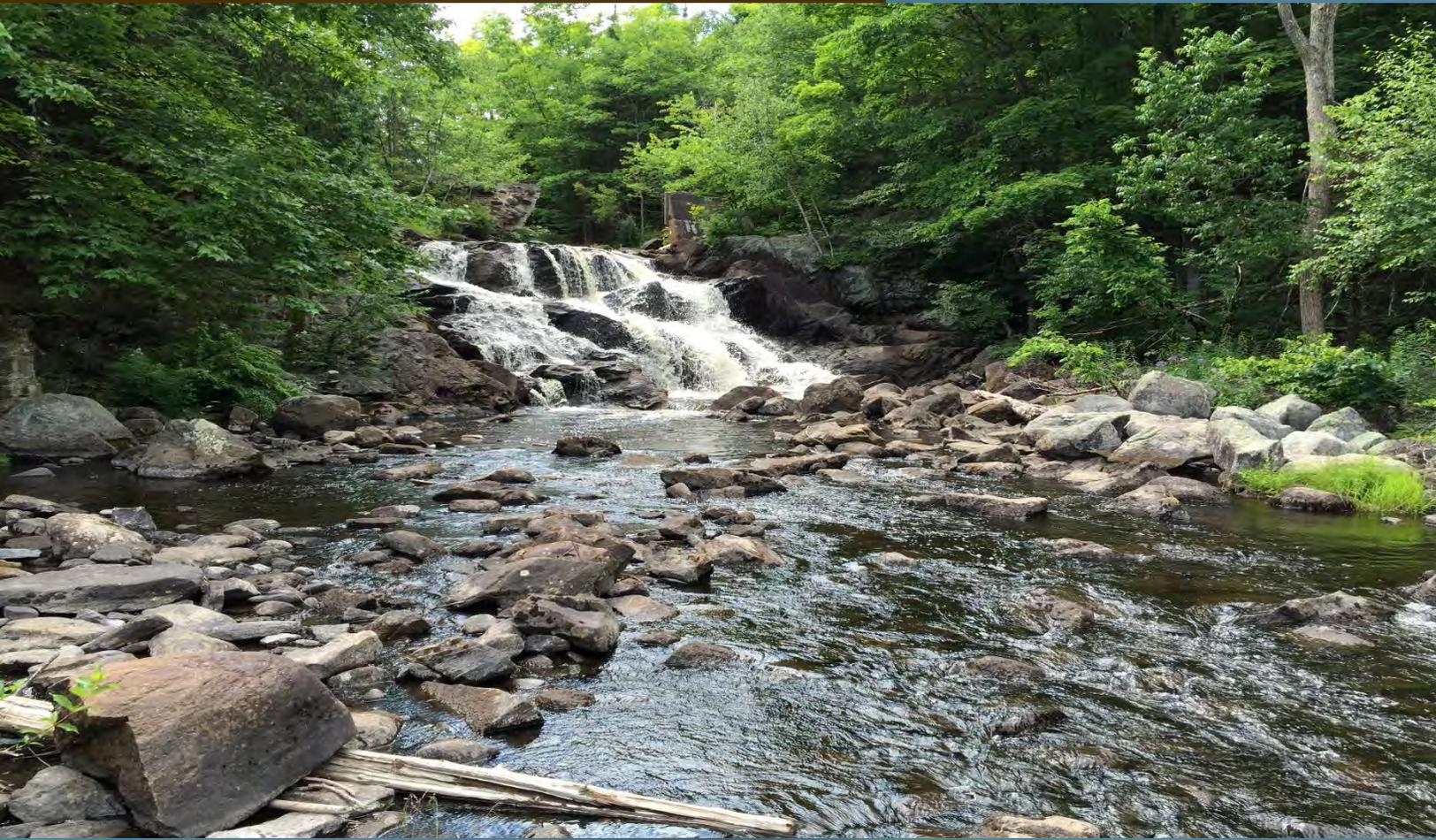
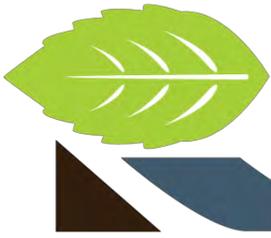




Species at Risk Surveys
Old Man's Creek Reserve
Magnetawan Watershed Land Trust
November 2016



RIVERSTONE
ENVIRONMENTAL SOLUTIONS INC.



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ENVIRONMENTAL SOLUTIONS INC.

November 10, 2016
RS# 2016-013

Valerie Fieldwebster
Coordinator
Magnetawan Watershed Land Trust
P.O. Box 300018
Huntsville, ON P1H 2A0
Via email to: magnetawanwlt@gmail.com

**SUBJECT: Species at Risk Surveys
Old Man's Creek Reserve
Municipality of Magnetawan**

Dear Ms. Fieldwebster,

RiverStone Environmental Solutions Inc. is pleased to provide you with the attached report.

Please contact us if there are any questions regarding the report, or if further information is required.

Best regards,

RiverStone Environmental Solutions Inc.

Report prepared by:

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1 **BACKGROUND**

RiverStone Environmental Solutions Inc. (hereafter, “RiverStone”) was retained by the Magnetawan Watershed Land Trust to conduct surveys for species at risk (SAR) at a property known as the Old Man’s Creek Reserve (hereafter, “OMC Reserve”). OMC Reserve is an approximately 97 ha property that straddles Old Man’s Creek in the Municipality of Magnetawan, just south of Ahmic Lake. The property is legally described as Part of Lots 3 and 4, Concession 1 and 2, in the former Geographic Township of Croft. The community of Burk’s Falls is approximately 25 km east of the property.

OMC Reserve contains a variety of forest and wetland vegetation communities along with aquatic habitat associated with Old Man’s Creek. Forest communities tend to be deciduous, late-successional, and mature, dominated by a mixture of Sugar Maple (*Acer saccharum*), American Beech (*Fagus grandifolia*), and Red Oak (*Quercus rubra*). Eastern Hemlock (*Tsuga canadensis*) comprises a greater proportion of the canopy in topographic lows (e.g., slopes adjacent to Old Man’s Creek) and north facing slopes. Mixed forest communities on-site are dominated by various Poplars (*Populus* spp.), White Birch (*Betula papyrifera*), and Balsam Fir (*Abies balsamea*). Thicket Swamps containing Speckled Alder (*Alnus incana*) line the margins of Old Man’s Creek near the base of the waterfall, while pockets of lowland Deciduous and Conifer Swamp have emerged in the valleys between the numerous ridges on the property.

The focus of RiverStone’s surveys at OMC Reserve was to ascertain the presence/absence of SAR birds and bats. During the SAR bird and bat surveys, additional features with the potential to provide SAR habitat were also noted and reported herein.

2 **APPROACH AND METHODS**

Table 1 below summarizes the site assessment dates and level of field effort expended at OMC Reserve in respect of the SAR bird and bat surveys.

Table 1. Site visits and primary tasks completed in 2016.

Date	Primary tasks	RiverStone Staff	Time spent on site
June 1, 2016	SAR Breeding Bird Survey	Tristan Knight (with Valerie Fieldwebster of MWLT)	5 hours
July 5, 2016	SAR Breeding Bird Survey	Tristan Knight	5 hours
July 12-21, 2016	Acoustic Surveys for SAR Bats	-	9 nights

2.1 **Species at Risk Breeding Bird Surveys**

Two (2) rounds of breeding bird surveys were conducted at OMC Reserve in general accordance with the Ontario Breeding Bird Atlas (OBBA) protocol (Bird Studies Canada et al. 2001). Surveys were conducted within the appropriate season (May 24–July 10), time of day (between dawn and approximately 5 hours after dawn), and weather conditions (no rain, wind speed ≤ 3 on the Beaufort Wind Scale). Rather than establishing point count stations, the surveys consisted of a detailed “area search” that involved walking transects across the property in areas with the greatest potential to function as habitat for SAR birds. The highest level of breeding evidence was recorded for each bird species recorded. The OBBA provides four breeding categories to accompany each observation:

Observed: Species observed during its breeding season (no evidence of breeding).

Possible Breeding: Includes any of the following observation types: 1) species observed in its breeding season in suitable nesting habitat, and 2) singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat.

Probable Breeding: Includes any of the following observation types: 1) pair observed in their breeding season in suitable nesting habitat, 2) permanent territory presumed through registration of territorial song on at least 2 days, a week or more apart, at the same place, 3) courtship or display between a male and a female or 2 males, including courtship feeding or copulation, 4) visiting probable nest site, 5) agitated behaviour or anxiety calls of an adult, 6) brood patch on adult female or cloacal protuberance on adult male, and 7) nest-building or excavation of nest hole.

Confirmed Breeding: Includes any of the following observation types: 1) distraction display or injury feigning, 2) used nest or egg shell found (occupied or laid within the period of the study), 3) recently fledged young or downy young, including young incapable of sustained flight, 4) adults leaving or entering nest site in circumstances indicating occupied nest, 5) adult carrying faecal sac, 6) adult carrying food for young, 7) nest containing eggs, and 8) nest with young seen or heard.

2.2 Species at Risk Bat Acoustic Monitoring

Targeted surveys for SAR Bats (Little Brown Myotis [*Myotis lucifugus*]; Northern Myotis [*Myotis septentrionalis*]; Tri-coloured Bat [*Perimyotis subflavus*]) focused on (1) identifying locations with the potential to provide habitat for maternal roosting colonies of bats, and (2) identifying the species of bats present at the potential habitat sites via acoustic monitoring. Surveys were directed by the MNRF protocols outlined in OMNR (2010) and (OMNR 2011) as modified by Parry Sound District MNRF (MNRF 2016 Draft).

General conditions of OMC Reserve forest communities were documented during the morning breeding bird surveys. Areas with a high potential to function as habitat for bats (e.g., presence of clustered snag trees and/or cavity trees, open areas for foraging, etc.) were noted to provide direction for deploying acoustic survey equipment. Results of the snag/cavity tree observations were reviewed in conjunction with aerial photography to identify areas with the highest potential of providing habitat for SAR Bats. As the majority of Species at Risk Bats in Ontario forage in communities with open canopies, it was determined that the acoustic survey sites should be located in areas containing snag/cavity trees that are in proximity to openings in the forest canopy (e.g., forest edges, wetlands, watercourses, etc.).

Acoustic monitoring equipment (i.e., bat detectors) are used to record bat “calls” that are produced by individual bats as part of their echolocation process. While some overlap exists in the call characteristics of individual species of bats, echolocation calls can be used to identify the species of bats present in a given location. Echolocation calls are made at frequencies above the range of typical human hearing and as such, recording and analysis of these calls requires ultrasonic equipment.

Acoustic recorders (Wildlife Acoustics SM4, Full Spectrum) were placed at two (2) locations on the property. Each of the sites were surveyed for nine (9) straight nights to determine whether bat species were present and provide a measure of relative abundance of each species recorded at a given location.

As previously stated, calls made by bats are above the threshold of typical human hearing abilities. To analyse the calls collected by the acoustic recorders, specialized analysis software (Kaleidoscope Pro) was used to visually display individual calls collected by the acoustic recorders. Individual species and their relative abundance was determined from the acoustic data collected.

3 RESULTS

3.1 Species at Risk Breeding Bird Surveys

Two (2) bird SAR were recorded during the breeding bird surveys: Eastern Wood-pewee (*Contopus virens*) and Wood Thrush (*Hylocichla mustelina*). The locations where both species were recorded at OMC Reserve is noted on **Figure 1**. Representative photographs of OMC Reserve which illustrate key SAR bird (and other SAR) habitats can be found in **Appendix 1**.

Eastern Wood-pewee is designated *Special Concern* by the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and *Special Concern* under the provincial *Endangered Species Act* (ESA). In Ontario, Eastern Wood-pewee is most commonly associated with open, deciduous and mixed forests of various sizes (including fragmented woodlots in predominately agricultural landscapes south of the Canadian Shield). This species is also commonly found along forest edges. Eastern Wood-pewee's preference for open forests and forest edges is often attributed to its aerial foraging behaviour. Eastern Wood-pewee is considered a "probable" breeder on the Old Man's Creek Reserve owing to it being recorded during both RiverStone site visits in the same general location and habitat near the northern boundary of the property. The forest community in this portion of OMC Reserve contains a late-successional Deciduous Forest dominated by widely-spaced, mature Sugar Maple (*Acer saccharum*) with limited shrub/sapling density, which provides good foraging opportunities for this species (see Photo 1 in **Appendix 1**).

Wood Thrush is designated *Threatened* by COSSARO and *Special Concern* under the ESA. In Ontario, Wood Thrush is most commonly associated with second-growth deciduous and mixed forests that contain abundant woody undergrowth (e.g., regenerating tree species and shrubs). Wood Thrush was recorded on the first survey (June 1) in a second growth forest with a dense regenerating understory, which conforms well to its habitat preferences described above (see Photo 2 in **Appendix 1**). Although this species was not recorded during the second site visit in July, Wood Thrush is known to vocalize less frequently near the terminus of the breeding season (pers. obs.). Given suitable habitat for this species across much of the central and eastern portions of the property, it is possible that this species breeds at OMC Reserve.

A full list of all bird species recorded during the breeding bird surveys, including each species' breeding status, is provided in **Appendix 2**. Many of the bird species recorded are considered area-sensitive and are only found in relatively large, contiguous deciduous and mixed forest communities. Certain species associated with more shrubby areas/thickets (e.g., Mourning Warbler, Nashville Warbler, Common Yellowthroat etc.) were recorded within or adjacent to the Speckled Alder (*Alnus incana*) thicket swamp that fringes the edge of Old Man's Creek. It is noteworthy that the bird surveys were focused within areas with a high potential to support SAR birds rather than to provide a complete list of bird species on the property.

3.2 Species at Risk Bat Acoustic Monitoring

RiverStone completed bat acoustic surveys in the summer of 2016; locations where the acoustic monitoring equipment was deployed are provided on **Figure 1**

Acoustic detections of bats or “bat passes” are often used as a measure of relative abundance of bats (Miller 2001). Based on the data collected, overall abundance of bats was generally low. It should be highlighted that the “number of passes” does not equate with “number of individuals recorded” at a particular monitoring station, since the same individual bat may trigger the monitoring device several times while flying/foraging in the area around the device.

Silver-haired Bat (*Lasionycteris noctivagans*) was the most commonly detected species at both acoustic monitoring stations (**Table 2**), followed by Big Brown Bat (*Eptesicus fuscus*) and Hoary Bat (*Lasiurus cinereus*). There is overlap in the call repertoire of Silver-haired Bat and Big Brown Bat; as such, some portion of the calls made by these two species cannot be confidently identified. The more numerous calls identified by the acoustic software as Silver-haired Bat suggest that this species is likely present on site, but the relatively few calls identified as Big Brown Bat may be Silver-haired Bat or Big Brown Bat. The call signature (i.e., spectrogram) of Hoary Bat is more unique amongst Ontario bats, and as such the calls identified as this species are more reliably identified.

As the most abundant bat recorded at OMC Reserve, male and non-breeding female Silver-haired Bats typically roost alone during the day under bark, in cavities, and in foliage. Gestating females and females with young congregate into maternal colonies located most often in tree cavities in the early stages of decay. Hoary Bats have similar habitat preferences, and are the largest bat in Ontario. Silver-haired Bats and Hoary Bats (along with Red Bats, not recorded at OMC Reserve) migrate south and are not known to overwinter in Ontario. No Species at Risk Bats were detected during the acoustic monitoring completed on the subject property.

Table 2. Results of acoustic surveys for bats in 2016. See **Figure 1** for the location of surveys stations.

Survey Station	Start of Acoustic Monitoring	End of Acoustic Monitoring	Species Detection (No. of Passes)
Location 1	Jul 12 (pm)	Jul 21 (am)	Big Brown Bat (5) Hoary Bat (5) Silver-haired Bat (25)
Location 2	Jul 12 (pm)	Jul 21 (am)	Big Brown Bat (3) Silver-haired Bat (97)

The acoustic surveys were completed in early July; maternal roosting colonies of Little Brown Myotis, Northern Myotis, and Tri-colored Bat persist into July with pups being born between late June and early July (COSEWIC 2013). This suggests that given the timing of our surveys, if SAR Bats were present within the vicinity of the acoustic monitoring equipment deployed at OMC Reserve, our efforts should have detected them.

3.3 Additional Species at Risk Habitats

During the SAR bird surveys, any observed features that had the potential to function as habitat for species at risk (other than birds) was recorded. A description of other SAR that occur or have the potential to occur at OMC Reserve is provided below.

One (1) dead Snapping Turtle (*Chelydra serpentina*; designated *Special Concern* in Ontario) was observed at the edge of OMC Reserve (west side of Old Man's Creek) during the first breeding bird survey on June 1, 2016. The specimen was beginning to decompose but was in relatively good condition; cause of death is unknown. Old Man's Creek between the upstream lake (i.e., north of Ahmic Lake Road) and Ahmic Lake contains suitable habitat for Snapping Turtle, which occurs in a wide variety of aquatic environments and has less specialized habitat requirements compared to other SAR turtles in Ontario. The lower reaches of Old Man's Creek (i.e., below the waterfalls) are relatively wide (15-45 m) and contain aquatic vegetation and structural elements (e.g., coarse woody debris, etc.) that could function as basking habitat for this species.

Apart from Snapping Turtle, Old Man's Creek and its adjacent forested riparian zone has the potential to function as habitat for other SAR herpetofauna. Eastern Ribbonsnake (*Thamnophis sauritus*; designated *Special Concern* in Ontario) generally occurs along the edges of lakes, ponds, streams, and wetlands, particularly those that consist of low, dense shoreline vegetation. This species is also known to make forays into adjacent terrestrial areas (e.g., forests, meadows) in pursuit of prey and/or basking opportunities. Although OMC Reserve is situated near the known northern limit of this species' range, suitable habitat for this species is present along the Old Man's Creek corridor.

Northern Map Turtle (*Graptemys geographica*; designated *Special Concern* in Ontario) may also be present within Old Man's Creek, particularly the lower reaches (i.e., where it widens at least 30 m). Northern Map Turtle typically inhabits lakes and larger river systems and is less likely to be found in ponds and smaller wetlands that support many other turtle species in Ontario. This species is generally restricted to aquatic environments (preferring to travel underwater in shallow areas to reach different habitats within its home range), but may travel overland to access nesting areas in May and June. Habitat for Blanding's Turtle (*Emydoidea blandingii*; designated *Threatened* in Ontario) and Spotted Turtle (*Clemmys guttata*; designated *Endangered* in Ontario) appears to be limited at OMC Reserve and adjacent lands given the lack of ponds with abundant vegetation and peatlands, respectively. Notwithstanding the above, the possibility of these two species make use of the lower reaches of Old Man's Creek as a movement corridor or feeding habitat and can only be ascertained with certainty by surveys conducted under appropriate conditions.

Near the northern boundary of the OMC Reserve (in the general vicinity of where Eastern Wood-pewee was recorded) a patch of Two-leaved Toothwort (*Cardamine diphylla*) was observed. Species in the genus *Cardamine* are the host plant for the West Virginia White (*Pieris virginiensis*; designated *Special Concern* in Ontario) butterfly. This species is generally associated with mesic deciduous and mixed forest (where *Cardamine* is present) and will nectar on a variety of spring ephemeral wildflowers including Yellow Trout Lily (*Erythronium americanum*) and Trilliums (*Trillium* spp.). The flight period for adults of this species occurs from early April to mid-June in Ontario. Although the current Ontario distribution of this species is not well-known, there is a recent observation of this species from southern Parry Sound District and it is known to occur northward along the eastern shore of Lake Superior in Algoma District (Burke 2013). Although the limited records of this species in Ontario suggests that the likelihood of this species being present at OMC Reserve is low, butterfly

surveys conducted in April-June would be required to ascertain the presence or absence of West Virginia White with greater certainty.

A small open rock barren with a thick mat of Reindeer Lichen (*Cladonia rangiferina*) and other lichen and moss species was observed at the extreme southern boundary of OMC Reserve east of Old Man's Creek. Rock barrens provide openings in the canopy and structural elements (e.g., cover rocks, coarse woody debris, etc.) that can provide habitat for certain species of SAR herpetofauna in Ontario, such as (among others) Five-lined Skink (*Plestiodon fasciatus*; designated *Special Concern* in Ontario) and Eastern Hog-nosed Snake (*Heterodon platirhinos*; designated *Threatened* in Ontario). Brief efforts were made within the above-noted rock barren to search for SAR herpetofauna during the June 1 site visit. Overall, the rock barren was small and appeared to lack structure (e.g., cracks/crevices, cover rocks, coarse woody debris, etc.), which decreases the likelihood that SAR herpetofauna make use of the area.

4 **RECOMMENDATIONS FOR FURTHER SAR ASSESSMENTS**

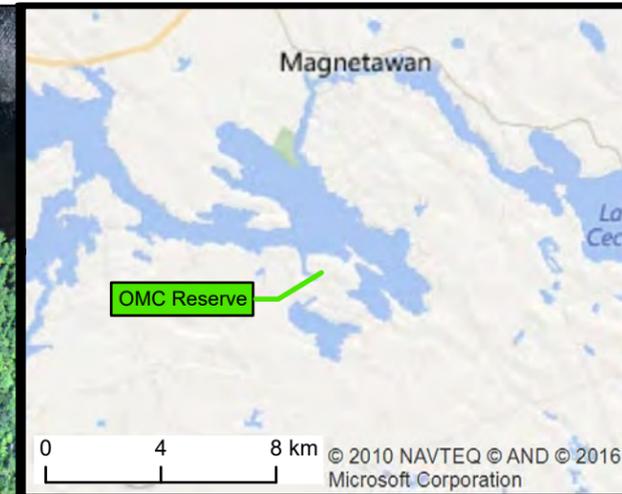
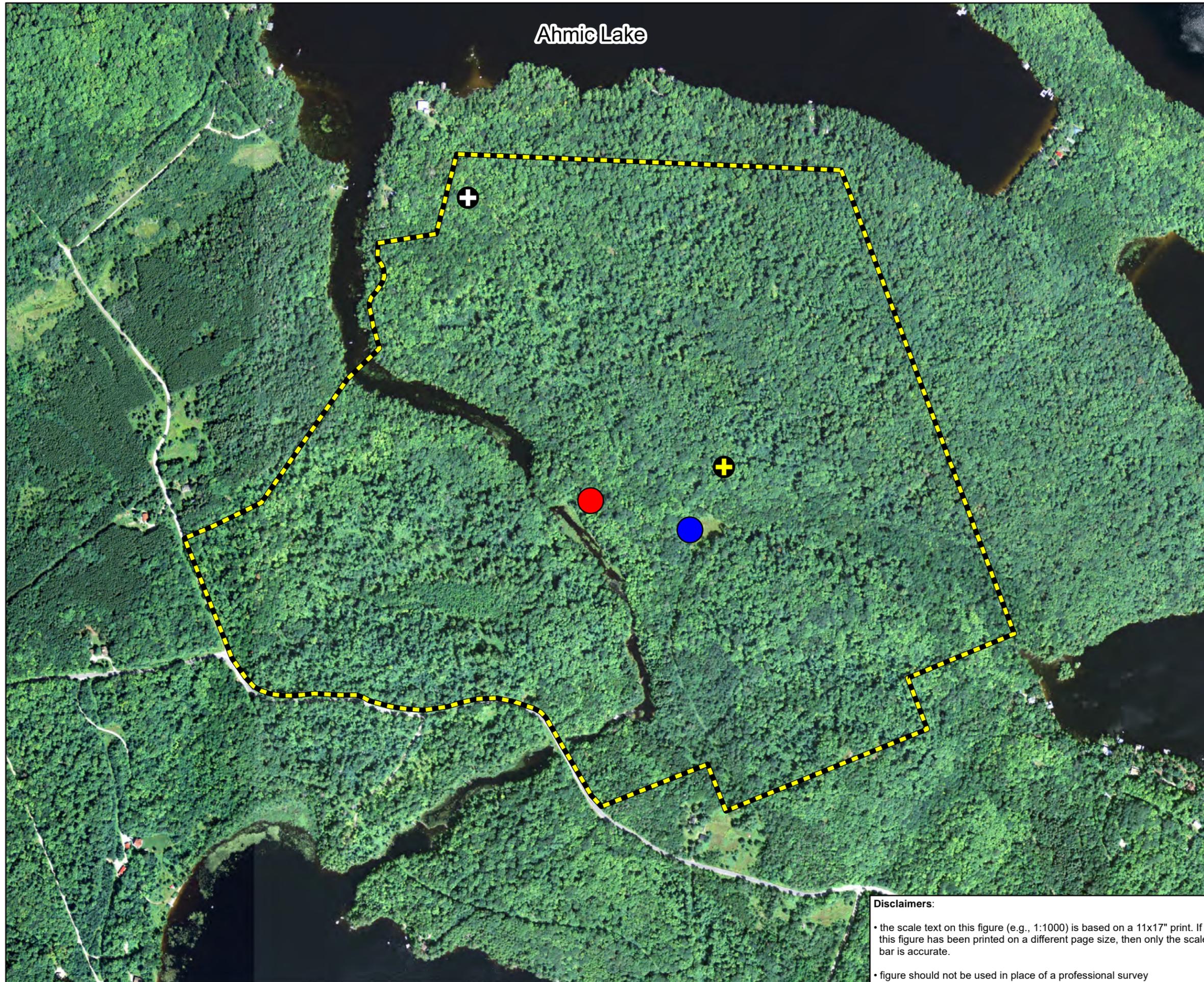
Based on the SAR bird and bat surveys conducted by RiverStone in 2016, along with incidental observations of features that could provide habitat for other SAR species, some considerations for further SAR surveys on the property are as follows.

As noted in **Section 3.2**, no SAR bat species were detected at the two (2) acoustic monitoring stations over the nine (9) evening survey period. Although the acoustic monitoring equipment was deployed in areas with a high potential to function as maternity roosts and/or foraging areas for SAR bats, the equipment only has a detection limit of approximately 30 m. Additional areas on the OMC Reserve also have a high potential to function as habitat for SAR bats, including the riparian forests along Old Man's Creek, and the mature deciduous forest at the north end of the property. A more comprehensive acoustic survey including deployment of equipment in a greater variety of locations could result in successful detection of SAR bats at OMC Reserve.

Although potential habitat for other SAR taxa was described in **Section 3.3** overall to be low, surveys for turtles (particularly Northern Map Turtle) and skink/snakes could result in additional observations of SAR at OMC Reserve.

5 **REFERENCES**

- Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature.** 2001. Ontario breeding bird atlas: guide for participants.
- Burke, P. S.** 2013. Management Plan for the West Virginia White (*Pieris virginiensis*) in Ontario. Ontario Management Plan Series,
- COSEWIC.** 2013. COSEWIC assessment and status report on the Little Brown Myotis *Myotis lucifugus*, Northern Myotis *Myotis septentrionalis* and Tri-colored Bat *Perimyotis subflavus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. .
- Miller, B. W.** 2001. A method for determining relative activity of free flying bats using a nw activity index for acoustic monitoring. *Acta Chiropterologica* **3**:93-105.
- OMNR.** 2010. Bats and bat habitats: guidelines for wind power projects. 25 pp.



Legend

Planning Boundaries
 Old Man's Creek Reserve

Locations of Deployed Bat Acoustic Monitoring Equipment
 Location 1 - Clearing (Timber Landing)
 Location 2 - Cluster of Snags

Locations of Bird Species at Risk Recorded by RiverStone in 2016
 Eastern Wood-pewee
 Wood Thrush

Orthorectified aerial photo - September 2011

Scale	RS Project No.	Date Last Updated	By
1:6,000	2016-013	Oct 28, 2016	TK

0 90 180 Metres

Figure 1. Location SAR Birds Recorded and Bat Acoustic Monitoring Stations at the Old Man's Creek Reserve.

Prepared for the Magnetawan Watershed Land Trust.

Disclaimers:

- the scale text on this figure (e.g., 1:1000) is based on a 11x17" print. If this figure has been printed on a different page size, then only the scale bar is accurate.
- figure should not be used in place of a professional survey

Appendix 1. Select Photographs from the Species at Risk Surveys conducted at Old Man's Creek Reserve in 2016.





Photo 1. Mature, open deciduous forest near the northern limit of the OMC Reserve where Eastern Wood-pewee was recorded (Jun 1, 2016).



Photo 2. Deciduous forest with greater understory density in the approximate centre of OMC Reserve where Wood Thrush was recorded (Jun 1, 2016).



Photo 3. Bat Acoustic Monitoring Station #1 at the interface of the deciduous forest and former timber landing (Jul 12, 2016).



Photo 4. Bat Acoustic Monitoring Station #2 situated amidst a cluster of snags/cavity trees which may act as roosting habitat for bats (Jul 12, 2016).



Photo 5. A large, tall snag near the northern limit of the OMC Reserve, which may act as potential roosting habitat for bats (including SAR bats) (Jun 1, 2016).



Photo 6. Deceased Snapping Turtle near the northern limit of OMC Reserve adjacent to the west side of Old Man's Creek (Jun 1, 2016).



Photo 7. Two-leaved Toothwort (*Cardamine diphylla*), the host plant of West Virginia White Butterfly (Jun 1, 2016).



Photo 8. Small rock barren at the southern limit of the OMC Reserve, which has some potential to function as habitat for SAR herpetofauna (particularly Five-lined Skink and snakes) (Jun 1, 2016).

Appendix 2. List of Bird Species Recorded at Old Man's Creek Reserve in 2016.



Common Name	Scientific Name	Highest Breeding Evidence Recorded
American Crow	<i>Corvus brachyrhynchos</i>	Possible
American Goldfinch	<i>Carduelis tristis</i>	Possible
American Redstart	<i>Setophaga ruticilla</i>	Probable
American Robin	<i>Turdus migratorius</i>	Probable
Belted Kingfisher	<i>Ceryle alcyon</i>	Observed
Blackburnian Warbler	<i>Setophaga fusca</i>	Probable
Black-and-white Warbler	<i>Mniotilta varia</i>	Probable
Black-capped Chickadee	<i>Poecile atricapillus</i>	Probable
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	Probable
Black-throated Green Warbler	<i>Dendroica virens</i>	Probable
Blue Jay	<i>Cyanocitta cristata</i>	Probable
Blue-winged Teal	<i>Anas discors</i>	Observed
Broad-winged Hawk	<i>Buteo platypterus</i>	Possible
Brown Creeper	<i>Certhia americana</i>	Possible
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	Probable
Common Grackle	<i>Quiscalus quiscula</i>	Probable
Common Raven	<i>Corvus corax</i>	Possible
Common Yellowthroat	<i>Geothlypis trichas</i>	Possible
Eastern Wood-pewee	<i>Contopus virens</i>	Probable
Hairy Woodpecker	<i>Picoides villosus</i>	Probable
Hermit Thrush	<i>Catharus guttatus</i>	Probable
Least Flycatcher	<i>Empidonax minimus</i>	Probable
Mourning Warbler	<i>Geothlypis philadelphia</i>	Probable
Northern Flicker	<i>Colaptes auratus</i>	Possible
Northern Parula	<i>Setophaga americana</i>	Possible
Northern Waterthrush	<i>Parkesia noveboracensis</i>	Possible
Ovenbird	<i>Seiurus aurocapilla</i>	Probable
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Possible
Red-eyed Vireo	<i>Vireo olivaceus</i>	Probable
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Probable
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	Possible
Scarlet Tanager	<i>Piranga olivacea</i>	Probable
Veery	<i>Catharus fuscescens</i>	Probable
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Probable
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Confirmed
Winter Wren	<i>Troglodytes hiemalis</i>	Probable
Wood Thrush	<i>Hylocichla mustelina</i>	Possible
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Possible
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Probable
Yellow-rumped Warbler	<i>Setophaga coronata</i>	Possible