NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

May 16, 2019 Project 2238

Rob Guttridge
JR Capital Holdings
2963 Brigden Road
Brigden, ON
N0N 1B0

Dear Mr. Guttridge

RE: 1873 London Line, Sarnia – Species at Risk Assessment

Natural Resource Solutions Inc. (NRSI) is pleased to provide the following Species at Risk (SAR) assessment for the property located at 1873 London Line in Sarnia, Ontario as requested by the City of Sarnia, County of Lambton, and the St. Clair Region Conservation Authority (SCRCA).

The subject property is currently managed as a golf course and is bordered by the Telfer Diversion Channel and a residential subdivision to the west; an aggregate pit, agricultural fields, and naturalized lands associated with Waddell Creek to the south; a cemetery, pond, and natural lands to the east; and London Line to the north. Habitat for SAR is limited, as the lands on the subject property are comprised mostly of manicured lawn/golf greens as well as a few constructed ponds and planted trees throughout.

NRSI carried out an assessment of SAR habitat within the subject property that involved review of available background resources, assessment of existing habitats, and follow-up field surveys to confirm the presence/absence of SAR. These steps are described in further detail below, along with recommendations for addressing SAR moving forward.

Background Review

This SAR assessment included a review of desktop sources. Most of the sources listed below provide data in 10kmx10km squares and information from squares overlapping the subject property were included in this screening (17LH95, 17LH96).

- Aerial imagery;
- City of Sarnia SAR List (MNRF 2018a);
- Ontario Breeding Bird Atlas (BSC et al. 2018);
- Ontario Butterfly Atlas (Jones et al. 2018);
- Ontario Odonata Atlas (NHIC 2018);
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2018);
- Ontario Mammal Atlas (Dobbyn 1994);
- Natural Heritage Information Centre Database (MNRF 2018b); and
- Fisheries and Oceans Canada – Aquatic SAR Mapping (DFO 2018).

In addition, NRSI also contacted the Aylmer District Ministry of Natural Resources and Forestry (MNRF), as well as the SCRCA on February 28, 2019 to request additional information on SAR not included within the other background sources. NRSI also distributed the '*Preliminary SAR*

Assessment' letter dated March 7, 2019 to both agencies in order to receive any feedback they may have had on proposed field methodologies. A response was received from the SCRCA on March 21, 2019, and their letter, along with NRSI's *Preliminary SAR Assessment* letter, are attached in Appendix I. To date no response has been received from the MNRF (or the MECP, since the Ministry of Environment, Conservation and Parks took over SAR files as of April 1, 2019).

Field Surveys

Following NRSI's background review and preliminary assessment of SAR (Appendix I), NRSI biologists completed two site visits to assess the potential for SAR to occur within the subject property, on April 12th and May 6th, 2019. These surveys were primarily focused on detection of basking turtles, but were also suitable for determining the suitability of the habitats on the subject property for the other SAR and Species of Conservation Concern (SCC). The specific details and conditions of these two surveys are provided in Table 1.

Table 1. London Line SAR Survey Conditions

Date	Time (24hr)	Surveyors	Temperature (°C)	Wind Speed (Beaufort	Cloud Cover %	Precipitation
April 12, 2019	1400-1645	C. Humphrey, E. McCann	17	5	90	None
May 6, 2019	1100-1345	C. Humphrey, E. McCann	19	2	90	None

For turtle basking surveys, NRSI followed the MNRF *Survey Protocol for Blanding's Turtle (Emydoidea blandingii) in Ontario (August 2015)*, which, based on discussions with MNRF staff, is appropriate for surveying for other turtle species as well. During the course of these surveys, NRSI biologists walked the perimeter of each pond, scanning frequently with binoculars to detect basking turtles. All species were documented during the course of these surveys. Two species of turtles were identified: Midland Painted Turtle (*Chrysemys picta*) and Snapping Turtle (*Chelydra serpentina*), both within and adjacent to the subject property (Map 1). Although neither of these species are considered regulated SAR (i.e. Threatened or Endangered provincially), Snapping Turtle is considered a species of 'Special Concern' both provincially and federally, while Midland Painted Turtle is designated as 'Special Concern' federally only.

In addition, NRSI biologists also assessed potential habitat for SAR bats and Barn Swallows within the existing structures on-site. A total of 24 Barn Swallow nests were identified on two separate small shelters on the golf course. All of these nests are considered 'active' as they are in good shape and appear to be recently constructed. Barn Swallow were observed foraging and landing in many of these nests during the May 6, 2019 site visit. Barn Swallow are considered Threatened both provincially and federally and are protected under the Endangered Species Act. None of the structures observed within the subject property are suitable for bat roosting.

No other SAR or SCC were observed within the subject property or adjacent lands during these surveys.

Implications of these observations are described below, and locations of SAR/SCC as well as turtle observations are shown Map 1.

Conclusions and Recommendations

Based on the results of the SAR assessment, Barn Swallow is the only SAR confirmed to be present within the subject property. This Threatened species is protected under the Endangered Species Act, and potential impacts to habitat for this species is regulated as per Section 23.5 of Ontario Regulation 242/08. The following steps are required to be completed in order to facilitate removal of these nests/nesting structures:

- The proposed activity must be registered with the MECP prior to removal;
- Current Barn Swallow nesting structures may only be removed outside of the active nesting period from early May to the end of August (i.e. following August 31);
- An alternative nesting structure must be provided along with a greater number of nest cups than were destroyed (25 or more), prior to the advent of the next nest breeding season (May-August);
- The nesting structure is to be monitored for a period of 3 years to assess nest success; and
- A *Barn Swallow Mitigation and Restoration Record* is to be prepared, which must be provided to the MECP for review, upon their request.

Although Snapping Turtle and Midland Painted Turtle are not considered SAR, and hence, the policies of the Endangered Species Act do not apply, NRSI recommends the removal of any of the ponds within the subject property be carried out as follows:

- Prior to removal of any of the golf course ponds, two nights of hoop netting (trapping) should be carried out to capture and relocate turtles that may be present. Following the completion of trapping, water levels within the pond should be drawn down over approximately 1 week to allow any turtles time to vacate these features prior to removal. A final wildlife salvage for turtles and any other wildlife (e.g. fish, frogs, toads) would be required immediately prior to removal/filling. These activities should occur between late spring to early fall to avoid the hibernation period. A Wildlife Scientific Collector's Authorization permit from the MNRF is required to carry out this work.

In addition, Monarch and Riddell's Goldenrod have the potential to occur within or adjacent to the subject property. Limited habitat for these species occurs at the rear of the property, which is proposed to remain naturalized following development. Milkweed species (*Asclepias*sp.) should be planted within buffers and naturalized areas, which will help support Monarch and other pollinators.

Providing the recommendations within this SAR assessment are followed, no negative impacts to SAR or SCC are anticipated as a result of this proposed development.

Should you have any questions or comments regarding this SAR assessment, please do not hesitate to contact either of us. NRSI is available to assist with meeting the ESA requirements for Barn Swallow, conducting the wildlife salvage, and assisting with any planting or restoration plans.

Sincerely,
Natural Resource Solutions Inc.

Katharina Richter, B.E.S
Senior Biologist

and

Nathan Miller, M.Sc., P.Biol
Terrestrial & Wetland Biologist

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 Database. Squares 17LH95, 17LH96. http://www.birdsontario.org/atlas/aboutdata.jsp?lang=en

City of Sarnia. 2018. City of Sarnia Official Plan, Office Consolidation. July 2016.

Dobbyn, J.S. 1994. Atlas of the Mammals of Ontario. Don Mills, Federation of Ontario Naturalists.

Fisheries and Oceans Canada (DFO). 2018. Aquatic Species at Risk Map. Available online: http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html. September 26, 2018.

Jones, C., R. Layberry, and A. Macnaughton. 2018. Ontario Butterfly Atlas Online. Toronto Entomologists' Association. Last updated February 20198. http://www.ontarioinsects.org/atlas_online.html.

Ministry of Natural Resources and Forestry (MNRF). 2018a. City of Sarnia Municipal Species at Risk Reference Guide. May 2018.

Ministry of Natural Resources and Forestry (MNRF). 2018b. Get Natural Heritage Information: All Species. https://www.ontario.ca/page/get-natural-heritage-information.

Ministry of Natural Resources and Forestry (MNRF). 2015. Significant Wildlife Habitat Schedules for Ecoregion 7E. January 2015.

Ontario Nature. 2018. Reptiles and Amphibians of Ontario Range Maps. Available online: http://www.ontarionature.org/protect/species/reptiles_and_amphibians/index.php.

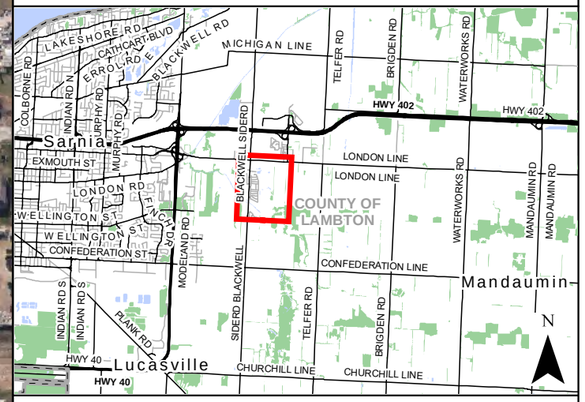
Ontario Odonata Atlas Database. 2018. Natural Heritage Information Centre, Ontario Ministry of Natural Resources and Forestry.

Maps

Map 1

1873 London Line, Sarnia, ON

Significant Species Observations



Legend

- Subject Property
- Barn Swallow Nest Observation
- Painted Turtle Observation
- Snapping Turtle Observation

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 2238 Date: May 21, 2019	NAD83 - UTM Zone 17 Size: 11x17" **1:5,000**

0 100 200 300 Metres

Path: X:\2238A_LondonLine_Sarnia_SAR_Assessment\NRSI_2238_Map2_SpeciesObs_5K_2019_05_21_GCS.mxd

Appendix I

St. Clair Region Conservation Authority Comments on Preliminary SAR Screening
Preliminary SAR Assessment (NRSI March 7, 2019)

St. Clair Region Conservation Authority
205 Mill Pond Cres., Strathroy, ON, N7G 3P9
(519) 245-3710 (519) 245-3348 FAX
E-Mail: stclair@scrca.on.ca
Website: www.scrca.on.ca

Planning File No: PL#2018-072

March 21, 2019

Natural Resource Solutions Inc.
415 Phillip Street, Unit C
Waterloo, ON, N2L 3X2

Attention: Nathan Miller

Dear Mr. Miller:

Re: Species at Risk Screening and Background Information Request
1873 London Line
East Part Lot 12, Concession 6,
Geographic Township of Sarnia, City of Sarnia
Applicant: Rob Guttridge, JR Capital Holdings

St. Clair Region Conservation Authority (SCRCA) staff reviewed the background data request and preliminary species at risk assessment submitted February 28 and March 8, 2019 by Natural Resource Solutions Inc. (NRSI) for 1873 London Line. SCRCA staff provide the following comments as part of SCRCA's understanding with the City of Sarnia, representing the provincial interest on natural heritage encompassed by Section 2.1 of the Provincial Policy Statement (2014).

Background Information Request
NRSI has requested background information for any available natural heritage information within 1 km of the subject property. We can confirm that SCRCA does not have any records of Provincially Significant Wetlands (PSW), Areas of Natural and Scientific Interest (ANSI), Environmentally Sensitive Areas (ESA), or terrestrial wildlife or vegetation surveys within 1 km of the subject property. There are several significant woodlands that are present on the neighboring properties, which could include candidate significant wildlife habitat and habitat of endangered or threatened species.

The watercourses around the property (Upper Perch Creek, Telfer Diversion Channel, and Wadell Creek) are identified on *Map 5: Natural Heritage* of the *City of Sarnia Official Plan*, along with the associated natural hazard area, as part of the natural heritage system.

SCRCA has conducted mussel surveys downstream from the subject property on the Telfer Diversion Channel within 1 km of the subject property. We can confirm that mussels are present in the watercourse, including species at risk mussels. The location of our surveys is shown on *the Department of Fisheries and Oceans Aquatic Species at Risk Maps*, south of the 402 between Airport Road and Telfer

Road. Surveys have not been conducted in the section of the Telfer Diversion Channel next to the subject property, however depending on water depth and conditions, mussels may be present. This should be considered when designing the stormwater management system for the subdivision, as maintaining or improving water quality is required.

City of Sarnia Official Plan

The following policies of the *City of Sarnia Official Plan* should be taken into account during the design and development of the proposed subdivision.

Species at Risk

Section 4.3.3.3 Natural Areas of the *City of Sarnia Official Plan* states: "*All development applications shall be screened against known or probable location of habitat of endangered species and threatened species. Where a known or probable location of habitat of endangered species and threatened species is identified on or is in close proximity to the subject lands, the development proponent shall consult with the Ontario Ministry of Natural Resources to confirm the identification and determine whether specific technical studies may be required*."

NRSI has indicated that they have contacted the Aylmer District office of the Ministry of Natural Resources and Forestry requesting screening for species at risk in the area of the subject property.

Watercourses

Section 4.3.3.3 of the Official Plan also states: *"All permanent and intermittent streams, watercourses, lakes, wetlands and ponds, other than artificial off-stream ponds, are deemed to be fish habitat and are identified as surface water features on Map 5…"*

NRSI has discussed in the preliminary species at risk assessment that the ponds on the subject property are created ponds, and according to the *Significant Wildlife Habitat Ecoregions Criteria Schedules for Ecoregion 7E,* man-made ponds are not significant wildlife habitat for Snapping Turtle.

SCRCA would appreciate receiving a copy of the correspondence between NRSI and MNRF regarding the details of the Wildlife Scientific Collector's Authorization Permit for the capture and relocation of turtles and amphibians from the ponds.

The Official Plan includes best management practices for development along watercourse in policy 4.3.*3.*7, which states:

> *"The City recognizes that the health of aquatic communities and fish habitat is an indicator of a healthy environment. Development and site alteration shall not adversely affect watercourses. Development along watercourses shall be*

planned to ensure that harmful alteration, disruption and destruction of fish habitat is avoided. The following principles apply to any development along a watercourse in the City of Sarnia:

a) *Natural vegetation and other suitable erosion control methods should be introduced and maintained on the banks of watercourses;*
b) *Construction of tile outlets shall not contribute to erosion along watercourses;*
c) *Trees shall be planted or other buffer measures installed where appropriate to protect watercourse banks and enhance the ecological corridor role of watercourses;*
d) *Interim measures to protect the watercourse from erosion and sedimentation during construction shall be implemented; and*
e) *An appropriate setback for all development from the top of the bank of watercourses shall be required to prevent erosion, improve water quality, enhance wildlife corridors and protect fish habitat, in addition to protecting the development from flooding and slope instability.*

The Zoning By-law shall establish setbacks from watercourses to minimize the effect of development."

SCRCA recommends that the above noted best management practices be incorporated where appropriate into the development.

Fish Habitat

Regarding Fish Habitat, the City's Official Plan contains policy 4.3.3.8, which states:

"The City may permit development near or adjacent to fish habitat where it is demonstrated to the satisfaction of the Department of Fisheries and Oceans (DFO), its designate and/or the City that the proposal will not harmfully alter, disrupt or destroy fish habitat. The goal is no net loss of the productive capacity of fish habitat…

If it is determined by DFO, its designate and the City that any development would cause negative impacts, such development and site alteration may be prohibited…."

SCRCA recommends that the proponent follow the Department of Fisheries and Oceans project review process regarding projects near water, as it pertains to the stormwater management system, for any outlets to watercourses.

As noted above, species at risk mussels are known to exist in the watercourse downstream from the property, therefore the maintenance or improvement of water quality should be addressed in the design of any outlet to the Telfer Diversion Channel from the stormwater management system on the subject property.

Recommendations

SCRCA supports NRSI's recommendations to conduct field surveys in spring 2019 to confirm the presence/absence of Butternut, Barn Swallow and species at risk bats, as well as any other recommendations received from the Ministry of Natural Resources and Forestry.

As SCRCA has noted above, species at risk mussels are known to be present in the Telfer Diversion Channel downstream of the subject property, therefore any stormwater management system that outlets to the watercourse must include controls for water quality.

Thank you for the opportunity to comment.

If you have further questions, please do not hesitate to contact the undersigned.

Sincerely,

Sarah Hodgkiss

Sarah Hodgkiss
Planning Ecologist

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

March 7, 2018 Project 2238

Rob Guttridge
JR Capital Holdings
2963 Brigden Road
Brigden, ON
N0N 1B0

Dear Mr. Guttridge

RE: 1873 London Line, Sarnia – Preliminary Species at Risk Assessment

Natural Resource Solutions Inc. (NRSI) is pleased to provide the following preliminary Species at Risk (SAR) assessment for the property located at 1873 London Line in Sarnia, Ontario (Map 1).

The subject property is currently managed as a golf course and is bordered by the Telfer Diversion Channel and a residential subdivision to the west; an aggregate pit, agricultural fields, and naturalized lands associated with Waddell Creek to the south; a cemetery, pond, and natural lands to the east; and London Line to the north. Habitat for SAR is limited, as the lands on the subject property are comprised mostly of manicured lawn/golf greens as well as a few constructed ponds and planted trees throughout.

Below are the steps that were taken for the completion of this preliminary SAR screening, as well as the results and recommended next steps.

Background Review

As detailed within the approved workplan, this Preliminary SAR Assessment (Phase 1) included a review of desktop sources. Most of the sources listed below provide data in 10kmx10km squares and information from squares overlapping the subject property were included in this screening (17LH95, 17LH96).

- Aerial imagery;
- City of Sarnia SAR List (MNRF 2018a);
- Ontario Breeding Bird Atlas (BSC et al. 2018);
- Ontario Butterfly Atlas (Jones et al. 2018);
- Ontario Odonata Atlas (NHIC 2018);
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2018);
- Ontario Mammal Atlas (Dobbyn 1994);
- Natural Heritage Information Centre Database (MNRF 2018b); and
- Fisheries and Oceans Canada – Aquatic SAR Mapping (DFO 2018).

In addition, NRSI also contacted the Aylmer District Ministry of Natural Resources and Forestry (MNRF), as well as the St. Clair Region Conservation Authority (SCRCA) on February 28, 2019 to request additional information on SAR not included within the other background sources. A response has not been received to date.

Preliminary SAR Screening

NRSI compiled a list of SAR that have the potential to occur within the subject property based on the results of the background review. This includes 'regulated SAR', which are those identified as 'Endangered' or 'Threatened' provincially, as well as species of 'Special Concern', which are not protected by the ESA, but whose habitat is protected as Significant Wildlife Habitat as per Section 4.3.3 of the City of Sarnia Official Plan (City of Sarnia 2016).

Each SAR identified as potentially occurring within the subject property was then compared to the habitats present on the subject property based on available aerial imagery and our understanding of current land use to determine the potential for these species to be present. A site visit has not yet been undertaken by NRSI biologists.

A list of each SAR that have the potential to occur within the subject property based on this preliminary screening exercise is provided below. The full SAR screening table for all species is provided in Appendix I and includes information on status, habitat and rationale for presence/absence of habitat.

Potential Regulated SAR

- Barn Swallow (*Hirundo rustica*)
- Butternut (*Juglans cinerea*)
- Eastern Small-footed Bat (*Myotis leibii*)
- Little Brown Myotis (*Myotis lucifugus*)
- Northern Myotis (*Myotis septentrionalis*)
- Tri-coloured Bat (*Perimyotis subflavus*)

Potential Species of Special Concern

- Monarch (*Danaus plexippus*)
- Riddell's Goldenrod (*Solidago riddellii*)
- Snapping Turtle (*Chelydra serpentina serpentina*)

Conclusions and Recommendations

Based on the results of the background review and preliminary SAR screening, several SAR have the potential to occur on the subject property.

The habitats for regulated SAR listed above are protected by the Endangered Species Act, and if confirmed to be present, would generally require regulations of the ESA to be followed, or a permit from the MNRF to alter or remove.

Habitat for Monarch, Riddell's Goldenrod, and Snapping Turtle is not protected by the ESA, but is protected through SWH as per the City of Sarnia Official Plan (City of Sarnia 2016). However, man-made ponds are not considered significant habitat for Snapping Turtle, as per the Significant Wildlife Habitat Ecoregions Criteria Schedules (MNRF 2015). SWH for Monarch is generally considered where abundant milkweed is present or at migratory stopover sites. Habitat for Riddell's Goldenrod is restricted to the rear of the property in naturalized areas that are proposed to be retained based on the development concept.

The following field surveys and recommendations should be completed in order to address regulated SAR within the subject property and lands immediately adjacent.

- Summer field survey to confirm the presence/absence of:
    - Butternut (area search of all trees);
    - Barn Swallow (review of potential nesting structures);
    - SAR Bats (assessment of all trees/structures within the subject property for suitable bat cavities); and
- Pond removal – prior to removal of any of the golf course ponds, two nights of hoop netting (trapping) should be carried out to capture and relocate turtles that may be present. Following the completion of trapping, water levels within the pond should be drawn down over approximately 1 week to allow any turtles time to vacate these features prior to removal. A final wildlife salvage for turtles and any other wildlife would be required immediately prior to removal/filling. These activities should occur between late spring to early fall to avoid the hibernation period. A Wildlife Scientific Collector's Authorization permit from the MNRF is required to carry out this work.
- Although Monarch has yet to be verified within the subject property, it is recommended that Common Milkweed (*Asclepias syriaca*) be planted throughout buffers and naturalized areas which will help support this species and other pollinators.

Based on the previous work plan prepared by NRSI, we had recommended completion of turtle basking and amphibian call surveys. However, as no amphibian SAR were identified during the screening, no surveys are required. Any amphibians located within these ponds will be relocated during the wildlife salvage activities. Similarly, Snapping Turtles will also be addressed through the completion of the recommendations provided above.

NRSI is able to provide a revised scope of work to complete the summer field surveys as well as the activities in support of the pond removals if needed at this time, or following agency comments. NRSI is also able to assist with addressing any permitting requirements as a result of the field surveys, as necessary.

Should you have any questions or comments regarding this preliminary SAR assessment, please do not hesitate to contact either of us.

Sincerely,
Natural Resource Solutions Inc.

Katharina Richter

Katharina Richter, B.E.S
Senior Biologist

Nathan Miller, M.Sc., P.Biol
Terrestrial & Wetland Biologist

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 Database. Squares 17LH95, 17LH96. http://www.birdsontario.org/atlas/aboutdata.jsp?lang=en

City of Sarnia. 2018. City of Sarnia Official Plan, Office Consolidation. July 2016.

Dobbyn, J.S. 1994. Atlas of the Mammals of Ontario. Don Mills, Federation of Ontario Naturalists.

Fisheries and Oceans Canada (DFO). 2018. Aquatic Species at Risk Map. Available online: http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html. September 26, 2018.

Jones, C., R. Layberry, and A. Macnaughton. 2018. Ontario Butterfly Atlas Online. Toronto Entomologists' Association. Last updated February 20198. http://www.ontarioinsects.org/atlas_online.html.

Ministry of Natural Resources and Forestry (MNRF). 2018a. City of Sarnia Municipal Species at Risk Reference Guide. May 2018.

Ministry of Natural Resources and Forestry (MNRF). 2018b. Get Natural Heritage Information: All Species. https://www.ontario.ca/page/get-natural-heritage-information.

Ministry of Natural Resources and Forestry (MNRF). 2015. Significant Wildlife Habitat Schedules for Ecoregion 7E. January 2015.

Ontario Nature. 2018. Reptiles and Amphibians of Ontario Range Maps. Available online: http://www.ontarionature.org/protect/species/reptiles_and_amphibians/index.php.

Ontario Odonata Atlas Database. 2018. Natural Heritage Information Centre, Ontario Ministry of Natural Resources and Forestry.

Appendix II
SAR Screening

1873 London Line, Sarnia SAR Assessment - SAR/SCC Screening

Scientific Name	Common Name	SRANK[1]	COSSARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[5,6,7,8]	Background Source	Suitable Habitats within Subject Property
Plants								
Carex lupuliformis	Hop-like Sedge	S1	END	E	Schedule 1	Swales, marshes, swamps, borders of vernal pools and wet depressions in forests, very local.	MNRF 2018b	No
Castanea dentata	American Chestnut	S2	END	E	Schedule 1	Moist to well drained forests on sand, occasionally heavy soils.	MNRF 2018b	No
Cornus florida	Eastern Flowering Dogwood	S2?	END	E	Schedule 1	Dry (usually oak) to rich deciduous forests, especially on hillsides and river banks.	MNRF 2018b	No
Hydrastis canadensis	Golden Seal	S2	THR	T	Schedule 1	Rich deciduous forests, or less often, oak-hickory; quite local.	MNRF 2018b	No
Juglans cinerea	Butternut	S3?	END	E	Schedule 1	Stream banks and swamps, as well as upland beech-maple, oak-hickory, and mixed hardwood stands.	MNRF 2018b	Yes. However, this species was not found to be present on the subject property. Very few trees are present.
Panax quinquefolius	American Ginseng	S3	END	E	Schedule 1	Rich, even swampy, hardwoods (beech, sugar maple, hemlock), especially on slopes or ravines (including forested dunes).	MNRF 2018b	No
Solidago riddellii	Riddell's Goldenrod	S3	SC	SC	Schedule 1	Fens, wet prairies, shore meadows, moist ground around lakes and along rivers.	MNRF 2019a	Yes
Birds								
Chaetura pelagica	Chimney Swift	S4B, S4N	THR	T	Schedule 1	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water.	BSC et al. 2008; MNRF 2018b	No
Chordeiles minor	Common Nighthawk	S4B	SC	T	Schedule 1	Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	BSC et al. 2008	No. Open areas are not suitable for nesting.
Colinus virginianus	Northern Bobwhite	S1	END	E	Schedule 1	Generally inhabits a variety of edge and grassland type habitats including non-intensively farmed agricultural lands.	BSC et al. 2008	No
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC	--	Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks.	BSC et al. 2008	No. A very small woodland area is present but is unsuitable breeding habitat for this species. Larger suitable woodland habitat is present on adjacent lands.

Scientific Name	Common Name	SRANK[1]	COSSARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[5,6,7,8]	Background Source	Suitable Habitats within Subject Property
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	No Schedule	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50ha.	BSC et al. 2008; MNRF 2018b	No. Suitable breeding habitat is not present.
Empidonax virescens	Acadian Flycatcher	S2S3B	END	E	Schedule 1	Mature, shady, deciduous forests; heavily wooded ravines; creek bottoms or river swamps; availability of good quality habitat is limiting factor; needs at least 30 ha of forest.	MNRF 2018b	No
Hirundo rustica	Barn Swallow	S4B	THR	T	--	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	BSC et al. 2008; MNRF 2019a,b	Yes. Nesting by this species has been confirmed in two of the small structures within the golf course property.
Hylocichla mustelina	Wood Thrush	S4B	SC	T	--	Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12m.	BSC et al. 2008	No. A very small woodland area is present but is unsuitable breeding habitat for this species.
Icteria virens	Yellow-breasted Chat	S2B	END	E	Schedule 1	Thickets, tall tangles of shrubbery beside streams, ponds; overgrown bushy clearings with deciduous thickets; nests above ground in bush, vines etc.	MNRF 2018b	No. Suitable thickets are not present on the subject property.
Ixobrychus exilis	Least Bittern	S4B	T	T	-	Deep marshes, swamps, bogs; marshy borders of lakes, ponds, streams, ditches; dense emergent vegetation of cattail, bulrush, sedge; nests in cattails; intolerant of loss of habitat and human disturbance.	BSC et al. 2008; MNRF 2018b	No. Suitable wetland habitat is not present.
Protonotaria citrea	Prothonotary Warbler	S1B	END	E	Schedule 1	Area sensitive species preferring 100 ha of flooded or swampy woodlands with standing or flowing water and more than 25% canopy cover with numerous stumps and snags; stream borders or flooded bottomlands; soft, dead trees with dbh >10 cm; Carolinian species.	MNRF 2018b	No
Riparia riparia	Bank Swallow	S4B	THR	T	--	Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence.	BSC et al. 2008; MNRF 2018b	No. Suitable nesting habitat not present.
Setophaga cerulea	Cerulean Warbler	S3B	THR	E	Schedule 1	Mature deciduous woodland of Great Lakes-St.Lawrence and Carolinian forests, sometimes coniferous; swamps or bottomlands with large trees; area sensitive species needing extensive areas of forest (>100 ha).	MNRF 2018b	No

Scientific Name	Common Name	SRANK[1]	COSSARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[5,6,7,8]	Background Source	Suitable Habitats within Subject Property
Sturnella magna	Eastern Meadowlark	S4B	THR	T	No Schedule	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10ha in size.	BSC et al. 2008; MNRF 2018b	No
Tyto alba	Barn Owl	S1	END	E	Schedule 1	Open areas such as fields, agricultural lands with scattered woodlots, buildings and/or orchards; grasslands, sedge meadows, marshes; snow-cover limits ability to catch prey; species has intolerance to severe cold; nests in hollow trees and live trees >46 cm dbh; also nests in barns, abandoned buildings.	MNRF 2018b	No
Herpetofauna								
Apalone spinifera spinifera	Spiny Softshell	S3	THR	E	Schedule 1	Intolerant of pollution; large river systems, shallow lakes and ponds with muddy bottoms and aquatic vegetation; basks on sandbars, mud flats, grassy beaches, logs or rocks; eggs are laid near water on sandy beaches or gravel banks in areas with sun; requires acceptable feeding, nesting, habitat and natural, undisturbed corridors between these critical habitats.	MNRF 2018b	No
Chelydra serpentina serpentina	Snapping Turtle	S3	SC	SC	Schedule 1	Permanent, semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites; may nest at some distance from water; often hibernate together in groups in mud under water; home range size ~28 ha.	Ontario Nature 2019; MNRF 2019a	Yes. This species has been confirmed within the ponds on the subject property.
Clemmys guttata	Spotted Turtle	S3	END	E	Schedule 1	Semi-aquatic preferring ponds, marshes, bogs and even ditches with slow-moving, unpolluted water and abundant supply of aquatic vegetation. Other aquatic habitat can include vernal pools, seeps, sloughs, creeks, stormwater ponds, sheltered edges of bays, channels and drainage ditches. Strong preference for marsh meadows as well. Nests will be found in well-drained, sunny locations that are bare or have sparse vegetation. Hibernates in wetlands or seasonally wet areas associated with structures including overhanging banks, hummocks, tree roots, or aquatic animal burrows.	MNRF 2018b	No

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Emydoidea blandingii	Blanding's Turtle (*Great Lakes/St Lawrence population*)	S3	THR	T	Schedule 1	Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks; surrounding natural habitat is important in summer as they frequently move from aquatic habitat to terrestrial habitats; hibernates in bogs; not readily observed.	Ontario Nature 2019; MNRF 2018b	No. Pond and wetland habitats on-site are not suitable for this species.
Pantherophis gloydi pop. 2	Eastern Foxsnake (Carolinian population)	S2	END	E	Schedule 1	Shrub swamps and bogs; deciduous forest containing openings with shrubs and saplings; prefer woodland marsh edges for hunting, breeding; in Lake Erie area, often seen near or adjacent to large marshes.	MNRF 2018b	No
Plestiodon fasciatus	Common Five-lined Skink (Carolinian population)	S2	END	E	Schedule 1	Moderately dense or open deciduous or mixed woodlands with logs and slash piles; damp spots under logs, leaf litter, or sawdust; open talus slopes, barren rock; sandy beaches of Lake Erie, Lake Ontario; breeds in forest floor litter; lays, protects eggs under rocks, logs; forages in open woodlands, in sandy areas, along shores of lakes, and islands; hibernates under rock piles, in rock crevices, under logs and in stumps.	MNRF 2018b	No
Thamnophis butleri	Butler's Gartersnake	S2	END	E	Schedule 1	Wet meadows, pastures, margins of marshes and streams, and open country.	MNRF 2018b	No. Meadow habitat is not present adjacent to ponds on subject property.
Mammals								
Myotis leibii	Eastern Small-footed Myotis	S2S3B	END	--	--	Roosts in caves, mine shafts, crevices or buildings that are in or near woodland; hibernates in cold dry caves or mines; maternity colonies in caves or buildings; hunts in forests.	MNRF 2018b	No. Suitable roosting structures/trees are not present.
Myotis lucifugus	Little Brown Myotis	S4	END	E	Schedule 1	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges.	Dobbyn 1994; MNRF 2018b	No. Suitable roosting structures/trees are not present.
Myotis septentrionalis	Northern Myotis	S3	END	E	Schedule 1	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy.	MNRF 2018b	No. Suitable roosting structures/trees are not present.
Perimyotis subflavus	Tri-colored Bat	S3?	END	E	Schedule 1	Open woods near water; roosts in trees, cliff crevices, buildings or caves; hibernates in damp, draft-free, warm caves, mines or rock crevices.	MNRF 2018b	No. Suitable roosting structures/trees are not present.

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Fish and Mussels								
Quadrula quadrula	Mapleleaf Mussel - Great Lakes - Upper St. Lawrence Population	S2	SC	SC	Schedule 1	Usually found in medium to large rivers with slow to moderate currents and firmly packed sand, gravel, or clay and mud bottoms. It also lives in lakes and reservoirs. The fish host of the Mapleleaf Mussel is the Channel Catfish. Presence of the fish host is one of the key features determining whether the body of water can support a healthy mussel population.	Government of Canada 2018	No
Insects								
Danaus plexippus	Monarch	S2N, S4B	SC	E	Schedule 1	Open areas with Milkweed spp. (*Asclepias* spp.)	MacNaughton et al. 2019	Yes. Open areas are present.

[1,2]MNRF 2018a, [3,4]Government of Canada 2018, [5]OMNR 2000, [6]Reznicek et al. 2011, [7]Layberry et al. 1998, [8]Paulson 2011

LEGEND
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S#? Rank Uncertain
B Breeding
N Non-breeding
COSSARO/COSEWIC
NAR Not at Risk
SC Special Concern
END/E Endangered
THR/T Threatened
SARA Schedule
Schedule 1 Officially Protected under SARA