and will be protected from development and

future disturbances by retained swamp habitat, a 30m setback and the remnant golf course. Therefore, no impact to this SWH function is anticipated as a result of the proposed development.

7.4.8 Terrestrial Crayfish

The proposed development would result in no direct impact to high quality wetland communities that provide habitat for terrestrial crayfish (*i.e.* MAS3-1 and SWM4-1 communities). Wetland habitat will be retained on the landscape, post development, and will be protected from development and future disturbances by retained swamp habitat, a 30m setback and the remnant golf course. Therefore, no impact to this SWH function is anticipated as a result of the proposed development.

7.4.9 Special Concern and Rare Wildlife Species

As discussed above, wetland habitat will be retained on the landscape, post development, and will be protected from development and future disturbances by retained swamp habitat, a 30m setback and the remnant golf course. Thus, SC species with life cycles that are dependent upon wetland habitat will not be impacted by the proposed development. These species include Bald Eagle, Black Tern, Eastern Musk Turtle, Eastern Ribbonsnake, Eastern Wood-pewee, Northern Map Turtle, Snapping Turtle, Yellow Rail and Western Chorus Frog and Olive-sided Flycatcher.

Nesting habitat for turtle species (Snapping and Northern Map) may be present within the Study Area, characterized by the sand trap features of the golf course. As discussed above, these would not be preferred habitat for the species, given the frequent disturbance relating to maintenance and recreational use of the golf course. Thus, decommissioning of these features are unlikely to significant impact local turtle populations, provided that the sand traps are decommissioned outside of the nesting and incubation period (June-April).

Eastern Wood-pewee was observed once within the White Cedar coniferous forest present in the western portion of the Study Area (Breeding Bird Station 4) and was not confirmed to be breeding on site. Regardless, woodland communities proposed for removal may provide nesting and foraging habitat for the species. Removal of the woodland patches is unlikely to affect species population, given the vast amount of woodland remaining in the area, both within Wasaga Beach Provincial Park and within the Jack`s Lake PSW Complex.

Therefore, no impact to this SWH function is anticipated as a result of the proposed development.

7.5 Aquatic Habitat

Fish habitat contained within Marl Lake and Jack's Lake PSW is approximately 170m from the closest limit of disturbance and should therefore not be impacted by the proposed development. Additionally, no site alteration or development is proposed to occur within 30m of the wetland limit (Figure 3).

It is our understanding that the three water hazard features located within the Study Area (Figure 2a) are offline (i.e., not connected to other watercourses) and were constructed as part of the golf course in the Study Area. Therefore, as per the Federal *Fisheries Act* and in accordance with DFO's Projects Near Water website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html), commercial ponds that are not connected to a waterbody that contains fish at any time during any given year are not considered fish habitat under the *Act*.. It is our understanding that DFO review is not required for the proposed works, and that the proposed conversion of the South Feature to a SWMP and minor infilling of the North Feature can be completed using the Self Assessment process. A DFO Self Assessment will need to be completed by a qualified fisheries biologist once design plans are finalized.

While DFO review is not required, the contractor is still required to avoid causing *serious harm to fish* in accordance with the *Fisheries Act*. Mitigation recommendations are provided in Section 8.0 to ensure works are in compliance with the *Fisheries Act.*

8.0 RECOMMENDATIONS

8.1 Species at Risk

8.1.1 Endangered Bat Species

Candidate maternity roosting habitat has been identified within the Study Area. Azimuth is currently in consultation with the MNRF discuss the potential impact of the proposed development to at risk Bats and their habitat. Azimuth will circulate review agencies with correspondence summarizing the outcome of the 2017 acoustic surveys and MNRF consultation, as the information becomes available.

8.1.2 Endangered and Threatened Reptile Species

The property may function as a movement corridor between critical habitat components of local at risk reptilian populations. Azimuth is currently in consultation with the MNRF discuss their perceived impact of the proposed development to at risk reptiles and their habitat. Azimuth will circulate review agencies with correspondence summarizing the outcome of 2017 field studies and MNRF consultation, as additional information becomes available.

8.1.3 Non-detected Species of Concern

It should be noted that the absence of a protected species within the Study Area does not indicate that they will never occur within the area. Given the dynamic character of the natural environment, there is a constant variation in habitat use. Care should be taken in the interpretation of presence of species of concern including those listed under the ESA and SARA. Changes to policy, or the natural environment, could result in shifts, removal, or addition of new areas to the list of areas currently considered SNHF and functions. This report is intended as a point in time assessment of the potential to impact SAR; not to provide long term 'clearance' for SAR. While there is no expectation that the assessment should change significantly, it is the responsibility of the proponent to ensure that they are not in contravention of the ESA at the time that site works are undertaken. A review of the assessment provided in this report by a qualified person should be sufficient to provide appropriate advice at the time of the onset of future site works.

If SAR individuals, other than Butternut trees identified with white numbering, are identified during on-site work, all works should cease and MNRF Midhurst District (Phone # (705) 725-7500) should be contacted for guidance.

8.2 Candidate Significant Wildlife Habitat

8.2.1 Amphibian Breeding and Turtle Overwintering Area

Consideration should be given to the re-location of frog and turtle species prior to any works within the golf course features. A biologist/ecologist should be on site during the decommissioning of the ponds to identify and re-locate any additional wildlife that is found through the duration of this process. Re-location of amphibian and reptile species should occur during the most active times of the year. Typically re-location is recommended between May – September, however this is highly dependent on weather conditions.

8.2.2 Potential Turtle Nesting Area

Precautions should be taken to prevent any harm to potential nesting turtles within the sand trap features of the golf course. Excavation of the area should occur outside of the turtle nesting season (*i.e*. June - April) to avoid desiccation of egg clutches should turtle species be utilizing the area at the time. If excavation must occur during this time period, exclusion fencing should be installed around the feature prior to May 1, in order to prevent nesting.

8.3 Retained Vegetation

Tree protection measures should be implemented prior to commencement of construction activity to ensure tree resources designated for retention are not impacted by the development. Retainable trees should be protected through the installation of fencing or a comparable barrier along the drip line of the retainable trees. No development activities (material and equipment storage, grading, equipment activity, *etc*.) are permitted outside of the identified development limit. Installation and maintenance of silt fencing around the perimeter of the development limits is required and should be monitored for the duration of construction activities to ensure that there is no sediment migration off-site.

8.4 Water Hazard Decommissioning

Various warmwater centrarchid species were observed within the water hazard proposed for conversion to a SWMP (South Feature). Additionally, minor infilling of the North Feature may be completed during grading of the residential lots. Thus, appropriate mitigation measures should be implemented during works in these features to ensure that works are not in contravention of the *Fisheries Act*, 1985.

While DFO review is not required, the contractor is still required to avoid causing *serious harm to fish* in accordance with the *Fisheries Act*. Therefore, a qualified fisheries ecologist shall obtain a Licence to Collect Fish for Scientific Purposes (LCFSP) from the MNRF, and all fish in the pond should be captured prior to infilling and either relocated or euthanized based on MNRF's conditions of the LCFSP.

All maintenance of machinery required during construction must be conducted 30m away from the all waterbody features to prevent accidental spillage of deleterious substances that may harm the aquatic environment.

At this time, the need for dewatering of the construction area is unknown. If dewatering is required, all water should be pumped to a filter bag (*i.e*. envirobag or equivalent) prior to being released into any waterbodies. Filter bags should be placed a minimum of 30m from all waterbody features on stable, vegetated ground to allow fines to settle out of the water. Monitoring of dewatering operations should occur throughout the construction process to ensure water is free of fines before entering nearby waterbodies.

8.5 Isolation of Work Area

In advance of any vegetation clearing or earth works (*i.e.*, clearing or grubbing) the development limits approved in the proposed Draft Site Plan should be established in proximity to natural heritage features to be protected. A temporary fence (*i.e*. snow fence, or sediment fence) should be erected along the surveyed limits to prevent

inadvertent encroachment into these areas to be protected. This fence should be kept intact throughout the entire construction.

8.6 Timing Restrictions

8.6.1 Migratory Birds

Construction activities involving the removal of vegetation should be restricted from occurring during the bird breeding season. Migratory birds, nests, and eggs are protected by the Migratory Birds Convention Act, 1994 and the Fish and Wildlife Conservation Act, 1997. Environment Canada outlines dates when activities in any region have potential to impact nests at the Environment Canada Website (http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1#_03)

In zones C2 and C3, where the Study Area is located, vegetation clearing should be avoided between April 1st and August 30th of any given year. If vegetation clearing is required between these dates, screening by an ecologist with knowledge of bird species present in the area could be undertaken to ensure that the vegetation has been confirmed to be free of nests prior to clearing.

8.6.2 Bat Maternity Roosting Habitat

Future construction activities involving the removal of trees (particularly large trees >25 cm diameter at breast height in the early stages of decay) should be restricted from occurring between the beginning of May to approximately late September to avoid impacting active bat roosting habitat.

In general, where possible, we recommend retaining those cavity trees on-site that don't pose a falling hazard to future dwellings as a way of maintaining "wildlife cavity trees" in general as benefit to local wildlife.

9.0 POLICY AND REGULATION CONFORMITY

9.1 Provincial Policy Statement

The proposed development results in no negative direct or indirect impact to significant natural heritage features or functions (*i.e.*, woodlands, valleylands, wildlife habitat functions) (Policies 2.1.4, 2.1.5, 2.1.6, & 2.1.8), including potential animal movement corridors/habitat linkages (Policy 2.1.2). The development may impact wetlands and ANSI's if post-development contribution to the water table is not maintained. Species at risk impacts are addressed below. – **Additional consideration is required during future stages of site plan design.**

9.2 Ontario's *Endangered Species Act*, 2007

The proposed development may impact habitat of Endangered and Threatened species. Further consultation with MNRF must be completed prior to issuance of development approvals. A permit may be required to ensure compliance. – **Additional detail is required to determine conformity.**

9.3 County of Simcoe

The proposed development aligns with the designated land use of the Official Plan. The development will not impact adjacent natural heritage features, provided that the mitigation measures described herein are implemented, and that, local water balance can be achieved, and that it is determined that no SAR impact will occur as a result of the proposed development **- Conforms, however, additional consideration is required during future stages of site plan design.**

9.4 Town of Wasaga Beach

The proposed development aligns with the designated land use of the Official Plan. The development will not impact adjacent natural heritage features, provided that the mitigation measures described herein are implemented, and that it is determined that no SAR impact will occur as a result of the proposed development. – **Conforms, however, additional consideration is required during future stages of site plan design.**

9.5 Nottawasaga Valley Conservation Authority

A portion of the development is proposed within lands subject to O. Reg. 172/06, Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. A permit under O. Reg. 172/08 will be required prior to initiation development.

9.6 Federal Fisheries Act

All in-water works proposed with the North and South water hazard features should not contravene the *Fisheries Act.* It is our understanding that the three water hazard features located within the Study Area (Figure 2a) are not considered fish habitat under the *Act* and therefore DFO review is not required for the proposed works. **– Conforms, however, a DFO Self Assessment will need to be completed once design plans are finalized to ensure the works avoid causing *serious harm to fish* in accordance with the *Fisheries Act.***

10.0 CONCLUSIONS

This EIS concludes that additional studies relating to SAR and hydrology should occur prior to preparation of firm conclusions relating to natural heritage impact of the proposed development. That said, it is unlikely that the development will negatively impact the majority of the natural heritage features or functions within or beyond the development footprint if the appropriate mitigation measures are followed. An NVCA work permit will need to be obtained prior to initiating works, and a DFO Self Assessment will need to be completed once design plans are finalized. The proposed use of the property appears consistent with the adjacent residential and tourism land use, and the existing natural heritage features and functions, wildlife habitat, fish habitat, and vegetation communities in the area are anticipated to remain unaffected post development. Further study is required to determine if the development will impact natural heritage features influenced by local hydrology and utilized by SAR. The conclusions of this report will be updated based on the results of the additional studies.

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LEGEND:

Approx. Study Area

250m 0 750m

HORIZONTAL SCALE 1:25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Golf Course Rd.,
Wasaga Beach, ON

DATE ISSUED: *September 2015*	Figure No.
CREATED BY: *JLM*	
PROJECT NO.: *15-273*	1
REFERENCE: *MNRF*	

DAYSTAMP: M:\15 Projects\15-273 Marlwood GG EIS\04.0 - Drafting\15-273.dwg

Plotted by: JMCCARTNEY on August 29, 2017 at 1:14pm
File: M:\15 Projects\15-273 Marlwood GG EIS\04.0 - Drafting\15-273.dwg Layout: Figure 1 Plotscale: 5

LEGEND:

- Approx. Study Area
- Lake
- Offline Water Hazard Feature
- Jack's Lake PSW Limit (MNRF, Dec. 2016)
- 30m Wetland Buffer
- Snapping Turtle Nests
- Not Assessed Butternut Locations
- Non-Retainable Butternut Locations
- Bird Survey Stations
- Amphibian Survey Stations (white)
- Vegetation Communities

CUP3-1	Red Pine Coniferous Plantation
FOC1-2	Dry-Fresh White Pine-Red Pine Coniferous Forest Type
FOC2-2	Dry-Fresh White Cedar Coniferous Forest
FOC3-1	Fresh-Moist Hemlock Coniferous Forest
FOC4-1	Fresh-Moist White Cedar Coniferous Forest Type
FOD	Deciduous Forest Type
FOD5-8	Dry-Fresh Sugar Maple-White Ash Deciduous Forest Type
MAS3-1	Cattail Organic Shallow Marsh
M	Maintained Lands
SWM1-1	White Cedar-Hardwood Organic Mixed Swamp
THMM1-1	Dry-Fresh Native Mixed Regeneration Thicket Type

60m 0 120m

HORIZONTAL SCALE 1: 4,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

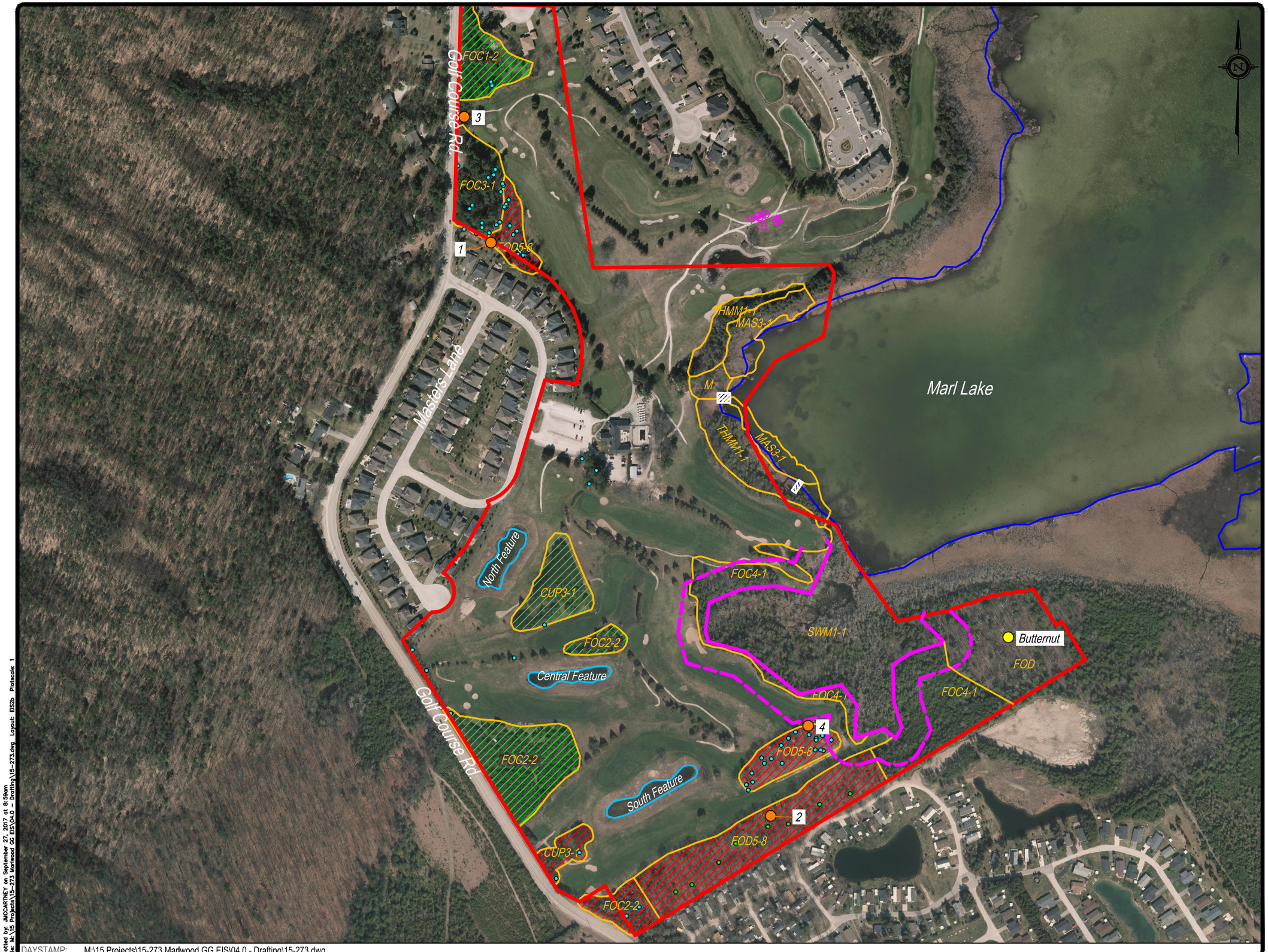
Environmental Features

Golf Course Rd.,
Wasaga Beach, ON

DATE ISSUED:	March 2017	Figure No. 2a
CREATED BY:	JLM	
PROJECT NO.:	15-273	
REFERENCE:	First Base Solutions	

DAYSTAMP: M:\15 Projects\15-273 Marlwood GG EIS\04.0 - Drafting\15-273.dwg

Plotted by: JMCCARTNEY on September 27, 2017 at 8:55am
File: M:\15 Projects\15-273 Marlwood GG EIS\04.0 - Drafting\15-273.dwg Layout: EIS2a Plotscale: 1



LEGEND:

- Approx. Study Area
- Watercourse
- Jack's Lake PSW Limit (MNRF, Dec. 2016)
- Snapping Turtle Nests
- Bat Snag Survey Plot Locations
- Bat Snag Locations
- Not Assessed Butternut Locations
- Non-Retainable Butternut Locations

Bat Snag Density

- Low Snag Density (<5/ha)
- Medium Snag Density (5-10/ha)
- High Snag Density (>10/ha)

Vegetation Communities

CUP3-1	Red Pine Coniferous Plantation
FOC1-2	Dry-Fresh White Pine-Red Pine Coniferous Forest Type
FOC2-2	Dry-Fresh White Cedar Coniferous Forest
FOC3-1	Fresh-Moist Hemlock Coniferous Forest
FOC4-1	Fresh-Moist White Cedar Coniferous Forest Type
FOD	Deciduous Forest Type
FOD5-8	Dry-Fresh Sugar Maple-White Ash Deciduous Forest Type
MAS3-1	Cattail Organic Shallow Marsh
M	Maintained Lands
SWM4-1	White Cedar-Hardwood Organic Mixed Swamp
THMM1-1	Dry-Fresh Native Mixed Regeneration Thicket Type

60m 0 120m

HORIZONTAL SCALE 1: 4,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Bat Snag Density Mapping

Golf Course Rd.,
Wasaga Beach, ON

DATE ISSUED:	March 2017	Figure No.
CREATED BY:	JLM	2b
PROJECT NO.:	15-273	
REFERENCE:	First Base Solutions	

DAYSTAMP: M:\15 Projects\15-273 Marlwood GG EIS\04.0 - Drafting\15-273.dwg

Plotted by: JMCCARTNEY on September 27, 2017 at 8:59am
File: M:\15 Projects\15-273 Marlwood GG EIS\04.0 - Drafting\15-273.dwg Layout: EIS2b Plotscale: 1

LEGEND:

- *Approx. Study Area*
- *Watercourse*
- *Jack's Lake PSW Limit (MNRF, Dec. 2016)*
- *30m Wetland Buffer*
- *Not Assessed Butternut Locations*
- *Non-Retainable Butternut Locations*

60m 0 120m

HORIZONTAL SCALE 1:4,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Proposed Development

Golf Course Rd.,
Wasaga Beach, ON

DATE ISSUED:	*July 2017*	Figure No.
CREATED BY:	*JLM*	3
PROJECT NO.:	*15-273*	
REFERENCE:	*First Base Solutions*	

DAYSTAMP: M:\15 Projects\15-273 Marlwood GG EIS\04.0 - Drafting\15-273.dwg

Plotted by: JMCCARTNEY on August 29, 2017 at 1:36pm
File: M:\15 Projects\15-273 Marlwood GG EIS\04.0 - Drafting\15-273.dwg Layout: EIS3 Plotscale: 5

Table 1 - Ecological Land Classification

Ecological Land Classification						
System	**Community Class**	**Community Series**	**Ecosite**	**Vegetation Type**	**Composition**	**Ground Cover**
Terrestrial	CU: Cultural	CUP: Cultural Plantation Series	CUP3: Coniferous Plantation Ecosite	CUP3-1: Red Pine Coniferous Plantation Type	Densely-planted, mature Red Pine plantation. Areas of cedar regeneration, but mostly sparse or non-existent subcanopy and understory.	Includes Poison Ivy, Field Basil, and Canada Mayflower. Overall, the groundcover is sparse, with some other early-successional species encroaching from forest edges adjacent to the maintained golf course lands.
Terrestrial	FO: Forest	FOC: Coniferous Forest Series	FOC1: Dry - Fresh Pine Coniferous Forest Ecosite	FOC1-2: Dry - Fresh White Pine - Red Pine Coniferous Forest Type	Relatively mature Red Pine- and White Pine-dominant canopy with components of White Ash and Sugar Maple. Canopy trees typically within the 25-50cm and >50cm DBH size category. Sub-canopy and understory of Eastern Hemlock and regenerating hardwoods, including Sugar Maple, White Ash, Red Oak, and Paper Birch.	Sparse vegetation cover including species such as: Wild Sarsaparilla, Bracken Fern, White Baneberry, Goutweed, Bittersweet Nightshade, and some hardwood seedling regeneration. Abundant leaf litter cover.
Terrestrial	FO: Forest	FOC: Coniferous Forest Series	FOC2: Dry - Fresh Cedar Coniferous Forest Ecosite	FOC2-2: Dry - Fresh White Cedar Coniferous Forest Type	Dense, second-growth Northern White Cedar forms a low canopy, with sparse 'super canopy' of Red Pine and Balsam Poplar; scattered Paper Birch. Community is relatively young, likely succeeding to 100% cedar coverage in the short term.	Little to no groundcover due to deep shading of dense cedar.
Terrestrial	FO: Forest	FOC: Coniferous Forest Series	FOC3: Fresh - Moist Hemlock Coniferous Forest Ecosite	FOC3-1: Fresh - Moist Hemlock Coniferous Forest Type	Mature hemlock-dominant canopy, with abundant White Pine and occasional Red Oak and American Beech. Sub-canopy and understory also contains abundant hemlock, with prominent components of cedar, Paper Birch, and scattered American Beech. Wide range of age classes present, with many individual trees exceeding 50cm DBH.	Groundcover species include: Bracken Fern, Canada Mayflower, Rough-leaved Goldenrod, Calico Aster, False Solomon's Seal, and Maple-leaved Viburnum.
Terrestrial	FO: Forest	FOC: Coniferous Forest Series	FOC4: Dry - Fresh White Cedar Mixed Forest Ecosite	FOC4-1: Dry - Fresh White Cedar - White Birch Mixed Forest Type	This forest is cedar-dominant when all strata are considered, but the canopy layer has prominent components of both Paper Birch and Balsam Poplar. Being a transition zone between the upland golf course area and lowland mixed swamp forest, this community exhibits considerable variability in soil moisture and canopy composition. Lower strata are primarily cedar.	Groundcover is sparse, but includes Ostrich Fern, Wild Sarsaparilla, patches of exotic Coltsfoot on sloping areas, and common early-successional species along the east and west forest edges.
Terrestrial	FO: Forest	FOD: Deciduous Forest Series	FOD5: Dry - Fresh Sugar Maple Deciduous Forest Ecosite	FOD5-8: Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type	Maturing Sugar Maple-dominant forest, with components of White Ash, Eastern Hop-hornbeam, and Paper Birch in the canopy. Eastern Hop-hornbeam, Northern White Cedar, and Eastern Hemlock comprise the sub-canopy, while Eastern Hop-hornbeam, American Ash, and Paper Birch form a sparse understory layer.	Groundcover species include: Large-flowered Trillium, False Solomon's Seal, Star-flowered Solomon's Seal, Bracken Fern, Rough-leaved Goldenrod, Hog Peanut, Large-leaved Aster, Wild Red Raspberry, White Baneberry, White Sweet Clover, and Smooth Brome.
Wetland	MA: Marsh	MAS: Shallow Marsh	MAS3: Organic Shallow Marsh Ecosite	MAS3-1: Cattail Organic Shallow Marsh Type	This community contains a low cover of Eastern White Cedar, Red-osier Dogwood, and Speckled Alder on the periphery, before transitioning into a cattail-dominant marsh at its core. Broad-leaved Cattail and Narrow-leaved Cattail are both present, with a mix of graminoids and a notable abundance of exotic Purple Loosestrife.	Broad-leaved Cattail and Narrow-leaved Cattail are both present, with a mix of graminoids and a notable abundance of exotic Purple Loosestrife. Other notable species include Spotted Joe-pye-weed, Orange Jewelweed, and Blue Flag Iris.
Terrestrial	TH: Thicket	THM: Mixed Thicket	THMM1: Dry-Fresh Mixed Regeneration Thicket Ecosite	THMM1-1 Native Mixed Regeneration Thicket Type	This community is regenerating cedar forest with, cedar, Paper Birch, Balsam Poplar and Red-Osier Dogwood establishing within the understory. Being a transition zone between the upland golf course area and lowland wetland areas, this community exhibits considerable variability in soil moisture and canopy composition.	Groundcover is includes Ostrich Fern, Wild Sarsaparilla, patches of exotic Coltsfoot on sloping areas, Purple Loosestrife, Spotted Joe Pye-weed and Orange Jewelweed.

Table 1 - Ecological Land Classification

Ecological Land Classification						
System	**Community Class**	**Community Series**	**Ecosite**	**Vegetation Type**	**Composition**	**Ground Cover**
Wetland	SW: Swamp	SWM: Mixed Swamp Series	SWM4: White Cedar Organic Mixed Swamp Ecosite	SWM1-1: White Cedar - Hardwood Organic Mixed Swamp Type	Lowland swamp forest with a fairly-even canopy mix of Balsam Poplar, Black Spruce, Northern White Cedar. Subcanopy and understory layers are cedar-dominant, with prominent components of Black Ash and Balsam Fir, and traces of Bur Oak and cattail sp. in the sub-canopy and understory, respectively.	Groundcover contains a mix of young Balsam Fir, mixed graminoids, Canada Goldenrod, young Cattails, exotic Coltsfoot, and other species.
Terrestrial	Maintained Lands	N/A	N/A	N/A	Maintained open area for the golf course.	Mowed grass

Table 2. Vascular Plants **AEC15-273**

Scientific Name	Common Name	Observed on Property	CUP3-1	FOC1-2	FOC2-2	FOC3-1	FOC4-1	THMM1-1	FOD5-8	MAS3-1	SWM1-1	Golf Course Area	S-Rank	G-Rank	SARO Status
Acer rubrum	Red Maple								X		X		S5	G5	
Acer saccharum	Sugar Maple		X	X		X			X				S5	G5	
Acer x freemanii	Freeman Maple										X		SNA	GNR	
Achillea millefolium	Common Yarrow	X											SNA	G5	
Actaea pachypoda	White Baneberry	X											S5	G5	
Actaea rubra	Red Baneberry			X					X				S5	G5	
Adiantum pedatum	Northern Maidenhair Fern								X				S5	G5	
Aegopodium podagraria	Goutweed			X									SNA	GNR	
Ambrosia psilostachya	Perennial Ragweed								X				SNA	G5	
Amphicarpaea bracteata	American Hog-peanut								X				S5	G5	
Anemone acutiloba	Sharp-lobed Hepatica				X				X				S5	G5	
Anemone canadensis	Canada Anemone		X		X		X	X					S5	G5	
Apocynum androsaemifolium	Spreading Dogbane								X				S5	G5	
Aquilegia canadensis	Wild Columbine			X									S5	G5	
Aralia hispida	Bristly Sarsaparilla								X				S5	G5	
Aralia nudicaulis	Wild Sarsaparilla			X		X	X	X	X				S5	G5	
Arctium minus	Common Burdock								X				SNA	GNR	
Betula alleghaniensis	Yellow Birch								X		X		S5	G5	
Betula papyrifera	Paper Birch				X	X	X	X	X				S5	G5	
Bidens cernua	Nodding Beggarticks							X		X			S5	G5	
Bromus inermis	Smooth Brome								X				SNA	GNR	
Campanula rapunculoides	Creeping Bellflower	X											SNA	GNR	
Carex formosa	Awnless Graceful Sedge										X		S4	G4	
Carex plantaginea	Plantain-leaved Sedge								X				S5	G5	
Carex platyphylla	Broadleaf Sedge	X											S5	G5	
Carex stricta	Tussock Sedge									X	X		S5	G5	
Caulophyllum thalictroides	Blue Cohosh								X				S5	G4G5	
Cicuta virosa	Northern Water-hemlock			X			X	X			X		S4S5	G4G5	
Circaea alpina	Small Enchanter's Nightshade										X		S5	G5	
Clinopodium vulgare	Field Basil		X										S5	G5	
Clintonia borealis	Clinton Lily						X	X					S5	G5	
Comarum palustre	Marsh Cinquefoil										X		S5	G5	
Convallaria majalis	European Lily-of-the-valley			X									SNA	G5	
Cornus alternifolia	Alternate-leaved Dogwood				X				X				S5	G5	
Cornus rugosa	Roundleaf Dogwood								X				S5	G5	
Cornus sericea	Red-osier Dogwood							X	X	X	X		S5	G5	
Cynanchum rossicum	European Swallow-wort	X											SNA	GNR	
Cypripedium parviflorum var. Pubescens	Large Yellow Lady's Slipper				X		X	X	X				S5	G5	

Scientific Name	Common Name	Observed on Property	CUP3-1	FOC1-2	FOC2-2	FOC3-1	FOC4-1	THMM1-1	FOD5-8	MAS3-1	SWM1-1	Golf Course Area	S-Rank	G-Rank	SARO Status
Dactylis glomerata	Orchard Grass								X				SNA	GNR	
Daucus carrota	Wild Carrot	X											SNA	GNR	
Epilobium ciliatum	Hairy Willowherb							X		X			S5	G5	
Epipactis helleborine	Common Helleborine								X				SNA	GNR	
Equisetum arvense	Field Horsetail								X				S5	G5	
Erigeron hyssopifolius	Daisy Fleabane								X				S5	G5	
Erythronium americanum	Yellow Trout-lily	X													
Eurybia macrophylla	Largeleaf Wood-aster								X				S5	G5	
Fagus grandifolia	American Beech								X				S4	G5	
Fragaria virginiana	Wild Strawberry		X						X				S5	G5	
Fraxinus americana	White Ash		X	X					X				S4	G5	
Fraxinus nigra	Black Ash										X		S4	G5	
Fraxinus pennsylvanica	Green Ash										X		S4	G5	
Galium aparine	Cleavers				X								S5	G5	
Gaultheria procumbens	Eastern Teaberry	X											S5	G5	
Geranium robertianum	Herb-robert	X											S5	G5	
Geum allepicum	Yellow Avens	X											S5	G5	
Hieracium aurantiaca	Orange Hawkweed								X				SNA	GNR	
Hieracium lachenalii	Common Hawkweed		X		X						X		SNA	GNR	
Hieracium pilosella	Mouse-eared Hawkweed	X											SNA	GNR	
Hypericum perforatum	Common St. John's Wort								X				SNA	GNR	
Impatiens capensis	Spotted Jewelweed									X	X		SNA	GNR	
Iris versicolor	Harlequin Blue Flag									X			S5	G5	
Juglans cinerea	Butternut								X				S3?	G4	END
Juniperus communis	Ground Juniper		X										S5	G5	
Leucanthemum vulgare	Oxeye Daisy											X	SNA	GNR	
Lycopus americanus	American Bugleweed									X			S5	G5	
Lythrum salicaria	Purple Loosestrife									X			SNA	G5	
Maianthemum canadense	Wild Lily-of-the-valley		X	X		X			X		X		S5	G5	
Maianthemum racemosum	False Solomon's-seal		X	X	X			X	X		X		S5	G5	
Maianthemum stellatum	Star-flowered False Solomon's-seal		X			X			X				S5	G5	
Matteuccia struthiopteris	Ostrich Fern						X	X	X				S5	G5	
Medicago lupulina	Black Medic	X											SNA	GNR	
Melilotus albus	White Sweet-clover											X	SNA	G5	
Mentha arvensis	Wild Mint	X											S5	G5	
Nuphar advena	Large Yellow Pond-lily									X			S3	G5T5	
Nymphaea odorata ssp. odorata	Fragrant Water-lily									X			S5?	G5T5	
Onoclea sensibilis	Sensitive Fern										X		S5	G5	

Table 2. Vascular Plants **AEC15-273**

Scientific Name	Common Name	Observed on Property	CUP3-1	FOC1-2	FOC2-2	FOC3-1	FOC4-1	THMM1-1	FOD5-8	MAS3-1	SWM1-1	Golf Course Area	S-Rank	G-Rank	SARO Status
Osmundastrum cinnamomeum	Cinnamon Fern										X		S5	G5	
Ostrya virginiana	Eastern Hop-hornbeam								X				S5	G5	
Paeonia officinalis	Common Peony			X									SNA	GNR	
Parthenocissus quinquefolia	Virginia Creeper			X					X				S4?	G5	
Petasites frigidus var. palmatus	Palmate Coltsfoot										X		S5	G5T5	
Phleum pratense	Timothy	X											SNA	GNR	
Picea mariana	Black Spruce										X		S5	G5	
Pinus resinosa	Red Pine		X										S5	G5	
Pinus strobus	Eastern White Pine			X			X		X			X	S5	G5	
Pinus sylvestris	Scotch Pine											X	SNA	GNR	
Plantago lanceolata	English Plantain						X						SNA	G5	
Populus balsamifera	Balsam Poplar										X		S5	G5	
Populus grandidentata	Large-toothed Aspen	X											S5	G5	
Populus tremuloides	Quaking Aspen		X		X		X	X			X	X	S5	G5	
Prenanthes alba	White Rattlesnake-root	X											S5	G5	
Prenanthes altissima	Tall Rattlesnake-root	X											S5	G5	
Prunella vulgaris	Self-heal								X				S5	G5	
Prunus pensylvanica	Fire Cherry								X				S5	G5	
Prunus serotina	Wild Black Cherry								X				S5	G5	
Prunus virginiana	Choke Cherry	X											S5	G5	
Pteridium aquilinum	Bracken Fern			X	X				X				S5	G5	
Quercus macrocarpa	Bur Oak										X		S5	G5	
Quercus rubra	Northern Red Oak		X	X					X				S5	G5	
Ranunculus acris	Tall Buttercup		X									X	SNA	G5	
Rhamnus cathartica	Common Buckthorn	X											SNA	GNR	
Rhus typhina	Staghorn Sumac											X	SNA	GNR	
Ribes cynosbati	Prickly Gooseberry								X				S5	G5	
Rubus idaeus ssp. idaeus	Common Red Raspberry		X										SNA	G5T5	
Rubus occidentalis	Black Raspberry		X										S5	G5	
Rubus parviflorus	Thimbleweed	X											S4	G5	
Rubus pubescens	Dwarf Red Raspberry										X		S5	G5	
Sambucus racemosa	Red-berried Elder			X									S5	G5	
Saponaria officinalis	Bouncing-bet	X											SNA	GNR	
Scirpus atrovirens	Woolgrass Bulrush									X	X		S5	G5	
Silene vulgaris	Maiden's Tears		X				X	X					SNA	GNR	
Smilax herbacea	Smooth Herbaceous Greenbriar								X				S4	G5	
Solidago canadensis	Canada Goldenrod	X											S5	G5	
Solidago rugosa	Rough-stemmed Goldenrod					X							S5	G5	

Table 2. Vascular Plants **AEC15-273**

Scientific Name	Common Name	Observed on Property	CUP3-1	FOC1-2	FOC2-2	FOC3-1	FOC4-1	THMM1-1	FOD5-8	MAS3-1	SWM1-1	Golf Course Area	S-Rank	G-Rank	SARO Status
Streptopus lanceolatus var. lanceolatus	Eastern Rose Twisted-stalk			X	X				X				S5?	G5T5	
Symphyotrichum laeve	Smooth Blue Aster	X											S5	G5	
Symphyotrichum lanceolatum	Panicled Aster								X				S5	G5	
Symphyotrichum robynsianum	Long-leaved Aster					X			X		X		S5	G4G5	
Taraxacum officinale	Common Dandelion		X			X			X				SNA	G5	
Taxus canadensis	Canadian Yew								X				S4	G5	
Thalictrum dioicum	Early Meadow-rue								X				S5	G5	
Thelypteris palustris	Eastern Marsh Fern										X		S5	G5	
Thuja occidentalis	Eastern White Cedar		X		X						X	X	S5	G5	
Tiarella cordofolia	Heartleaf Foamflower									X			S5	G5	
Tilia americana	American Basswood		X	X	X				X				S5	G5	
Toxicodendron rydbergii	Rydberg's Poison Ivy		X	X	X	X							S5	G5	
Trientalis borealis	Northern Starflower								X				S5	G5	
Trifolium pratense	Red Clover											X	SNA	GNR	
Trillium grandiflorum	White Trillium			X	X	X			X		X		S5	G5	
Tsuga canadensis	Eastern Hemlock								X		X		S5	G5	
Tussilago farfara	Colt's-foot				X		X	X	X				SNA	GNR	
Typha latifolia	Broad-leaved Cattail									X	X	X	S5	G5	
Ulmus americana	American Elm						X	X			X		S5	G5?	
Uvularia grandiflora	Large-flowered Bellwort								X				S5	G5	
Verbascum thapsus	Common Mullein											X	SNA	GNR	
Viburnum acerifolium	Mapleleaf Viburnum			X		X			X				S5	G5	
Viburnum lentago	Nannyberry							X		X			S5	G5	
Vicia cracca	Tufted Vetch		X										SNA	GNR	
Vitis riparia	Riverbank Grape		X										S5	G5	

Surveys were completed on September 24, 2015, June 16, 2016 and August 31, 2016 by M. Fuller and K. Zgurzynski

Table 3. Bird Species List

Family	Scientific Name	Common Name[1]	Survey Station										Incidental	Breeding Evidence[4]	Conservation Rank[2,3]		
			1	2	3	4	5	6	7	8	9	10			S-rank	G-rank	SARO Status
Alcedinidae	*Megaceryle alcyon*	Belted Kingfisher											X	N	S4B	G5	
Anatidae	*Anas platyrhynchos*	Mallard							, FO			,Obs	X	Po	S5	G5	
Anatidae	*Branta canadensis*	Canada Goose			FY,				Obs,		Obs,		X	Y	S5	G5	
Anatidae	*Lophodytes cucullatus*	Hooded Merganser											X	N	S5B,S5N	G5	
Bombycillidae	*Bombycilla cedrorum*	Cedar Waxwing			S,	S,	S	, S	, S	S, S	S,	, S		Pr	S5B	G5	
Caprimulgidae	*Caprimulgus vociferus*	Eastern Whip-poor-will											X	N	S4B	G5	THR
Cardinalidae	*Cardinalis cardinalis*	Northern Cardinal				S,S	S,S		S, S	S,	S, S			Pr	S5	G5	
Cathartidae	*Cathartes aura*	Turkey Vulture											X	N	S5B	G5	
Certhiidae	*Certhia americana*	Brown Creeper	S,											N	S5B	G5	
Charadriidae	*Charadrius vociferus*	Killdeer								FO		S,	X	Po	S5B,S5N	G5	
Columbidae	*Zenaida macroura*	Mourning Dove		S,	S,	S,S	S,	S,S	S,	FO, S	,S			Pr	S5	G5	
Corvidae	*Corvus brachyrhynchos*	American Crow	FO, C	C,	FO	C,						FO, FO		Po	S5B	G5	
Corvidae	*Corvus corax*	Common Raven									,C			N	S5	G5	
Corvidae	*Cyanocitta cristata*	Blue Jay			C, FO	C,	C,	C, S	FO	C, C	C, C	C, C	X	Pr	S5	G5	
Emberizidae	*Melospiza melodia*	Song Sparrow			S,S	S,	S,S	S,S	,S		,S	S,S		Pr	S5B	G5	
Emberizidae	*Pipilo erythrophthalmus*	Eastern Towhee					,S							N	G5	S4B	
Fringillidae	*Carduelis tristis*	American Goldfinch		S,	,S	FO							X	Po	S5B	G5	
Fringillidae	*Carpodacus purpureus*	Purple Finch									,S			Po	S4B	G5	
Gruidae	*Grus canadensis*	Sandhill Crane				Obs							X	Po	S5B	G5	
Hirundinidae	*Tachycineta bicolor*	Tree Swallow			S,									N	S4B	G5	
Icteridae	*Agelaius phoeniceus*	Red-winged Blackbird	S,	S,		S,S	S,	S,	,S	,S	S,	S,S		Pr	S4B	G5	
Icteridae	*Icterus galbula*	Baltimore Oriole											X	N	S4B	G5	
Icteridae	*Molothrus ater*	Brown-headed Cowbird								S,				N	S4B	G5	
Icteridae	*Quiscalus quiscula*	Common Grackle				Obs		Obs	FO	Obs		Obs	X	Po	S5B	G5	
Laridae	*Larus argentatus*	Herring Gull											X	N	S5B,S5N	G5	
Laridae	*Larus delawarensis*	Ring-billed Gull	S,	FO		S,						S,	X	Po	S5B,S4N	G5	
Mimidae	*Dumetella carolinensis*	Gray Catbird											X	N	S4B	G5	
Paridae	*Poecile atricapillus*	Black-capped Chickadee	S,S	S,		S,	S,S	S,		S,	S,		X	Pr	S5	G5	
Parulidae	*Geothlypis trichas*	Common Yellowthroat			S,				S,	S,S	S,	S,S		Pr	S5B	G5	
Parulidae	*Mniotilta varia*	Black-and-white Warbler		,S	S,								X	Po	S5B	G5	
Parulidae	*Setophaga petechia*	Yellow Warbler								,S		,S		Po	S5B	G5	
Parulidae	*Setophaga pinus*	Pine Warbler	S,S	S,	S,S				S,	S,				Pr	S5B	G5	
Parulidae	*Setophaga ruticilla*	American Redstart									,S		X	N	S5B	G5	
Parulidae	*Setophaga virens*	Black-throated Green Warbler					S,						X	N	S5B	G5	
Picidae	*Colaptes auratus*	Northern Flicker							,S				X	N	S4B	G5	
Picidae	*Picoides villosus*	Hairy Woodpecker											X	N	S5	G5	
Sittidae	*Sitta carolinensis*	White-breasted Nuthatch											X	N	S5	G5	
Sturnidae	*Sturnus vulgaris*	European Starling	S,			S,				S,				Po	SNA	G5	
Trochilidae	*Archilochus colubris*	Ruby-throated Hummingbird							,S					N	S5B	G5	
Troglodytidae	*Cistothorus palustris*	Marsh Wren											X	N	S4B	G5	
Turdidae	*Turdus migratorius*	American Robin	Obs, S	S,	S,S	S,S	S,S	S,S	,S	S, N	S,	,S		Pr	S5B	G5	

Table 3. Bird Species List

Family	Scientific Name	Common Name[1]	Survey Station										Incidental	Breeding Evidence[4]	Conservation Rank[2,3]		
			1	2	3	4	5	6	7	8	9	10			S-rank	G-rank	SARO Status
Tyrannidae	*Contopus virens*	Eastern Wood-pewee				S								N	S4B	G5	SC
Tyrannidae	*Empidonax minimus*	Least Flycatcher										S,		N	S4B	G5	
Tyrannidae	*Myiarchus crinitus*	Great Crested Flycatcher	S	S,S			S,		S,	,S	S,	S,		Pr	S4B	G5	
Tyrannidae	*Sayornis phoebe*	Eastern Phoebe					,S							N	S5B	G5	
Tyrannidae	*Tyrannus tyrannus*	Eastern Kingbird										S,		N	S4B	G5	
Vireonidae	*Vireo olivaceus*	Red-eyed Vireo	S,	,S		S,	S,S	S,	S,S	S,S	S,S			Pr	S5B	G5	
Vireonidae	*Vireo solitarius*	Blue-headed Vireo		S,S				S,						Po	S5B	G5	
		Unknown woodpecker sp.	drum (1)											Po			

[1] Nomenclature based on Ontario Ministry of Natural Resources (OMNR), Natural Heritage Information Centre (NHIC) database - http://nhic.mnr.gov.on.ca/MNR/nhic/species.cfm

[2] Conservation Rankings: From Ontario Ministry of Natural Resources, Natural Heritage Information Centre (http://nhic.mnr.gov.on.ca/nhic_.cfm)

[3] Conservation Rank - from OMNRF, NHIC, SAR and SARO Lists 2014

S-rank - S1 - Extremely Rare, S2 - Very Rare, S3 - Rare to Uncommon, S4 - Common, S5 - Very Common

G-Rank - G1 - Critically Imperiled, G2 - Imperiled, G3 - Vulnerable, G4 - Apparently Secure, G5 - Secure

SARO - EXP (Extirpated), END (Endangered), THR (Threatened), SC (Special Concern), NAR (Not At Risk)

[4]OBBA Breeding Evidence Codes:

C - Call heard (male or female), in suitable nesting habitat in nesting season.

S - Singing male present or breeding calls heard, in suitable nesting habitat in nesting season.

N - Nest Building or excavation of nest hole

FO - Fly Over

FY - Recently fledged or downy young (including incapable of sustaining flight)

[4]Breeding Assessment: Y - Breeding confirmed on or adjacent to property; Pr - Probably breeding on or adjacent to property; Po Possibly breeding on or adjacent to property, N - Species observed but no evidence of breeding on or adjacent to property

Survey Conditions

Surveyor: M. Fuller; Date: June 1, 2016; Time: 06:40 - 08:40; Temp.: 14-16C; C.C.: 0%; Wind: B0-B1 (NW); Prec.: nil

Surveyor: M. Fuller; Date: June 16, 2016; Time: 07:00 - 09:00; Temp.: 15-18C; C.C.: 25-95%; Wind: B0-B1 (NE); Prec.: nil

Table 4. Amphibian Species List **AEC 15-273**

Sampling Date	Common Name / Scientific Name	Spring Peeper *Pseudacris crucifer*	Mink Frog *Lithobates septentrionalis*	American Toad *Anaxyrus americanus*	Northern Green Frog *Lithobates clamitans*	Western Chorus Frog *Pseudacris triseriata*
04-17-2016[3]	Station 1[1]	2-6				
	Station 2	1-2				
	Station 3	2-20	1-4			1-1
	Station 4					
05-19-2016[4]	Station 1[1]	2-12		1-1		
	Station 2	1-1				
	Station 3	1-7		1-1		
	Station 4			1-1		
06-19-2016[5]	Station 1[1]				1-2	
	Station 2				1-5	
	Station 3					
	Station 4					
Conservation Rank	S Rank	S5	S5	S5	S5	S3[2]
	SARO Status					
	COSEWIC Status					THR[2]

[1]See Figure 2 for location
[2]Candian Shield/Great Lakes St. Lawrence Population

Observation Conditions:
[3] Date: April 17, 2016; Survey Time: 20:30 - 20:58; Air Temperature: 10^0C; Wind: B0/na; Cloud Cover: 0%; Precipitation: nil; Observed M. Fuller

[4] Date: May 19, 2016; Survey Time: 21:15 - 21:43; Air Temperature 11^0C; Wind B0/na; Cloud Cover 0%; Precipitation nil; Observer M. Fuller

[5] Date: June 27, 2016; Survey Time: 21:39 - 10:05; Air Temperature: 19^0C; Wind: B0/na; Cloud Cover: 0%; Precipitation: nil; Observer M.Fuller

Table 5: Species at Risk Habitat Summary					AEC15-273
Common Name	**Species Name**	**MNR**	**SARA**	**Key Habitats Used By Species[1]**	**Initial Assessment**
Restricted Species	*Not Applicable*	END	END	Broadly Speaking, this species is associated with hardwood deciduous vegetation units ESA Protection: Species and regulated habitat protection	**Habitat within the study area is potentially suitable for this species, i.e. Sugar Maple dominant forest communities. However, the habitat would not be considered ideal due to small fragment size and likelihood of disturbance. This species would not be expected to occur in the study area.**
Bald Eagle	*Haliaeetus leucocephalus*	SC	NAR	Nests in a variety of habitats and forest types Winter perching areas around winter feeding areas ESA Protection: N/A	**Habitat within and adjacent to the study area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake Provincially Significant Wetland (PSW) system may provide suitable nesting and hunting habitat. No individuals were observed during field investigations.**
Bank Swallow	*Riparia riparia*	THR	THR	Nests in burrows excavated in natural and human-made settings with vertical sand and silt faces. Colonies commonly found in sand or gravel pits, lakeshores, and along river banks ESA Protection: Species and general habitat protection	Habitat within the study area is not considered suitable for this species.
Barn Swallow	*Hirundo rustica*	THR	THR	Ledges and walls of man-made structures such as buildings, barns, boathouses Cliffs or caves ESA Protection: Species and general habitat protection	**Habitat within the study area is potentially suitable for this species. Existing structures and areas of natural cover within and adjacent to the study area may provide a mix of nesting and foraging habitat.**
Black Tern	*Chlidonias niger*	SC	NAR	Colonial nesters typically within cattail marshes and other shallow marsh types. Floating nests. ESA Protection: N/A	**Habitat within and adjacent to the study area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable nesting habitat.**
Blanding's Turtle	*Emydoidea blandingii*	THR	THR	Blanding's Turtles are a primarily aquatic species that prefer wetland habitats, lakes, ponds, slow-moving streams, etc., however they may utilize upland areas to search for suitable basking and nesting sites. In general, preferred wetland sites are eutrophic and characterized by shallow water, organic substrates, and a high density of aquatic vegetation (COSEWIC, 2005). ESA Protection: Species and general habitat protection	**Habitat within and adjacent to the study area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable habitat. Open upland habitat on the golf course offers potentially-suitable nesting and basking habitat opportunities.**
Bobolink	*Dolichonyx oryzivorus*	THR	Not Listed	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >4ha (MNRF, 2000) ESA Protection: Species and general habitat protection	Habitat within the Study Area is not considered suitable for this species.
Branched Bartonia	*Bartonia paniculata*	THR	THR	Fen, sphagnum bogs Shoreline (with hummock vegetation) ESA Protection: Species and regulated habitat protection	Habitat within the study area is potentially suitable for this species, i.e. sphagnum mats on the perimeter of Marl Lake. However, the habitat would not be considered ideal, and this species in not known to occur outside of Muskoka and Parry Sound Districts.
Broad Beech Fern	*Phygopteris hexagonoptera*	SC	Not Listed	Rich soils in deciduous forests, such as Maple-Beech forests. ESA Protection: N/A	Habitat within the study area is potentially suitable for this species, i.e. Sugar Maple dominant forest communities. Species was not identified on site during vegetation surveys.
Butternut	*Juglans cinerea*	END	END	Occurs on a variety of sites, including dry rocker soils (particularly those of limestone origin); grows best on well-drained fertile soils in shallow valleys and on gradual slopes; singly or in small groups mixed with other species. Intolerant of shade (Farrar 1995) ESA Protection: Species and general habitat protection	**Habitat within the study area is suitable for this species. Azimuth's field surveys documented Butternut in the study area.**
Canada Warbler	*Wilsonia canadensis*	SC	THR	Wet, mixed deciduous-coniferous forests with a well developed shrub layer. Shrub marshes, red-maple stands, cedar stands, black spruce swamps, larch and riparian woodlands along rivers and lakes. (COSEWIC, 2008) ESA Protection: N/A	Habitat within the study area is alcking a well developed shrub layer and thus is not considered to be high quality habitat for the species. Individuals were not confirmed during breeding surveys.
Chimney Swift	*Chaetura pelagica*	THR	THR	Nests primarily in chimneys though some populations (i.e. in rural areas) may nest in cavity trees (Cadman 2007). Recent changes in chimney design and covering of openings to prevent wildlife access may be a significant factor in recent declines in numbers (Adams and Lindsey 2010). ESA Protection: Species and general habitat protection	Habitat within the study area is potentially suitable for this species. However, no major suitable nesting structures are present within the study area. In addition, the ON Breeding Bird Atlas would indicate that this species is not particularly abundant in the vicinity of the study area. This species would not be expected to occur in the study area.
Common Nighthawk	*Chordeiles minor*	SC	THR	Open habitats including sand dunes, beaches recently logged/burned over areas, forest clearings, short grass prairies, pastures, open forests, bogs, marshes, lakeshores, gravel roads, mine tailings, quarries, and other open relatively clear areas. (COSEWIC, 2007) ESA Protection: N/A	Habitat in the lands adjacent to the study area are potentially suitable for this species. However, the study area itself provides little potentially suitable opportunities. This species would not be expected to occur in the study area.
Eastern Hog-nosed Snake	*Heterodon platirhinos*	THR	THR	Open areas of sand or fine gravel Rock-barren ESA Protection: Species and general habitat protection	**Habitat in the lands adjacent to the study area are preferred habitat of the species. Potential overwintering habitat for the species exists within wetland and mixed swamp communities.**
Eastern Prairie Fringed Orchid	*Platanthera leucophaea*	END	END	Wetlands, fens, swamps, and tallgrass prairie. Ditches, railroad rights of way. ESA Protection: Species and general habitat protection	Habitat within the study area is potentially suitable for this species, i.e. sphagnum mats on the perimeter of Marl Lake. However, the habitat would not be considered ideal, and occurrences of this species are well-documented throughout its range.
Eastern Meadowlark	*Sturnella magna*	THR	Not Listed	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees. Old orchards with adjacent, open grassy areas >4 ha in size (MNRF, 2000) ESA Protection: Species and general habitat protection	Habitat within the Study Area is not considered suitable for this species.
Eastern Musk Turtle	*Sternotherus oderatus*	SC	THR	Marsh, swamp, fen (bog). Eastern Musk Turtles are found in ponds, lakes, marshes and rivers that are generally slow-moving have abundant emergent vegetation and muddy bottoms that they burrow into for winter hibernation (MNRF 2015). ESA Protection: N/A	**Habitat within and adjacent to the study area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable habitat.**
Eastern Ribbonsnake	*Thamnophis sauritus*	SC	SC	Marsh, swamp, fen (bog). Eastern Ribbonsnake prefer to live in close proximity to water, particularly marshes and areas with shallow water where opportunities to hunt frogs and fish are possible (MNRF, 2015). ESA Protection: N/A	**Habitat within and adjacent to the study area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable habitat.**
Eastern Wood-pewee	*Contopus virens*	SC	SC	Typically associated with deciduous and mixed forests with little understory vegetation; Often found in clearings or on edges of deciduous and mixed forests (MNRF, 2015). ESA Protection: N/A	**Habitat within and adjacent to the study area is potentially suitable for this species. Tracts of forest and abundant edge habitat provide suitable opportunities for nesting and foraging.**
Golden-winged Warbler	*Vermivora chrysoptera*	SC	THR	Areas of early successional scrub surrounded by Mature Forests including dry uplands, swamp forests, and marshes (COSEWIC, 2006#). ESA Protection: N/A	Habitat within the study area is not considered suitable for this species. Mature forest communities are present, but the study area lacks early-successional scrub habitat.
Hine's Emerald	*Somatochlora hineana*	END	END	Generally found in the vicinity of calcareous groundwater-fed, graminoid-dominated wetlands; fens, meadow marshes, shallow marshes. Requiring seepage areas and terrestrial crayfish burrows to complete lifecycles. Hine's Emerald is only known to occur in Ontario in the Minesing Wetlands. ESA Protection :Species and general habitat protection.	Habitat within the study area is potentially suitable for this species. The Minesing Wetlands complex is located approximately 10km southwest of the Jack's Lake PSW complex and shares some similar characteristics. However, this species is well-documented, with thorough surveying conducted in the lower Nottawasaga basin that have not resulted in observations outside of the Minesing Wetlands. This species would not be expected to occur in the study area.

Table 5: Species at Risk Habitat Summary					AEC15-273
Common Name	**Species Name**	**MNR**	**SARA**	**Key Habitats Used By Species[1]**	**Initial Assessment**
Hooded Warbler	*Wilsonia citrina*	SC - Downlisted to NAR	THR	Mature hardwood forests with tall trees and relatively well-closed canopy (COSEWIC, 2000#). ESA Protection: N/A	Habitat within the study area is potentially suitable for this species, i.e. Sugar Maple dominant forest communities. However, the habitat would not be considered ideal due to small fragment size. This species would not be expected to occur in the study area.
Least Bittern	*Ixobrychus exilis*	THR	THR	Least Bittern prefer large, freshwater marshes with dense aquatic vegetation (e.g. Cattails) with interspersed clumps of woody vegetation and open water (COSEWIC, 2001). ESA Protection: Species and general habitat protection	**Habitat within and adjacent to the study area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable habitat.**
Little Brown Myotis	*Myotis lucifugus*	END	END	Forests and regularly aging human structures as maternity roost sites. Regularly associated with attics of older buildings and barns for summer maternity roost colonies. Overwintering sites are characteristically mines or caves, but can often include buildings (MNRF 2014, COSEWIC 2013a). ESA Protection: Species and general habitat protection	**Habitat within and adjacent to the study area is potentially suitable for this species. Forested and naturalized upland communities may provide opportunities for nesting and foraging. Candidate Maternity Roosting habitat has been identified on the property.**
Monarch Butterfly	*Danaus plexippus*	SC	SC	Caterpillars - Milkweed in meadows and open areas Adults - Meadows and diverse habitats with a variety of wildflowers (MNRF, 2015) ESA Protection: N/A	No suitable habitat present within the study area - no naturalized meadow areas are present within the property limits.
Northern Long-eared Bat	*Myotis septentrionalis*	END	END	Maternity roost sites are generally located within deciduous and mixed forests and focused in snags including loose bark and cavities of trees. Overwintering sites are characteristically mines or caves. ESA Protection: Species and general habitat protection	**Habitat within and adjacent to the study area is potentially suitable for this species. Forested and naturalized upland communities may provide opportunities for nesting and foraging. Candidate Maternity Roosting habitat has been identified on the property.**
Northern Map Turtle	*Grapetemys geographica*	SC	SC	Northern Map Turtles prefer rivers and lakeshores with available emergent rocks and fallen trees for basking. Deep, slow-moving sections of rivers are utilized for hibernation (COSEWIC, 2002a). ESA Protection: N/A	**Habitat within and adjacent to the study area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable habitat.**
Olive-sided Flycatcher	*Contopus cooperi*	SC	THR	Natural forest openings, forest edges near natural openings (such as wetlands) or open to semi-open forest stands. Occasionally human made openings (such as clear cuts). Presence of tall snags and residual live trees is essential. (COSEWIC, 2007 and MNRF, 2015)) ESA Protection: N/A	**Habitat within and adjacent to the study area is potentially suitable for this species. Tracts of forest and abundant edge habitat provide suitable opportunities for nesting and foraging.**
Red-Headed Woodpecker	*Melanerpes erythrocephalus*	SC	THR	Oak and Beech Forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, beaver ponds and burns (COSEWIC, 2007#). ESA Protection: N/A	Habitat within and adjacent to the study area is potentially suitable for this species. Forest within and adjacent to the study area contain both oak-dominant and riparian communities. Species was not observed during breeding bird surveys.
Snapping Turtle	*Chelydra serpentina*	SC	SC	Snapping Turtle utilize a wide variety of aquatic habitat, but prefer shallow waters with abundant leaf litter. Femals travel overland during the nesting season in search of suitable nesting sites such as gravel shoulders of roadways, dams, and aggregate pile (MNRF, 2015). ESA Protection: N/A	**Habitat within and adjacent to the study area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable habitat.**
Restricted Species	*Not Applicable*	END	END	Marsh, swamp, fen (poor fen) Vernal pools Open areas of sand or fine gravel Rock-barren ESA Protection: Species and general habitat protection	Habitat within and adjacent to the study area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable habitat. Informal correspondence with MNRF indicates that the species is unlikely to occur.
Spotted Wintergreen	*Chimaphila maculata var. Maculata*	END	END	Usually occurs in dry oak-pine woodland habitats with sandy soils. Typically, dominant tree species include White Pine, Red Oak, Black Oak, and American Beech. The species does best in semi-open habitats. ESA Protection: Species and general habitat protection	Habitat in the lands adjacent to the study area are potentially suitable for this species. However, the study area itself provides little potentially suitable opportunities. This species would not be expected to occur in the study area.
Tri-colored Bat	*Perimyotis subflavus*	END	END	During the summer, the Tri-colored Bat is found in a variety of forested habitats. It forms day roosts and maternity colonies in older forest and occasionally in barns or other structures. They forage over water and along streams in the forest. ESA Protection: Species and General Habitat Protection	**Habitat within and adjacent to the study area is potentially suitable for this species. Forested and naturalized upland communities may provide opportunities for nesting and foraging. Candidate Maternity Roosting habitat has been identified on the property.**
Swamp Rose-mallow	*Hibiscus moscheuto*	SC	SC	Early successional wetlands typically deep-water cattail marshes, and meadow marshes (COSEWIC, 2004#). ESA Protection: N/A	Habitat within the study area is not considered suitable for this species. The study area is outside of the known range for this species in ON.
Whip-Poor-Will	*Caprimulgus vociferus*	THR	THR	Whip-poor-will prefer areas with a mix of open and forested habitat, open woodlands, or openings in mature forests (MNRF, 2015). ESA Protection: Species and general habitat protection	**No suitable habitat is present within the study area, though the species was heard calling on adjacent lands during amphibian surveys.**
Wood Thrush	*Hylocichla mustelina*	SC	THR	Typically associated with moist mature deciduous and mixed forests with a well developed understory. ESA Protection: N/A	Habitat within and adjacent to the study area is potentially suitable for this species. Forested tracts may provide nesting an foraging habitat. Species was not observed during breeding surveys.
Yellow-breasted Chat	*Icteria virens*	SC	END (Southern Mountain Population)	Early successional habitats including dense, low deciduous or coniferous vegetation (Environment Canada, 2011). ESA Protection: N/A	Habitat within the study area is not considered suitable for this species.
Yellow Rail	*Coturnicops noveboracensis*	SC	SC	Shallow wetlands dominated by reeds or sedges. Overlying dry mat of dead vegetation important for nesting. ESA Protection: N/A	**Habitat within and adjacent to the study area is potentially suitable for this species. Wetland habitat associated with Marl Lake and the Jack's Lake PSW system may provide suitable habitat.**

1. Habitat as outlined within the MNRF's Species at Risk in Ontario website files (https://www.ontario.ca/environment-and-energy/species-risk-ontario-list), or Species Specific COSEWIC Reports referenced in this document.
Species at Risk in Ontario List (Updated June 13, 2017)

COSEWIC. 2000a. COSEWIC assessment and update status report on the Spotted Wintergreen *Chimaphila maculata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 6 pp.
COSEWIC. 2003a. COSEWIC assessment and update status report on the Branched Bartonia *Bartonia paniculata* ssp. *paniculata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 14 pp.
COSEWIC. 2003b. COSEWIC assessment and status report on the Butternut *Juglans cinerea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp.
COSEWIC. 2003c. COSEWIC assessment and update status report on the Eastern Prairie Fringed-orchid *Platanthera leucophaea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
COSEWIC. 2004b. COSEWIC assessment and update status report on the Swamp Rose-mallow *Hibiscus moscheutos* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
COSEWIC. 2005a. COSEWIC assessment and update status report on the Blanding's Turtle *Enydoidea blandingii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa.viii +40 pp.
COSEWIC. 2006a. COSEWIC assessment and status report on the Golden-winged Warbler *Vermivora chrysoptera* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
COSEWIC. 2007g. COSEWIC assessment and update status report on the Eastern Hog-nosed Snake *Heterodon platirhinos* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 36 pp.
COSEWIC. 2007h. COSEWIC assessment and update status report on the Chimney Swift *Chaetura pelagic* a in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 49 pp.
COSEWIC. 2007i. COSEWIC assessment and status report on the Common Nighthawk *Chordeiles minor* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp.
COSEWIC. 2007j. COSEWIC assessment and status report on the Olive-sided Flycatcher *Contopus cooperi* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
COSEWIC. 2007l. COSEWIC assessment and status report on the Red-headed Woodpecker *Melanerpes erythrocephalu* s in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
COSEWIC. 2008c. COSEWIC assessment and status report on the Snapping Turtle *Chelydra serpentina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
COSEWIC. 2008d. COSEWIC assessment and status report on the Canada Warbler *Wilsonia Canadensis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp.
COSEWIC. 2009a. COSEWIC assessment and update status report on the Whip-poor-will *Caprimulgus vociferus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
COSEWIC. 2009b. COSEWIC assessment and update status report on the Least Bittern *Ixobrychus exilis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
COSEWIC. 2009d. COSEWIC assessment and status report on the Yellow Rail *Coturnicops noveboracensis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp.
COSEWIC. 2010h. COSEWIC assessment and update status report on the Bobolink *Dolichonyx oryzivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 42 pp.
COSEWIC. 2010k. COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.

Table 5: Species at Risk Habitat Summary					AEC15-273
Common Name	**Species Name**	**MNR**	**SARA**	**Key Habitats Used By Species[1]**	**Initial Assessment**

COSEWIC. 2011c. COSEWIC assessment and update status report on the Yellow-breasted Chat *auricollis* subspecies *Icteria virens auricollis* and the Yellow-breasted Chat *virens* subspecies *Icteria virens virens* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp.

COSEWIC. 2011d. COSEWIC assessment and update status report on the Barn Swallow *Hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.
COSEWIC. 2011e. COSEWIC assessment and update status report on the Eastern Meadowlark *Sturnella magna* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
COSEWIC. 2011f. COSEWIC assessment and update status report on the Hine's Emerald *Somatochlora hineana* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 41 pp.
COSEWIC. 2012e. COSEWIC assessment and status report on the Eastern Musk Turtle *Sternotherus odoratus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 68 pp
COSEWIC. 2012f. COSEWIC assessment and status report on the Eastern Ribbonsnake *Thamnophis sauritus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 39 pp.
COSEWIC. 2012g. COSEWIC assessment and status report on the Northern Map Turtle *Graptemys geographica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 63 pp.
COSEWIC. 2012h. COSEWIC assessment and status report on the Eastern Wood-pewee *Contopus virens* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp.
COSEWIC. 2012i. COSEWIC assessment and status report on the Wood Thrush Hylocichla mustelina in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
COSEWIC. 2012j. COSEWIC assessment and status report on the Hooded Warbler *Setophaga citrina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp.
COSEWIC. 2013c. COSEWIC assessment and update status report on the Little Brown Myotis *Myotis lucifugus*, Northern Myotis *Myotis septentrionalis* and Tri-colored Bat *Perimyotis subfalvus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp.
COSEWIC. 2013d. COSEWIC assessment and update status report on the Bank Swallow *Riparia riparia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.
Ministry of Natural Resources and Forestry (MNRF). 2016. https://www.ontario.ca/page/bald-eagle
Ministry of Natural Resources and Forestry (MNRF). 2016.https://www.ontario.ca/page/black-tern
Ministry of Natural Resources and Forestry (MNRF). 2016.https://www.ontario.ca/page/broad-beech-fern

Table 6. Significant Woodland Assessment **AEC15-273**

CRITERIA	STANDARDS	ASSESSMENT
Woodland Size Criteria		
• Size refers to the aerial (spatial) extent of the woodland (irrespective of ownership) • Woodland areas are considered to be generally continuous even if intersected by narrow gaps 20m or less in width between crown edges. • Size value is related to the scarcity of woodland in the landscape derived on a municipal basis with consideration of the differences in woodland coverage among physical sub-units (e.g., watersheds, biophysical regions). • Size criteria should also account for differences in landscape-level physiography (e.g., moraines, clay planes) and community vegetation types.	Where woodlands cover: • Is less than about 5% of land cover, woodlands 2ha in size or larger should be considered significant • Is about 5-15% of land cover, woodlands 4ha in size or larger should be considered significant • Is about 15-30% of land cover, woodlands 20ha in size or larger should be considered significant • Is about 30-60% of land cover, woodlands 50ha in size or larger should be considered significant • Occupies more than 60% of the land, a minimum size is not suggested, and other factors should be considered	• According to Nottawasaga Valley Conservation Authority's 2013 Nottawasaga Valley Watershed Health Check, the watershed has a total of 32.6% of forest cover, with 10.3% of forest interior habitat. • In this planning context, woodlands would need to be 50 ha in size or larger to be considered significant. • In accordance with the forest/woodland layer provided by the Simcoe County Interactive Mapping (Appendix E) , the forested block within the study area does not exceed 50 ha. • *Therefore, according to the Woodland Size Criteria, the woodland within the study area could not be considered Significant in the context of the PPS.*
Ecological Function Criteria		
Woodland Interior		
• Interior Habitat more than 100m from the edge (as measured from the limits of a continuous woodland as defined above) is important for some species. • For purposes of this criterion, a maintained public road would create an edge even if the opening was not wider than 20m and did not create a separate woodland.	Woodlands should be considered significant if they have: • Any interior habitat where woodlands cover less than about 15% of the land cover • 2 ha or more of interior habitat where woodlands cover about 15-30% of the land cover • 8 ha or more of interior habitat where woodlands cover about 30-60% of the land cover • 20 ha or more of interior habitat where woodlands cover about 60% of the land cover	• Since landscape contains between 30 and 60% woodland cover, a woodland interior of 8ha or more would compel identification of a woodland unit as significant. • The woodland unit, in which the study area is located, does not exceed 8 ha of interior habitat. • *Therefore, according to the Woodland Interior Criteria, the woodland within the study area does not appear Significant in the context of the PPS.*
Proximity to Other Woodlands or Other Habitats		
• Woodlands that overlap, abut or are close to other significant natural heritage features or areas could be considered more valuable or significant than those that are not. • Patches close to each other are of greater mutual benefit and value to wildlife.	Woodlands should be considered significant if: • A portion of the woodland is located within a specific distance (e.g., 30m) of a significant natural feature or fish habitat likely receiving ecological benefit from the woodland and the entire woodland meets the minimum area threshold (e.g., 0.5-20ha, depending on circumstance)	• The woodland unit in which the study area is in close proximity to other forested areas, wetlands (including PSW), and Life Sciences & Earth Sciences ANSI. • **Woodland does not meet the minimum area threshold as outlined above.** • *Therefore, according to the Proximity to Other Woodlands or Other Habitats Criteria, the woodland unit within the study area does not appear Significant in the context of the PPS.*
Linkages		
• Linkages are important connections providing for movement between habitats. • Woodlands that are located between other significant features or areas can be considered to perform an important linkage function as “stepping stones” for movement between habitats.	Woodlands should be considered significant if they: • Are located within a defined natural heritage system or provide a connecting link between two other significant features, each of which is within a specified distance (e.g., 120m) and meets minimum area thresholds (e.g., 1-20ha, depending on circumstance)	• The woodland unit where the study area is located is providing a linkage between two designated Areas of Natural and Scientific Interest (ANSIs). • **Woodland does not meet the minimum area threshold.** • *Therefore, according to the Linkages Criteria, the woodland unit within the study area does not appear Significant in the context of the PPS.*

CRITERIA	STANDARDS	ASSESSMENT
Water Protection		
• Source water protection is important. • Natural hydrological processes should be maintained.	Woodlands should be considered significant if they: • Are located within a sensitive or threatened watershed or a specific distance (e.g., 50m or top of valley bank if greater) or a sensitive groundwater discharge, sensitive recharge, sensitive headwater area, watercourse or fish habitat and meet minimum area thresholds (e.g., 0.5-10ha, depending on circumstance)	• The study area is located within an area designated as Significant Groundwater Recharge Area. • **Woodland does not meet the minimum area threshold.** • *Therefore, according to the Water Protection Criteria, the woodland unit within the study area does not appear Significant in the context of the PPS*
Woodland Diversity		
• Certain woodland species have had major reductions in representation on the landscape and may need special consideration. • More native diversity is more valuable than less diversity.	Woodlands should be considered significant if they have: • A naturally occurring composition of native forest species that have declined significantly south and east of the Canadian Shield and meet minimum area thresholds (e.g., 1-20ha, depending on circumstance) • A high native diversity through a combination of composition and terrain (e.g., a woodland extending from a hilltop to a valley bottom or to opposite slopes) and meet minimum area thresholds (e.g., 2-20ha, depending on circumstance)	• The woodland unit where the study area is located overlaps with a wetlands, ANSI, watercourses and associated valleys. • **Woodland does not meet the minimum area threshold.** • *Therefore, according to the Woodland Diversity Criteria, the woodland unit within the study area does not appear Significant in the context of the PPS.*
Uncommon Characteristics Criteria		
• Woodlands that are uncommon in terms of species composition, cover type, age or structure should be protected. • Older woodlands (i.e., woodlands greater than 100 years old) are particularly valuable for several reasons, including their contributions to genetic, species and ecosystem diversity.	Woodlands should be considered significant if they have: • A unique species composition or the site is represented by less than 5% overall in woodland area and meets minimum area thresholds (e.g., 0.5ha, depending on circumstance) • A vegetation community with a provincial ranking of S1, S2 or S3 (as ranked by the NHIC and meet minimum area thresholds (e.g., 0.5ha, depending on circumstance) • Habitat (e.g., with 10 individual stems or 100m^2 of leaf coverage) of a rare, uncommon or restricted woodland plant species and meet minimum area thresholds (e.g., 0.5ha, depending on circumstance): vascular plant species for which the NHIC's Southern Ontario Coefficient of Conservatism is 8, 9 or 10; tree species of restricted distribution such as sassafras or rock elm; species existing only in a limited number of sites within the planning area • Characteristics of older woodlands or woodlands with larger tree size structure in native species meet minimum area thresholds	• The woodland unit within the study area is not uncommon in terms of species composition, cover types (i.e., composition of ELC vegetation types), structure or age. • *Therefore, the woodland unit within the study area does not appear Significant by the Uncommon CharacteristicsCriteria in the context of the PPS.*

CRITERIA	STANDARDS	ASSESSMENT
	(e.g., 1-10ha, depending on circumstance): older woodlands could be defined as having 10 or more trees/ha greater than 100 years old; larger tree size structure could be defined as 10 or more trees/ha at least 50cm in diameter, or a basal area of 8 or more m^2/ha in trees that are at least 40cm in diameter	
Economic and Social Function Values Criteria		
• Woodlands that have high economic or social values through particular site characteristics or deliberate management should be protected.	Woodlands should be considered significant if they have: • High productivity in terms of economically viable products together with continuous native natural attributes and meet minimum area thresholds (e.g., 2-20ha, depending on circumstance) • A high value in special services such as air-quality improvement or recreation at a sustainable level that is compatible with long-term retention and meet minimum area thresholds (e.g., 0.2-10ha, depending on circumstance) • Important identified appreciation, education, cultural or historical value and meet minimum area thresholds (e.g., 0.2-10ha, depending on circumstance)	• The woodland unit within the study area is not considered to have high value in "special services", such as water quality improvement. • There is no extraction of economically viable products, or formal education known to occur in the area. • *Therefore, according to the Economic and Social Function Values Criteria, the woodland unit within the study area does not appear Significant in the context of the PPS.*

Significant Wildlife Habitat Criteria Schedule for Ecoregion 6E

Table 7.1 Seasonal Concentrations of Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Waterfowl Stopover and Staging Areas (Terrestrial) **Rationale:** Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	Fields with sheet water during Spring (mid-March to May). • Fields flooding during springmelt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available. Information Sources • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • Any mixed species aggregations of 100 or more individuals required. • The flooded field ecosite habitat plus a 100-300m radius area, dependant on local site conditions and adjacent land use is the significant wildlife habitat. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMiST Index #7 provides development effects and mitigation measures.	Habitat within the study area does not meet ELC criteria. No further evaluation undertaken.
Waterfowl Stopover and Staging Areas (Aquatic) **Rationale:** Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water) Information Sources • Environment Canada. • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Areas	Studies carried out and verified presence of: • Aggregations of 100© or more of listed species for 7 days©, results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH • The combined area of the ELC ecosites and a 100m radius area is the SWH • Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWHMiST Index #7 provides development effects and mitigation measures.	**Habitat within and adjacent to the study area meets criteria for ELC community types. MAS3-1 communities on the west shore of Marl Lake are potentially suitable for waterfowl stopover and staging areas though species use has not been confirmed at this time. Habitat will remain post development.**

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Shorebird Migratory Stopover Area **<u>Rationale:</u>** High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	• Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. • Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. • Sewage treatment ponds and storm water ponds do not qualify as a SWH. <u>Information Sources</u> • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiSTIndex #8 provides development effects and mitigation measures.	Habitat within the study area does not meet ELC criteria. No further evaluation undertaken.
Raptor Wintering Area **<u>Rationale:</u>** Sites used by multiple species of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl **<u>Special Concern:</u>** Short-eared Owl Bald Eagle	<u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW. <u>Bald Eagle:</u> Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	• The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Raptor wintering sites (hawk/owl) need to be > 20 ha with a combination of forest and upland. • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands • Field area of the habitat is to be wind swept with limited snow depth or accumulation. • Eagle sites have open water, large trees and snags available for roosting <u>Information Sources:</u> • OMNRF Ecologist or Biologist Field Naturalist Clubs • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Results of Christmas Bird Counts Reports and other information available from Conservation Authorities.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species. • To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #10 and #11 provides development effects and mitigation measures.	Habitat in the study area does not meet size criteria or habitat composition for upland meadow communities. No further investigation undertaken.
Bat Hibernacula **<u>Rationale;</u>** Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH • The locations of bat hibernacula are relatively poorly known. <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • Natural Heritage Information Center (NHIC) Bat Hibernaculum Ministry of Northern • Development and Mines for location of mine shafts. • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH. • The habitat area includes a 200m radius around the entrance of the hibernaculum, for most development types and 1000m for wind farms • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects. • SWHMiST Index #1 provides development effects and mitigation measures.	Habitat with the study area does not meet ELC criteria. No further evaluation undertaken.

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Bat Maternity Colonies **Rationale:** Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	• Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario. • Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred Information Sources • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts.	• Maternity Colonies with confirmed use by; • >10 Big Brown Bats© • >5 Adult Female Silver-haired Bats • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects". • SWHMiST Index #12 provides development effects and mitigation measures.	**Habitat within the study area meets criteria for ELC codes. Forested communities (FOD, FOC) provide potentially suitable habitat for bat maternity colonies. Sufficient snag density is present within forest communities.**
Turtle Wintering Areas **Rationale:** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle **Special Concern:** Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles; ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO Northern Map Turtle; Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	• For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. Information Sources • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF Ecologist or Biologist • Field Naturalist clubs • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May) • Congregation of turtles is more common where wintering areas are limited and therefore significant • SWHMiST Index #28 provides development effects and mitigation measures for turtle wintering habitat.	**Habitat within and adjacent to the study area meets key criteria for ELC codes. Marl Lake and its associated swamp and marsh communities are potentially suitable for turtle wintering areas.**

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Reptile Hibernaculum Rationale; Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	**Snakes:** Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake **Special Concern:** Milksnake Eastern Ribbonsnake **Lizard:** **Special Concern** (Southern Shield population)**:** Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line • Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. • Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures . Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information available from Conservation Authorities. • Field Naturalists clubs • University herpetologists • Natural Heritage Information Center (NHIC) • OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWH • SWHMiST Index #13 provides development effects and mitigation measures for snake hibernacula. • Presence of any active hibernaculum for skink is significant. • SWHMiST Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	**Habitat within the study area may be associated with swamp communities located on the property. No surveys have been completed to confirm hibernacula presence.**
Colonially -Nesting Bird Breeding Habitat (Bank and Cliff) **Rationale:** Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist Clubs.	Studies confirming: • Presence of 1 or more nesting sites with 8or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #4 provides development effects and mitigation measures	Habitat with the study area does not meet ELC criteria. No further evaluation undertaken.

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Colonially -Nesting Bird Breeding Habitat (Tree/Shrubs) **Rationale:** Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree. <u>Information Sources</u> • Ontario Breeding Bird Atlas, colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from CAs. • MNRF District Offices. • Local naturalist clubs.	Studies confirming: • Presence of 5 or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWHMiST Index #5 provides development effects and mitigation measures.	Habitat with the study area meets ELC criteria, but no colonies were observed during breeding bird surveys. No further evaluation undertaken.
Colonially -Nesting Bird Breeding Habitat (Ground) **<u>Rationale;</u>** Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> • Ontario Breeding Bird Atlas , rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs. • Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices. • Field Naturalist clubs.	Studies confirming: • Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. • Presence of 5 or more pairs for Brewer's Blackbird. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiSTcxlix Index #6 provides development effects and mitigation measures.	Habitat with the study area meets ELC criteria, but no colonies were observed during breeding bird surveys. No further evaluation undertaken.
Migratory Butterfly Stopover Areas **<u>Rationale:</u>** Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral <u>Special Concern</u> Monarch	Combination of ELC Community Series; need to have present one Community Series from each land class: <u>Field:</u> CUM CUT CUS <u>Forest:</u> FOC FOD FOM CUP Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes <u>Information Sources</u> • OMNRF (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. • MUD of >5000 **or** >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. • SWHMiST Index #16 provides development effects and mitigation measures.	Study area does not meet key requirement for close proximity to Lake Ontario.

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Landbird Migratory Stopover Areas **<u>Rationale:</u>** Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds. Canadian Wildlife Service Ontario website. All migratory songbirds. Canadian Wildlife Service Ontario website:	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 ha in size and within 5 km of Lake Ontario. • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Ontario are more significant • Sites have a variety of habitats; forest, grassland and wetland complexes. • The largest sites are more significant • Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Ontario are Candidate SWH . <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr./May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #9 provides development effects	Study area does not meet key requirement for close proximity to Lake Ontario.
Deer Yarding Areas **<u>Rationale:</u>** Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC. Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT	• Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%cxciv. • OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual" • Woodlots with high densities of deer due to artificial feeding are not significant.	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #2 provides development effects and mitigation measures.	N/A – OMNRF to determine this habitat. Swamp/woodland habitat adjacent to the Study Area may qualify under this criteria, but nothing is located within the actual Study Area.
Deer Winter Congregation Areas **<u>Rationale:</u>** Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions.	White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	• Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands . • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha . • Woodlots with high densities of deer due to artificial feeding are not significant□. <u>Information Sources</u> • MNRF District Offices • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #2 provides development effects and mitigation measures.	Habitat in the study area does not meet key criteria for minimum woodland patch size. No further evaluation undertaken.

Table 7.2 - Rare Vegetation Communities

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Assessment
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
Cliffs and Talus Slopes **Rationale:** Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO TAS TAT CLO CLS CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF District • Natural Heritage Information Center (NHIC) has location information available on their website • Field Naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes • SWHMiST Index #21 provides development effects and mitigation measures.	Habitat with the study area does not meet ELC criteria. No further evaluation undertaken.
Sand Barren **Rationale;** Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered, but less than 60%.	A sand barren area >0.5ha in size. Information Sources • MNRF Districts. • Natural Heritage Information Center (NHIC) has location information available on their website. • Field Naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.) • SWHMiST Index #20 provides development effects and mitigation measures.	Habitat with the study area does not meet ELC criteria. No further evaluation undertaken.
Alvar **Rationale;** Alvars are extremely rare habitats in Ecosregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **Five Alvar Species:** 1) *Carex crawei* 2) *Panicum philadelphicum* 3) *Eleocharis compressa* 4) *Scutellaria parvula* 5) *Trichostema brachiatum* These indicator species are very specific to Alvars within Ecoregion 6E	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover	An Alvar site > 0.5 ha in size. Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists. • Ontario Nature – Conserving Great Lakes Alvars. • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Field Naturalist clubs. • Conservation Authorities.	• Field studies that identify four of the five **Alvar Indicator Species** at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses • SWHMiST Index #17 provides development effects and mitigation measures.	Habitat with the study area does not meet ELC criteria. No further evaluation undertaken.

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Assessment
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
Old Growth Forest **Rationale;** Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest. Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Districts. • Field Naturalist clubs • Conservation Authorities • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species are >140 years old, then the area containing these trees is Significant Wildlife Habitat • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) • The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest area containing the old growth characteristics • SWHMiST Index #23 provides development effects and mitigation measures.	Habitat in study area does not meet criteria for old growth forest characteristics. No further evaluation undertaken.
Savannah **Rationale:** Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Field Naturalist clubs. • Conservation Authorities.	Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used. • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWHMiST Index #18 provides development effects and mitigation measures.	Habitat with the study area does not meet ELC criteria. No further evaluation undertaken.
Tallgrass Prairie **Rationale:** Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Field Naturalist clubs. • Conservation Authorities.	Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWHMiST Index #19 provides development effects and mitigation measures.	Habitat with the study area does not meet ELC criteria. No further evaluation undertaken.
Other Rare Vegetation Communities **Rationale:** Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M The OMNRF/NHIC will have up to date listing for rare vegetation communities. Information Sources • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Field Naturalist clubs. • Conservation Authorities.	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. • Area of the ELC Vegetation Type polygon is the SWH. • SWHMiST Index #37 provides development effects and mitigation measures.	Habitat in study area does not meet criteria for rare community types. No further evaluation undertaken.

7.3 - Specialized Habitat for Wildlife

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Waterfowl Nesting Area **Rationale;** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from Conservation Authorities.	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or; • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST Index #25 provides development effects and mitigation measures.	Upland forest adjacent to large wetland habitat is present in the Study Area, however, the forest patches within the Study Area does not meet the size criteria (aka >120m wide) for significance.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **Rationale;** Nest sites are fairly uncommon in Eco-region 6E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey **Special Concern** Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). Information Sources • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented • Reports and other information available from Conservation Authorities. • Field Naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH , maintaining undisturbed shorelines with large trees within this area is important . • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. , Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for > 3 years or suspected of not being used for >5 years before being considered not significant. • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #26 provides development effects and mitigation measures	**Habitat in the study area meets key criteria for ELC community types directly adjacent to a water body. SWM communities adjacent to Marl Lake provide potentially suitable habitat for Bald Eagle and Osprey nesting, foraging, and perching habitat.**

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SHW	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Woodland Raptor Nesting Habitat **<u>Rationale:</u>** Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and C UP3	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <u>Information Sources</u> • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada. • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of 1 or more active nests from species list is considered significant. • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH . (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH. • Broad-winged Hawk and Coopers Hawk– A 100m radius around the nest is the SWH. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMiST Index #27 provides development effects and mitigation measures.	Habitat in the study area does not meet key criteria for minimum forest patch size and interior forest patch size.
Turtle Nesting Areas **<u>Rationale;</u>** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle <u>Special Concern Species</u> Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources</u> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) • Field Naturalist clubs	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	**Suitable nesting habitat is present within 100m of the MAS3 ecosite. In addition, exposed mineral soils are present throughout the study area, including within maintained portions of the golf course (sand traps). Snapping Turtle nesting was confirmed on the subject property in June 2017 though not within 100m of the Study Area.**

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Seeps and Springs **Rationale:** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species Information Sources • Topographical Map. • Thermography. • Hydrological surveys conducted by Conservation Authorities and MOE. • Field Naturalists clubs and landowners. • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. • SWHMiST Index #30 provides development effects and mitigation measures	No evidence that habitat in the study area meets key criteria, the study area is not located within a headwater area.
Amphibian Breeding Habitat (Woodland). **Rationale:** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF District. • OMNRF wetland evaluations • Field Naturalist clubs • Canadian Wildlife Service • Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm; • Presence of breeding population of 1 or more of the 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. • The habitat is the wetland area plus a 230m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. • SWHMiST Index #14 provides development effects and mitigation measures.	Habitat in the study area meets key criteria relating to ELC communities. Amphibians were confirmed to be breeding within the SWM community, however, not with a call intensity that would be considered significant (i.e. not with Call Level 3 or at least 20 individuals at a time).

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Amphibian Breeding Habitat (Wetlands) **<u>Rationale;</u>** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands>500m2 (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. **or;** Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • 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 wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #15 provides development effects and mitigation measures.	Habitat in the study area meets key criteria relating to ELC communities. Amphibians were confirmed to be breeding within the MA community, however, not with population numbers or a call intensity that would be considered significant.
Woodland Area-Sensitive Bird Breeding Habitat **<u>Rationale:</u>** Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren **Special Concern:** Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha, • Interior forest habitat is at least 200 m from forest edge habitat. <u>Information Sources</u> • Local bird clubs. • Canadian Wildlife Service (CWS) for the location of forest bird monitoring. • Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #34 provides development effects and mitigation measures.	Habitat in the study area does not meet key criteria for minimum forest patch size and interior forest patch size.

7.4 - Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SHW	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Marsh Breeding Bird Habitat **Rationale;** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan **Special Concern:** Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands. • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. Information Sources • OMNRF District and wetland evaluations. • Field Naturalist clubs • Natural Heritage Information Center (NHIC) Records. • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas.	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; **or** breeding by any combination of 5 or more of the listed species. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #35 provides development effects and mitigation measures	**Habitat within and adjacent to the study area meets criteria for ELC community types. MAS3-1 communities on the west shore of Marl Lake are potentially suitable for marsh breeding birds. Sandhill Crane was documented within Marl Lake in May 2016.**
Open Country Bird Breeding Habitat Sources Defining Criteria **Rationale;** This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow **Special Concern** Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha • Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). • Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. • The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #32 provides development effects and mitigation measures	Habitat in study area does not meet key criteria for ELC codes. No further evaluation undertaken.
Shrub/Early Successional Bird Breeding Habitat **Rationale;** This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species	Large field areas succeeding to shrub and thicket habitats>10haclxiv in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years). • Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. • Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #33 provides development effects and mitigation measures.	Habitat in study area does not meet key criteria for ELC codes. No further evaluation undertaken.

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SHW	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Terrestrial Crayfish **Rationale:** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (Fallicambarus fodiens) Devil Crayfish or Meadow Crayfish; (Cambarus Diogenes)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites • Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult • SWHMiST Index #36 provides development effects and mitigation measures.	**Habitat within and adjacent to the study area meets criteria for ELC community types. MAS3-1 and SWM4-1 communities on the west shore of Marl Lake are potentially suitable for terrestrial crayfish. These species are typically confined to SW Ontario, but the Nottawasaga watershed has resident populations of Digger Crayfish.**
Special Concern and Rare Wildlife Species **Rationale:** These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites Information Sources • Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website "Get Information" : http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWHMiST Index #37 provides development effects and mitigation measures.	**Special Concern and Provincially Rare species are potentially present within and adjacent to the study area.**

7.5 - Animal Movement Corridors

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	
Amphibian Movement Corridors **Rationale;** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1	Movement corridors between breeding habitat and summer habitat. • Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (**Amphibian Breeding Habitat –Wetland)** of this Schedule. Information Sources • MNRF District Office. • Natural Heritage Information Center (NHIC). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs.	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. • Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant • Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20mcxlix . • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. • SWHMiST Index #40 provides development effects and mitigation measures	There are abundant wetlands within the general vicinity of the study area. The study area may potentially be used as a movement corridor for some species of amphibians.
Deer Movement Corridors **Rationale:** Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when **Deer Wintering Habitat** is confirmed as SWH from Table 1.1 of this schedule. • A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion. • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). Information Sources • MNRF District Office. • Natural Heritage Information Center (NHIC). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs.	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200m wide with gaps <20mcxlix and if following riparian area with at least 15m of vegetation on both sides of waterway. • Shorter corridors are more significant than longer corridors. • SWHMiST Index #39 provides development effects and mitigation measures	Habitat in study area must be identified by OMNRF. No further evaluation undertaken.

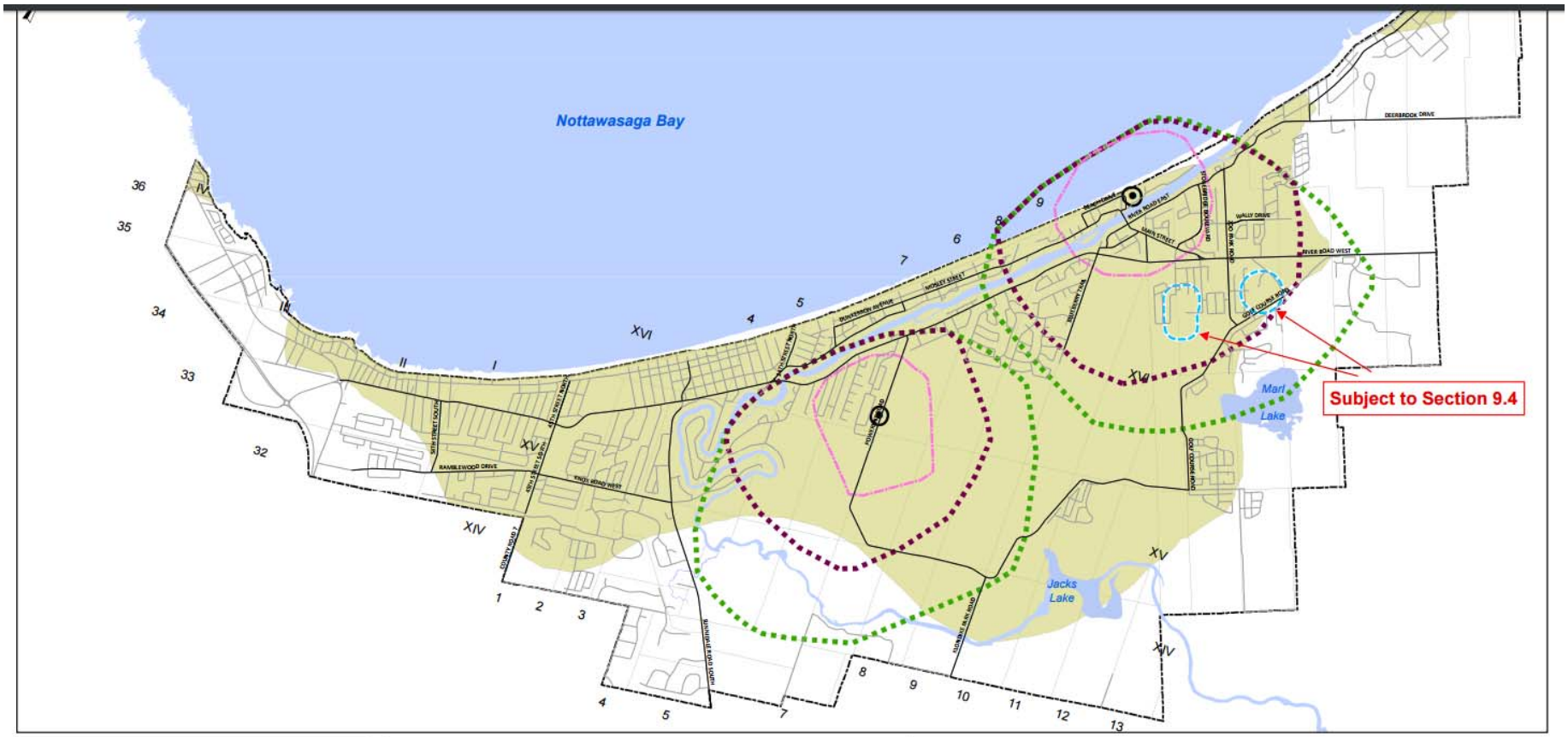
7.6 - Exceptions for EcoRegion 6E

EcoDistrict	Wildlife Habitat and Species	Candidate			Confirmed SWH	Assessment
		Ecosites	Habitat Description	Habitat Criteria and Information	Defining Criteria	
6E-14 **Rationale:** The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracts with mast-producing tree species is important for bears.	**Mast Producing Areas** Black Bear	All Forested habitat represented by ELC Community Series: FOM FOD	• Black bears require forested habitat that provides cover, winter hibernation sites, and mast-producing tree species. • Forested habitats need to be large enough to provide cover and protection for black bears	Woodland ecosites >30ha with mast-producing tree species, either soft (cherry) or hard (oak and beech), Information Sources Important forest habitat for black bears may be identified by OMNRF.	All woodlands > 30ha with a 50%composition of these ELC Vegetation Types are considered significant: FOM1-1 FOM2-1 FOM3-1 FOD1-1 FOD1-2 FOD2-1 FOD2-2 FOD2-3 FOD2-4 FOD4-1 FOD5-2 FOD5-3 FOD5-7 FOD6-5 SWHMiST Index #3 provides development effects and mitigation measures.	Habitat in study area does not meet key criteria for minimum forest patch size. No further evaluation undertaken.
6E- 17 **Rationale:** Sharp-tailed grouse only occur on Manitoulin Island in Eco-region 6E, Leks are an important habitat to maintain their population	**Lek** **Sharp-tailed Grouse**	CUM CUS CUT	• The lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography. • Leks are typically a grassy field/meadow >15ha with adjacent shrublands and >30ha with adjacent deciduous woodland. Conifer trees within 500m are not tolerated.	Grasslands (field/meadow) are to be >15ha when adjacent to shrubland and >30ha when adjacent to deciduous woodland. • Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying) • Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting Information Sources • OMNRF district office • Bird watching clubs • Local landowners • Ontario Breeding Bird Atlas	Studies confirming lek habitat are to be completed from late March to June. • Any site confirmed with sharp-tailed grouse courtship activities is considered significant • The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the lek habitat • SWHMiST Index #32 provides development effects and mitigation measures	Property not located on Manitoulin Island.

APPENDICES

APPENDIX A

Municipal Planning



Adopted by Council: September 9, 2003

Approved by the County of Simcoe: June 22, 2004

Consolidated: February 29, 2016

NOTE: The lot lines depicted on this map are for reference only and may not reflect accurately property boundaries in all instances.

0 300 600 1,200 1,800 2,400 3,000

Metres

- Municipal Wells
- Well Head Protection Area-A: 100 Metre Fixed Radius Area Capture Zone
- Well Head Protection Area-B: 2 Year Capture Zone
- Well Head Protection Area-C: 2-10 Year Capture Zone
- Well Head Protection Area-D: 10-25 Year Capture Zone
- Area of High Aquifer Vulnerability
- Special Hydrogeological Study Area

TOWN OF WASAGA BEACH · INCORPORATED 1974 ·

Schedule 'G'

Wellhead Protection Areas and Vulnerable Aquifer Areas

Official Plan for theTown of Wasaga Beach

Adopted by Council: September 9, 2003

Approved by the County of Simcoe: June 22, 2004

Consolidated: February 29, 2016

NOTE: The lot lines depicted on this map are for reference only and may not reflect accurately property boundaries in all instances.

0 300 600 1,200 1,800 2,400 3,000

Metres

- ANSI (Area of Natural and Scientific Interest)
- Provincially Significant Wetland Complex
- Natural Heritage System Category 1 and 2 Lands

TOWN OF WASAGA BEACH • INCORPORATED 1974 •

Schedule 'D'

Natural Heritage System

Official Plan of theTown of Wasaga Beach

Adopted by Council: September 9, 2003

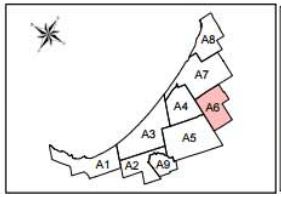
Approved by the County of Simcoe: June 22, 2004

Consolidated: February 29, 2016

NOTE: The lot lines depicted on this map are for reference only and may not reflect accurately property boundaries in all instances.

0 100 200 400 600 800 1,000

Metres



Legend

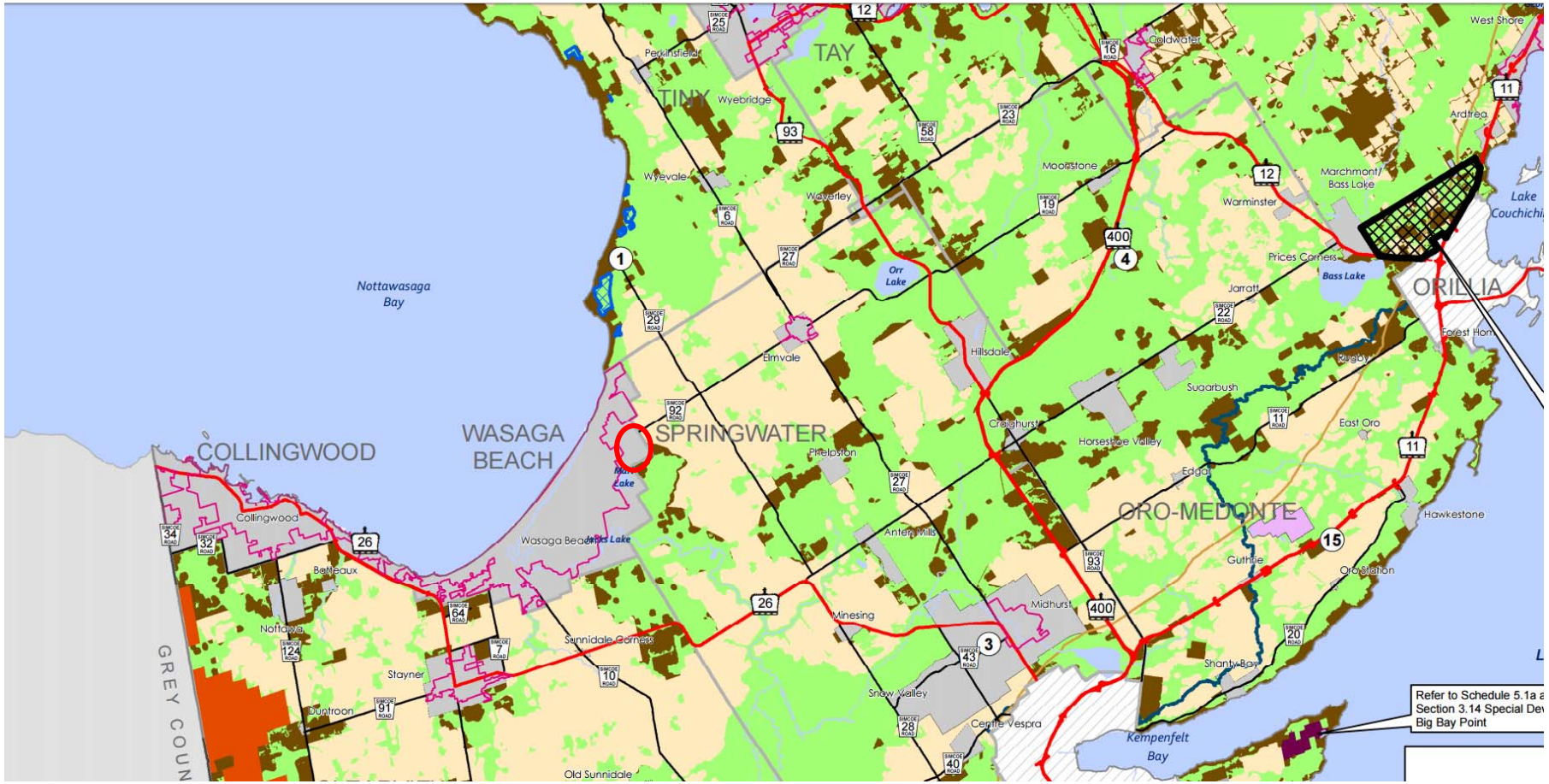
- Residential
- High Density Residential
- Country Club Community
- Campground Commercial
- Recreational Commercial
- Service Commercial
- District Commercial
- Local Commercial
- Tourism Accommodation
- Tourism Commercial
- Institutional
- Open Space
- Natural Hazards
- Natural Heritage System Category 1
- Rural
- Waste Disposal

Schedule 'A-6'

Land Use Plan

Official Plan for theTown of Wasaga Beach

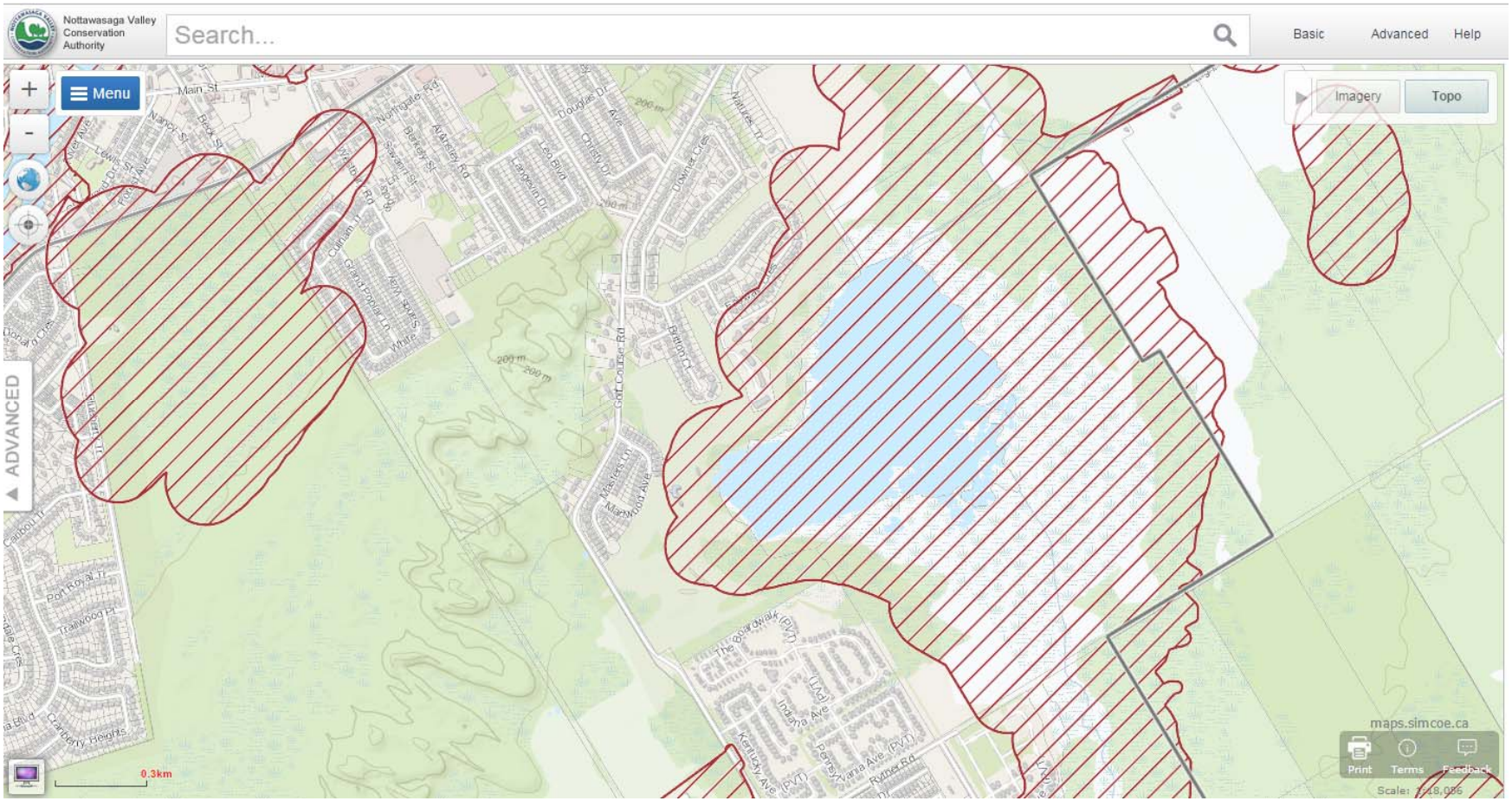
County of Simcoe Schedule 5.1 - Land Use. Property Location indicated by the Red Circle.



APPENDIX B

Nottawasaga Valley Conservation Authority Regulation Mapping

NVCA Regulation Mapping



APPENDIX C

Nottawasaga Valley Conservation Authority Terms of Reference

Melissa Fuller

From: Dave Featherstone [dfeatherstone@nvca.on.ca]
Sent: March-21-17 10:29 AM
To: Melissa Fuller
Cc: Lee Bull; Doug Herron (dherron@wasagabeach.com)
Subject: RE: TOR for Marlwood Golf Course residential Development

Hi Melissa. The work tasks identified below are satisfactory from my perspective.

Best regards,

David Featherstone, B.Sc.
Manager, Watershed Monitoring Program
Nottawasaga Valley Conservation Authority
8195 8th Line, Utopia, ON
L0M 1T0
(705) 424-1479 Ext. 242
dfeatherstone@nvca.on.ca

From: Melissa Fuller [mailto:MFuller@Azimuthenvironmental.Com]
Sent: March-20-17 3:37 PM
To: Dave Featherstone
Subject: TOR for Marlwood Golf Course residential Development

Good Afternoon Dave,

As you are likely aware, the owners of Marlwood Golf Course are pursuing an development application for the residential infill of homes along Golf Course Rd. and the southern property limit. We have completed the following tasks in support of an EIS for the development. Please review and provide comment as you see fit.

- Evaluate existing vegetation communities using Ecological Land Classification for Southern Ontario (Lee *et al*. 1998. Ecological Land Classification for Southern Ontario: first approximation and its applications. SCSS Field Guide FG-02) to vegetation type;
- Conduct three vascular plant surveys in spring (June), summer (August) and fall (September);
- Conduct three evening calling amphibian surveys to determine if amphibian breeding habitat is present on or adjacent to areas proposed for development;
- Conduct two dawn breeding bird surveys;
- Delineate the boundary of the Jack's Lake PSW Complex with the MNRF;
- Complete a Butternut Health Assessment for the Butternut trees found on the property;
- Complete a snag density survey of moderately decayed trees with diameter at breast height >25cm to assess for potential maternity roosting habitat for SAR bats;

- Undertake a Species at Risk screening and inventory under the ESA and assess for potential habitat, including a targeted search for Butternut;

- Record wildlife observations and assess wildlife habitat function, including assessing the potential for SWH to occur;

- Provide a water balance assessment based on background data/published resources to evaluate the potential for the proposed development to impact the hydrology of the adjacent Jack's Lake PSW/aquatic resources;

- Map vegetation communities, environmental features, and the proposed development on current high quality ortho-air photos;

- Provide an assessment of the potential impacts of the proposed works on identified environmental features;

- Provide recommendations for the mitigation of potential impacts of the development on identified natural features;

- Provide recommendations for restoration and/or enhancement, if required; and

- Demonstrate conformity with the applicable policies, including those of the Town, NVCA, PPS (2014), and the ESA.

My sincere apologies for the delay in getting this to you - it has slipped through the cracks with everything going on.

Kind regards,

Melissa Fuller H. B.Sc.

Terrestrial Ecologist, ISA Certified Arborist

Azimuth Environmental Consulting, Inc
642 Welham Street
Barrie, ON, L4N 9A1

office: (705) 721-8451 ext. 216
fax: (705) 721-8926
cell: 705-795-8451
mfuller@azimuthenvironmental.com

Providing services in hydrogeology, terrestrial and aquatic ecology & environmental engineering

APPENDIX D

Species at Risk Information Request

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

May 24, 2016 AEC 15-273

Ministry of Natural Resources
Midhurst District
2284 Nursery Road
Midhurst, Ontario
L0L 1X0

Attention: Jodi Benvenuti, Management Biologist

Re: **Species at Risk Information Request for the Marlwood Golf Course Property in the Town of Wasaga Beach, County of Simcoe**

Dear Ms. Benvenuti:

Azimuth Environmental Consulting (Azimuth) has been retained by Loft Planning Inc. to prepare a Scoped Environmental Impact Study (EIS) for a proposed residential development at the above noted site (please see attached mapping). The purpose of this letter is to request additional information regarding Species at Risk (SAR) and any other sensitive areas associated with the study area, and to request any background information that may be relevant to our study.

EXISTING CONDITIONS

The property largely consists of maintained green space, manmade structures, and associated infrastructure. Marl Lake is present along the eastern boundary of the property, and the majority of natural vegetation communities connecting with the Marl Lake shoreline are present within 100 metres of the lake edge, some of which are mapped within Jack's Lake Complex Provincially Significant Wetland. Isolated portions of upland forest vegetation are located adjacent to Golf Course Road and are not directly connected to contiguous woodland and wetland units that abut Marl Lake.

BACKGROUND SAR DATA

A search of the Ontario Breeding Bird Atlas has been completed. Square 17NK72 was queried and it was determined that several SAR bird species have been recorded demonstrating probable or confirmed breeding evidence within the 10 x 10 km data square, including Chimney Swift, Eastern Wood-pewee, Whip-poor-will, Common Nighthawk, Bank Swallow, Barn Swallow, Wood Thrush, Canada Warbler, Bobolink, and Eastern Meadowlark.

Available information from the Natural Heritage Information Centre (NHIC) indicates that SAR recorded within the 1 km of the study area includes Least Bittern (Threatened), Northern Map Turtle (Special Concern), and Snapping Turtle (Special Concern).

In addition to external sources, Azimuth has completed one site visit at this time. Three Butternut was identified by Azimuth staff during the on-site SAR screening portion of the study. The survey was conducted by a certified Butternut Health Assessor who will also be carrying out health assessments for all identified Butternut in spring/summer 2016.

In summary, based on information reviewed, the following are being considered in our assessment:

- Mammals: Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septrentionalis*), and Eastern Small-footed Bat (*Myotis leibii*);
- Reptiles and Amphibians: Blanding's Turtle (*Emydoidea blandingii*), Eastern Hog-nosed Snake (*Heterodon platirhinos*), Eastern Musk Turtle (*Sternotherus odoratus*), Eastern Ribbonsnake (*Thamnophis sauritus*), Milksnake (*Lampropeltis triangulum*), and Snapping Turtle (*Chelydra serpentina*);
- Birds: Barn Swallow (*Hirundo rustica*), Bank Swallow (*Riparia riparia*), Bobolink (*Doliichonyx oryzivorus*), Canada Warbler (*Wilsonia carolinus*), Cerulean Warbler (*Setophaga cerulea*), Chimney Swift (*Chaetura pelagica*), Common Nighthawk (*Chordeiles minor*), Eastern Wood-pewee (*Contopus virens*), Eastern Meadowlark (*Sturnella magna*), Least Bittern (*Ixobrychus exilis*), Olive-sided fly catcher (*Contopus cooperi*), Wood Thrush (*Hylocichla mustelina*), and Whip-poor-will (*Caprimulgus vociferus*)
- Plants and Lichens: Butternut (*Juglans cinerea*); and,
- Insects: Monarch Butterfly (*Danaus plexippus*).

If the District's files contain additional or contradictory information, we would appreciate your input at this time.

It is generally our intention to append this correspondence in the resulting EIS. If restricted species occur in the area and the MNRF determines that these need to be considered in our review, please provide two copies of the response - one with the species name replaced with (Restricted Species) for inclusion within Azimuth's natural heritage review report, and the other retaining the identity of the species for Azimuth's internal use only.

Thank you very much for your assistance in this matter. If you have any questions regarding this project please do not hesitate to contact us.

Yours truly,

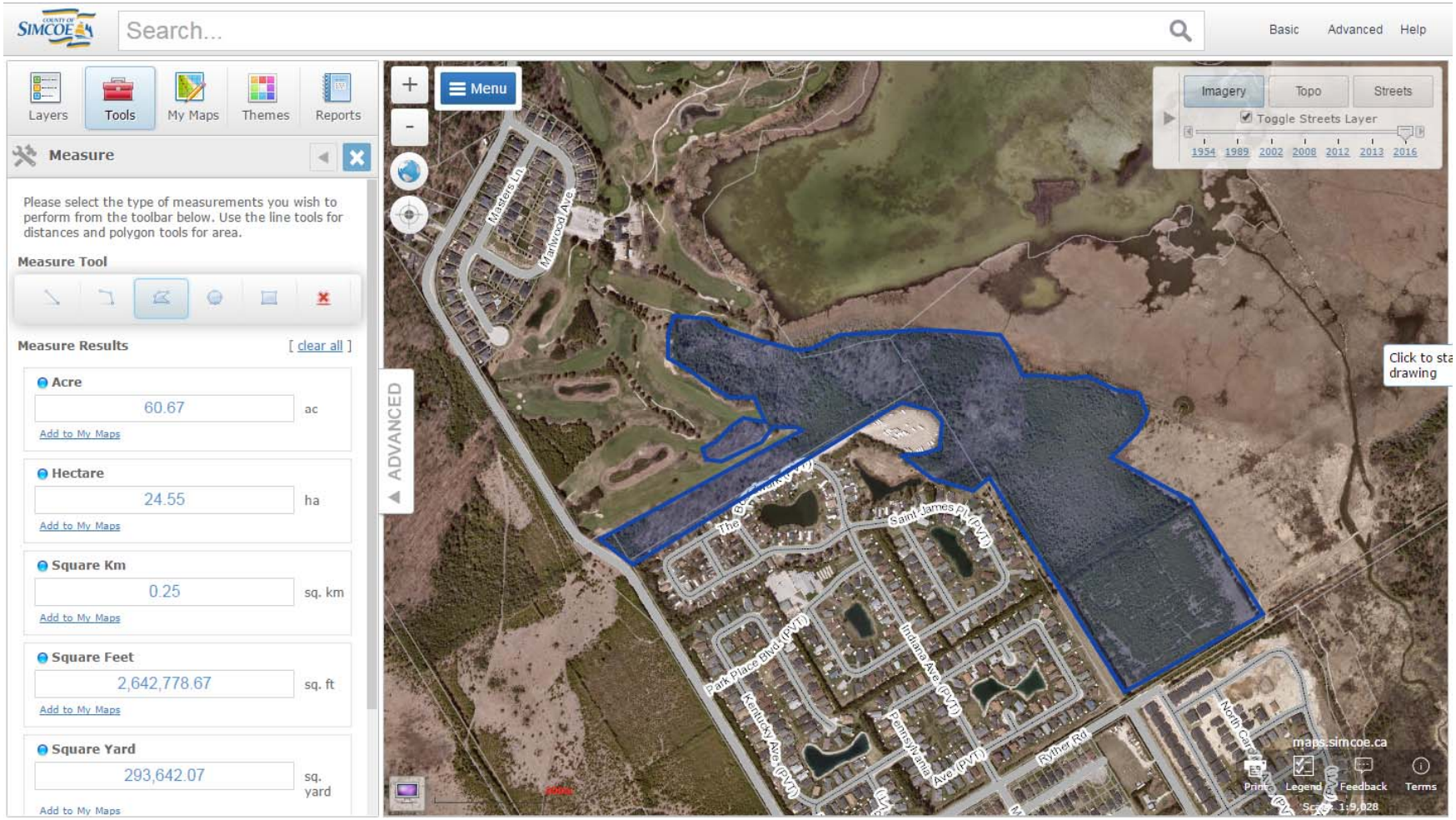
AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Stephanie Casutt, H.B.ES
Terrestrial Ecologist

Attach: AEC15-273 Site Location
AEC15-273 Ontario Breeding Bird Atlas Data Summary (17NK72), NHIC 2016

APPENDIX E

Significant Woodland Area Calculation


Search...
Basic
Advanced
Help
Layers
Tools
My Maps
Themes
Reports
Measure
Please select the type of measurements you wish to perform from the toolbar below. Use the line tools for distances and polygon tools for area.
Measure Tool
Measure Results
[clear all]
Acre
60.67
ac
Add to My Maps
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24.55
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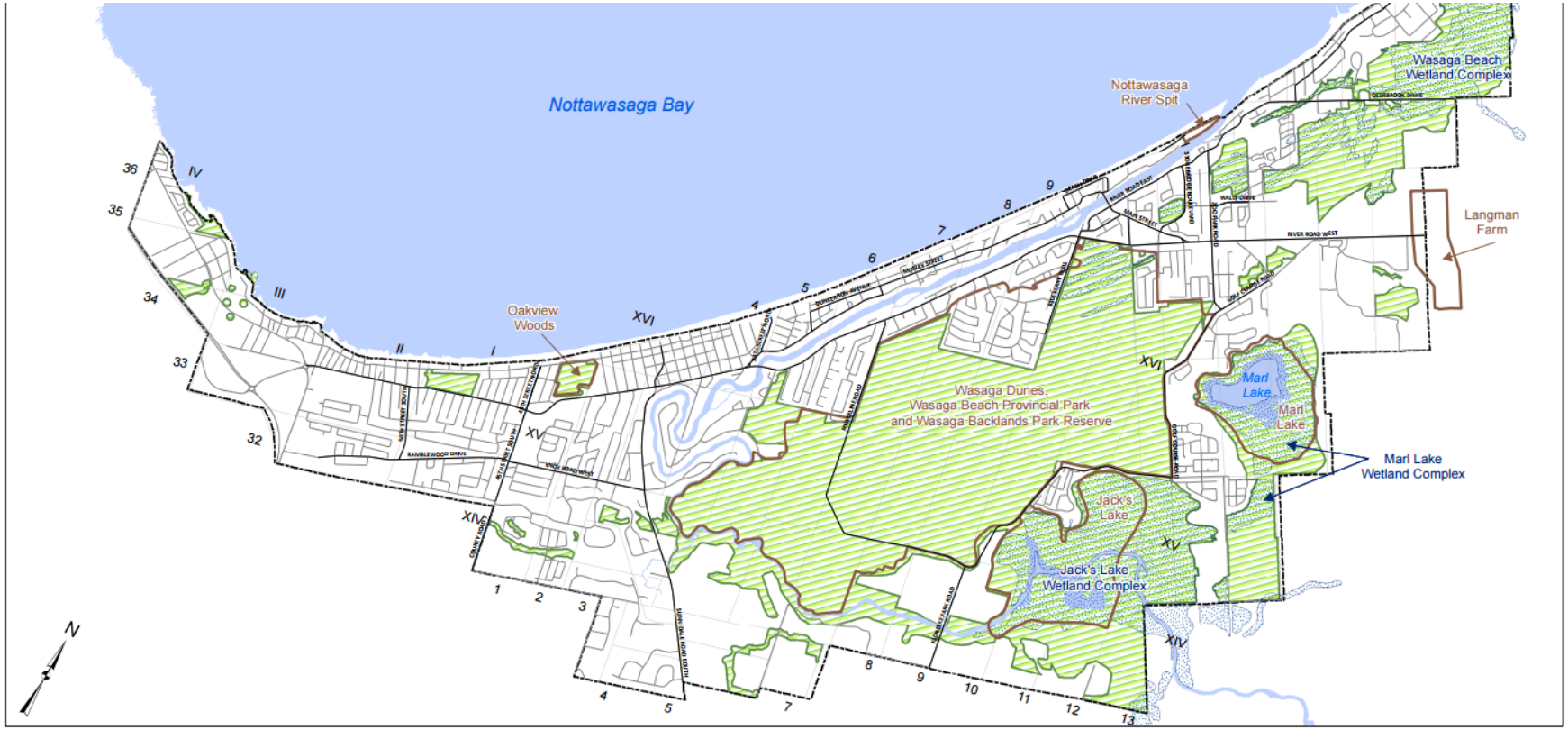
Add to My Maps
Square Km
0.25
sq. km
Add to My Maps
Square Feet
2,642,778.67
sq. ft
Add to My Maps
Square Yard
293,642.07
sq. yard
Add to My Maps
Menu
ADVANCED
Imagery
Topo
Streets
Toggle Streets Layer
1954 1989 2002 2008 2012 2013 2016
Click to sta
drawing
Masters Ln
Marlwood Ave
Saint James Pl (PVT)
Park Place Blvd (PVT)
Indiana Ave (PVT)
Kentucky Ave (PVT)
Pennsylvania Ave (PVT)
Ryther Rd
maps.simcoe.ca
Print
Legend
Feedback
Terms
Scale 1:9,028

APPENDIX F

Significant Feature Mapping



Adopted by Council: September 9, 2003

Approved by the County of Simcoe: June 22, 2004

Consolidated: February 29, 2016

NOTE: The lot lines depicted on this map are for reference only and may not reflect accurately property boundaries in all instances.

0 300 600 1,200 1,800 2,400 3,000

Metres

ANSI (Area of Natural and Scientific Interest)

Provincially Significant Wetland Complex

Natural Heritage System Category 1 and 2 Lands

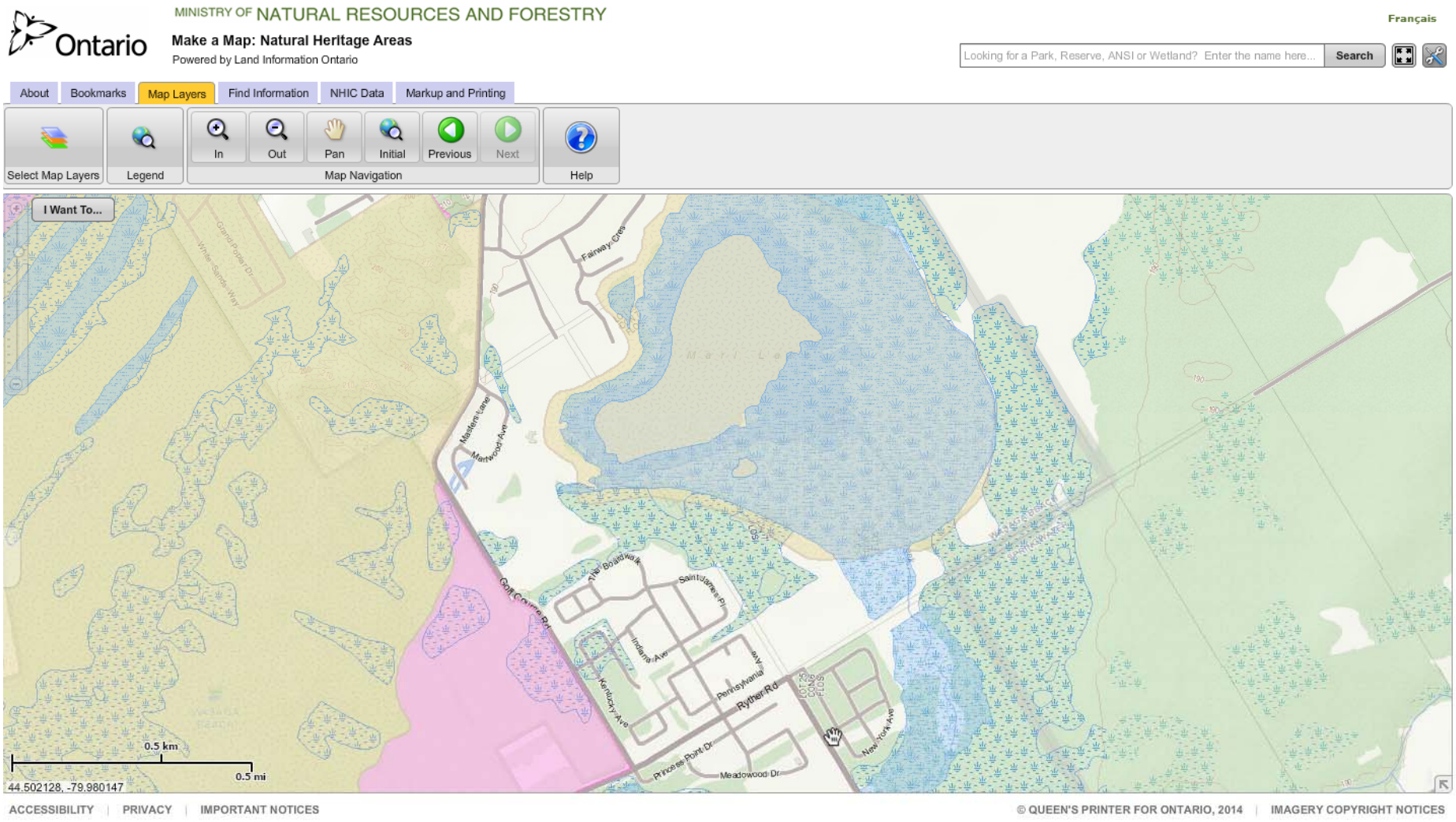
TOWN OF WASAGA BEACH • INCORPORATED 1974

Schedule 'D'

Natural Heritage System

Official Plan of theTown of Wasaga Beach

15-273 Marl Lake ANSI (Life Science)/ Jacks Lake Complex Provincially Signficant Wetland



Marl Lake Golf and Country Club
Jack's Lake Complex Provincially Significant Wetland

0 45 90 180 Meters

N
W E
S

Legend

MarlLkGCC

The drawing, map or plan supplied is not a Plan of Survey but graphical illustration only. The true positional accuracy of the information shown hereon must not be used as evidence of the location of legal boundaries, township lot fabric, features, or routes. Any coordinates supplied are derived from the drawing and are approximate only. They cannot be used to establish the location of parcel corners.

NOTE:
MPAC, wetland, and imagery data layers from MNRF NRVIS database.

Ministry of Natural Resources and Forestry

Ministère des Richesses Naturelles et des Forêts

Midhurst District Office
2284 Nursery Road
Midhurst, ON L9X 1N8

Telephone: (705) 725-7530
Facsimile: (705) 725-7584

Ontario

November 30, 2016

Azimuth Environmental Consulting, Inc
642 Welham Street
Barrie, Ontario,
L4N 9A1

Attention: Melissa Fuller

Subject: Marl Lake Golf and Country Club – Jack's Lake Complex – Boundary Amendment

Ms. Fuller this letter follows up on our June 2016 site visit where we met to review your interpretation of part of the boundary of the Jack's Lake Complex provincially significant wetland on the Marlwood Golf and Country Club property, Wasaga Beach. Attached for your reference is a map presenting the wetland boundary based on the survey coordinates resulting from that meeting. As you indicated the development was proposed within the forested block adjacent to the length of the 13th golf hole, the wetland boundary reviewed was limited to the southern part of the subject property. The resulting amendment to the wetland boundary was made to that section between the two red bars.

With this letter we confirm the wetland boundary amendment of the Jack's Lake Complex PSW on the Marlwood Golf and Country Club property as shown in the attached map. Recent staff changes will delay briefly our updating the digital wetland data in Land Information Ontario, however we trust the attached serves the file going forward in the short term.

Should you have any questions contact the undersigned at this office.

Yours truly,

Graham Findlay
Management Biologist
Huronia Resource Management Team,
Midhurst District

c.c. (by email only)
Doug Herron, Town of Wasaga Beach
Dave Featherstone, NVCA

APPENDIX G

Butternut Health Assessment

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

August 9, 2016 AEC 15-273

Alex Smardenka
C/O LOFT Planning Inc.
308 Hurontario Street
Collingwood, Ontario
L9Y 2M3

Attn: Alex Smardenka

Re: Butternut Health Assessment (#455-002)for
Marlwood Golf Course, Town of Wasaga Beach, County of Simcoe

Mr. Smardenka,

Azimuth Environmental Consulting Inc. (Azimuth) has completed a Butternut Health Assessment on one tree located on the property noted above. A second tree is present on the property, however, a formal assessment on the tree was not completed as the tree is dead, and is currently a standing snag, approximately 20m in height.

Date of Butternut Health Assessment: July 14, 2016
Date BHA Report Prepared: July 22, 2016

Map datum used: ☒ NAD83 ☐ WGS84

Total number of trees assessed in this BHA Report: 2

The assessed trees were numbered on site using white spray paint. The numbers at the site correspond to the tree numbers referenced in this report.

This BHA Report includes the following tables:

- Table 1: Butternut Trees Assessed
- Table 2: Summary of Assessment Results

Table 1: Butternut Trees Assessed

Tree #	UTM coordinates	Category[1] *(1, 2, or 3[2])*	Dbh[3] (cm)	Cultivated? *(Y/N)*	Proposed to be: *(enter one: unknown[4], killed, harmed or taken)*	If tree is proposed to be killed, harmed, or taken, indicate reason tree is proposed to be killed, harmed or taken:
1	17 T 579907 mE 4929365 mN	Dead	65	N	NA	NA
2	17 T 580222 mE 4928712 mN	1	25	N	Killed	Residential infill

[1] The extent to which the tree is affected by Butternut Canker is presented in the Excel document titled, "BHA Tree Analysis" that accompanies this BHA Report.
[2] Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08.
[3] dbh: diameter at breast height, rounded to nearest cm (if tree is shorter than breast height, enter zero)
[4] In this column, "unknown" indicates that at the time of assessment, there are no proposals to kill, harm or take this tree that are known to the BHA.

Table 2: Summary of Assessment Results

Result:	**Total #:**	**Important information for persons planning activities that may affect Butternut:**
Category 1	1	• A Category 1 tree is one that is affected by butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of butternut in the area in which the tree is located; and is considered "non-retainable". • During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. • Category 1 trees may be killed, harmed or taken **after** the 30 day period that follows submission of this BHA Report to the MNRF District Manager, unless the results of an MNRF examination indicate that the assessment has not been conducted in accordance with the document entitled "Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the *Endangered Species Act, 2007"*.
Category 2	0	• A Category 2 tree is one that is not affected by Butternut Canker, or is affected by Butternut Canker but the degree to which it is affected is not too advanced and retaining the tree could support the protection or recovery of butternut in the area in which the tree is located, and is considered "retainable". • During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. • Activities that may kill, harm or take up to a **maximum of ten (10)** Category 2 trees may be eligible to follow the rules in section 23.7 of Ontario Regulation 242/08, in accordance with the conditions and requirements set out in the regulation. • Refer to e-Laws for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm • Activities that may kill, harm or take more than ten (10) Category 2 trees are not eligible to follow the rules in section 23.7 of Ontario Regulation 242/08. Contact the local MNRF district office for information on how to seek an ESA authorization (e.g., a permit) or consider an alternative that would be eligible for the regulation.

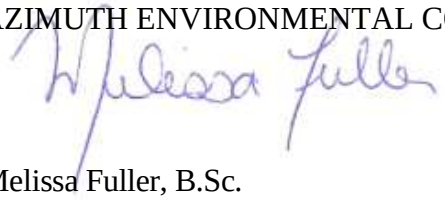
Result:	Total #:	Important information for persons planning activities that may affect Butternut:
Category 3	0	• A Category 3 tree is one that may be useful in determining sources of resistance to Butternut Canker, and is considered "archivable". • Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08. • Contact the local MNRF district office for information on how to seek an ESA authorization, or consider an alternative that will avoid killing, harming or taking any Category 3 trees.
Cultivated	0	• An activity that involves killing, harming, or taking a cultivated Butternut tree that was not required to be planted to fulfill a condition of an ESA permit or a condition of a regulation, may be eligible for the exemption provided by subsection 23.7 (11) of O. Reg. 242/08. • Prior to undertaking the activity, the owner or occupier of the land on which the Butternut is located (or person acting on their behalf) will need to determine whether the exemption for cultivated trees is applicable by determining whether or not the tree was cultivated as a result of the requirements for an exemption under O. Reg. 242/08 or a condition of a permit issued under the ESA. This information can be accessed by contacting the local MNRF district office. • The owner or occupier of the land on which the Butternut is located (or person acting on their behalf) is encouraged to append the details regarding whether the tree was planted to satisfy a requirement (e.g., the permit number or registration number) to this BHA Report for their records.
Hybrid	0	• Hybrid Butternut trees are not protected under the ESA, but their removal may be subject to municipal by-laws and other legislation.

This concludes the summary of the BHA Report. A complete BHA Report must also include:

1. All original (hard copy) data forms (i.e., all completed sets of Form 1 and Form 2), and
2. Electronic and printed copies of the Excel data analysis spreadsheet.

If you have any question or concerns regarding this correspondence, please do not hesitate to contact me.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.



Melissa Fuller, B.Sc.
Terrestrial Ecologist and Butternut Health Assessor (BHA#455)

Enclosures:

1. Information from the Ministry of Natural Resources and Forestry about Butternut and the Endangered Species Act, 2007
2. Butternut Health Assessor's Report
3. Original data forms
4. Electronic and printed copies of the Excel data spreadsheet (BHA Tree Analysis)

0cm 3cm 15cm

Butternut Data Collection Form 1 - 2010 Edition

Surveyor ID or BHA # 455

(PLEASE USE BLOCK LETTERS)

Date (dd/mm/yyyy) 14-07-2016

Shaded fields are mandatory for Butternut Health Assessments

Surveyor Contact

First MELISSA Last FULLER

Email MFULLER@AZIMUTHENVIRONMENTAL.COM

Telephone (705) 795-8451 Telephone Other ( ) - x

Property Owner (check if same as surveyor) ☐

First ALEX Last SMARDENKA

or Company

Email

Telephone (705) 351-8674 Telephone Other ( ) - x

Property Owner's Mailing address

Address 31 MARLWOOD AVE Postal Code L9Z 1S8 Prov. ON

City WASAGA BEACH

Tree Location (if different from mailing address)

Address/(911#)

Township Lot Con

City

Directions

☐ Yes ☐ No Can Share Location Information with other Butternut Recovery Organizations?

☐ Yes ☐ No Site visits OK? (prior arrangments will always be made for a site vist)

> (Greater than)
< (Less than)

Butternut Trees Tally by Diameter Class

(Do a dot tally in blank space; write total# in box for each)

Tree Condition	< 3 cm	3-15 cm	16-30cm	>30 cm
Vigorous: > 50% Live Crown Minor or no cankers				
Poor Vigor: <50% Live Crown or >50% Live Crown + heavily cankered stem			1	
Dead				1

Historically, do some trees produce seeds? ☐ Y ☐ N ☒ Unkown

Estimated area containing butternut for properties > 1 acre (0.4 hectares): ☐ Acres ☐ Hectares

Overall Property Description (area(s) containing Butternut)

☐ Rolling Upland ☐ Bottomland
☐ Valley Slope ☐ Variable
☒ Tableland ☐ Unknown

Vegetation Community/ies

☐ Open ☐ Fencerow
☐ Shrubland ☐ Roadside
☒ DeciduousForest ☐ Quary
☐ ConiferForest ☐ UrbanYard
☐ MixedForest ☐ UrbanPark

Other

Soil Drainage

☐ Well Drained
☒ Moderately Drained
☐ Poorly Drained
☐ Unknown

Soil Texture

☐ Clay ☐ Sand
☐ Clay Loam ☐ Variable
☐ Loam ☐ Unknown
☒ Loamy Sand

Soil Depth

☒ > 1metre
☐ 30 - 99cm
☐ < 30cm
☐ Variable
☐ Unknown

Please enter matching numerical page link code on forms 1 and 2

Page Link 455002

(Contact Information follows all applicable privacy policies and guidelines)

Please return forms to:
Forest Gene Conservation Association
Suite 233, 266 Charlotte St.
Peterborough, ON, K9J 2V4
www.fgca.net

49731

Butternut Data Collection FORM 2 (2010 Edition) (PLEASE USE BLOCK LETTERS)

Shaded fields are mandatory for Butternut Health Assessments

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Site Code(A,B,...Z, AA...):

Surveyor ID or BHA #: 455

Date (dd/mm/yyyy): 14-07-2016

Surveyor Last Name: FULLER

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree #: 001 | Zone: 17 | Easting: 579907 | Northing: 4929365

Crown Class: 1 | Live Crown %: 0 | Main Stem Length(m) Below crown: 8

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: 1 | DBH(cm): 65

Butternut Origin: ☒ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☒ None

Assess below live crown: #Epic-Live: – | #Epic-Dead: – | Bark Type: R | # Callused Wounds: –

	#Open	#Sooty
Root	–	–
=<2m	–	–
>2m	–	–

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species: FRAXAME, ACERSAC

Dead

Tree #: 002 | Zone: 17 | Easting: 580292 | Northing: 4928712

Crown Class: 3 | Live Crown %: 30 | Main Stem Length(m) Below crown: 8

☒ Twig Dieback ☒ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: 2 | DBH(cm): 25

Butternut Origin: ☒ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☒ None

Assess below live crown: #Epic-Live: 2 | #Epic-Dead: – | Bark Type: S | # Callused Wounds: 1

	#Open	#Sooty
Root	2	0
=<2m	0	4
>2m	4	2

Metres from badly cankered tree: ☐ < 40 ☒ > 40 ☐ None Found

Competing Species: FRAXAME, SDGMAF, BETPAPY

1 stem is dead ~20 DBH on dead stem

Tree #: | Zone: 1 | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: | DBH(cm):

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

Assess below live crown: #Epic-Live: | #Epic-Dead: | Bark Type: | # Callused Wounds:

	#Open	#Sooty
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

Tree #: | Zone: 1 | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: | DBH(cm):

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

Assess below live crown: #Epic-Live: | #Epic-Dead: | Bark Type: | # Callused Wounds:

	#Open	#Sooty
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

Tree #: | Zone: 1 | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: | DBH(cm):

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

Assess below live crown: #Epic-Live: | #Epic-Dead: | Bark Type: | # Callused Wounds:

	#Open	#Sooty
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

Please enter matching page link code on forms 1 and 2

Page Link: 455002

(Contact Information follows all applicable privacy policies and guidelines)

Please return forms to:
Forest Gene Conservation Association
Suite 233, 266 Charlotte St.
Peterborough, ON, K9J 2V4
www.fgca.net

49731

BHA Report #	455002	Assessment Date(s)	15-Jul-16	Total # Butternut Trees in BHA Report	2
BHA ID #	455	BHA Name	Melissa Fuller		
Landowner / Client Name			Marlwood Golf Club		
Property Location			31 Marlwood Ave., Wasaga Beach		

input field data										automatic calculations from field data						Categories: 1: non-retainable, 2: retainable, 3: archivable				
Tree #	Live Crown %	Tree dbh (cm)	# bole cankers: sooty (S) (will be assigned 2.5 cm per canker)		# bole cankers: open (O) (will be assigned 5 cm per canker)		# root flare (RF) cankers		<40 m from cankered tree? (Y or N)	Circ. (cm) = Pi x dbh	total bole canker width (sooty x 2.5 + open x 5)	total RF canker width (sooty x 2.5 + open x 5)	bole canker % of circ.	RF canker % of circ.	total bole & root canker % of 2xCirc	LC% >/= 50 & BC% = 0	LC% >70 & BRC % <20	LC% >70 & BC % <20	Preliminary tree call	FINAL TREE CALL a Cat 2, dbh>20cm <40m from a Cat 1
			S <2 m	S >2 m	O <2 m	O >2 m	RF S	RF O		Circ (cm)	BC (cm)	RC (cm)	BC%	RC%	BRC%					
1	0	65							N	204.1	0.0	0.0	**0.0**	**0.0**	**0.0**	1	1	1	**1**	**1**
2	30	25	4	2	0	4	0	2	N	78.5	35.0	10.0	**44.6**	**12.7**	**28.7**	1	1	1	**1**	**1**
3										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
4										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
5										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
6										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
7										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
8										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
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10										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
11										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
12										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
13										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
14										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
15										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
16										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
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21										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
22										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
23										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!

Ministry of Natural Resources and Forestry

Species At Risk
P.O. Box 7000, 300 Water Street
Peterborough ON K9J 8M5

Ministère des Richesses naturelles et des Forêts

Espèces en péril
C.P. 7000, 300, rue Water
Peterborough ON K9J 8M5

The enclosed Butternut Health Assessor's Report documents the results of the Butternut health assessment that was conducted by the designated Butternut Health Assessor (BHA) identified in the top section of the report. If there are other Butternut trees (of any size or age) at the site that may be affected by the activity and they are not identified in the enclosed BHA Report, they too must be assessed by a designated BHA.

Butternut is listed as an endangered species on the Species at Risk in Ontario List, and as such, it is protected under the *Endangered Species Act, 2007* (ESA) from being killed, harmed, or removed. If you are planning to undertake an activity that may affect Butternut, you may be eligible to follow the requirements set out in section 23.7 of Ontario Regulation 242/08 under the ESA, or you may need to seek an authorization under the ESA (e.g., a permit).

Please visit e-laws at the link provided below for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled. Information about Butternut is also available at: http://www.ontario.ca/environment-and-energy/butternut-trees-your-property.

If you are eligible to kill, harm or take Butternut under section 23.7 of the regulation, your first step is to submit the BHA Report and the original data forms enclosed in this package to the local Ministry of Natural Resources and Forestry (MNRF) District Manager. Note that MNRF cannot accept photocopies or scanned electronic copies of the data forms.

Note regarding changes:

If the enclosed BHA Report does not identify which Butternut tree(s) are proposed to be killed, harmed, or taken in Table 1 (i.e., if "unknown" is indicated in the second last column of Table 1), or, if the information in the last two columns of Table 1 has changed since the date this BHA Report was produced, **do not make any edits to the BHA Report**. Instead, please attach a cover letter that identifies which Butternut tree(s) are proposed to be killed, harmed, or taken (by referencing the tree identification numbers) when you submit the enclosed BHA Report to the local MNRF District Manager.

The BHA Report must be submitted at least 30 days prior to registering an eligible activity to kill, harm, or remove a Butternut tree. During this 30 day period, no Butternut trees (of any category) may be killed, harmed, or removed, and MNRF may contact you for an opportunity to examine the trees. If MNRF chooses to examine the trees, a representative of MNRF will contact you using the information you supplied when you submitted the BHA Report.

If you are eligible to follow the rules in regulation under section 23.7, you may register your activity using the "Notice of Butternut Impact" form on the MNRF Registry **after the 30 day period has elapsed**.

If you are **not** eligible to follow the rules in regulation under section 23.7, please contact the local MNRF district office to determine whether you will need to seek an authorization (e.g., a permit). A link to the directory of MNRF offices is provided below.

Note that municipal by-laws and legislation other than the ESA may also be applicable to the removal or harming of trees.

Please retain this information and a copy of the BHA Report (including copies of all data forms) for your records, along with any other documentation you may receive from MNRF should an examination of the trees occur. If you have any questions, please contact your local MNRF district office.

Links:

Endangered Species Act, 2007:
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm

Ontario Regulation 242/08 (refer to section 23.7):
http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm

MNRF Office Locations:
https://www.ontario.ca/government/ministry-natural-resources-and-forestry-regional-and-district-offices

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Assessments & Approvals

August 23, 2017 AEC 15-273

Alex Smardenka
C/O LOFT Planning Inc.
308 Hurontario Street
Collingwood, Ontario
L9Y 2M3

Attn: Alex Smardenka

Re: Update to the Butternut Health Assessment (#455-002) for Marlwood Golf Course, Town of Wasaga Beach, County of Simcoe

Mr. Smardenka,

Azimuth Environmental Consulting Inc. (Azimuth) has completed a Butternut Health Assessment on one tree located on the property noted above. At this time, 4 trees have been assessed; one is dead and three have been deemed non-retainable. Two trees (#3 and #4) were assessed in 2017. The trees assessed in 2016 have not be re-assessed.

Date of First Butternut Health Assessment: July 14, 2016
Date BHA Report Prepared: July 22, 2016

Date of Second Butternut Health Assessment : August 23, 2017
Date BHA Report Prepared: August 23, 2017

Map datum used: ☒ NAD83 ☐ WGS84

Total number of trees assessed in this BHA Report: 4

The assessed trees were numbered on site using white spray paint. The numbers at the site correspond to the tree numbers referenced in this report.

This BHA Report includes the following tables:

- Table 1: Butternut Trees Assessed
- Table 2: Summary of Assessment Results

Table 1: Butternut Trees Assessed

Tree #	UTM coordinates	Category[1] *(1, 2, or 3[2])*	Dbh[3] (cm)	Cultivated? *(Y/N)*	Proposed to be: *(enter one: unknown[4], killed, harmed or taken)*	If tree is proposed to be killed, harmed, or taken, indicate reason tree is proposed to be killed, harmed or taken:
1	17 T 579907 mE 4929365 mN	Dead	65	N	NA	NA
2	17 T 580222 mE 4928712 mN	1	25	N	Killed	Residential infill
3	17 T 579874 mE 4929504 mN	1	12	N	Killed	Residential infill
4	17 T 5780271 mE 4928816 mN	1	42	N	Killed	Residential infill

[1] The extent to which the tree is affected by Butternut Canker is presented in the Excel document titled, "BHA Tree Analysis" that accompanies this BHA Report.
[2] Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08.
[3] dbh: diameter at breast height, rounded to nearest cm (if tree is shorter than breast height, enter zero)
[4] In this column, "unknown" indicates that at the time of assessment, there are no proposals to kill, harm or take this tree that are known to the BHA.

Table 2: Summary of Assessment Resutls

Result:	**Total #:**	**Important information for persons planning activities that may affect Butternut:**
Category 1	3	• A Category 1 tree is one that is affected by butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of butternut in the area in which the tree is located; and is considered "non-retainable". • During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. • Category 1 trees may be killed, harmed or taken **after** the 30 day period that follows submission of this BHA Report to the MNRF District Manager, unless the results of an MNRF examination indicate that the assessment has not been conducted in accordance with the document entitled "Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the *Endangered Species Act, 2007"*.
Category 2	0	• A Category 2 tree is one that is not affected by Butternut Canker, or is affected by Butternut Canker but the degree to which it is affected is not too advanced and retaining the tree could support the protection or recovery of butternut in the area in which the tree is located, and is considered "retainable". • During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. • Activities that may kill, harm or take up to a **maximum of ten (10)** Category 2 trees may be eligible to

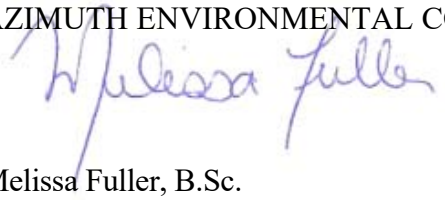
Result:	Total #:	Important information for persons planning activities that may affect Butternut:
		follow the rules in section 23.7 of Ontario Regulation 242/08, in accordance with the conditions and requirements set out in the regulation. • Refer to e-Laws for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm • Activities that may kill, harm or take more than ten (10) Category 2 trees are not eligible to follow the rules in section 23.7 of Ontario Regulation 242/08. Contact the local MNRF district office for information on how to seek an ESA authorization (e.g., a permit) or consider an alternative that would be eligible for the regulation.
Category 3	0	• A Category 3 tree is one that may be useful in determining sources of resistance to Butternut Canker, and is considered "archivable". • Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08. • Contact the local MNRF district office for information on how to seek an ESA authorization, or consider an alternative that will avoid killing, harming or taking any Category 3 trees.
Cultivated	0	• An activity that involves killing, harming, or taking a cultivated Butternut tree that was not required to be planted to fulfill a condition of an ESA permit or a condition of a regulation, may be eligible for the exemption provided by subsection 23.7 (11) of O. Reg. 242/08. • Prior to undertaking the activity, the owner or occupier of the land on which the Butternut is located (or person acting on their behalf) will need to determine whether the exemption for cultivated trees is applicable by determining whether or not the tree was cultivated as a result of the requirements for an exemption under O. Reg. 242/08 or a condition of a permit issued under the ESA. This information can be accessed by contacting the local MNRF district office. • The owner or occupier of the land on which the Butternut is located (or person acting on their behalf) is encouraged to append the details regarding whether the tree was planted to satisfy a requirement (e.g., the permit number or registration number) to this BHA Report for their records.
Hybrid	0	• Hybrid Butternut trees are not protected under the ESA, but their removal may be subject to municipal by-laws and other legislation.

This concludes the summary of the BHA Report. A complete BHA Report must also include:

1. All original (hard copy) data forms (i.e., all completed sets of Form 1 and Form 2), and
2. Electronic and printed copies of the Excel data analysis spreadsheet.

If you have any question or concerns regarding this correspondence, please do not hesitate to contact me.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.



Melissa Fuller, B.Sc.
Terrestrial Ecologist and Butternut Health Assessor (BHA#455)

Enclosures:

1. Information from the Ministry of Natural Resources and Forestry about Butternut and the Endangered Species Act, 2007
2. Butternut Health Assessor's Report
3. Original data forms
4. Electronic and printed copies of the Excel data spreadsheet (BHA Tree Analysis)

Explanation of Butternut Categories under Ontario Regulation 242/08

On July 1 2013, Ontario Regulation 242/08, (the General Regulation under the Endangered Species Act, 2007) was amended to include a new subsection pertaining to Butternut (s. 23.7). This amendment resulted in revisions to the rules that Butternut Health Assessors (BHAs) must follow when conducting health assessments of Butternut trees.

The categories for classification of trees have broadened from the previous categories of 'retainable' and 'non-retainable' to include a third category for trees that may be useful in determining sources of resistance to Butternut Canker. The exemptions from ESA prohibitions that are provided by section 23.7 of the regulation are not applicable to Category 3 trees.

Butternut Categories, as defined in section 23.7 of Ontario Regulation 242/08:

Category 1: the butternut tree is affected by butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of butternut trees in the area in which the tree is located.

Category 2: the butternut tree is not affected by butternut canker or the butternut tree is affected by butternut canker but the degree to which it is affected is not too advanced and retaining the tree could support the protection or recovery of butternut trees in the area in which the tree is located.

Category 3: the butternut tree may be useful in determining sources of resistance to butternut canker.

Summary of Categories:

Category 1: Non-retainable Butternut

Category 2: Retainable Butternut

Category 3: A Butternut is judged to be Category 3 if the Butternut exhibits resistance to Butternut Canker, based on observation that:

(3)(a) It satisfies the criteria for Category 2,

(3)(b) It has a breast height diameter of at least 20 cm, and

(3)(c) It occurs within 40 m of at least one Butternut tree which is severely affected by Butternut Canker.

As scientific research provides greater understanding of resistance to Butternut Canker, other criteria for determining the categorization of a Butternut tree may be adopted. The BHA must ensure they are using the most up to date versions of the Butternut Assessment Guidelines and all Butternut health assessment materials. To receive updates from the Ministry, BHAs are required to keep their contact information up to date, as specified in the BHA Protocol.

For more information on the regulation changes pertaining to Butternut:
http://www.ontario.ca/environment-and-energy/butternut-trees-your-property

Contact: esapermits@ontario.ca

species at risk

Butternut Trees on Your Property

INTRODUCTION

The Ministry of Natural Resources is streamlining and automating its approvals processes for natural resource-related activities – with the goal of providing individuals and businesses with faster and more efficient service delivery.

This fact sheet provides information about regulatory provisions under the Endangered Species Act (ESA) for activities that may impact butternut trees.

The ESA provides protection for endangered or threatened species in Ontario. Some activities that would otherwise contravene the ESA may be eligible to proceed without a permit from the Ministry of Natural Resources provided that regulatory conditions for the ongoing protection of species at risk and their habitats are met.

ACTIVITIES THAT MAY AFFECT BUTTERNUT

Anyone intending to cut down or harm butternut trees may be able to follow the rules set out in the regulation, depending on the health of the trees as determined by a qualified butternut health assessor and the number of trees impacted. In some cases, this will include a requirement for the person to register with the Ministry of Natural Resources. A permit under the ESA is not required if the rules in regulation are followed for all eligible activities.

What is a "qualified butternut health assessor?"

A butternut health assessor is a person designated by the Ministry of Natural Resources for the purpose of assessing whether, and the extent to which, butternut trees are affected by a disease called butternut canker.

What are the categories for butternut trees?

A qualified butternut health assessor must inspect and report on the tree, and then assign it to one of three categories, based on the tree's condition or value as a genetic resource. The categories are:

- Category 1: the tree is in an advanced state of disease from butternut canker and is considered "non-retainable."
- Category 2: the tree does not have butternut canker, or the disease is not as advanced and the tree is considered "retainable."
- Category 3: the tree may be useful in determining sources of resistance to butternut canker and is considered "archivable." This regulation does not apply to Category 3 trees.

species at risk

What activities are eligible?

This section may apply to anyone who is proposing an activity the may have an impact on a butternut tree. The butternut must be assessed by a qualified butternut health assessor, and the regulation may apply depending on the number of trees proposed to be affected, and the category of the tree.

A person may be eligible if the activity affects Category 1 trees or 10 or fewer Category 2 trees.

A person is not eligible for the regulation and must obtain an ESA authorization if the activity affects a Category 3 tree, or more than 10 Category 2 trees.

What activities are not eligible?

- A person cannot affect more than 10 Category 2 trees identified in the butternut health assessors report.
- The regulation does not apply if a person has been previously exempted to remove 10 butternut trees, identified by a butternut health assessor as Category 2 trees and the location of the trees are in the same area or close proximity, the person is proposing to have an impact on additional butternut trees for the same or similar reasons.

What are the rules in regulation?

At least 30 days before any butternut is killed, harmed or taken:

- A designated butternut health assessor must;
- complete an assessment for each butternut tree in accordance with the "Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the Endangered Species Act, 2007" published by the Ministry of Natural Resources and designate it as Category 1, 2, or 3;
- provide a written report of the assessment in accordance with those guidelines.
- The person proposing to carry out the activity must send the report of the butternut health assessor to the appropriate MNR District Manager and allow MNR staff to access the site during that time, if requested.

After the 30 day period has passed, the person may carry out activities on any Category 1 trees identified in the report.

If 10 or fewer Category 2 trees are affected (and the activity is not otherwise ineligible), the person carrying out the activity must:

- Register using the Notice of Butternut Impact form on the Registry.
- Follow the rules in regulation including:
  - Plant replacement trees to benefit butternut using best management practices outlined in the regulation.
  - Conduct monitoring and tending of the seedlings that are planted.
  - Keep required records.

Please refer to **Legal/Technical Background** below for a summary of these conditions.

species at risk

LEGAL/TECHNICAL BACKGROUND

The following is a summary of the conditions in the regulation that must be fulfilled to allow eligible activities, and is for information purposes only. Please refer to O.Reg. 242/08 section 23.7 at e-laws.gov.on.ca for the full legal text.

Summary of Conditions

Actions to Benefit Butternut:

The person must provide a benefit for butternut by carrying out these activities:

- follow planting ratios as described in the regulation for replacing the trees, based on the size of the tree(s) and whether the tree is being killed and taken or harmed;
- follow the rules in regulation regarding seed origin, timing of planting, soil characteristics, companion trees plantings and spacing requirements; and,
- replace planted butternut that die within two years of planting the seedling.

Monitoring and Tending:

The person must monitor and tend the planted butternut trees by following requirements described in the regulation:

- monitor planted trees once annually for two years between May 15 and September 20 to assess the health of each tree;
- tend each butternut tree planted once a week during the first growing season (May 15 – September 20) which includes maintenance of tree guards, vegetation control and watering; and,
- tend each butternut tree planted in the second growing season as required by completing vegetation control and watering.

Records:

The person must maintain a record of planting, monitoring and tending activities for every planted butternut tree and provide this record to MNR should it be requested. This record must include planting dates, dates and description of monitoring and tending activities and the health status of each tree, including any signs of butternut canker.

IMPORTANT LINKS

For more information about Ontario's species at risk, visit **ontario.ca/speciesatrisk.**

FOR MORE INFORMATION

1-855-613-4256
Email: mnr.rasc@ontario.ca

BHA Report #	455002	Assessment Date(s)	15-Jul-16	Total # Butternut Trees in BHA Report	2
BHA ID #	455	BHA Name	Melissa Fuller		
Landowner / Client Name			Marlwood Golf Club		
Property Location			31 Marlwood Ave., Wasaga Beach		

input field data										automatic calculations from field data						Categories: 1: non-retainable, 2: retainable, 3: archivable				
Tree #	Live Crown %	Tree dbh (cm)	# bole cankers: sooty (S) (will be assigned 2.5 cm per canker)		# bole cankers: open (O) (will be assigned 5 cm per canker)		# root flare (RF) cankers		<40 m from cankered tree? (Y or N)	Circ. (cm) = Pi x dbh	total bole canker width (sooty x 2.5 + open x 5)	total RF canker width (sooty x 2.5 + open x 5)	bole canker % of circ.	RF canker % of circ.	total bole & root canker % of 2xCirc	LC% >/= 50 & BC% = 0	LC% >70 & BRC % <20	LC% >70 & BC % <20	Preliminary tree call	FINAL TREE CALL a Cat 2, dbh>20cm <40m from a Cat 1
			S <2 m	S >2 m	O <2 m	O >2 m	RF S	RF O		Circ (cm)	BC (cm)	RC (cm)	BC%	RC%	BRC%					
1	0	65							N	204.1	0.0	0.0	**0.0**	**0.0**	**0.0**	1	1	1	**1**	**1**
2	30	25	4	2	0	4	0	2	N	78.5	35.0	10.0	**44.6**	**12.7**	**28.7**	1	1	1	**1**	**1**
3										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
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23										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!

BHA Tree Analysis (version: December 2013)

This table is to be completed by a designated Butternut Health Assessor (BHA).

BHA Report #	455002	Assessment Date(s)	23-Aug-17	Total # Butternut Trees in BHA Report	4
BHA ID #	455	BHA Name	Melissa Fuller		
Landowner / Client Name			Marlwood Golf Club		
Property Location			31 Marlwood Ave., Wasaga Beach		

input field data										automatic calculations from field data						Categories: 1: non-retainable, 2: retainable, 3: archivable				
			# bole cankers				# root flare (RF) cankers													
Tree #	Live Crown %	Tree dbh (cm)	sooty (S) (will be assigned 2.5 cm per canker)		open (O) (will be assigned 5 cm per canker)				<40 m from cankered tree? (Y or N)	Circ. (cm) = Pi x dbh	total bole canker width (sooty x 2.5 + open x 5)	total RF canker width (sooty x 2.5 + open x 5)	bole canker % of circ.	RF canker % of circ.	total bole & root canker % of 2xCirc	LC% >/= 50 & BC% = 0	LC% >70 & BRC % <20	LC% >70 & BC % <20	Preliminary tree call	FINAL TREE CALL a Cat 2, dbh>20cm <40m from a Cat 1
			S <2 m	S >2 m	O <2 m	O >2 m	RF S	RF O		Circ (cm)	BC (cm)	RC (cm)	BC%	RC%	BRC%					
1	0	65							N	204.1	0.0	0.0	**0.0**	**0.0**	**0.0**	1	1	1	**1**	**1**
2	30	25	4	2	0	4	0	2	N	78.5	35.0	10.0	**44.6**	**12.7**	**28.7**	1	1	1	**1**	**1**
3	10	12	6	8	1	0	0	0	n	37.68	40.0	0.0	**106.2**	**0.0**	**53.1**	1	1	1	**1**	**1**
4	30	42	4	0	0	4	0	0	n	131.9	30.0	0.0	**22.7**	**0.0**	**11.4**	1	1	1	**1**	**1**
5										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
6										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
7										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!

0cm 3cm 15cm

Butternut Data Collection Form 1 - 2010 Edition

Surveyor ID or BHA # 455

(PLEASE USE BLOCK LETTERS)

Date (dd/mm/yyyy) 14-07-2016

Shaded fields are mandatory for Butternut Health Assessments

Surveyor Contact

First MELISSA Last FULLER

Email MFULLER@AZIMUTHENVIRONMENTAL.COM

Telephone (705) 795-8451 Telephone Other ( ) - x

Property Owner (check if same as surveyor) ☐

First ALEX Last SMARDENKA

or Company

Email

Telephone (705) 351-8674 Telephone Other ( ) - x

Property Owner's Mailing address

Address 31 MARLWOOD AVE Postal Code L9Z 1S8 Prov. ON

City WASAGA BEACH

Tree Location (if different from mailing address)

Address/(911#)

Township Lot Con

City

Directions

☐ Yes ☐ No Can Share Location Information with other Butternut Recovery Organizations?

☐ Yes ☐ No Site visits OK? (prior arrangments will always be made for a site vist)

> (Greater than)
< (Less than)

Butternut Trees Tally by Diameter Class

(Do a dot tally in blank space; write total# in box for each)

Tree Condition	< 3 cm	3-15 cm	16-30cm	>30 cm
Vigorous: > 50% Live Crown Minor or no cankers				
Poor Vigor: <50% Live Crown or >50% Live Crown + heavily cankered stem			1	
Dead				1

Historically, do some trees produce seeds? ☐ Y ☐ N ☒ Unkown

Estimated area containing butternut for properties > 1 acre (0.4 hectares): ☐ Acres ☐ Hectares

Overall Property Description (area(s) containing Butternut)

☐ Rolling Upland ☐ Bottomland
☐ Valley Slope ☐ Variable
☒ Tableland ☐ Unknown

Vegetation Community/ies

☐ Open ☐ Fencerow
☐ Shrubland ☐ Roadside
☒ DeciduousForest ☐ Quary
☐ ConiferForest ☐ UrbanYard
☐ MixedForest ☐ UrbanPark

Other

Soil Drainage

☐ Well Drained
☒ Moderately Drained
☐ Poorly Drained
☐ Unknown

Soil Texture

☐ Clay ☐ Sand
☐ Clay Loam ☐ Variable
☐ Loam ☐ Unknown
☒ Loamy Sand

Soil Depth

☒ > 1metre
☐ 30 - 99cm
☐ < 30cm
☐ Variable
☐ Unknown

Please enter matching numerical page link code on forms 1 and 2

Page Link 455002

(Contact Information follows all applicable privacy policies and guidelines)

Please return forms to:
Forest Gene Conservation Association
Suite 233, 266 Charlotte St.
Peterborough, ON, K9J 2V4
www.fgca.net

49731

Butternut Data Collection FORM 2 (2010 Edition) (PLEASE USE BLOCK LETTERS)

Shaded fields are mandatory for Butternut Health Assessments

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Site Code(A,B,...Z, AA...): ☐☐☐

Surveyor ID or BHA #: 455

Date (dd/mm/yyyy): 14-07-2016

Surveyor Last Name: FULLER

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree #: 001 | Zone: 17 | Easting: 579907 | Northing: 4929365

Crown Class: 1 | Live Crown %: 0 | Main Stem Length(m) Below crown: 8

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: 1 | DBH(cm): 65

Butternut Origin: ☒ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☒ None

Assess below live crown: #Epic-Live: – | #Epic-Dead: – | Bark Type: R | # Callused Wounds: –

	#Open	#Sooty
Root	–	–
=<2m	–	–
>2m	–	–

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species: FRAXAME, ACERSAC

Comments: Dead

Tree #: 002 | Zone: 17 | Easting: 580222 | Northing: 4928712

Crown Class: 3 | Live Crown %: 30 | Main Stem Length(m) Below crown: 8

☒ Twig Dieback ☒ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: 2 | DBH(cm): 25

Butternut Origin: ☒ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☒ None

Assess below live crown: #Epic-Live: 2 | #Epic-Dead: – | Bark Type: S | # Callused Wounds: 1

	#Open	#Sooty
Root	2	0
=<2m	0	4
>2m	4	2

Metres from badly cankered tree: ☐ < 40 ☒ > 40 ☐ None Found

Competing Species: FRAXAME, SDGMAF, BETPAPY

Comments: 1 stem is dead ~20 DBH on dead stem

Tree #: ☐☐☐ | Zone: 1 | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: | DBH(cm):

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

Assess below live crown: #Epic-Live: | #Epic-Dead: | Bark Type: | # Callused Wounds:

	#Open	#Sooty
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

Tree #: ☐☐☐ | Zone: 1 | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: | DBH(cm):

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

Assess below live crown: #Epic-Live: | #Epic-Dead: | Bark Type: | # Callused Wounds:

	#Open	#Sooty
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

Tree #: ☐☐☐ | Zone: 1 | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration

#Stems: | DBH(cm):

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

Assess below live crown: #Epic-Live: | #Epic-Dead: | Bark Type: | # Callused Wounds:

	#Open	#Sooty
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

Please enter matching page link code on forms 1 and 2

Page Link: 455002

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49731

0cm 3cm 15cm

Butternut Data Collection Form 1 - 2010 Edition

Surveyor ID or BHA # 455

(PLEASE USE BLOCK LETTERS)

Date (dd/mm/yyyy) 23 - 08 - 2017

Shaded fields are mandatory for Butternut Health Assessments

Surveyor Contact

First MELISSA Last FULLER

Email MFULLER@AZIMUTENVIRONMENTAL.COM

Telephone (705) 721-8451 Telephone Other ( ) - x

Property Owner

(check if same as surveyor) ☐

First ALEX Last SMARDENKA

or Company

Email

Telephone (705) 351-8674 Telephone Other ( ) - x

Property Owner's Mailing address

Address 31 MARLWOOD AVE Postal Code L9Z 1S8 Prov. ON

City WASAGA BEACH

Tree Location (if different from mailing address)

Address/(911#)

Township Lot Con

City

Directions

☐ Yes ☐ No Can Share Location Information with other Butternut Recovery Organizations?

☐ Yes ☐ No Site visits OK? (prior arrangments will always be made for a site vist)

> (Greater than)
< (Less than)

Butternut Trees Tally by Diameter Class

(Do a dot tally in blank space; write total# in box for each)

Tree Condition	< 3 cm	3-15 cm	16-30cm	>30 cm
Vigorous: > 50% Live Crown Minor or no cankers				
Poor Vigor: <50% Live Crown or >50% Live Crown + heavily cankered stem		1		1
Dead				

Historically, do some trees produce seeds? ☐ Y ☐ N ☐ Unkown

Estimated area containing butternut for properties > 1 acre (0.4 hectares): ☐ Acres ☐ Hectares

Overall Property Description (area(s) containing Butternut)

☐ Rolling Upland ☐ Bottomland
☐ Valley Slope ☐ Variable
☒ Tableland ☐ Unknown

Vegetation Community/ies

☐ Open ☐ Fencerow
☐ Shrubland ☐ Roadside
☒ DeciduousForest ☐ Quary
☐ ConiferForest ☐ UrbanYard
☐ MixedForest ☐ UrbanPark

Other

Soil Drainage

☒ Well Drained
☐ Moderately Drained
☐ Poorly Drained
☐ Unknown

Soil Texture

☐ Clay ☐ Sand
☐ Clay Loam ☐ Variable
☐ Loam ☐ Unknown
☒ Loamy Sand

Soil Depth

☐ > 1metre
☐ 30 - 99cm
☐ < 30cm
☐ Variable
☐ Unknown

Please enter matching numerical page link code on forms 1 and 2

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Butternut Data Collection FORM 2 (2010 Edition)

(PLEASE USE BLOCK LETTERS)

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Shaded fields are mandatory for Butternut Health Assessments

Site Code(A,B,...Z, AA...): 273

Surveyor ID or BHA #: 455

Surveyor Last Name: FULLER

Date (dd/mm/yyyy): 23 - 08 - 2017

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree 1

Tree #: 04 | Zone: 17 | Easting: 580271 | Northing: 4928816

Crown Class: 1 | Live Crown %: 30 | Main Stem Length(m) Below crown: 12

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☒ None

☑ Twig Dieback ☒ Branch Dieback ☐ Defoliation ☐ Discolouration | #Stems: 1 | DBH(cm): 42

Butternut Origin: ☒ Natural ☐ Planted ☐ Unknown

Assess below live crown:

	#Open	#Sooty
1 #Epic-Live		
Ø #Epic-Dead		
Root	1	Ø
B Bark Type		
=<2m	Ø	4
5 # Callused Wounds		
>2m	4	Ø

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species: ACERSAC, ABIESBA, BETPAPY

Bark is quite ridged, difficult to see >2m, many calluses

Tree 2

Tree #: 63 | Zone: 17 | Easting: 579874 | Northing: 4929504

Crown Class: 3 | Live Crown %: 10 | Main Stem Length(m) Below crown: 5

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☒ None

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration | #Stems: 1 | DBH(cm): 12

Butternut Origin: ☒ Natural ☐ Planted ☐ Unknown

Assess below live crown:

	#Open	#Sooty
6 #Epic-Live		
Ø #Epic-Dead		
Root	Ø	Ø
S Bark Type		
=<2m	1	6
3 # Callused Wounds		
>2m	Ø	8

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species: ABIESBA, ACESAC

Tree 3

Tree #: | Zone: 1 | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration | #Stems: | DBH(cm):

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Assess below live crown:

	#Open	#Sooty
#Epic-Live		
#Epic-Dead		
Root		
Bark Type		
=<2m		
# Callused Wounds		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

Tree 4

Tree #: | Zone: 1 | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration | #Stems: | DBH(cm):

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Assess below live crown:

	#Open	#Sooty
#Epic-Live		
#Epic-Dead		
Root		
Bark Type		
=<2m		
# Callused Wounds		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

Tree 5

Tree #: | Zone: 1 | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

☐ Twig Dieback ☐ Branch Dieback ☐ Defoliation ☐ Discolouration | #Stems: | DBH(cm):

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Assess below live crown:

	#Open	#Sooty
#Epic-Live		
#Epic-Dead		
Root		
Bark Type		
=<2m		
# Callused Wounds		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

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APPENDIX H

Water Balance

Technical Memorandum

To:	**Melissa Fuller, Azimuth Environmental Consulting, Inc.**
Re:	**Water Balance Assessment – 445 Golf Course Road, Wasaga Beach**
From:	Jennifer Thompson, Azimuth Environmental Consulting, Inc.
Project:	15-273
Date:	July 11, 2017

Azimuth Environmental Consulting, Inc. (Azimuth) was retained to conduct a desktop water balance assessment for the proposed residential development. The development area is a 7.18 hectare (ha) parcel which is currently part of the Marlwood Golf & Country Club (the "golf course") located at 445 Golf Course Road in Wasaga Beach, Ontario (the "Site"). The proposed development will include fifty-four (54) single family lots which will represent an extension of Masters Lane on the south half of the current golf course parcel. A storm water management (SWM) block is also part of the proposed development plan. The proposed development will be supplied with municipal water and sanitary services.

The primary objective of this evaluation was to review the geological and hydrologic data available for the subject property, and assess the potential for impacts to occur to the existing hydrogeological conditions on a post-development basis.

1.0 EXISTING CONDITIONS

Parcel Information

The Site is currently part of 445 Golf Course Road (PIN 583340254). The Site is bordered by Golf Course Road to the west, residential homes to the south and north, and Marl Lake to the east. The Site is currently occupied by forest vegetation, the entire 13th hole, and portions of the 12th, 14th, 16th, 17th, and 18th hole of the golf course. There are no structures on the Site; however the Site contains a number of golf course ponds ("hazard features") and part of the existing golf course irrigation system.

Soil

The soil map of Simcoe County (Soil Survey Report No. 29, Scale 1:63,360) shows the uppermost soil at the Site to be composed of Minesing marly clay or Tioga sandy loam (Hoffman *et al.*, 1962). Minesing marly clay is classified within hydrologic soil group "C". Group C represent soils which have low infiltration rates when thoroughly wet and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. Tioga sandy loam is classified within hydrologic soil group "A". Group A represents soils with a low runoff potential and high infiltration

rates even when thoroughly wet. They consist chiefly of deep, well to excessively drained sand or gravel.

Physiography

The Ontario Geologic Survey (Chapman and Putnam, 1984) describes the area as being located within the Simcoe Lowlands physiographic region, specifically within the Nottawasaga Basin. The Simcoe Lowlands were at one time part of the floor of glacial Lake Algonquin and its surface beds are therefore deposits of deltaic and lacustrine origin.

Hydrology and Drainage

The topography of the Site is currently flat to rolling, and displays contours ranging between 185 - 189 m above sea level (asl). The Site topography is generally sloped toward the two golf course ponds and forest area along the west Site boundary. The regional topography is sloped toward Marl Lake, which is located about 300 m north east of the proposed development. Marl Lake is drained by Little Marl Creek, which is part of the Lower Nottawasaga River subwatershed and drains into Georgian Bay.

Regional Geology

Surficial material at the Site consists of lacustrine deposits which may be composed of both silt and clay associated with basin or quiet water deposits, or sand, gravelly sand and gravel associated with near shore and beach deposits (Barnett *et al*., 1991). The uppermost bedrock at the Site consists of limestone and shale of the Verulam Formation of the Simcoe Group (OGS, 2016) which is Middle Ordovican in age.

Local Geology

The Ontario Ministry of the Environment and Climate Change (MOECC) Water Well Records were references for any recorded well information in the vicinity of the Subject Site (GIN, 2017; Table 1). Well records can be used to gain subsurface information which can provide insight into geological formations within the area.

Table 1: MOECC Water Well Database Summary[1]

Well ID	Elevation (masl)	Date Drilled	Static Water Level (mbgs)	Depth to Bedrock (m)	Total Depth (m)	Well Type	Primary Use
5729422	186	1992-06-12	9.2	-	41.2	Overburden	Domestic
5734995	186	2000-03-21	4.6	-	13.1	Overburden	Domestic
5726707	186	1990-06-06	9.1	-	41.5	Overburden	Domestic
5733732	197	1998-08-17	11.6	-	53.0	Overburden	Domestic
5731265	193	1994-11-24	10.1	-	44.5	Overburden	Domestic
5709060	191	1971-08-06	-	74.4	79.3	Bedrock	Abandoned
5709061	191	1971-08-13	-	-	54.9	Overburden	Test Hole
5733570	186	1998-06-24	8.5	-	41.4	Overburden	Domestic

Notes: [1] - values rounded for presentation purposes

The surrounding wells in the MOECC database were drilled primarily for domestic use, with one well listed for test hole purposes and one well listed as abandoned. In general, wells were advanced primarily through a thick (11-25 m) surficial sand unit overlying a clay or silt layer which overlies a second, confined sand or gravel unit. Bedrock was encountered in one record at a depth of 74 mbgs. The static water table upon borehole completion was between 4.6 – 11.6 mbgs with an average depth of 8.9 mbgs.

Geotechnical Program

A preliminary geotechnical program was completed at the Site by SPL/WSP in November 2015. According to Burnside (2017), the results of the program indicate the subsurface geology to be composed of sand with layers of sand/gravel and marl at varying depths, although not in all boreholes. The marl was reportedly shallow enough for footings to extend below the bottom of the layer with the exception of one location (BH15-04) where the marl extended to 2.0 mbgs.

Ground water measurements were collected at three locations (BH15-01, BH15-05, & BH15-12) on a monthly basis between October 2015 and August 2016. A summary of the water measurements are found in the below Table 2:

Table 2: Summary of Ground Water Measurements (Burnside, 2017)

Borehole ID	High Ground Water Level		Low Ground Water Level		Range (m)
	mbgs	masl	mbgs	masl	
BH15-01	2.37	186.63	3.13	185.87	0.76
BH15-05	0.99	186.01	1.48	185.52	0.49
BH15-12	1.44	188.56	2.20	187.80	0.76

The high ground water level at the Site is therefore between 0.99 – 2.37 mbgs.

2.0 WATER BALANCE

In order to determine the potential changes to the natural ground water recharge conditions, a pre- and post-development water balance assessment has been completed using the Thornthwaite and Mather method (1957). The "pre-development" case is based on the existing conditions, i.e. golf course and natural forest. This method evaluated evapotranspiration based on precipitation and temperature. Residual soil saturation is a function of topography and soil type. Monthly data are tabulated from daily average temperature and precipitation, and the water budget is a continuous calculation over the period of record. To clarify, the method and approach used by many individuals in examining infiltration resets the annual conditions (moisture deficit, snow storage, etc.) over the winter months because of the general lack of infiltration during the frost period. However, we maintain those records and carry them forward from month to month during the entire period of record.

Values were determined on a monthly basis, compiled from daily Environment Canada meteorological data station located in Collingwood, Ontario between 1960 and 2010 (Collingwood Climate Data). The calculations are based on the average conditions during this period. The average precipitation was 888 millimeters (mm), rainfall was 656 mm, evapotranspiration was 495 mm, and the surplus was 392 mm per year.

Land Use

Pre-Development Conditions

Using an aerial image, the Site was classified according to land use/ vegetation type. Land within the pre-development area can be classified as forest, pond, and landscaped grass/meadow (Table 3).

Table 3: Pre-Development Area Classification

Land Use	Land Area (m^2)
Forest	28,580
Pond	1,610
Landscaped Grass/Meadow	41,610
Total	**71,800**

Notes – values are estimated and are rounded for presentation purposes

The pre-development area contains a percent impervious cover (pond) of 2%.

Post-Development Conditions

Based on the work completed by Burnside (2017) the post-development Site will have a percent impervious of 50%. To determine the post-development land use designations, the following assumptions have been made:

- The average house lot coverage is assumed to be 40%;
- The average lot frontage is assumed to be 18.5 m and the average lot depth is assumed to be 35 m for an average lot size of 647.5 m^2;
- The average house footprint is 260 m^2 for a total house area of 14,040 m^2; and
- The pervious land area is assumed to be composed of landscaped grass and/or meadow land associated with lawn and landscaped areas.

Land within the post-development area can be classified as impervious and landscaped grass/meadow (Table 4).

Table 4: Post-Development Area Classification

Land Use	Land Area (m^2)
Impervious	35,900
Landscaped Grass/Meadow	35,900
Total	**71,800**

Notes – values are estimated and are rounded for presentation purposes

Runoff from the Site will reportedly be conveyed from all impervious areas to the internal storm sewer system or to a rear lot soak-away pit within each single detached lot. The soak away pits are reportedly 1.0 m x 1.5 m x 1.5 m (2.25 m^3) and will be placed within the lowest rear yard corner. The proposed storm sewer system will drain into an onsite SWM pond prior to discharge into Marl Lake.

Infiltration

Infiltration is generated one of two ways: (1) directly from rainfall impact on pervious surfaces; and (2) indirectly when runoff from impervious surfaces is diverted into adjacent naturalized areas.

Infiltration is dependent on the land use, slope, and soil texture of the underlying soil, among other things. To determine the total volume of direct infiltration, an infiltration coefficient (IC) was assigned to each pervious land use according to values obtained from the MOEE Hydrogeological Technical Information Requirements for Land Development Applications (MOECC, 1995) and summarized in Table 5.

Table 5: Assigned Infiltration Coefficients

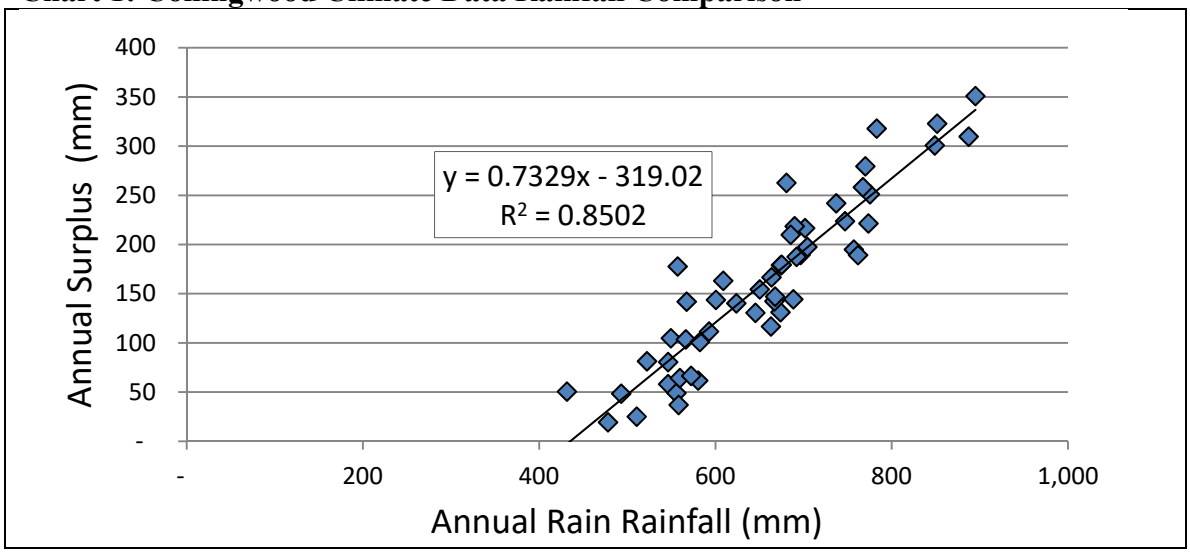
Land Use	Runoff Coefficient	Infiltration Coefficient (IC)
Pond	1.00	0.00
Landscaped Grass/Meadow[1]	0.30	0.75
Forest [2]	0.10	0.90

Notes 1 – Assuming lawn land use,, flat topography, and sand soil
2 - Assuming woodland, flat topography, and sand soil

To calculate the indirect infiltration numerically, the runoff from hard surfaces that has been directed to natural areas is treated as a supplement to precipitation. A series of sensitivity analyses was completed to evaluate water surplus as a function of annual and monthly precipitation (data provided by Environment Canada – Collingwood Data). Surplus is directly proportional to both rainfall and total precipitation, and within a narrow statistical range. Comparison based on rain surplus and total rainfall is most conservative compared to total surplus or total precipitation since it negates the influence of snow and the potential for infiltration through the winter. As shown below in Chart 1, rain surplus increases at a rate of approximately 73% of total rain increase.

This methodology identifies a single value for infiltration / runoff partitioning and this is incorporated here. Again, this is conservative since it assumes the same proportion of surplus is required to overcome soil moisture deficit, however, it is already met. Based on Chart 1, it is assumed that discharging pavement run-off to grassed areas will capture 73% of the potential infiltration loss.

Chart 1: Collingwood Climate Data Rainfall Comparison



Pre-Development Infiltration

To determine the pre-development direct infiltration amount, the area of each land use was multiplied by the surplus amount (392 mm) and by the infiltration coefficient. The total direct pre-development infiltration for the subject property is ~ 22,315 $m^{3.}$ There is no indirect infiltration in the pre-development scenario. The total infiltration for the pre-development scenario is therefore 22,315 m^3.

Post-Development Infiltration

The post-development direct infiltration was determined using the same steps as outlined above. The total direct infiltration for the post-development scenario is 10,555 m^3. This represents a deficit of 11,755 m^3 compared to the pre-development infiltration volume.

Indirect infiltration from pervious surfaces is therefore required to supplement the post-development infiltration volume using low impact development (LID). To determine the post-development indirect infiltration amount, it is assumed that runoff from the roof of each home is directed on to the adjacent pervious grassed lawn. The indirect infiltration is therefore found by multiplying the total house area (14,040 m^2) area by the surplus (392 mm), by the rainfall recovery from Chart 1 (73%) and by the infiltration coefficient of the receiving land use (landscaped grass, IC of 0.75). The infiltration obtains from diverting rooftop leaders on to pervious areas is ~3,015 m^3. This represents a total infiltration amount of 13,570 m^3.

The proposed development will also include rear lot catch basins/soak away pits within each backyard to capture additional runoff from the rear yard area. No detailed design for

these soak away pits have been provided. However, if 250 m^2 of each rear lot contributed runoff toward the soak away pit, and that all of this runoff will infiltrate, than an additional 1,325 m^3 of infiltration can be added to the post-development infiltration volume. It should be noted that this is an estimate and the actual volume will depend on the detailed design considerations. Burnside (2017) also indicates that a vegetated swale is a good fit for the SWM pond outlet into Marl Lake. Incorporating both of these features will increase the post-development infiltration volume and provide the additional benefit of reducing phosphorus runoff. The volume of infiltration captured will depend on the size and type of area which will drain into each soak away pit as well as the soak away pit construction.

3.0 SUMMARY AND CONCLUSIONS

Using the climate model data and calculations mentioned above, pre- and post-development infiltration values have been determined (Table 6).

The amount of direct infiltration has decreased from pre- to post-development by approximately 11,755 m^3 due to the increase in impervious cover associated with paved driveways, paved roads, and residences. The percent impervious increased from 2% in the pre-development condition to 50% in the post-development condition.

The amount of indirect infiltration actually increased from pre- to post-development by approximately 3,015 m^3 due to the construction of the homes. Since it was assumed that the roof top water would be diverted into an adjacent natural area, the addition of the homes resulted in more indirect infiltration to the subsurface. Additional indirect infiltration is anticipated through incorporating rear lot soak away trenches (1,325 m^3) and/or a drainage swale associated with the SWM pond outlet.

The total pre-development infiltration volume is 22,310 m^3, the post-development infiltration without mitigation volume is 10,555 m^3, and after incorporating rooftop diversion and an estimate of the volume obtained by the soak away pits, the post-development infiltration volume is 14,895 m^3.

Table 6: Water Balance Summary

Parameters	Values
Average Annual Climatic Data	
Rainfall (mm)	656
Total Precipitation (mm)	888
Evapotranspiration (mm)	495
Surplus (mm)	392
Site Area (m^2)	71,800
Pre-Development	
Direct Infiltration (m^3/year)	22,310
Indirect Infiltration (m^3/year)	-
Total	22,310

Table 6: Water Balance Summary

Parameters	Values
Post Development	
Direct Infiltration (m^3/year)	10,555
Indirect Infiltration (m^3/year)	3,015
Soak Away Pit (estimate; m^3/year)	1,325
Total	14,895
Comparison	
Pre-Development and Post Development Differential (m^3)	-7,415
Pre-Development and Post Development Differential (mm)	- 103
Pre-Development and Post Development Differential (%)	-33

As summarized in Table 6, there will be a reduction of infiltration between the pre- and post-development conditions. The reduction in infiltration will correspond to an increase in runoff. The proposed SWM strategy is to collect storm water runoff in the onsite SWM pond which will then discharge into Marl Lake after appropriate quality and quality control treatment.

Based upon our assumptions above and interpretation of the available data it is concluded that the present hydrogeological conditions of the Site and surrounding area have the potential to experience a small change due to the proposed development if additional LIDs are not incorporated. The potential change would be a local lowering of the water table by 25 to 50mm, and the change is limited by the elevation of Marl Lake. However, the additional runoff into Marl Lake from the on Site SWM pond will likely offset any decrease in infiltration due to the proximity of the Site and subsurface connection to this feature.

4.0 REFERENCES

Barnett, P.J., Cowan, W.R. and Henry, A.P. 1991. Quaternary Geology of Ontario, Ontario Geological Survey, Map 2556, Scale 1:1,000,000.

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R. J. Burnside & Associates Limited (Burnside). 2017. Functional Servicing and Stormwater Management Report, Residential Subdivision Extension of Masters Lane (DRAFT).

Thornthwaite, C.W., and Mather, J.R., 1957. Instructions and tables for computing potential evapotranspiration and the water balance. Climatology, vol. 10.