



Hutchinson

Environmental Sciences Ltd.

Environmental Impact Study for
Proposed Redevelopment of
Mansfield Ski Club

Prepared for: Mr. Finley McEwen, Mansfield Ski Club

Job #: J180029

January 10, 2019



January 10, 2019

HESL Job #: J180029

Mr. Finley McEwen
Mansfield Ski Club
20 Queen St. West, 5th Floor
Toronto, ON M5H 3R4

Dear Mr. McEwen:

Re: Environmental Impact Study for Proposed Redevelopment of Mansfield Ski Club

Hutchinson Environmental Sciences Ltd. (HESL) is pleased to submit the following Environmental Impact Study (EIS) for proposed redevelopment and expansion at the Mansfield Ski Club.

This EIS (i) characterizes natural heritage features and functions on the ski club property, (ii) identifies potential negative impacts of the proposed development on them, (iii) recommends measures to avoid and mitigate these impacts, and (iv) evaluates conformity of the project with relevant environmental legislation and policy. The EIS was conducted through a review of background information, as well as field investigations undertaken in the 2018 field season to describe plant and wildlife communities and habitats on the property.

We trust that this report will assist you through the approval process for the proposed development. Please feel free to contact me if you have any questions or concerns.

Sincerely,
Per. Hutchinson Environmental Sciences Ltd.

Brent Parsons, M. Sc.
Senior Scientist
brent.parsons@environmentalsciences.ca



Environmental Impact Study, Mansfield Ski Club Redevelopment

Signatures

Report Prepared by:



Andrea Smith, Ph.D.
Senior Scientist



Brent Parsons, M.Sc.
Senior Scientist



Executive Summary

Hutchinson Environmental Sciences Inc. (HESL) was retained by the Mansfield Ski Club to complete an Environmental Impact Study (EIS) for proposed commercial and residential redevelopment and expansion of the existing ski hill, located at 628213 15th Side Road in Mulmur Township, Dufferin County. The proposed redevelopment consists of three main components:

- (i) expansion of the development footprint around the existing Mansfield ski chalet, to include additional landscaping and parking, as well as townhomes, commercial retail, wastewater treatment and stormwater storage;
- (ii) placement of engineered fill at the top of the existing ski hill to raise the grade by approximately 25 m; and
- (iii) construction of a snow-making pond at the bottom of the ski hill adjacent to 17th Side Road.

The purpose of the EIS is to protect natural heritage features, areas and associated functions from negative impacts of the proposed development and site alteration. The EIS was conducted through background review and field investigations undertaken in the summer of 2018 to collect data on vegetation communities, breeding birds, habitat for species at risk, watercourses, and significant wildlife habitat (SWH).

The Mansfield Ski Club is situated within the Headwaters Region of southern Ontario, an area of rolling hills, large forest tracts and agricultural landscapes. The property is partially within the Greater Golden Horseshoe (GGH) Natural Heritage System (NHS), and close to a provincially significant wetland, an Earth Science Area of Natural and Scientific Interest (ANSI) and two Life Science ANSIs. Much of the natural habitat on site has undergone significant alteration in the past to accommodate the ski facilities and is characterized by open grassland punctuated by woodland strips. The Pine River meanders along the northeast side of the property, and a naturalized wetland (formed from an old snow-making pond) lies below the ski hill. Although the site experiences a high degree of human activity during the winter months, it is relatively empty of humans once the ski season is over. During the spring and summer, the property supports a diversity of vegetation and wildlife communities.

A total of 116 plant species were recorded on the property, including several invasive species (e.g., Spotted Knapweed, Reed Canary Grass, Common Reed). No rare or sensitive species were documented. The existing chalet area contained meadow and meadow marsh vegetation communities. The top of the ski hill was characterized by meadow habitat, while the proposed location for the snow-making pond contained a Reed Canary Grass meadow marsh.

Thirty-four bird species were recorded on the property, including three species at risk (Eastern Wood-pewee, Barn Swallow, and Eastern Meadowlark). Monarch Butterfly (also a species at risk) was documented on site as well. Although not encountered during field surveys, nine additional species at risk could potentially occur in the open meadows, woodland edges and wetlands present at the ski hill.

An ephemeral watercourse drains stormwater from the ski chalet parking lot southeast to a small cattail marsh. The watercourse provides limited ecological function and does not support fish habitat.



Environmental Impact Study, Mansfield Ski Club Redevelopment

No candidate or confirmed SWH was identified within the three proposed redevelopment areas based on a review of the species and vegetation communities described on site. However, SWH may occur in areas adjacent to the subject property.

The redevelopment at the top of the ski hill will not result in any significant changes to land use at this location and is not anticipated to cause any adverse effects on natural heritage features and functions. The expansion of the chalet development will directly impact an ephemeral watercourse, as well as meadow and wetland habitat. However, the wetland and watercourse were both formed as a result of stormwater drainage from the chalet's parking lot. Proper development and maintenance of the stormwater pond associated with the proposed redevelopment at this location could provide net ecological benefits despite the loss of the small wetland and watercourse.

The original proposed location for the snow-making pond would directly affect habitat of a threatened species (Eastern Meadowlark) and wetland habitat. We recommend relocating the new snow-making pond to an area of disturbed habitat to the northwest of the marsh and maintaining a 30m buffer between the pond footprint and the adjacent meadow marsh and naturalized wetland.

We recommend that several practices be incorporated into the planning and implementation of redevelopment and expansion activities to minimize or avoid negative impacts on natural features and their ecological functions, including careful site selection, timing of construction and maintenance activities, vegetation management, erosion and sediment control, and invasive species management.



List of Abbreviations

ANSI	Area of Natural and Scientific Interest
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CVC	Credit Valley Conservation
ECCC	Environment and Climate Change Canada
ELC	Ecological Land Classification
EIS	Environmental Impact Study
GGH	Greater Golden Horseshoe
HA	Hectare
HESL	Hutchinson Environmental Sciences Ltd.
MMAH	Ministry of Municipal Affairs and Housing
NHS	Natural Heritage System
NVCA	Nottawasaga Valley Conservation Authority
OBBA	Ontario Breeding Bird Atlas
OMNR	Ontario Ministry of Natural Resources
OMNRF	Ontario Ministry of Natural Resources and Forestry (OMNR renamed in 2014)
PPS	Provincial Policy Statement
SARA	Species at Risk Act
SWH	Significant Wildlife Habitat
TRCA	Toronto and Region Conservation Authority



Table of Contents

Transmittal Letter

Signatures

Executive Summary

List of Abbreviations

1.	Introduction	1
2.	Policy Framework	3
2.1	Federal Policy	3
2.1.1	<i>Species at Risk Act (2002).....</i>	3
2.1.2	<i>Migratory Birds Convention Act (1994).....</i>	3
2.2	Provincial Policy	3
2.2.1	<i>Provincial Policy Statement (2014).....</i>	3
2.2.2	<i>Endangered Species Act (2007).....</i>	4
2.2.3	<i>Fish and Wildlife Conservation Act (1997).....</i>	4
2.2.4	<i>Growth Plan for the Greater Golden Horseshoe (2017)</i>	4
2.2.5	<i>Conservation Authorities Act (1990)</i>	5
2.3	Municipal Policy	6
2.3.1	<i>Dufferin County Official Plan (2017)</i>	6
2.3.2	<i>Township of Mulmur Official Plan (2010).....</i>	6
3.	Methodology.....	9
3.1	Background Review	9
3.2	Field Investigations	9
3.2.1	<i>Vegetation Communities.....</i>	9
3.2.2	<i>Breeding Birds.....</i>	10
3.2.3	<i>Species at Risk</i>	10
3.2.4	<i>Watercourse Assessment.....</i>	10
3.2.5	<i>Significant Wildlife Habitat</i>	11
4.	Existing Natural Heritage Conditions	12
4.1	Vegetation Communities.....	12
4.1.1	<i>Existing Chalet Area</i>	12
4.1.2	<i>Top of Ski Hill.....</i>	12
4.1.3	<i>Snow-making Pond.....</i>	13
4.2	Breeding Birds.....	18
4.3	Species at Risk	21
4.4	Watercourse Assessment	22
4.5	Significant Wildlife Habitat	26
5.	Impact Assessment	26
5.1	Habitat of Species at Risk.....	26
5.1.1	<i>Alternative Location for the Snow-making Pond.....</i>	28
5.2	Wetlands	29
5.3	Watercourse.....	29
5.4	Redevelopment Alternatives	29
6.	Recommended Avoidance and Mitigation Measures.....	34



Environmental Impact Study, Mansfield Ski Club Redevelopment

6.1	Site Selection	34
6.2	Timing	34
6.3	Preservation and Planting of Vegetation	35
6.4	Erosion and Sediment Control Plan	35
6.5	Buffers	35
6.6	Invasive Species Management	36
7.	Conclusions	36
8.	References	38

List of Figures

Figure 1.	Mansfield Ski Club Study Area and Proposed Redevelopment.	2
Figure 2.	The Greater Golden Horseshoe Natural Heritage System in Relation to the Mansfield Ski Club.	8
Figure 3.	Vegetation Communities.....	14

List of Tables

Table 1.	Habitat Description and Availability for Species at Risk with Potential to Occur on the Mansfield Property.....	21
Table 2.	Stream Permanency Characteristics (Irwin et al. 2013).	25
Table 3.	Classification of Drainage Features (TRCA and CVC 2014).	25
Table 4.	General Habitat Descriptions for Barn Swallow and Eastern Meadowlark.....	27
Table 5.	Natural Heritage Constraints on the Property.....	30

Appendices

- Appendix A. Plant List for the Mansfield Ski Club.
- Appendix B. Breeding Bird List for the Mansfield Ski Club.



Environmental Impact Study, Mansfield Ski Club Redevelopment

1. Introduction

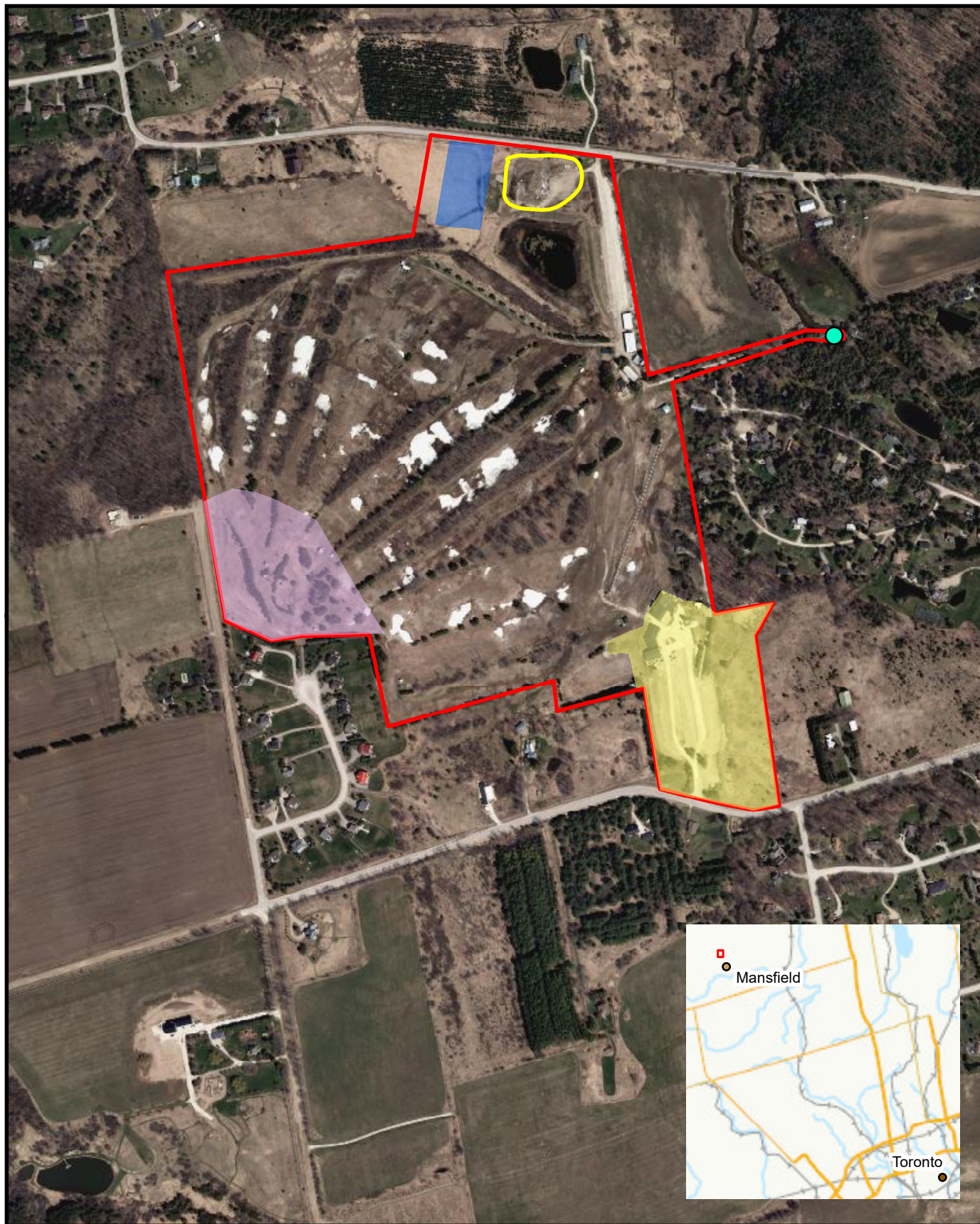
Hutchinson Environmental Sciences Inc. (HESL) was retained by the Mansfield Ski Club to complete an Environmental Impact Study (EIS) for proposed commercial and residential redevelopment and expansion of the existing ski hill, located at 628213 15th Side Road in Mulmur Township, Dufferin County (Figure 1). The proposed redevelopment consists of three main components:

- (i) expansion of the development footprint around the existing Mansfield ski chalet, to include additional landscaping and parking, as well as townhomes, commercial retail, wastewater treatment and stormwater storage;
- (ii) placement of engineered fill at the top of the existing ski hill to raise the grade by approximately 25 m; and
- (iii) construction of a snow-making pond at the bottom of the ski hill adjacent to 17th Side Road.

An EIS is required prior to the approval of *Planning Act* (1990) applications for development and site alteration. The purpose of an EIS is to protect natural heritage features, areas and associated functions from negative impacts of the proposed development and site alteration. The EIS should

- identify and describe natural features and ecological functions and evaluate the suitability of the proposed development;
- recommend design and mitigation measures to minimize potential negative impacts on natural features and ecological functions;
- recommend appropriate buffers (including vegetation protection zones) to protect adjacent lands; and
- demonstrate that the project conforms with relevant municipal, provincial and federal legislation and policy (Township of Mulmur 2010; Dufferin County 2017).





- Study Area
- Alternative location for snow-making pond
- Pumphouse
- Ski chalet development

- Construction of snow-making pond
- Placement of fill at top of ski hill



0 0.125 0.25
km

Scale = 1:10,000

Project #:	180029	Projection:	Mercator
Drafted:	K. Hadley	Datum:	WGS 1984
Reviewed:	A. Smith	Date:	Jan 11, 2019



Figure 1

Mansfield Ski Club Study
Area and Proposed
Redevelopment

2. Policy Framework

The following legislation and policy apply to the area encompassing the proposed development and adjacent lands.

2.1 Federal Policy

2.1.1 *Species at Risk Act* (2002)

The federal *Species at Risk Act* (SARA; 2002) prohibits

- The killing, harm, harassment, capture, possession, collection or trade of an individual of a wildlife species listed as extirpated, endangered or threatened under the Act; and
- The damage or destruction of its residence or critical habitat.

SARA applies to all species listed as extirpated, endangered or threatened occurring on federal lands, and to listed aquatic species and bird species covered by the *Migratory Birds Convention Act* (1994) wherever they occur in Canada.

2.1.2 *Migratory Birds Convention Act* (1994)

Under the *Migratory Birds Convention Act* (1994) it is illegal to disturb or destroy eggs and nests of migratory bird species listed under Article I of the Migratory Birds Convention, and illegal to hunt listed species without a permit.

2.2 Provincial Policy

2.2.1 Provincial Policy Statement (2014)

The Provincial Policy Statement (PPS; MMAH 2014) provides policy direction to regional and local municipalities regarding land use planning and development under the provincial *Planning Act* (1990). Policy 2.1 of the PPS addresses protection of natural features and areas. Under this policy, development and site alteration are not permitted in certain natural heritage features and adjacent lands unless specific provisions are satisfied. In particular, development and site alteration are prohibited in

- Significant wetlands;
- Significant wildlife habitat (SWH);
- Significant areas of natural and scientific interest (ANSIs); and
- Adjacent lands to these features and areas

unless it can be demonstrated that there will be no negative impacts on the natural features or their ecological functions. In addition, development and site alteration are prohibited in

- Fish habitat; and
- Habitat of endangered and threatened species



Environmental Impact Study, Mansfield Ski Club Redevelopment

except in accordance with provincial and federal requirements. Furthermore, development and site alteration are prohibited in adjacent lands to fish habitat unless it can be demonstrated that there will be no negative impacts on its features and functions.

Provincially significant wetlands are designated by the Ontario Ministry of Natural Resources and Forestry (OMNRF), while municipalities can define wetlands of regional or local significance. The OMNRF also designates ANSIs as provincially, regionally or locally significant (only provincially significant are covered under the PPS). OMNRF is responsible for approving the identification of significant habitat for endangered and threatened species within a municipal planning area or a proposed development area. The protection of fish and fish habitat is governed by the federal government. The identification and protection of remaining significant natural heritage features is the responsibility of the municipality or other planning authority.

The Terra Nova Wetland Complex, a provincially significant wetland, is situated to the north of the property, more than 120 m away. Three ANSIs are also located nearby, but are all more than 120 m away from the property: the Pine River Valley Earth Science ANSI is situated to the northwest, the Terra Nova Forests Life Science ANSI is situated to the west, and the Oak Ridges South Slope Forests Life ANSI is to the east (OMNRF 2014).

2.2.2 *Endangered Species Act (2007)*

Ontario's *Endangered Species Act (2007)* prohibits

- The killing, harm, harassment, or capture of a living individual belonging to a species listed as endangered or threatened under the Species at Risk in Ontario List; and
- The damage or destruction of its habitat.

2.2.3 *Fish and Wildlife Conservation Act (1997)*

Ontario's *Fish and Wildlife Conservation Act (1997)* prohibits the destruction of nests and eggs of wild birds (not including species subject to the federal *Migratory Birds Convention Act* or the following exempted species: American Crow, *Corvus brachyrhynchos*; Brown-headed Cowbird, *Molothrus ater*; Common Grackle, *Quiscalus quiscula*; House Sparrow, *Passer domesticus*; Red-winged Blackbird, *Agelaius phoeniceus*; and European Starling, *Sturnus vulgaris*).

2.2.4 *Growth Plan for the Greater Golden Horseshoe (2017)*

The Growth Plan for the Greater Golden Horseshoe (GGH) provides a framework to manage population growth and development in the GGH. The Plan supports the PPS through the recognition that natural features and areas need to be protected and managed as part of planning for future growth. The Plan includes a Natural Heritage System (NHS) comprised of core natural areas linked by natural corridors to protect natural heritage and biodiversity in the region. Municipalities must incorporate the NHS into their official plans and apply relevant policies to maintain, restore or enhance diversity and connectivity of the system and the long-term ecological or hydrological functions of its natural features and areas (Government of Ontario 2017).

New development or site alteration within the NHS must demonstrate that



Environmental Impact Study, Mansfield Ski Club Redevelopment

- it will have no negative impacts on key natural heritage features¹ or key hydrologic features² or their functions;
- connectivity along the system and between key features located within 240 m of each other will be maintained or, where possible, enhanced;
- removal of other natural features not identified as key natural heritage features and key hydrologic features is avoided, as much as possible;
- the disturbed area (including any buildings and structures) shall not exceed 25% of the total developable area, and the impervious surface will not exceed 10% of the total developable area; and
- at least 30% of total developable area will remain or be restored to natural self-sustaining vegetation.

New development or site alteration within 120 m of a key natural heritage feature within the NHS (or key hydrologic feature) requires the completion of a natural heritage evaluation, which identifies a vegetation protection zone that is

- wide enough to protect the key natural heritage feature (or key hydrologic feature) and its functions from impacts of the proposed development;
- comprised of natural and self-sustaining vegetation;
- for key hydrologic features, no less than 30 m from its outside boundary;
- where development or site alteration is not permitted (Government of Ontario 2017).

The northern portion of the subject property is situated within the GGH NHS, including the area proposed for the new snow-making pond at the bottom of the ski hill (Figure 2). The area proposed for placement of fill at the top of the ski hill is within 120 m of the GGH NHS (but not within 120 m of a key natural heritage or key hydrologic feature in the NHS). The area proposed for expansion of the development footprint around the existing chalet is more than 120 m from the GGH NHS.

2.2.5 *Conservation Authorities Act* (1990)

The Nottawasaga Valley Conservation Authority (NVCA) regulates development within its jurisdiction through Ontario Regulation 172/06 under the *Conservation Authorities Act*. Development is prohibited in areas that are

- Adjacent or close to the shoreline of the Great Lakes – St. Lawrence River system or inland lakes that may be affected by flooding, erosion or dynamic beaches;
- river or stream valleys;
- hazardous lands;
- wetlands; or
- other areas where it could interfere with hydrologic functions of a wetland (including within 120 m of all provincially significant wetlands and wetlands larger than 2 ha, and areas within 30 m of wetlands smaller than 2 ha)

¹ Key natural heritage features are habitat of endangered and threatened species, fish habitat, wetlands, life science ANSIs, significant valleylands, significant woodlands, SWH, sand barrens, savannahs, tallgrass prairies, and alvars

² Key hydrologic features are permanent and intermittent streams, inland lakes and their littoral zones, seepage areas and springs, and wetlands



Environmental Impact Study, Mansfield Ski Club Redevelopment

unless the development will not affect control of flooding, erosion, dynamic beaches, pollution or conservation of land.

Most of the subject property lies within NVCA regulated area (NVCA 2014-2018), including the marsh to the southeast of the ski chalet and the meadow marsh and naturalized wetland at the bottom of the ski hill, all of which are smaller than 2 ha in size.

2.3 Municipal Policy

2.3.1 Dufferin County Official Plan (2017)

The County's Official Plan (Section 5.3) supports the natural heritage provisions set out by the PPS by prohibiting development and site alteration in

- significant wetlands;
- significant woodlands, significant valleylands, SWH, significant ANSIs, unless it is demonstrated that there will be no negative impacts on the natural features or their ecological functions;
- unevaluated wetlands or locally or regionally significant wetlands, unless it is demonstrated that there will be no negative impacts on the natural features or their ecological functions;
- fish habitat, except in accordance with provincial and federal requirements;
- significant habitat of endangered and threatened species, except in accordance with provincial and federal requirements;
- adjacent lands to natural heritage features and areas listed above, unless it is demonstrated that there will be no negative impacts on the natural features or their ecological functions. Adjacent lands are defined as within 120 m of significant wetlands, significant woodlands, significant valleylands, SWH, significant ANSIs – Life Science, unevaluated wetlands, locally or regionally significant wetlands, fish habitat, and significant habitat of species at risk, and within 50 m of significant ANSIs – Earth Science.

Dufferin County has established a natural heritage system to protect the natural heritage features and areas identified in Section 5.3.

According to the County's Official Plan mapping the subject property falls under the Countryside Area land use designation and is outside the Niagara Escarpment Plan area (Schedules A and B). The property is near a provincially significant wetland (the Terra Nova Wetland Complex), a significant Earth Science ANSI, and two significant Life Science ANSIs, all of which are more than 120 m from the Ski Hill's boundary on 17th Side Road (Schedule E).

2.3.2 Township of Mulmur Official Plan (2010)

The Township's Official Plan also supports the natural heritage provisions set out by the PPS (2014) through the protection, maintenance and enhancement of natural areas features and functions. Under Section 5.18, the Official Plan recognizes the importance of protecting significant natural features and areas from the cumulative impacts of development and site alteration due to multiple or successive activities. Section 5.18 also emphasizes the need to protect the diversity and connectivity of natural features, the long-term ecological function and biodiversity of natural heritage systems, and the linkages between and among natural heritage features and areas, surface water features, and ground water features.



Environmental Impact Study, Mansfield Ski Club Redevelopment

Development and site alteration is prohibited in

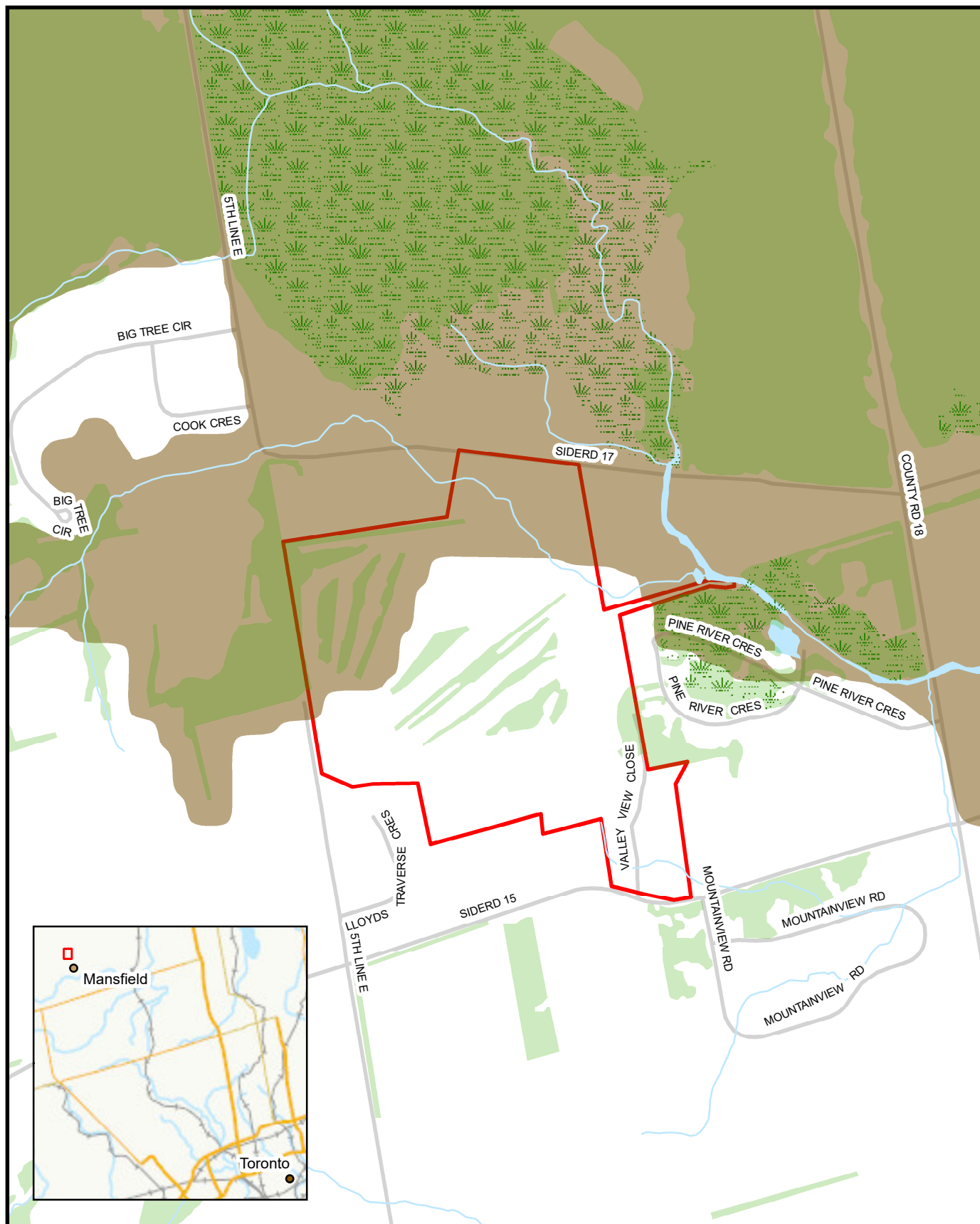
- significant wetlands;
- significant habitat of endangered and threatened species;
- significant woodlands, significant valleylands, SWH, significant ANSIs, unless it can be demonstrated that there will be no negative impact on these natural features or their ecological functions;
- fish habitat except in accordance with provincial and federal requirements;
- adjacent lands to the natural heritage features and areas listed above, unless it is demonstrated that there will be no negative impacts on the natural features or their ecological functions. Adjacent lands are defined as within 120 m of these features.

For wetlands that have not been designated as significant, development within 30 m of the wetlands is permitted only if it can be demonstrated that the activity will not result in

- loss of wetland functions;
- subsequent demand for future development which will negatively affect the existing wetlands functions;
- conflict with existing site-specific wetland management practices; and
- loss of contiguous wetland area.

No natural heritage features are identified on the subject property under the Township's Official Plan mapping (Schedules B1 and B2).





- Rivers
- Waterbodies
- Wooded area
- Natural heritage system
- ~ Wetlands
- Study area
- Roads



0 0.25 0.5
km

Scale = 1:15,000



Project #: 180029 Projection: Mercator
 Drafted: K. Hadley Datum: WGS 1984
 Reviewed: A. Smith Date: Nov 27, 2018

Figure 2

Greater Golden Horseshoe
 Natural Heritage System in
 Relation to the Mansfield
 Ski Club

3. Methodology

3.1 Background Review

We conducted a background review of information relating to the natural and physical setting of the subject property to scope field efforts and to gain a general overview of natural heritage features present and potential species of conservation concern that could occur in the area. Information sources included

- Email and telephone correspondence with the NVCA (Knapp pers. comm.; Francis pers. comm.);
- Email and telephone correspondence with OMNRF Midhurst Office (Findlay pers. comm.; Shirley pers. comm.);
- Federal Species at Risk Public Registry (Government of Canada 2018);
- OMNRF Natural Heritage Information Centre records of species at risk and natural areas;
- OMNRF's Natural Heritage Reference Manual and Significant Wildlife Habitat resource material (OMNR 2000, 2010; OMNRF 2014, 2015);
- Ontario Breeding Bird Atlas (Bird Studies Canada et al. 2006);
- Ontario Butterfly Atlas (Toronto Entomologists' Association 2018);
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2018);
- eBird (eBird 2012);
- Dufferin County Official Plan (2017);
- Township of Mulmur Official Plan (2010);
- Aerial photography and topographic maps of the subject property.

3.2 Field Investigations

We conducted field work in the summer of 2018 to characterize the natural heritage features and their ecological functions on the property. We focused on collecting data on (i) vegetation communities, (ii) breeding birds, (iii) habitat for species at risk, (iv) watercourses, and (iv) significant wildlife habitat. Incidental observations of wildlife species were made during all field visits.

Species of conservation concern, including species at risk, tend to be hard to detect in surveys because they often occur in low numbers and may be cryptic or elusive. Determining the presence or absence of these species from surveys alone may thus result in an underestimate of biodiversity. Many species of conservation concern are associated with specific types of structural habitat and ecological communities (e.g., caves or cliffs, particular Ecological Land Classification [ELC] ecosites). These habitat features may therefore be used as indicators of the potential presence of species of conservation concern. As a result, we combined wildlife surveys with documentation of habitat and ecological communities to evaluate the potential for species of conservation concern to occur on the subject property.

3.2.1 Vegetation Communities

We conducted plant surveys to characterize vegetation communities using standard ELC techniques (Lee et al. 1998) on August 24, 2018. We recorded all vascular plant species encountered, taking note of rare or sensitive species.



Environmental Impact Study, Mansfield Ski Club Redevelopment**3.2.2 Breeding Birds**

We conducted two early morning breeding bird surveys to document the bird communities in the areas of the proposed redevelopment and expansion:

- (i) Around the existing Mansfield ski chalet and parking lot, including the early successional field to the east of the existing development footprint and along the treeline to the west of the existing development footprint;
- (ii) At the top of the ski hill;
- (iii) In the area proposed for the snow-making pond at the bottom of the ski hill.

We also documented the breeding birds in the vicinity of the pumphouse during these visits. No targeted surveys were conducted for the nocturnal species at risk Eastern Whip-poor-will (*Antrostomus vociferus*) or Common Nighthawk (*Chordeiles minor*) because no suitable nesting habitat occurred within the three proposed redevelopment areas (i.e., Whip-poor-will: mixed forest with openings; Nighthawk: gravel beaches, rocky outcrops and open forest floors; Cornell University 2017).

We followed the Ontario Breeding Bird Atlas (OBBA) protocol for surveying breeding birds (OBBA 2001). A single five-minute point count was conducted in each of the four survey areas, during which time all birds detected by sight and sound within and beyond 100 m of the observer were recorded to species. For each bird we also recorded the level of breeding evidence according to the OBBA protocol (i.e., species observed in breeding season with no evidence of breeding, possible breeding, probable breeding and confirmed breeding). We noted any species designated at risk federally and/or provincially, as well as species considered area-sensitive (i.e., area-sensitive species require large areas of continuous habitat for breeding and foraging; OMNR 2000).

Surveys were carried out on June 29 and July 10, 2018 between 07:00 and 010:00 h. Weather conditions during this time were clear with no precipitation, with calm air to moderate breezes and temperatures between 18°-30°C.

3.2.3 Species at Risk

Habitat requirements of species at risk with potential to occur on the subject property were studied prior to field investigations and habitats were assessed during field investigations in accordance with those habitat requirements. Species at risk were also surveyed for as part of the bird surveys, and through incidental observations during all visits to the site.

3.2.4 Watercourse Assessment

A stormwater drainage feature located adjacent to the existing parking lot was characterized during field investigations. A variety of stream characteristics of the watercourse were assessed to define stream permanency and habitat conditions following protocol outlined in Irwin et al. (2013) and Toronto Region Conservation Authority (TRCA) and Credit Valley Conservation (CVC; 2014).



Environmental Impact Study, Mansfield Ski Club Redevelopment**3.2.5 Significant Wildlife Habitat**

SWH is defined under the PPS as wildlife habitat that is ecologically important in terms of features, functions, representation or amount, and which contributes to the quality and diversity of a geographic area or natural heritage system (MMAH 2014). SWH may include seasonal concentration areas, rare vegetation communities or specialized habitats for wildlife, habitats of species of conservation concern (not including threatened or endangered species) and animal movement corridors (OMNRF 2015). Candidate SWH was identified in the field (based on species observations) and through a review of the ELC vegetation communities described for the property. ELC communities documented on site were then compared with ELC ecosite classifications considered potential SWH for Ecoregion 6E, which encompasses the subject property (OMNRF 2015).



4. Existing Natural Heritage Conditions

The Mansfield Ski Club is situated within the Headwaters Region of southern Ontario, an area of rolling hills, large forest tracts and agricultural landscapes that is source to some of the province's major rivers (Credit, Grand, Humber, and Nottawasaga). The Niagara Escarpment Plan Area extends through the region approximately 6 km to the west of the ski club. The property itself is partially within the GGH NHS, and close to a provincially significant wetland, an Earth Science ANSI and two Life Science ANSIs. The property straddles two physiographic regions: the Niagara Escarpment covering the southwest portion, including the top of the ski hill; and the Horseshoe Moraines covering the northeast portion. The elevation on site varies from 380 m at the top of the ski hill to approximately 265 m at the bottom, in the Pine River floodplain (Golder Associates 2017).

4.1 Vegetation Communities

Overall, 116 plant species were recorded on the property: 13 tree species (including six native species), 15 shrub and vine species (including 12 native species) and 88 herbaceous species (including 45 native species; Appendix A). A total of 46% of all plants surveyed on site were non-native, including several invasive species (e.g., Tartarian Honeysuckle, *Lonicera tatarica*; Smooth Brome *Bromus inermis* subspecies *inermis*; Spotted Knapweed, *Centaurea maculosa*; Purple Loosestrife, *Lythrum salicaria*; Wild Parsnip, *Pastinaca sativa*; Reed Canary Grass, *Phalaris arundinacea* subspecies *arundinacea*; and Common Reed, *Phragmites australis* subspecies *australis*). No rare or sensitive species were observed on the property.

The following vegetation communities were documented in the three proposed development areas (Figure 3; Appendix A).

4.1.1 Existing Chalet Area

MEFM1-1: Goldenrod Forb Meadow Ecosite

This vegetation community is located to the southeast of the existing ski chalet, extending from the deciduous forest south to 15th Sideroad. The field is dominated by herbaceous vegetation, including Canada Goldenrod (*Solidago canadensis*), Common Milkweed (*Asclepias syriaca*) and Canada Thistle (*Cirsium arvense*), and interspersed with shrubs (e.g., Staghorn Sumac, *Rhus typhina*) and scattered trees (e.g., Common Apple, *Malus pumila*; Photos 1 and 2).

MAMM1-2: Cattail Graminoid Mineral Meadow Marsh Ecosite

A small cattail marsh is situated in the southern section of the goldenrod forb meadow, close to 15th Sideroad.

4.1.2 Top of Ski Hill

MEGM3-5: Smooth Brome Graminoid Meadow Ecosite

The top of the ski hill is dominated by herbaceous vegetation and interspersed with scattered coniferous and deciduous trees (Photos 3 and 4).








4.1.3 Snow-making Pond

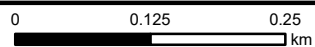
MAMM1-3: Reed Canary Grass Graminoid Mineral Meadow Marsh Ecosite

The proposed area for the snow-making pond is a meadow marsh dominated by the invasive plant species Reed Canary Grass (Photos 5 and 6). An unevaluated wetland (a marsh formed from a former snow-making pond) lies to the southeast of the meadow (Photo 7).





- | | |
|--|--|
|  MEFM1-1 – Goldenrod Ford Meadow |  MEGM3-5 – Smooth Brome Graminoid Meadow |
|  MAMM1-2 – Cattail Graminoid Mineral Meadow Marsh |  MAMM1-3 – Reed Canary Grass Graminoid Mineral Meadow Marsh |
|  Study Area | |



Scale = 1:7,000



Project #:	180029	Projection:	Mercator
Drafted:	K. Hadley	Datum:	WGS 1984
Reviewed:	A. Smith	Date:	Jan 11, 2019

Figure 3

Vegetation Communities

Environmental Impact Study, Mansfield Ski Club Redevelopment



Photo 1. Goldenrod Forb Meadow by ski chalet.



Photo 2. Goldenrod Forb Meadow by ski chalet.





Photo 3. Smooth Brome Graminoid Meadow at top of ski hill.



Photo 4. Top of ski hill.



Environmental Impact Study, Mansfield Ski Club Redevelopment



Photo 5. Reed Canary Grass Graminoid Mineral Meadow Marsh below ski hill.



Photo 6. Reed Canary Grass Graminoid Mineral Meadow Marsh.



Environmental Impact Study, Mansfield Ski Club Redevelopment



Photo 7. Unevaluated wetland formed from abandoned snow-making pond.

4.2 Breeding Birds

A total of 34 bird species were documented on the subject property, including three species at risk: Eastern Wood-pewee (*Contopus virens*, listed as special concern provincially and federally); Barn Swallow (*Hirundo rustica*, listed as threatened provincially and federally); and Eastern Meadowlark (*Sturnell magna*, listed as threatened provincially and federally). Three area-sensitive species were detected on the property (White-breasted Nuthatch, *Sitta carolinensis*; Savannah Sparrow, *Passerculus sandwichensis*; and Eastern Meadowlark; Appendix B). Several types of breeding evidence were observed among the birds found on the property, ranging from species observed in their breeding season with no evidence of breeding, to possible breeding (e.g., singing male present in suitable nesting habitat) to probable breeding (e.g., pair observed in suitable nesting habitat, individual visiting probable nest site, agitated behaviour or anxiety calls of an adult) to confirmed breeding (adult carrying food for young).

Eastern Wood-pewee is among North America's most common and widespread songbirds, yet its populations have been declining over the past 40 years (COSEWIC 2012). It breeds in deciduous and mixed forests and woodlands, as well as along forest edges. The species is designated as special concern, meaning that the species is not currently endangered or threatened, but may become so due to a combination of biological traits and conservation threats. Possible factors threatening the Eastern Wood-pewee include habitat loss and degradation due to urban development, declines in availability of insect prey, and increased predation on eggs and fledglings by species such as Blue Jays (*Cyanocitta cristata*) and Red Squirrels (*Tamiasciurus hudsonicus*; OMNRF 2018a).

Barn Swallow is another example of a widespread and common bird species that has recently experienced precipitous population declines in North America. The species breeds in open country such as agricultural areas, typically near water. It often relies on human structures for nest sites, such as ledges and walls of old barns, culverts and bridges. Barn Swallow is designated as threatened, meaning that the species may become endangered if action is not taken to address threats to its populations. The main factors affecting



Environmental Impact Study, Mansfield Ski Club Redevelopment

populations appear to be loss of nesting sites (e.g., open barns) and foraging habitat (e.g., open farmland) due to changing agricultural practices, as well as large scale declines in insect prey likely due to pesticide use (COSEWIC 2011a; OMNRF 2018b).

Eastern Meadowlark, designated as threatened, breeds in grassland habitat, such as farm fields, uncut pastures and meadows. The species is declining in eastern North America primarily due to habitat loss and degradation (through mowing of hayfields during the breeding period, over-grazing by livestock, urban development, and reforestation; COSEWIC 2011b; OMNRF 2018c).

The habitat requirements of area-sensitive birds vary by species. For example, White-breasted Nuthatch relies on areas of continuous forest at least 10 ha in size. Savannah Sparrow requires grassland areas of at least 50 ha, while Eastern Meadowlark needs at least 10 ha of open grassland (OMNR 2000).

Sixteen bird species were observed in the area around the existing ski chalet and parking lot. Most species were typical of overgrown field, forest edge and wetland habitat, such as Mourning Dove (*Zenaida macroura*), Cedar Waxwing (*Bombycilla cedrorum*), Indigo Bunting (*Passerina cyanea*), Song Sparrow (*Melospiza melodia*), Red-winged Blackbird and Common Grackle. The species at risk, Eastern Wood-pewee, which is commonly associated with woodland openings and edges, was observed perched in a tree in the northern part of the goldenrod forb meadow. A House Wren (*Troglodytes aedon*) observed along the northern edge of the meadow appeared to have a nest in a cylindrical enclosure on the telephone wire, as it was seen entering and leaving the enclosure repeatedly and singing on the wire (Photo 8). House Wrens nest in both natural and artificial cavities, including old woodpecker holes, natural crevices and nest boxes (Cornell University 2017). All species observed in the area displayed possible or probable evidence of breeding.

Fourteen bird species were observed at the top of the ski hill. The bird community here was comprised of species associated with open field and meadow, and forest edge, such as Turkey Vulture (*Cathartes aura*), American Kestrel (*Falco sparverius*), Eastern Phoebe (*Sayornis phoebe*), House Wren, Chipping Sparrow (*Spizella passerina*) and American Goldfinch (*Spinus tristis*). White-breasted Nuthatch, an area-sensitive species common in mixed forests, woodlots and urban parks, was observed along the boundary with the residential neighbourhood to the south of the ski hill. A House Wren was observed on both survey visits entering a gap in the top of one of the chair lift support poles, presumably where it had a nest. All species in the area showed signs of possible or probable breeding, except for a pair of Turkey Vultures (perched on a fence on the hill), which lack suitable nesting habitat on site (cave or boulders).

Twenty bird species were observed at the bottom of the hill in the vicinity of the proposed snow-making pond. Two species at risk were present in the area: six Barn Swallow foraging over the unevaluated wetland (marsh), and an Eastern Meadowlark pair in the Reed Canary Grass meadow marsh where the snowmaking pond is proposed. An Eastern Meadowlark was observed singing in this habitat on both visits and one individual was observed carrying food into the tall grass on the second visit, where it presumably was feeding young. Other species found in the area were typical of open pasture and wetland habitat, such as Mourning Dove, Willow Flycatcher (*Empidonax traillii*), Eastern Kingbird (*Tyrannus tyrannus*), Common Yellowthroat (*Geothlypis trichas*), Song Sparrow and Red-winged Blackbird. All species observed in the area displayed possible or probable evidence of breeding, except for Turkey Vulture (no evidence of breeding) and Eastern Meadowlark (confirmed breeding due to adult feeding young).



Environmental Impact Study, Mansfield Ski Club Redevelopment

Nine species were observed in the forested and riparian area surrounding the pumphouse on the Pine River. No species at risk were recorded, but two area-sensitive species, White-breasted Nuthatch and Savannah Sparrow were present. The bird community around the pumphouse was characterized by birds mainly associated with forest edge and agricultural landscapes, such as Mourning Dove, Cedar Waxwing, Song Sparrow and American Goldfinch. Red-eyed Vireo (*Vireo olivaceus*), a species typical of deciduous and mixed forest was also documented here. All species observed in the area displayed possible evidence of breeding (i.e., singing male present).



Photo 8. Location of potential House Wren nest.



Environmental Impact Study, Mansfield Ski Club Redevelopment

4.3 Species at Risk

Thirty-one species at risk have been reported in Dufferin County (Findlay pers. comm.), and three of these have been documented within 1 km of the property (Eastern Meadowlark, Bobolink, and Snapping Turtle; OMNRF 2014). We documented four species at risk on site during our surveys:

- Three bird species: Eastern Wood-pewee (in the successional field adjacent to the existing chalet), Barn Swallow (over the unevaluated wetland), and Eastern Meadowlark (in the grassland habitat where the snow-making pond is proposed); and
- Monarch Butterfly (*Danaus plexippus*; near the naturalized wetland), listed as special concern provincially and endangered federally.

Nine other species at risk could potentially occur within suitable habitat on the property: Bobolink (*Dolichonyx oryzivorus*), Golden-winged Warbler (*Vermivora chrysoptera*), Grasshopper Sparrow (*Ammodramus savannarum*), Henslow's Sparrow (*Ammodramus henslowii*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Yellow-breasted Chat (*Icteria virens*), Butler's Gartersnake (*Thamnophis butleri*), Snapping Turtle (*Chelydra serpentina*), and Butternut (*Juglans cinerea*).

A summary of potential species at risk that could occur on the property is provided in Table 1.

Table 1. Habitat Description and Availability for Species at Risk with Potential to Occur on the Mansfield Property.

Species at Risk	Status	Habitat Description	Habitat Availability in Subject Property
Bobolink	Threatened (provincially and nationally)	Grasslands, hayfields and meadows	Grassland habitat where snow-making pond proposed
Golden-winged Warbler	Special concern (provincially) and threatened (nationally)	Field edges with shrubs surrounded by mature forest	Successional field adjacent to ski chalet
Grasshopper Sparrow	Special concern (provincially and nationally)	Grasslands, hayfields and pastures	Grassland habitat where snow-making pond proposed
Henslow's Sparrow	Endangered (provincially and nationally)	Abandoned farm fields, pastures and wet meadows	Grassland habitat where snow-making pond proposed
Red-headed Woodpecker	Special concern (provincially), threatened (nationally)	Open deciduous forest and forest edge, fields and pasture lands with scattered trees	Woodland edge on ski hills



Environmental Impact Study, Mansfield Ski Club Redevelopment

Species at Risk	Status	Habitat Description	Habitat Availability in Subject Property
Bobolink	Threatened (provincially and nationally)	Grasslands, hayfields and meadows	Grassland habitat where snow-making pond proposed
Golden-winged Warbler	Special concern (provincially) and threatened (nationally)	Field edges with shrubs surrounded by mature forest	Successional field adjacent to ski chalet
Grasshopper Sparrow	Special concern (provincially and nationally)	Grasslands, hayfields and pastures	Grassland habitat where snow-making pond proposed
Henslow's Sparrow	Endangered (provincially and nationally)	Abandoned farm fields, pastures and wet meadows	Grassland habitat where snow-making pond proposed
Yellow-breasted Chat	Endangered (provincially and nationally)	Thickets and scrub habitat, overgrown clearings	Successional field adjacent to ski chalet
Butler's Gartersnake	Endangered (provincially and nationally)	Open moist habitat such as dense grasslands, old fields and small wetlands	Grassland habitat, successional field, wetland
Snapping Turtle	Special concern (provincially and nationally)	Shallow waters	Wetland
Butternut	Endangered (provincially and nationally)	Mixed deciduous forest	Woodlands on ski hills

4.4 Watercourse Assessment

An open ditch (Photograph 9) transmits stormwater in a southerly direction along the western edge of the parking lot, through a long (~45 m) series of culverts to the southeast corner of the parking lot before flowing into a small cattail marsh (Photograph 10). The outlet of the culvert in the southeast part of the parking lot contains a series of perched, dilapidated culverts over a sharp gradient (Photograph 11). The assessment is focused on the watercourse located downstream of the culvert outlet as the upstream, man-made ditch contains few ecological features or functions.

The watercourse downstream of the parking lot displays incised channel form within 10 m of the culvert outlet before transitioning into flat runs and small pools up to 15 cm deep. Substrates within the watercourse are mixed and include organics, sand, silt, gravel and concrete rubble. Terrestrial and wetland vegetation species are located within the watercourse southeast of the parking lot (Photograph 12).





Photo 9. Open ditch adjacent to parking lot.



Photo 10. View of the watercourse and downstream cattail marsh.





Photo 11. One of a series of dilapidated culverts.



Photo 12. Poorly formed ephemeral channel with terrestrial vegetation.



Environmental Impact Study, Mansfield Ski Club Redevelopment

Watercourse features were evaluated in terms of permanency characteristics (Irwin et al. 2013; Table 2) and habitat classifications (TRCA and CVC 2014; Table 3). The watercourse exhibited predominantly ephemeral stream characteristics, apart from the presence of an incised channel and prominent banks near the culvert outlet, which likely developed due to high-volume discharges of stormwater over short time periods.

The watercourse provides limited ecological function according to criteria in TRCA and CVC (2014). It provides contributing functions for passing stormwater to the downstream cattail marsh, but it does not provide direct fish habitat because of limited permanency and migration opportunities, nor indirect/contributing habitat because the watercourse disappears downstream of the cattail marsh well before it gets close to any other waterbodies. However, the watercourse does provide important riparian and terrestrial functions associated with the adjacent cattail marsh.

Table 2. Stream Permanency Characteristics (Irwin et al. 2013).

Permanency Characteristic	Watercourse Assessment	Permanency Classification
Stream Flow	Appears to flow for days to weeks following spring snow melt or a major rain event.	Ephemeral
Defined Stream Bottom	Stream bottom is not well defined except on steep slopes.	Ephemeral
Prominent Banks	Prominent banks are absent, or if present, not continuous along stream length.	Intermittent
Supporting Criteria	Terrestrial plants are common throughout stream bottom	Ephemeral

Table 3. Classification of Drainage Features (TRCA and CVC 2014).

Habitat Classification	Watercourse Assessment
Hydrology	Contributing Functions - Ephemeral: Provides ephemeral flow or water storage during and after spring freshet and following large rain events only.
Riparian	Important Functions - the feature type is wetland
Fish and Fish Habitat	None. No clear direct or indirect linkage to fish-bearing waters.
Terrestrial Habitat	Important Functions – Wetlands that likely provide breeding habitat for amphibians.



4.5 Significant Wildlife Habitat

No candidate or confirmed SWH was identified within the three proposed redevelopment areas based on a review of the species and the ELC vegetation communities described on site. However, SWH may occur in areas adjacent to the subject property.

5. Impact Assessment

The ski club property is comprised of a mix of habitat types, including meadows, wetland and forest. It is surrounded by residential and agricultural development, as well as extensive forest cover forming part of the GGH NHS. Much of the natural habitat on site has undergone significant alteration in the past to accommodate the ski facilities and is characterized by open grassland punctuated by woodland strips. The Pine River meanders along the northeast side of the property, and a naturalized wetland (formed from an old snow-making pond) lies below the ski hill. Although the site experiences a high degree of human activity during the winter months, it is relatively empty of humans once the ski season is over. During the spring and summer, the property supports a diversity of vegetation and wildlife communities. No rare or sensitive plant species were identified on site and almost half the plant community is comprised of non-native species. Several sensitive wildlife species were identified on the property, including both species at risk and area-sensitive species.

The proposed redevelopment of the ski club is centred around three areas on the property: (i) the existing chalet (approximately 4 ha area), (ii) the top of the ski hill (approximately 3 ha area), and (iii) the bottom of the ski hill (approximately 0.5 ha area). The proposed work in each area will cause direct loss of habitat, as well as potential disturbance to adjacent plant and wildlife communities. However, the duration of these effects will differ between sites, with placement of fill at the top of the ski hill having relatively short-term impacts compared with expansion of the chalet's development footprint and construction of the snow-making pond, which will have longer term (or permanent) impacts. The redevelopment at the top of the ski hill will not result in any significant changes to land use at this location, in contrast to the expansion of the chalet development, and construction of the snow-making pond planned at the other two locations on site. In particular, the expansion of the chalet footprint will result in both direct loss of the ephemeral watercourse, meadow and wetland habitat, as well the indirect effect of increased human disturbance to the surrounding environment due to year-round residential and commercial development. At all three areas, proposed redevelopment could also increase the risk of the introduction of invasive species to surrounding natural areas. The relatively small size of the proposed redevelopment in each area, and its location within already open, previously disturbed habitat, means that it is unlikely to negatively affect the connectivity of natural heritage areas provided by the nearby GGH NHS.

The primary natural heritage constraints identified on the property relate to the presence of (i) habitat of species at risk, (ii) wetlands and (iii) watercourse.

5.1 Habitat of Species at Risk

The proposed redevelopment has the potential to negatively impact the habitat of species at risk on the property. Four species at risk were documented within the three areas of concern (Barn Swallow, Eastern Meadowlark, Eastern Wood-pewee, and Monarch Butterfly). Of these, Barn Swallow and Eastern Meadowlark, are afforded special protection under provincial legislation. As provincially threatened species,



Environmental Impact Study, Mansfield Ski Club Redevelopment

Barn Swallow and Eastern Meadowlark, and their habitat, are protected under Ontario's *Endangered Species Act*. Habitat of threatened species, and adjacent lands, also receive protection under the PPS, GGH NHS, and the official plans of Dufferin County and the Township of Mulmur.

Numerous Barn Swallows were observed foraging over the naturalized wetland (marsh) and in the vicinity of the maintenance buildings at the bottom of the ski hill. It is likely that they are nesting within these buildings. An Eastern Meadowlark was observed within the meadow marsh area proposed for the snow-making pond, where it likely had a nest.

General habitat descriptions have been developed by OMNRF to identify the area of habitat to be protected for both these threatened species (OMNR 2013; OMNRF 2018d). These descriptions are categorized into three levels, based on how tolerant the habitat is to disturbance or alteration (i.e., Category 1 habitat has the lowest tolerance, Category 2 has moderate tolerance, and Category 3 has the highest tolerance). An explanation of the general habitat descriptions for Barn Swallow and Eastern Meadowlark is provided in Table 2.

Table 4. General Habitat Descriptions for Barn Swallow and Eastern Meadowlark.

Species	Habitat Category	Description
Barn Swallow	1 - Nest	Tend to nest in human-made structures, such as open barns, under bridges and in culverts; used for egg laying, incubation, feeding, resting and rearing of young; nests often reused from year to year and can support multiple broods within the same year
	2 – Area within 5 m of nest	Area defended by male Barn Swallows during the breeding season; used for roosting, feeding, rearing of young, and resting;
	3 – Area between 5 and 200 m of nest	Barn Swallows use this area for rearing, feeding and resting; depend on open areas close to nest (such as waterbodies, pastures and woodland edges) where they can forage on the wing for flying insects
Eastern Meadowlark	1 – Nest and area within 10 m of nest	Nest is in dense grassland cover on the ground; used for egg laying, incubation and rearing of young; nesting periods lasts between 20 and 30 days, after which juveniles remain within nest area (unable to fly) for another week; area around nest critical for maintaining suitable microclimate and providing cover from predators; nests are rarely identified due to their cryptic nature
	2 – Area between 10 and 100 m of nest or centre of	Includes male's defended territory; used for courtship, mating, rearing of young, feeding, resting and bathing; includes pastures, hayfields, old or abandoned fields, native prairies and savannahs; one territory may support



Environmental Impact Study, Mansfield Ski Club Redevelopment

	approximated defended territory	multiple females and their nests; males and females return to previously used breeding sites from year to year
	3 – Area of continuous suitable habitat between 100 and 300 m of nest or approximated centre of defended territory	Used for feeding, rearing, resting, dispersal and hiding from predators

Activities can occur within general habitat of the two species at risk providing the function of these areas is maintained for the species, and no individuals are killed, harmed or harassed. Generally, the following activities are considered acceptable within the general habitat of Barn Swallow: mowing, general building use and improvements that do not impair nesting habitat. However, any activities that significantly modify structures where nests are found, or development activities causing significant fragmentation or removal of large areas of suitable habitat are generally not acceptable (OMNRF 2018d). We do not anticipate that any of the proposed redevelopment activities will negatively impact Barn Swallow or its general habitat, providing the existing maintenance buildings and naturalized wetland are not altered.

Generally, the following activities are considered acceptable within the general habitat of Eastern Meadowlark: continuation of existing agricultural practices, such as annual harvest or mowing; hiking and non-motorized vehicle use on existing trails. However, any activities that result in significant fragmentation or removal of large areas of suitable grassland, and widespread use of pesticides are generally not acceptable (OMNR 2013).

It was not possible to determine the exact location of the Eastern Meadowlark nest in the meadow marsh, as vegetation was tall and dense, and we did not perform a targeted nest search to avoid disturbing the species and its breeding habitat. However, based on our observations of Eastern Meadowlark activity, we were able to identify the approximate area in which a nest may have been located. Applying the general habitat categories for the species (Table 2) to this area demonstrated that all of the proposed snow-making pond footprint would fall within Eastern Meadowlark habitat subject to protection.

5.1.1 Alternative Location for the Snow-making Pond

The original proposed location for the new snow-making pond would directly impact Eastern Meadowlark habitat. As a result, we recommend that the proposed location be moved to the area directly north of the naturalized wetland, an area characterized by piles of gravel and sand, herbaceous vegetation, and old machinery (Photos 13 and 14). A bird survey conducted in this area during the July 10, 2018 breeding bird field work did not detect any species at risk or area-sensitive species.

We recommend that the development footprint should be at least 30 m away from both the meadow marsh and the naturalized wetland to minimize disturbance to these natural heritage features and to conform with applicable environmental policies. However, it may be possible to decrease this buffer size based on site-specific features, if required as discussed in Section 6.6. Native vegetation should be allowed to regenerate in the intervening area between the development footprint and adjacent natural heritage features.



Environmental Impact Study, Mansfield Ski Club Redevelopment

5.2 Wetlands

Three wetlands were identified on the property, two at the bottom of the ski hill (meadow marsh and naturalized marsh) and one in the field to the southeast of the ski chalet (cattail marsh). To our knowledge, none of these wetlands have been evaluated for provincial significance. However, as unevaluated wetlands these natural features, and adjacent lands, are still subject to protection under the GGH NHS, *Conservation Authorities Act*, and the official plans of Dufferin County and the Township of Mulmur.

The original proposed location of the snow-making pond would directly impact the meadow marsh. However, the new alternative location does not overlap with any wetland habitat.

The cattail marsh adjacent to the existing ski chalet was formed as a result of stormwater drainage from the chalet's parking lot. The proposed redevelopment of this area would lead to the disappearance of the marsh, but it would be replaced by a larger stormwater pond, which would provide a net habitat benefit in terms of amphibian breeding habitat, flood attenuation and water quality treatment, especially, if specific mitigation measures are implemented (e.g., native riparian plantings along pond's edge, vegetated buffer between parking areas and pond; see Section 6),

5.3 Watercourse

The ephemeral watercourse that conveys stormwater from the parking lot to the small cattail marsh supports limited ecological functions as discussed in Section 4.4 and it has developed as a direct result of stormwater inputs. The primary ecological function of the watercourse is supporting the small cattail wetland and the development of a stormwater pond will result in a net habitat benefit as discussed in Section 5.2.

5.4 Redevelopment Alternatives

Several natural heritage features and functions were identified on the property which are of conservation concern. In Table 5, we summarize our recommendations for modifications to the proposed redevelopment to avoid and minimize negative impacts on these natural heritage constraints.



Environmental Impact Study, Mansfield Ski Club Redevelopment

Table 5. Natural Heritage Constraints on the Property.

Natural Heritage Feature	Location	Policy	Constraints	Recommendations
Habitat of a threatened species	Meadow marsh proposed for snow-making pond	<i>Endangered Species Act</i>	No damage or destruction of habitat Provisions to develop land up to 30 ha if certain rules followed	Select an alternative location for snow-making pond
		PPS, Dufferin County Official Plan	No development or site alteration except in accordance with provincial and federal requirements	
		GGH NHS, Township of Mulmur Official Plan	No development or site alteration unless no negative impacts on feature	
Adjacent lands to habitat of a threatened species	Within 120 m of meadow marsh	GGH NHS	Establish a vegetation protection zone comprised of natural and self-sustaining vegetation to protect feature	Select alternative location for snow-making pond to the east of the meadow marsh and allow natural regeneration of intervening area
		Dufferin County Official Plan, Township of Mulmur Official Plan	No development unless no negative impacts on feature	



Environmental Impact Study, Mansfield Ski Club Redevelopment

Natural Heritage Feature	Location	Policy	Constraints	Recommendations
Wetlands	Meadow marsh proposed for snow-making pond and naturalized wetland	GGH NHS	No development or site alteration unless no negative impacts on feature	Select alternative location for snow-making pond to the east of meadow marsh and north of the naturalized wetland and allow natural regeneration of intervening area
	Meadow marsh proposed for snow-making pond, naturalized wetland, marsh in area proposed for ski chalet expansion	<i>Conservation Authorities Act</i>	No development or site alteration in or within 30 m of wetlands unless no effect on flooding, erosion, dynamic beaches, pollution or conservation of land	Select alternative location for snow-making pond east of the meadow marsh and north of the naturalized wetland and allow natural regeneration of intervening area
		Dufferin County Official Plan	No development or site alteration unless no negative impacts	Implement recommended mitigation measures to promote net habitat benefits from new stormwater pond
Adjacent lands to wetlands	Within 120 m of meadow marsh and naturalized wetland	GGH NHS	Establish a vegetation protection zone at least 30 m width from wetland boundary comprised of natural and self-sustaining vegetation to protect feature	Select alternative location for snow-making pond east of the meadow marsh and north of the naturalized wetland and allow natural regeneration of intervening area
	Within 120 m of all three wetlands	Dufferin County Official Plan		Select alternative location for snow-making pond east of the meadow marsh



Environmental Impact Study, Mansfield Ski Club Redevelopment

Natural Heritage Feature	Location	Policy	Constraints	Recommendations
	Within 30 m of all three wetlands	Township of Mulmur Official Plan	No development or site alteration unless no negative impacts	<p>and north of the naturalized wetland and allow natural regeneration of intervening area</p> <p>Implement recommended mitigation measures to promote net habitat benefits from new stormwater pond</p>





Photos 9 and 10. Disturbed area to the north of naturalized wetland in the alternative location for the snowmaking pond.



6. Recommended Avoidance and Mitigation Measures

Several practices should be incorporated into the planning and implementation of the three redevelopment components on the property to minimize or avoid negative impacts on natural features and their ecological functions.

6.1 Site Selection

The size and location of the development can influence its impact on the surrounding environment. The development footprints of the proposed expansion of the ski chalet area, grade rise at the top of the ski hill, and construction of the snow-making pond should be kept as small as possible to minimize the amount of habitat affected.

The location for the snow-making pond was originally proposed within habitat of a threatened species (Eastern Meadowlark) and within wetland habitat. The new alternative location for the snow-making pond avoids both of these sensitive natural heritage features.

Exclusion fencing should also be used during the construction phase to separate the development zone from surrounding habitat. This fencing is important both for preventing direct mortality to wildlife, and for preventing wildlife from using the construction zone as nesting habitat. Many reptile species, for example, lay eggs in soft substrate (e.g., Eastern hog-nosed Snake, Blanding's Turtle, Snapping Turtle), and may thus be attracted to any sand fill used during the construction phase.

6.2 Timing

Construction should be scheduled for times of the year that avoid or minimize wildlife disturbance (e.g., outside migration and breeding periods) and environmental damage (e.g., not during high runoff periods in spring and fall).

Amphibian and reptile populations are active from March to October in southern Ontario (OMNRF 2016). As two of the proposed redevelopment areas are located within or close to wetlands, it is recommended that construction activity be scheduled outside of this period to avoid disturbance of these species and their habitats. Once the stormwater pond is constructed, it is recommended that any associated maintenance activities (e.g., periodic removal of accumulated sediment through dredging) also be conducted outside the peak amphibian activity period.

The federal *Migratory Birds Convention Act* (1994) protects the nests, eggs and young of most bird species from harm or destruction. The breeding bird season for the Mansfield region extends from early April through late August for most species (ECCC 2017). As a result, clearing of vegetation should be scheduled outside of these periods. For any proposed clearing of vegetation within these dates, or where birds may be suspected of nesting outside these typical dates, a qualified ecologist should undertake detailed nest searches immediately prior to any development or site alteration to ensure that no active nests are present. If signs of breeding are found within the proposed development footprint, vegetation clearing should be delayed and appropriate buffers should be established around active nests until birds have fledged and left the area.



6.3 Preservation and Planting of Vegetation

The vegetation within and surrounding the proposed redevelopment footprints should be protected as much as possible to ensure wildlife habitat is maintained. Vegetation serves many important functions, including provision of shade, food, nesting habitat, movement corridors, and protection from predators. No aquatic or riparian vegetation should be removed from the naturalized wetland, as these plants provide important habitat for amphibians, fish and birds. To compensate for the loss of the cattail marsh, a vegetation plan should be developed to promote naturalization of the new stormwater pond with native riparian plant species. Vegetated swales should also be considered along all road edges to capture road pollutants (e.g., salt, heavy metals, oil and grease from vehicles; OMNR 2010).

6.4 Erosion and Sediment Control Plan

A plan should be developed to control erosion and subsequent sedimentation that could occur during and after development. In particular, efforts should be made to avoid runoff and sediment from entering nearby streams and wetlands, through, for example, the installation of sediment barriers prior to initiation of earthworks. Monitoring of the efficacy of control measures should be carried out and adjustments made as necessary to improve performance (e.g., measures should not block amphibian movement corridors, sediment barriers should be removed once surfaces are revegetated).

6.5 Buffers

A vegetated buffer should be maintained around sensitive habitat features such as wetlands, to protect them from disturbance, retain linkages for wildlife movement, and ensure water quality and quantity are not adversely affected. The determination of specific buffer requirements is challenging because of the many factors influencing their effectiveness, including site-specific features (biophysical and hydrological conditions), the nature of the development, and variation in the response of species to the buffer and development impacts. In addition, there are many gaps in our knowledge of how buffers work (Beacon 2012). Minimum buffer width around significant natural heritage features such as wetlands is typically recommended as 30 m in Ontario (OMNR 2010). This minimum buffer distance for wetlands is also supported by the GGH NHS (Government of Ontario 2017) and *Conservation Authorities Act* (1990).

Wetland buffers generally provide the following functions:

- Protection of water quantity (attenuation of stormwater flows, groundwater recharge);
- Protection of water quality (e.g., attenuation of sediments and associated contaminants, nutrient attenuation and transformation, regulation of water temperature);
- Screening from human disturbance (e.g., noise, trampling, dumping, spread of invasive species); and
- Protection of core habitat (e.g., maintenance of microclimate conditions, protection of biotic integrity, and provision of nutrients, large woody debris, and cover).

We recommend that a buffer (comprised of native vegetation) be established around the meadow marsh, naturalized wetland and stormwater pond on the property, within which development is excluded. A 30 m buffer is recommended but a reduced buffer could be justified during detailed design if required because of the following findings:



Environmental Impact Study, Mansfield Ski Club Redevelopment

- The presence of the invasive Reed Canary Grass monoculture in the Meadow Marsh limits ecological functionality in the Meadow Marsh;
- The additional recommended mitigation measures will help to minimize impacts to adjacent natural heritage features;
- Impacts of the snow-making pond on adjacent natural heritage features are limited as it does not include hardened surfaces or generate subsequent stormwater;
- The buffer areas are flat and through establishment of vegetation will effectively support the functions discussed previously.

6.6 Invasive Species Management

The meadow marsh on the property is dominated by the invasive Reed Canary Grass, which crowds out native wetland plants and destroys open water conditions that provide habitat for amphibians, turtles, waterfowl and other wildlife. Numerous other invasive plant species are also found throughout the property. Once invasive plant species become established it is extremely difficult to eradicate them from invaded areas. Efforts should be made during construction to avoid the accidental spread of these invasive plant species from one part of the property to another. In addition, steps should be taken to avoid the introduction and spread of additional invasive plant species to the area, and from the area to other construction sites. Invasive seeds and plant material can be inadvertently transferred from site to site on construction vehicles and equipment. We recommend that all vehicles and equipment be thoroughly washed to remove mud, seeds and plant material before they are moved among construction sites (both on and off the property). Please see the Ontario Invasive Plant Council's Clean Equipment Protocol for more information (Halloran et al. 2013).

7. Conclusions

We conducted an EIS to determine potential impacts of the proposed redevelopment and expansion at the Mansfield ski hill on natural heritage features and functions. The proposed redevelopment is centred around three areas on the property: (i) the existing chalet (approximately 4 ha area), (ii) the top of the ski hill (approximately 3 ha area), and (iii) the bottom of the ski hill (approximately 0.5 ha area). The placement of fill at the top of the ski hill is not anticipated to result in any significant changes to land use, nor any adverse effects on natural heritage features and functions at this location. In contrast, the expansion of the chalet development will directly impact an ephemeral watercourse, meadow and wetland habitat. The original proposed location for the snow-making pond, meanwhile, would directly affect habitat of a threatened species (Eastern Meadowlark) and wetland habitat.

We recommend changing the proposed location for the snow-making pond from the meadow marsh to an area of disturbed habitat to the east of the marsh, between 17th Side road and the naturalized wetland on site. This location is characterized by piles of gravel and sand, herbaceous vegetation, and old machinery. No bird species at risk or area-sensitive species were documented in this area during field investigations. We further recommended that a buffer be established between the snow-making pond footprint at this new location and both the meadow marsh and naturalized wetland, to minimize disturbance to these features and to conform with applicable environmental policies. Native vegetation should be allowed to regenerate within this buffer area.



Environmental Impact Study, Mansfield Ski Club Redevelopment

The cattail marsh adjacent to the existing ski chalet was formed as a result of stormwater drainage from the chalet's parking lot. While the proposed redevelopment of this area would destroy the marsh, it would be replaced by a larger stormwater pond, which could provide net ecological benefits if specific mitigation measures are implemented. The ephemeral watercourse that conveys stormwater from the parking lot to this cattail marsh provides limited ecological functions.

We recommended that several avoidance and mitigation measures be employed during the construction and operational phases of the development at all three locations on the property to further minimize negative impacts on the natural environment, including site selection, timing, vegetation management and erosion and sediment control.



8. References

- Bird Studies Canada, Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists, and Ontario Ministry of Natural Resources. 2006. Ontario Breeding Bird Atlas Website: <http://www.birdsontario.org/atlas/index.jsp> (accessed August 2017).
- COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2011a. COSEWIC Assessment and Status Report on the Barn Swallow *Hirundo rustica* in Canada. COSEWIC. Ottawa. ix + 37 pp.
- COSEWIC. 2011b. COSEWIC Assessment and Status Report on the Eastern Meadowlark *Sturnella magna* in Canada. COSEWIC. Ottawa. x + 40 pp.
- COSEWIC. 2012. COSEWIC Assessment and Status Report on the Eastern Wood-pewee, *Contopus virens* in Canada. COSEWIC. Ottawa. x + 39 pp.
- Conservation Authorities Act*. 1990. R.S.O. 1990, c. C. 27, and Ontario Regulation 172/06: Nottawasaga Valley Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.
- Cornell University. 2017. All About Birds Website: <https://www.allaboutbirds.org> (accessed August 2018).
- Dufferin County. 2017. Dufferin County Official Plan. Office Consolidation, July 17, 2017. 149 pp.
- eBird. 2012. eBird: An online database of bird distribution and abundance. Website: <http://www.ebird.org> (Accessed September 2018).
- Endangered Species Act*. 2007. S.O. 2007, c. 6
- ECCC (Environment and Climate Change Canada). 2017. General Nesting Periods of Migratory Birds in Canada. Website: http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4f39a78f-1#_01_0_1 (accessed November 2018).
- Fish and Wildlife Conservation Act*. 1997. S.O. 1997, c. 41
- Findlay, G. pers. comm. 2018. Email correspondence to A. Smith, September 28, 2018. OMNRF Management Biologist, Huronia Resources Management Team, Midhurst.
- Francis, M. pers. comm. 2018. Telephone correspondence with B. Parsons, December 2018. NVCA Planning Ecologist, Nottawasaga Valley Conservation Authority, Utopia, ON.
- Golder Associates. 2017. Geotechnical Assessment – Proposed Development at Mansfield Ski Club, Mulmur, Ontario. Memo prepared for F. McEwen, April 28 2017.



Environmental Impact Study, Mansfield Ski Club Redevelopment

Government of Canada. 2018. Species at Risk Public Registry. Website:

<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>
(accessed July 2018).

Government of Ontario. 2017. Growth Plan for the Greater Golden Horseshoe, May 2017. Approved by the Lieutenant Governor in Council, Order in Council No 1024/2017 under the *Places to Grow Act*, 2005 to take effect on July 1, 2017.

Halloran, J., H. Anderson, and D. Tassie. 2013. Clean Equipment Protocol for Industry. Peterborough Stewardship Council and Ontario Invasive Plant Council, Peterborough, ON, 20 pp. Website: https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf (accessed November 2018).

Irwin, K., B. Bergmann, and J. Boos. 2013. The Stream Permanency Handbook for South-Central Ontario. Ontario Ministry of Natural Resources.

Knapp, A. pers. comm. 2018. Email correspondence to F. McEwen, July 3 2018. Planner, Nottawasaga Valley Conservation Authority, Utopia, ON.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and Its Application. Ontario Ministry of Natural Resources. SCSS Field Guide FG-02. 225 pp.

Migratory Birds Convention Act. 1994. S.C.1994, c. 22

MMAH (Ministry of Municipal Affairs and Housing). 2014. Provincial Policy Statement 2014 under the *Planning Act*. 56 pp.

NVCA. 2014-2018. NVCA Interactive Map. Website: <https://maps.simcoe.ca/NVCA/> (accessed November 2018).

OBBA (Ontario Breeding Bird Atlas). 2001. Guide for Participants. Atlas Management Board, Federation of Ontario Naturalists. Don Mills, ON. 45 pp.

OMNR (Ontario Ministry of Natural Resources). 2000. Significant Wildlife Habitat Technical Guide. 151 pp.

OMNR. 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. 2nd Edition. Toronto, Queen's Printer for Ontario. 248 pp.

OMNR. 2013. General Habitat Description for the Eastern Meadowlark (*Sturnella magna*). July 2, 2013. 4 pp.

OMNRF (Ontario Ministry of Natural Resources and Forestry). 2014. Make a Map: Natural Heritage Areas. Website: http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US (accessed June 2018).



Environmental Impact Study, Mansfield Ski Club Redevelopment

- OMNRF. 2015. Significant wildlife Habitat Criteria Schedules for Ecoregion 6E. January, 2015. OMNRF, Regional Operations Division, Southern Region Resources Section. Peterborough, ON. 39 pp.
- OMNRF. 2016. Best Management Practices for Mitigating the Effects of Roads on Amphibians and Reptile Species at Risk in Ontario. Queen's Printer for Ontario. 112 pp.
- OMNRF. 2018a. Eastern wood-pewee. Website: www.ontario.ca/page/eastern-wood-pewee (accessed August 2018).
- OMNRF. 2018b. Barn Swallow. Website: <https://www.ontario.ca/page/barn-swallow> (accessed August 2018).
- OMNRF. 2018c. Eastern Meadowlark. Website: <https://www.ontario.ca/page/eastern-meadowlark> (accessed August 2018).
- OMNRF. 2018d. Barn Swallow General Habitat Description. Website: <https://www.ontario.ca/page/barn-swallow-general-habitat-description> (accessed October 2018).
- Ontario Nature. 2018. Ontario Reptile and Amphibian Atlas. Website: <https://ontarionature.org/oraa/maps> (accessed July 2018).
- Planning Act*. 1990. R.S.O. 1990, c. P. 13.
- Shirley, B. pers. comm. 2018. Telephone correspondence with B. Parsons, December 2018. OMNRF Management Biologist, Huronia Resources Management Team, Midhurst.
- Species at Risk Act*. 2002. S.C. 2002, c. 29.
- Toronto Entomologists' Association. 2018. Ontario Butterfly Atlas. Website: http://www.ontarioinsects.org/atlas_online.htm (accessed September 2018).
- Township of Mulmur. 2010. Official Plan for the Township of Mulmur. Approved by the Ministry of Municipal Affairs and Housing on April 24, 2012. 235 pp.
- TRCA (Toronto and Region Conservation Authority) and CVC (Credit Valley Conservation). 2014. Evaluation, Classification and Management of Headwater Drainage Features Guidelines.



Appendix A. Plant List for the Mansfield Ski Club.



Appendix A. Mansfield Plant List, 2018.

Common Name	Scientific Name	Family	Grank2	Srank3	Tracked by NHIC	Native Status
Trees						
Russian Olive	<i>Elaeagnus angustifolia</i>	ELAEAGNACEAE	G?	se3	N	I
Green Ash	<i>Fraxinus pennsylvanica</i>	OLEACEAE	G5	S5	N	N
Black Walnut	<i>Juglans nigra</i>	JUGLANDACEAE	G5	S4	N	N
Siberian Crabapple	<i>Malus baccata</i>	ROSACEAE	G?	SNA	N	I
Common Apple	<i>Malus pumila</i>	ROSACEAE	G5	SNA	N	I
Norway Spruce	<i>Picea abies</i>	PINACEAE	G?	se3	N	I
White Spruce	<i>Picea glauca</i>	PINACEAE	G5	S5	N	N
Red Pine	<i>Pinus resinosa</i>	PINACEAE	G5	S5	N	N
Scotch Pine	<i>Pinus sylvestris</i>	PINACEAE	G?	SNA	N	I
Carolina Poplar	<i>Populus X canadensis</i>	SALICACEAE	HYB	SNA	N	I
Balsam Poplar	<i>Populus balsamifera ssp balsamifera</i>	SALICACEAE	G5T?	S5	N	N
European Mountain-ash	<i>Sorbus aucuparia</i>	SORBAUC	G5	se4	N	I
American Elm	<i>Ulmus americana</i>	ULMACEAE	G5	S5	N	N
Shrubs and vines						
Climbing Bittersweet	<i>Celastrus scandens</i>	CELASTRACEAE	G5	S5	N	N
Red-osier Dogwood	<i>Cornus stolonifera</i>	CORNACEAE	G5	S5	N	N
Dotted Hawthorn	<i>Crataegus punctata</i>	ROSACEAE	G5	S5	N	N
Tartarian Honeysuckle	<i>Lonicera tatarica</i>	CAPRIFOLIACEAE	GNR	SNA	N	I
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	VITACEAE	G5	S4?	N	N
Canada Plum	<i>Prunus nigra</i>	ROSACEAE	G4G5	S4	N	N
Choke Cherry	<i>Prunus virginiana ssp. virginiana</i>	ROSACEAE	G5T?	S5	N	N
Staghorn Sumac	<i>Rhus typhina</i>	ANACARDIACEAE	G5	S5	N	N
Eastern Prickly gooseberry	<i>Ribes cynosbati</i>	GROSSULARIACEAE	G5	S5	N	N
Wild Red Raspberry	<i>Rubus idaeus ssp. melanolasius</i>	ROSACEAE	G5T	S5	N	N
Heart-leaved Willow	<i>Salix eriocephala</i>	SALICACEAE	G5	S5	N	N
Slender Willow	<i>Salix petiolaris</i>	SAILCACEAE	G5	S5	N	N
Common Lilac	<i>Syringa vulgaris</i>	OLEACEAE	G?	SNA	N	I
Guelder-rose Viburnum	<i>Viburnum opulus</i>	CAPRIFOLIACEAE	G5	se4	N	I
Riverbank Grape	<i>Vitis riparia</i>	VITACEAE	G5	S5	N	N
Herbaceous Plants						

Common Yarrow	<i>Achillea millefolium ssp. lanulosa</i>	ASTERACEAE	G5	S5	N	N
Red-root Amaranth	<i>Amaranthus retroflexus</i>	AMARANTHACEAE	GNR	SNA	N	I
Ragweed	<i>Ambrosia artemisiifolia</i>	ASTERACEAE	G5	S5	N	N
Thimbleweed	<i>Anemone virginiana var. virginiana</i>	RANUNCULACEAE	G5	S5	N	N
Greater Burdock	<i>Arctium lappa</i>	ASTERACEAE	GNR	SNA	N	I
Common Milkweed	<i>Asclepias syriaca</i>	ASCLEPIADACEAE	G5	S5	N	N
Smooth Brome	<i>Bromus inermis ssp. inermis</i>	POACEAE	G4G5T?	SE5	N	I
Bebb's sedge	<i>Carex bebbii</i>	CYPERACEAE	G5	S5	N	N
Fox Sedge	<i>Carex vulpinoidea</i>	CYPERACEAE	G5	S5	N	I
Spotted Knapweed	<i>Centaurea maculosa</i>	ASTERACEAE	G?	SNA	N	I
Chicory	<i>Cichorium intybus</i>	ASTERACEAE	N	SNA	N	I
Enchanter's Nightshade	<i>Circaea lutetiana ssp. canadensis</i>	ONAGRACEAE	G5T5	S5	N	N
Canada Thistle	<i>Cirsium arvense</i>	ASTERACEAE	G?	SNA	N	I
Fleabane	<i>Conyza canadensis</i>	ASTERACEAE	G5	S5	N	N
Crown-vetch	<i>Coronilla varia</i>	FABACEAE	G?	SNA	N	I
Dotted Hawthorn	<i>Crataegus punctata</i>	ROSACEAE	G5	S5	N	N
Orchard Grass	<i>Dactylis glomerata</i>	POACEAE	G?	SNA	N	I
Queen Anne's Lace	<i>Daucus carota</i>	APIACEAE	G?	SNA	N	N
Deptford-pink	<i>Dianthus armeria</i>	CARYOPHYLLACEAE	G?	SNA	N	I
Quack Grass	<i>Elymus repens</i>	POACEAE	G5	SE5	N	I
Hairy Willow-herb	<i>Epilobium ciliatum ssp. ciliatum</i>	ONAGRACEAE	G5	S5	N	N
Great-hairy Willow-herb	<i>Epilobium hirsutum</i>	ONAGRACEAE	G?	SNA	N	I
Linear-leaved Willow-herb	<i>Epilobium leptophyllum</i>	ONAGRACEAE	G5	S5	N	N
Field Horsetail	<i>Equisetum arvensis</i>	EQUISETACEAE	G5	S5	N	N
White-top Fleabane	<i>Erigeron annuus</i>	ASTERACEAE	G5	S5	N	N
Philadelphia Fleabane	<i>Erigeron philadelphicus ssp. philadelphicus</i>	ASTERACEAE	G5T?	S5	N	N
Daisy Fleabane	<i>Erigeron strigosus</i>	ASTERACEAE	G5	S5	N	N
Spotted Joe-pye Weed	<i>Eupatorium maculatum ssp. maculatum</i>	ASTERACEAE	G5T5	S5	N	N
Grass-leaved Goldenrod	<i>Euthamia graminifolia</i>	ASTERACEAE	G5	S5	N	N
Virginia strawberry	<i>Fragaria virginiana ssp. virginiana</i>	ROSACEAE	G5T?	SU	N	N
White Bedstraw	<i>Galium mollugo</i>	RUBIACEAE	G?	SNA	N	I
Herb-robert	<i>Geranium robertianum</i>	GERANIACEAE	G5	SNA	N	N
Yellow Avens	<i>Geum aleppicum</i>	ROSACEAE	G5	S5	N	N
Orange Hawkweed	<i>Hieracium aurantiacum</i>	ASTERACEAE	G?	SE5	N	I
Common St. John's-wort	<i>Hypericum perforatum</i>	CLUSIACEAE	G?	SE5	N	I
Elecampane	<i>Inula helenium</i>	ASTERACEAE	G?	SNA	N	I
Jointed Rush	<i>Juncus articulatus</i>	JUNCACEAE	G5	S5	N	N

Bird's-foot Trefoil	<i>Lotus corniculatus</i>	FABACEAE	G?	SNA	N	I
Purple Loosestrife	<i>Lythrum salicaria</i>	LYTHRACEAE	G5	SNA	N	I
Alfalfa	<i>Medicago sativa ssp sativa</i>	FABACEAE	G?T?	SNA	N	I
Peppermint	<i>Mentha x piperita</i>	LAMIACEAE	HYB	se4	N	I
Evening Primrose	<i>Oenothera biennis</i>	ONAGRACEAE	G5	S5	N	N
Old Panic Grass	<i>Panicum capillare</i>	POACEAE	G5	S5	N	N
Wild Parsnip	<i>Pastinaca sativa</i>	APIACEAE	G?	SNA	N	I
Reed Canary Grass	<i>Phalaris arundinacea</i>	POACEAE	G5	S5	N	I
Timothy	<i>Phleum pratense</i>	POACEAE	G?	SE5	N	I
Common Reed	<i>Phragmites australis</i>	POACEAE	G5	S5	N	I
English Plantain	<i>Plantago lanceolata</i>	PLANTAGINACEAE	G5	SE5	N	I
Nipple-seed Plantain	<i>Plantago major</i>	PLANTAGINACEAE	G5	SE5	N	I
Black-seed Plantain	<i>Plantago rugelii</i>	PLANTAGINACEAE	G5	S5	N	N
Fowl Bluegrass	<i>Poa palustris</i>	POACEAE	G5	S5	N	N
Kentucky Bluegrass	<i>Poa pratensis ssp. pratensis</i>	POACEAE	G5T	S5	N	I
Norwegian Cinquefoil	<i>Potentilla norvegica ssp. monspeliensis</i>	ROSACEAE	G5T?	S5	N	N
Tall Buttercup	<i>Ranunculus acris</i>	RANUNCULACEAE	G5	SNA	N	I
Black-eyed Susan	<i>Rudbeckia hirta</i>	ASTERACEAE	G5	S5	N	N
Curly Dock	<i>Rumex crispus</i>	POLYGONACEAE	G?	SNA	N	I
Woolgrass Bulrush	<i>Scirpus atrovirens</i>	CYPERACEAE	G5?	S5	N	N
Green Bristle Grass	<i>Setaria viridis</i>	POACEAE	G?	SNA	N	I
Climbing Nightshade	<i>Solanum dulcamara</i>	SOLANACEAE	G?	SE5	N	I
Black Nightshade	<i>Solanum nigrum</i>	SOLANACEAE	G?	SNA	N	I
Tall Goldenrod	<i>Solidago altissima</i>	ASTERACEAE	G?	S5	N	N
Canada Goldenrod	<i>Solidago canadensis</i>	ASTERACEAE	G5	S5	N	N
Broad-leaved Goldenrod	<i>Solidago flexicaulis</i>	ASTERACEAE	G5	S5	N	N
Field Goldenrod	<i>Solidago nemoralis ssp nemoralis</i>	ASTERACEAE	G5T?	S5	N	N
Perennial Sowthistle	<i>Sonchus arvensis ssp uliginosus</i>	ASTERACEAE	G?T?	SNA	N	I
Johnson Grass	<i>Sorghum halepense</i>	POACEAE	G?	se2	N	I
Small Dropseed	<i>Sporobolus neglectus</i>	POACEAE	G5	S4	N	N
Sheathed Dropseed	<i>Sporobolus vaginiflorus</i>	POACEAE	G5	S4	N	N
Heart-leaved Aster	<i>Symphyotrichum cordifolium</i>	ASTERACEAE	G5	S5	N	N
Panicled Aster	<i>Symphyotrichum lanceolatus ssp. lanceolatus</i>	ASTERACEAE	G5T?	S5	N	N
Calico Aster	<i>Symphyotrichum lateriflorus var. lateriflorus</i>	ASTERACEAE	G5T5	S5	N	N
New England aster	<i>Symphyotrichum novae-angliae</i>	ASTERACEAE	G5	S5	N	N
Purple Stemmed Aster	<i>Symphyotrichum puniceus</i>	ASTERACEAE	G5T?	S5	N	N

Arrow-leaved Aster	<i>Aster urophyllus</i>	ASTERACEAE	G4	S4	N	N
common dandelion	<i>Taraxacum officinale</i>	ASTERACEAE	G5	SE5	N	I
Meadow Goat's-beard	<i>Tragopogon dubius</i>	ASTERACEAE	G?	SNA	N	I
Alsike Clover	<i>Trifolium hybridum ssp. elegans</i>	FABACEAE	G?	SNA	N	I
Red Clover	<i>Trifolium pratense</i>	FABACEAE	G?	SNA	N	I
White Clover	<i>Trifolium repens</i>	FABACEAE	G?	SE5	N	I
Colt's Foot	<i>Tussilago farfara</i>	ASTERACEAE	G?	SNA	N	I
Narrow-leaved Cattail	<i>Typha angustifolia</i>	TYPHACEAE	G5	S5	N	N
Broad-leaf Cattail	<i>Typha latifolia</i>	TYPHACEAE	G5	S5	N	N
Blue Cattail	<i>Typha x glauca</i>	TYPHACEAE	HYB	se4?	N	I
Slender Stinging Nettle	<i>Urtica dioica ssp gracilis</i>	URTICACEAE	G5T?	s5	N	I
Common Valerian	<i>Valeriana officinalis</i>	VALERIANACEAE	G?	se3	N	I
Common Mullein	<i>Verbascum thapsus</i>	SCROPHULARIACEAE	G?	SNA	N	I
Tufted Vetch	<i>Vicia cracca</i>	FABACEAE	G?	SNA	N	I
Downy Yellow Violet	<i>Viola pubescens</i>	VIOLACEAE	G5	S5	N	N

Appendix B. Breeding Bird List for the Mansfield Ski Club.



Appendix B. Breeding Birds of Mansfield Ski Hill, 2018

Common Name	Scientific Name	Status					Locations			
		National Species at Risk COSEWIC designation ^a	National Species at Risk Species at Risk Act Designation ^a	Species at Risk in Ontario Listing ^b	Provincial breeding season SRANK ^c	Area-sensitive (OMNR) ^d	1	2	3	4
Turkey Vulture	<i>Cathartes aura</i>				S5			1	1	
American Kestrel	<i>Falco sparverius</i>				S4			1		
Mourning Dove	<i>Zenaidura macroura</i>				S5		2	1	2	1
Downy Woodpecker	<i>Picoides pubescens</i>				S5		1			
Northern Flicker	<i>Colaptes auratus</i>				S4			1		
Eastern Wood-Pewee	<i>Contopus virens</i>	SC		SC	S4		1			
Willow Flycatcher	<i>Empidonax traillii</i>				S5				1	
Eastern Phoebe	<i>Sayornis phoebe</i>				S5		1	1		
Eastern Kingbird	<i>Tyrannus tyrannus</i>				S4				1	1
Tree Swallow	<i>Tachycineta bicolor</i>				S4				1	
Barn Swallow	<i>Hirundo rustica</i>	THR		THR	S4				6	
Black-capped Chickadee	<i>Poecile atricapillus</i>				S5			1		
White-breasted Nuthatch	<i>Sitta carolinensis</i>				S5	A		1		1
House Wren	<i>Troglodytes aedon</i>				S5		1	3	2	1
Eastern Bluebird	<i>Sialia sialis</i>				S5		1			
American Robin	<i>Turdus migratorius</i>				S5		2	1		
Brown Thrasher	<i>Toxostoma rufum</i>				S4				1	
Cedar Waxwing	<i>Bombycilla cedrorum</i>				S5		1	1	1	1
European Starling	<i>Sturnus vulgaris</i>				SE				2	
Red-eyed Vireo	<i>Vireo olivaceus</i>				S5					1
Yellow Warbler	<i>Setophaga petechia</i>				S5				2	
Common Yellowthroat	<i>Geothlypis trichas</i>				S5		1		4	
Northern Cardinal	<i>Cardinalis cardinalis</i>				S5			1	1	
Indigo Bunting	<i>Passerina cyanea</i>				S4		2		1	
Chipping Sparrow	<i>Spizella passerina</i>				S5		1	2		
Field Sparrow	<i>Spizella pusilla</i>				S4		1			
Savannah Sparrow	<i>Passerculus sandwichensis</i>				S4	A				1
Song Sparrow	<i>Melospiza melodia</i>				S5		5	4	4	2
Swamp Sparrow	<i>Melospiza georgiana</i>				S5				1	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>				S4		4		2	
Eastern Meadowlark	<i>Sturnella magna</i>	THR		THR	S4	A			1	
Common Grackle	<i>Quiscalus quiscula</i>				S5		1		1	
American Goldfinch	<i>Spinus tristis</i>				S5		3	3	3	1

Field Work Conducted On: June 29 and July 10, 2018 between 7:00-10:00 hours

Weather Conditions: Temperature 18-30°C, Wind 0-4, Cloud 0, Precipitation 0

Location 1 - Main Parking Lot

Location 2 - Top of Ski Hill

Location 3 - Snow Pond Area

Location 4 - Pumphouse

Number of Species:	33
Number of (provincial and national) Species at Risk:	3
Number of S1 to S3 Species:	0
Number of Area-sensitive Species:	3

Location 1 - Main Parking Lot

Number of Species:	16
Number of (provincial and national) Species at Risk:	1
Number of S1 to S3 Species:	0
Number of Area-sensitive Species:	0

Location 2 - Top of Ski Hill

Number of Species:	14
Number of (provincial and national) Species at Risk:	0
Number of S1 to S3 Species:	0
Number of Area-sensitive Species:	1

Location 1 - Snow Pond Area

Number of Species:	20
Number of (provincial and national) Species at Risk:	2
Number of S1 to S3 Species:	0
Number of Area-sensitive Species:	1

Location 1 - Pumphouse

Number of Species:	9
Number of (provincial and national) Species at Risk:	0
Number of S1 to S3 Species:	0
Number of Area-sensitive Species:	2

KEY

a COSEWIC = Committee on the Status of Endangered Wildlife in Canada

b Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario)

END = Endangered, THR = Threatened, SC = Special Concern

^c SRANK for breeding status if:

S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)

SH (historical, possibly extirpated)

SNA (Not applicable...'because the species is not a suitable target for conservation activities'; includes non-native species),

NatureServe. 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available at: <http://www.natureserve.org/explorer>

d Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.