



REPORT

Natural Environment Report and Environmental Impact Study

Proposed East Oxford Pit, North Grenville, Ontario

Submitted to:

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1 INTRODUCTION

WSP Canada Inc. (WSP) was retained by R W Tomlinson Limited (Tomlinson) to undertake natural environment studies to accompany the application for a proposed aggregate pit under the *Aggregate Resources Act* [ARA; (Ontario 1990a)] for the proposed East Oxford Pit. The proposed pit is to be developed on Parts of Lots 13 and 14, Concession 8 in the Municipality of North Grenville, United Counties of Leeds and Grenville (UCLG), Ontario (**Figure 1**).

For the purposes of this report, the following definitions are used:

- Site / License Area – The total area that is proposed for licensing, which will also be referred to as the Site in this report (44.1 ha; **Figure 1**).
- Extraction Area – The total area within the Site / License Area that is proposed for extraction (37.2 ha; **Figure 1**).
- Study Area – The Study Area is defined in the *Aggregate Resources of Ontario: Technical reports and Information Standards* (Ontario 2020) as the Site and surrounding 120 metres (m). The Study Area discussed in this report also includes the entirety of the Tomlinson owned property. The potential groundwater drawdown zone of influence resulting from extraction of the Site (WSP 2025) does not extend beyond the 120 m (**Figure 1**).

1.1 Purpose

This report specifically addresses the requirements of Section 2.2 [Natural Environment Report (NER)] of the *Aggregate Resources of Ontario: Technical Reports and Information Standards* (Ontario 2020), which requires the assessment of potential environmental impacts of the proposed aggregate extraction on the Site and Study Area with respect to the following features:

- a) significant wetlands
- b) other coastal wetlands in Ecoregions 5E, 6E and 7E
- c) fish habitat
- d) significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River)
- e) habitat of endangered and threatened species
- f) significant wildlife habitat
- g) significant areas of natural and scientific interest (ANSI)
- h) within the area of one or more provincial plan(s), any key natural heritage features not included in a) through g)

Where any of the above features or areas have been identified, the NER must evaluate any negative impacts on the natural features or areas, including their ecological functions, that may result from the proposed extraction, and identify any proposed preventative, mitigative, or remedial measures. The NER must also identify if the Site or any of the features included in a) through g) are located within a natural heritage system that has been identified by a municipality in Ecoregions 6E and 7E, or by the province as part of a provincial plan.

This NER is also meant to satisfy the UCLG Official Plan (UCLG 2016) and the Municipality of North Grenville Official Plan (MNG 2018) requirements for an Environmental Impact Study (EIS).

The potential impacts of the proposed extraction on groundwater and surface water resources are discussed separately in detail in the Level 1 and Level 2 Water Report (WSP 2025) and have been incorporated where appropriate in this report as it relates to potential impacts to significant natural features.

1.2 Site Description

The Site consists of agricultural row crop fields and a former rural residence with outbuildings, as well as an area of cultural meadow and scattered deciduous trees (**Figure 1**). The Site is bounded by O'Neill Road, Pattersons Corners Road, and Leeds and Grenville Road 20 on the north, east and south sides, respectively. To the southwest, the Site is bounded by a wetland on lands owned by Tomlinson.

1.3 Adjacent Land Use

Surrounding land uses off-Site in the Study Area include agricultural lands, wooded areas, treed plantations, wetlands, and rural residences (**Figure 1**). To the west, on lands owned by Tomlinson, a small unnamed tributary is present within the wetlands, which drains west towards Kemptville Creek.

2 ENVIRONMENTAL POLICY CONTEXT

The evaluation of the form and function of natural heritage features present in the Study Area was undertaken to meet the requirements of the following legislation, plans, standards and policies:

- *Aggregate Resources Act* (Ontario 1990a) and Aggregate Resources of Ontario: Technical Reports and Information Standards (Ontario 2020)
- Provincial Planning Statement (MMAH 2024)
- *Fisheries Act* (Canada 1985)
- *Migratory Birds Convention Act* (Canada 1994)
- *Species at Risk Act* (Canada 2002)
- *Endangered Species Act* (Ontario 2007)
- United Counties of Leeds and Grenville Official Plan (UCLG 2016)
- Municipality of North Grenville Official Plan (MNG 2018)

An overview of the above noted legislation and policy documents is discussed in **Sections 2.1 to 2.7**.

2.1 Aggregate Resources Act (ARA)

The purpose of the ARA is to provide for the management of the aggregate resources of Ontario, control and regulate aggregate operations on Crown and private lands, require the rehabilitation of land from which aggregate has been excavated, and to minimize adverse impacts from aggregate operations on the environment (Ontario 1990a).

Applicants applying for a license under the ARA are required to prepare an NER that must identify significant natural environment features that occur on, or in proximity to (i.e., within 120 m) the proposed operation (Ontario 2020). Where any significant natural features have been identified, the report must identify and evaluate any

negative impacts on the natural features or areas, including their ecological functions, and identify any proposed preventative, mitigative or remedial measures. The report must also identify if the Site lies within a natural heritage system identified by a municipality (in Ecoregions 6E or 7E) or by the province as part of a provincial plan (e.g., Greenbelt Plan).

2.2 Provincial Planning Statement (PPS)

The Provincial Planning Statement (PPS; MMAH 2024) was issued under Section 3 of the *Planning Act* (Ontario 1990b).

The natural heritage policies of the PPS (Policy 4.1 – Natural Heritage) indicate that:

4.1.4. Development and site alteration shall not be permitted in:

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

4.1.5. Unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions, development and site alteration shall not be permitted in:

- a) Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E.
- b) Significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River).
- c) Significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River).
- d) Significant wildlife habitat.
- e) Significant areas of natural and scientific interest.
- f) Coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 4.1.4(b).

4.1.6. Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

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

4.1.8. Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 4.1.4, 4.1.5 or 4.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

4.1.9. Nothing in policy 4.1 is intended to limit the ability of agricultural uses to continue.

Section 4.2 of the PPS protects the quality and quantity of water, including the form and hydrologic function of sensitive surface water features and sensitive ground water features. Focus is given to maintaining hydrologic linkages and functions at the watershed scale to minimize potential negative impacts, including cross-jurisdictional and cross-watershed impacts of development.

The PPS defines “development” as the creation of a new lot, a change in land use, or the construction of buildings and structures requiring approval under the *Planning Act* (Ontario 1990b). “Site alteration” means activities, such as grading, excavation and the placement of fill that would change the landform and natural vegetative characteristics of a Site.

2.3 Fisheries Act

The purpose of the federal *Fisheries Act* (Canada 1985) is to provide a framework for the proper management and control of fisheries, and the conservation and protection of fish and fish habitat. The *Fisheries Act* prohibits causing the death of fish, or the harmful alteration, disruption, or destruction (HADD) of fish habitat, which is defined as “any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat’s capacity to support one or more life processes”.

As a result of amendments to the *Fisheries Act* in 2019 (DFO 2019), projects near water that could potentially impact fish or fish habitat may require a project review by Fisheries and Oceans Canada (DFO). The primary purpose of the review is to determine whether the death of fish and/or HADD of fish habitat, as defined by the Act, can be avoided. If potential impacts can be avoided, project approval is not required (DFO 2024). However, if it is determined that the project will result in death of fish or HADD of fish habitat, an authorization is required which may include a requirement for a habitat offsetting plan. Proponents also have a duty to notify DFO of any unforeseen activities during the project that cause harm to fish or fish habitat.

2.4 Migratory Birds Convention Act (MBCA)

The *Migratory Birds Convention Act* (MBCA; Canada 1994) prohibits the killing or capturing of migratory birds, as well as any damage, destruction, removal or disturbance of active nests. While Environment and Climate Change Canada (ECCC) can issue permits allowing the destruction of nests for certain activities or for protection of property, it does not typically issue permits in the case of industrial or construction activities.

In 2022, new Migratory Birds Regulations (MBR) were adopted that afford year-round protection to the nests of sixteen migratory species, until the nest is deemed to be abandoned. Nest abandonment must be reported through the Abandoned Nest Registry, administered by ECCC, if there is a need to damage, disturb, destroy, or remove a nest of a species listed in Schedule 1 of the MBR. The time period to confirm nest abandonment varies by species, and ranges from 12 to 36 months.

2.5 Species at Risk

2.5.1 Species at Risk Act (SARA)

The purpose of the federal *Species at Risk Act* (SARA; Canada 2002) is to prevent endangered or threatened species from becoming extinct or extirpated, to help in the recovery of endangered, threatened, and extirpated species, and to manage species of special concern to help prevent them from becoming endangered or threatened. At a federal level, species at risk (SAR) designations are initially determined by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). If approved by the federal Minister of the Environment and Climate Change, species are added to the federal List of Wildlife Species at Risk. Species that are included on Schedule 1 of the List as endangered or threatened are afforded protection of their defined critical habitat on federal lands under the Act.

On private or provincially-owned lands, only aquatic species and migratory birds listed as endangered, threatened or extirpated or Schedule 1 are protected under the SARA, unless ordered by the Governor in Council.

2.5.2 Endangered Species Act (ESA)

The purpose of the provincial *Endangered Species Act* (ESA; Ontario 2007) is to identify provincial SAR, protect those species and their habitats, promote the recovery of those species, and promote stewardship activities to assist in the protection and recovery of SAR. SAR designations for species in Ontario are initially determined by the Committee on the Status of Species at Risk in Ontario (COSSARO), and if approved by the provincial Minister of Environment, Conservation and Parks, species are added to the Species at Risk Ontario (SARO) list, contained in O. Reg. 230/08 (MECP 2025).

The *Protecting Ontario by Unleashing Our Economy Act* (“Bill 5”; Ontario 2025), received royal assent and became law on June 5, 2025. This Act made amendments to several other pieces of provincial legislation, including the ESA. Noted amendments include narrowing the definition of “habitat”, removal of the prohibition against harassment, and removing portions related to recovery strategies and management plans.

Subsection 9(1) of the ESA prohibits the killing or harming of species identified as endangered or threatened under the Act. Subsection 10(1)(a) prohibits the damage or destruction of the habitat of species identified as endangered or threatened. The definition of “habitat” was updated in the ESA following the royal assent of Bill 5, to mean:

- In respect to animals, a dwelling-place (nests, dens, etc.) that is occupied or habitually occupied by one or more members of a species for breeding, rearing, staging, wintering, or hibernating, and the immediate surrounding area necessary for breeding, rearing, staging, or hibernation.
- In respect to vascular plant species, the critical root zone surrounding a member of the species.
- In respect of all other species, an area on which any member of a species directly depends in order to carry on its life processes.
- Certain exceptions to the above apply, for example, the existing habitat regulation for black ash remains in force.

The ESA has a permitting process to allow activities to occur that would affect protected species and/or their habitats as well as a registration process for certain activities and species.

2.6 United Counties of Leeds and Grenville (UCLG)

Schedule A of the UCLG Official Plan (UCLG 2016) shows the Site as being designated Rural Lands. The lands to the west are designated Agricultural Area. A portion of the Study Area southeast of the Site is designated as Settlement Area. Schedule B identifies the Site as being within an area of Sand and Gravel Resource Area (Tertiary). No Natural Heritage Features are identified on the Site or in the Study Area per Schedule C. According to Schedule D, there is a small area of Unstable Soils west of the Site, associated with the wetland, but no Floodplain is identified.

The wetland immediately southwest of the Site is also identified as being part of the UCLG Natural Heritage System, but no Natural Heritage Features or Areas are identified (UCLG Official Plan Appendix 2). Where development is proposed within or adjacent to the Natural Heritage System, an EIS is required to determine whether any potentially significant Natural Heritage Features or Areas, or important linkages, corridors and restoration opportunities may exist.

Appendix 4 of the UCLG Official Plan identifies the wetland as being Low for Wildland Fire Hazard; however, much of this area has been cleared.

2.7 Municipality of North Grenville

The Site is designated a mix of Rural (along Pattersons Corners Road and a portion of O'Neill Road), Agriculture (along Leeds and Grenville Road 20), and Mineral Aggregate Reserves in the central portions of the Site on Schedule A of the Municipality of North Grenville Official Plan (MNG 2018). Schedule A1 maps Natural Heritage and Constraints within the planning area and identifies the wetland southwest of the Site as Unevaluated Wetlands, and maps the unnamed tributary contained within the wetland. No other natural heritage features or constraints are identified. Wildfire Hazard Mapping is illustrated on Schedule B2 of the Official Plan, which shows the wetland southwest of the Site as being High and Extreme hazards; however, much of this area has been cleared.

2.8 Rideau Valley Conservation Authority (RVCA)

The Site and Study Area are located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA), which regulates development in and adjacent to wetlands and watercourses; however, no permits or approvals from conservation authorities are required for applications under the ARA.

3 DESCRIPTION OF PROPOSED PROJECT

The proposed pit will have a maximum annual tonnage of 1,000,000 tonnes. The proposed operation will extract sand and gravel resources above and below the water table and will occur in a phased manner through five phases, beginning in the southwest portion of the Site and moving in a generally northeast direction.

The lands will be extracted to a maximum depth of approximately 98.5 masl. The removal of aggregate resources from below the water table will result in the creation of a pit pond that will be approximately 18.1 ha in size. There will be no pumping of water during extraction. Shallow shoreline areas are proposed around the perimeter of the lake.

The proposed project has incorporated setbacks along the proposed extraction boundary as follows (**Figure 1**):

- 30 m setbacks along all adjacent public roads
- 15 m setbacks along the wetland southwest of the Site
- 10 m setback from the identified archaeological site in the northeast corner of the Site

Within the setbacks, existing vegetation will remain untouched during all phases of the project with the exception of the placement of acoustic berms where required (**Figure 1**).

3.1 Rehabilitation Plan

The proposed pit will be rehabilitated to a naturalized pond (18.1 ha in size) along the southwestern portion of the Site with backfilled meadows along the road frontage of O'Neill Road and Pattersons Corners Road. Approximately 17.0 ha is proposed to be rehabilitated to meadows, with potential for future development. Perimeter grading berms will be implemented to separate the pond from the wetland to the southwest. A small wetland pocket of 0.1 ha will be created in the northwest portion of the Site.

The Rehabilitation Plan is provided in **Appendix A**.

4 METHODS

4.1 Background Review

Background information pertaining to the Study Area was compiled and reviewed as part of a comprehensive desktop exercise to better understand local biophysical conditions. Data was obtained from provincial, municipal, and other available resources to provide context, and to guide development of the site-specific field survey program. This desktop exercise included review of the following resources:

- Level 1 and Level 2 Water Report – Proposed East Oxford Pit, Ontario (WSP 2025)
- Make-a-Map Natural Heritage Areas geographic explorer for species at risk (SAR) or rare species (S1 to S3 provincial rankings) reported in the vicinity of the Site by the Natural Heritage Information Centre (NHIC), and natural areas information queries (MNR 2025a)
- Ministry of the Environment, Conservation and Parks (MECP) list of SAR in Ontario (O.Reg. 230/08) (MECP 2025) including COSSARO species assessment reports where applicable
- ECCC SAR Public Registry (ECCC 2025) including COSEWIC status reports, assessments, and recovery strategies where applicable
- DFO Aquatic Species at Risk Maps (DFO 2025)
- Ministry of Natural Resources (MNR) Land Information Ontario Aquatic Resources Area Layer (MNR 2025b)
- Breeding Bird Atlas of Ontario (OBBA) (Cadman et al. 2007)
- Atlas of the Mammals of Ontario (Dobbyn 1994)
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2019)
- Bat Conservation International (BCI) range maps (BCI 2025)
- Ontario Butterfly Atlas (Jones et al. 2025)
- eBird species maps (Cornell Lab of Ornithology 2025)
- iNaturalist records of SAR and rare species in the Study Area (iNaturalist 2025)
- Vascular Plants at Risk in Ontario (Leslie 2018)
- Information contained in natural heritage related map layers from Land Information Ontario (Land Information Ontario 2025) and the Ontario Land Cover Compilation (MNR 2025c)
- United Counties of Leeds and Grenville Official Plan (UCLG 2016)
- Municipality of North Grenville Official Plan (MNG 2018)
- Existing high-resolution aerial imagery and mapping

To gain an initial understanding of the existing conditions in the Study Area, including presence of wetlands, watercourses, ANSI, and other known or potential natural features, MNR Land Information Ontario data were used to create base layer mapping for the Study Area.

A formal information request was submitted to the MNR and MECP in April 2024, with only an automatic response received from the MECP, and no response received from the MNR (**Appendix B**).

4.2 Species at Risk Screening

A SAR screening was completed for the Site and Study Area, focusing on the review of records and ranges of species that are designated as threatened, endangered or special concern under the ESA, and species that are protected under Schedule 1 of the SARA. Species with ranges overlapping the Site or Study Area, or recent occurrence records in the vicinity, were screened by comparing their habitat requirements to habitat conditions at the Site and Study Area.

The potential for the species to occur was determined through a probability of occurrence based on the desktop study and the results of field surveys. The rankings used for this assessment are described below:

- Low - indicates no suitable habitat for life processes for that species (such as breeding, foraging, over-wintering, etc.); or suitable habitat is present, but none were observed during targeted surveys, and surveys are sufficient to dismiss presence. Low can also indicate an observation that is not tied to any habitats on the Site (e.g., a bird flying over the Site that is traveling to a different location).
- Moderate - indicates suitable habitat for life processes appeared to be present and targeted surveys were not completed; or standard surveys are not sufficient to dismiss presence (e.g., very cryptic species); or records are lacking information and/or cannot be tied to the Site itself (e.g., in the vicinity but precise location is unknown); or records are historic.
- High - indicates an accurate and recent species record (including observations made during field surveys or through background data review) that can be directly tied to the habitats on the Site.

The above rankings were used as guidelines for applying probability rankings; the ultimate determination was based on professional judgement. Any habitat identified during ground-truthing or other field surveys with potential to provide suitable conditions for additional SAR not already identified through the desktop screening was also assessed and recorded.

4.3 Field Surveys

The wildlife, habitats, plants and plant communities in the Study Area were characterized through multiple targeted field surveys. Habitats off-Site within the Study Area were characterized through review of aerial imagery, and through visual assessment from accessible lands (e.g., roadside, edge of the Site). Some field surveys were completed in the Study Area where land access was granted (e.g., Tomlinson-owned lands and public roadside). The following sections outline the methods used for each of the field surveys.

The dates when all surveys were conducted are included in **Table 1**. Locations of all survey stations are shown on **Figure 2**.

Table 1: Field Surveys Conducted on the Site and in the Study Area

Date	Type of Survey	Weather
20 April, 2023	Reconnaissance, Nocturnal Anuran Survey #1, Turtle VES*, Bat Habitat Survey, Aquatic Habitat Survey	7-11°C, partly cloudy, light to moderate winds, water temp 4°C
13 May, 2023	Turtle VES	19°C, cloudy, moderate winds, water temp 7°C

Date	Type of Survey	Weather
18 May, 2023	Nocturnal Anuran Survey #2, Turtle VES, Plant Community Survey	14-18°C, partly cloudy, light winds, water temp 13°C
7 June, 2023	Breeding Bird Survey #1, Turtle VES	13-16°C, partly cloudy/hazy, light to moderate winds, water temp 11°C
10 June, 2023	Turtle VES	20-22°C, mostly cloudy, light winds, water temp 12°C
20 June, 2023	Nocturnal Anuran Survey #3	20-21°C, cloudy, calm
2 July, 2023	Breeding Bird Survey #2, Plant Community Survey	19-20°C, cloudy, light to moderate winds
24 August, 2023	Plant Community Survey	14-17°C, partly cloudy, moderate to high winds
1 May, 2024	Wetland and Aquatic Habitat Survey	10-14°C, cloudy, light winds, water temp 9°C
12 August, 2024	Wetland and Aquatic Habitat Survey	19°C, mostly clear, moderate winds, water temp 18°C

Notes: *VES = visual encounter survey; visual encounter surveys for all wildlife and rare plants were conducted during all visits.

4.4 Plant Community Assessment and Botanical Surveys

4.4.1 Ecological Land Classification

Ecological land classification (ELC) mapping and data on the Site were gathered according to standard protocols (Lee et al. 1998). ELC mapping was refined over the course of several visits to capture seasonal variability in the dominant plant forms. ELC mapping of the Study Area was completed through interpretation of aerial imagery, access on Tomlinson-owned lands, and observations made from public access points (e.g., roadside) and from the edge of the Site.

4.4.2 Wetland Evaluation

Wetlands southwest of the Site on Tomlinson-owned lands were surveyed and classified according to the protocols of the Ontario Wetland Evaluation System (OWES) (MNR 2022) by a provincially certified wetland evaluator. The wetland evaluator also completed a formal evaluation of the wetland, per the OWES, to determine whether the feature qualifies as provincially significant. The evaluation was submitted by email to the Municipality of North Grenville on December 9, 2025, and the outcome of the evaluation and associated mapping was provided digitally to the MNR.

4.4.3 Botanical Inventory

A botanical inventory was completed concurrent with the plant community surveys, with a running list compiled of all plants encountered on the Site. Searches were conducted for SAR plants such as American ginseng (*Panax quinquefolius*), butternut (*Juglans cinerea*), black ash (*Fraxinus nigra*), provincially rare plants (ranked as S1 to S3 by NHIC), as well as food plants for any potentially present SAR insects. The running list of plants observed was augmented, as needed, during all field surveys. Locations of any rare or SAR plant species encountered, if any, were mapped using a hand-held GPS.

4.5 Wildlife and Wildlife Habitat Surveys

4.5.1 Herptile Surveys

To document use of wetlands in the Study Area by breeding anurans (i.e., frogs and toads), three rounds of nocturnal amphibian point-count surveys were conducted. Marsh Monitoring Program (MMP) protocols (Bird Studies Canada 2003) were used for guidance. In addition to point-count surveys, diurnal Visual Encounter

Surveys (VES) were conducted (e.g., searching for salamander, newt and anuran individuals and eggs during daylight hours and at night using a flashlight when necessary).

Visual surveys for basking turtles focused on wetlands that appeared to provide suitable turtle habitat. Using the Occurrence Survey Protocol for Blanding's Turtle in Ontario (MNRF 2015a), five survey rounds were conducted from April through June 15, 2023, when weather conditions were suitable. These protocols are appropriate for searching for a range of turtle species, since most turtle species have similar ecologies. Suitable habitat was scanned (i.e., with eyes and binoculars) from a distance following the perimeter of suitable wetlands. Surveyors tried to remain hidden, slowly approaching wetlands and waterbodies, and wading through shallow portions from mid-morning to late afternoon/early evening, depending on weather conditions as per the protocol. Basking turtles, as well as turtles wading, loafing, and swimming in shallow water were targeted during these surveys. In addition, when on-Site during evening and nocturnal surveys, suitable habitat was surveyed for presence of potential nesting turtles.

During all field surveys, VES for herptiles on the Site were conducted following recommended protocols (MNRF 2013, MNRF 2016, McDiarmid 2012).

4.5.2 Breeding Bird Surveys

Two rounds of breeding bird point counts were completed on the Site within the dates of May 25 to July 10, 2023, each separated by at least one week. Protocols from the Atlas of the Breeding Birds of Ontario (Cadman et al. 2007, Sauer et al. 2008) were used as guidance for these surveys. The surveys began as early as 30 minutes before sunrise and ended no later than 10:00 am. Each survey location consisted of a 50 and 100 m radius circular-plot; although all birds observed were noted regardless of distance to the observer. A list of all species was compiled, and the locations of any SAR were noted.

During all field surveys, VES for all bird species, including for those not well covered by point counts, such as raptors and raptor nests, were completed, and all bird observations were documented. Attention was paid to searching for nests of birds that are protected year-round by special provisions of the MBR 2022, and breeding evidence of all bird species was noted.

4.5.3 Mammal Surveys

General observations of mammals were collected during VES using the methods described in **Section 4.5.4**.

Targeted bat surveys were conducted on the Site and included a habitat assessment in April during leaf-off. A survey of suitable roost trees was performed, and included searching for trees with suitable cavities, cracks, peeling bark, presence of squirrel nests or dead, retained leaf clusters. Searches of the interior of structures at the Site were conducted to assess habitat suitability and to search for evidence of use by bats (e.g., direct observation of roosting, presence of guano, etc.). Because there are no forested areas on the Site, and the trees that do occur are primarily planted conifers or immature hardwoods, application of the Bat and Bat Habits: Guidelines for Wind Power Projects (MNRF 2011) protocols for determining snag density to assist in identifying candidate bat maternity roost significant wildlife habitat was not possible.

4.5.4 Visual Encounter Surveys

Visual encounter surveys included track and sign surveys, area searches, and incidental observations, concurrent with all other field surveys. These surveys followed recommended protocols (MNRF 2013, MNRF 2016, Bookhout 1994, McDiarmid 2012). During these surveys, the full range of habitats across the Site and in accessible parts of the Study Area were searched, with special attention paid to edge habitats and other areas where mammals

might be active. Any areas of exposed substrate such as sand or mud were examined for any visible tracks. Any wildlife (including mammals, reptiles, amphibians, birds, butterflies, native bumble bees and dragonflies) seen and identified were recorded. When encountered, tracks and other signs (e.g., stick or cavity nests, tracks, scats, hair, tree scrapes, etc.) were identified to a species, if possible, and recorded.

4.6 Aquatic Surveys

The Site and accessible portions of the Study Area were searched for aquatic features during field surveys. If present, features were assessed in early spring, then again in summer to identify and characterize potential fish habitat, flow conditions, and connectivity. Data was collected on habitat features (e.g., channel unit type, feature measurements, substrate, vegetation, etc.). In-situ water quality data, such as temperature, pH, and conductivity, were also collected, if relevant. As suitable surface water features in the Study Area are known fish habitat, and fish were observed, the feature is confirmed fish habitat; therefore, fish community sampling was deemed unnecessary and was not completed.

Temperature monitoring of surface water features on off-Site Tomlinson-owned lands was conducted in 2024 and 2025 by WSP (WSP 2025). Three water pressure/temperature transducers and a barometric pressure transducer were installed at the Site by WSP personnel on July 5, 2024 to monitor groundwater and surface water temperatures and water levels. The dataloggers were installed at SG-1, SG-3 and 21-03 (see **Figure 1**). Data was downloaded from the dataloggers periodically. The loggers were removed in the fall of 2024 to prevent damage during frozen conditions and were reinstalled on April 2, 2025. The collected data was analysed according to protocols presented in Jones & Stoneman (1996) to assess the thermal regime of the feature.

4.7 Analysis of Significant Natural Features and Impact Assessment

An assessment was conducted to determine the significance of natural features as well as SAR observed or determined to have the potential to exist on the Site or in the Study Area. The assessment was completed by analysing natural environment data collected through the background material described in **Section 4.1** and field surveys, using the methods and criteria outlined in the following sources:

- Natural Heritage Reference Manual (NHRM; MNR 2010)
- Significant Wildlife Habitat Technical Guide (SWHTG; MNR 2000)
- Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (SWHCS; MNR 2015b)

An assessment was then conducted to determine how the proposed extraction may negatively impact significant natural features or SAR. Preventative, mitigative and remedial measures were considered in assessing the net effects of the proposed extraction on the surrounding ecosystem. Where impacts to significant wildlife habitat were determined to be possible, mitigation was determined using the guidance provided in the Significant Wildlife Habitat Mitigation Support Tool (SWHMIST; MNR 2014).

5 EXISTING CONDITIONS

5.1 Ecosystem Setting, Landforms, and Regional Context

The Study Area is located at the upper limit of Ecoregion 6E (Lake Simcoe - Rideau), which covers approximately 6.4% of Ontario, extending from Lake Huron east to the Rideau River (Crins et al. 2009). Ecoregion 6E is dominated by the Great Lakes – St. Lawrence Forest Region, which is underlain primarily by dolomite and limestone bedrock, except along the Frontenac Arch between Algonquin Park and the Adirondack Mountains where granites and gneisses are mixed with limestones and sandstones (Crins et al. 2009). The majority of this

ecoregion exists as cropland (44.4%) and pasture or abandoned fields (12.8%), while water covers 4% of the ecoregion (Crins et al. 2009).

The Study Area lies within the Edwardsburg Sand Plains physiographic region in an area of sand plain with a beach running east-west through part of the Site (Chapman & Putnam 1984). The sand plains are characterized by glaciomarine sand deposits over bedrock and clays. The Site is higher in the eastern half, then, associated with the beach identified by Chapman & Putnam, the topography drops in the western half of the Site, which is occupied by a wetland. The ground surface elevation within the Site area ranges from approximately 104 to 111 masl and is highest in the middle of the Site. Topography declines rapidly to the west of the Site to an elevation of approximately 101 masl.

The Site and Study Area are located within the Oxford Mills catchment area of the Kemptville Creek subwatershed, within the Rideau River watershed (RVCA 2024).

5.2 Geology, Hydrogeology and Hydrology

The information in this section is taken from the Level 1 and Level 2 Water Report (WSP 2025) which should be read in conjunction with this report. Published surficial geology mapping indicates the presence of coarse textured glaciomarine deposits (i.e., sand, gravel, minor silt and clay) throughout the entire the Site. Published bedrock geology mapping indicates the upper bedrock unit in the vicinity of the Site consists of dolostone, minor shale and sandstone of the Oxford Formation.

Deposits of fine to coarse and permeable overburden capable of supplying sufficient quantities of groundwater exist locally in the area on and around the Site. The bedrock is the primary source of potable groundwater in the area of the proposed pit. Groundwater depths range from 0.15 to 5.02 m below-ground-surface (bgs) along the western boundary to 0.48 and 4.68 m bgs along the eastern boundary of the Site (WSP 2025). The direction of groundwater flow in the shallow overburden appears to be to the southwest across the Site, towards Kemptville Creek located outside of the Study Area to the west-southwest. The estimated incremental 1 m water table drawdown associated with the proposed extraction is illustrated on **Figure 1**.

According to the Level 1 and Level 2 Water Report (WSP 2025) under pre-development conditions, approximately 80% of surface flows at the Site drain north via roadside ditches to an unnamed tributary outside the Study Area. The remaining 20% of the Site drains south, towards the wetland and unnamed tributary southwest of the Site, which ultimately drains to Kemptville Creek.

Surface water features in the Study Area include a wetland at the southwestern edge of the Site, as well as an unnamed permanent tributary that flows through this wetland off-Site to the southwest, eventually feeding into Kemptville Creek. For more information on wetlands and watercourses see **Sections 5.3.2** and **5.5**.

The Site is not within any Wellhead Protection Areas or Intake Protection Zones, but is located within a Significant Groundwater Recharge Area (WSP 2025).

5.3 Plant Communities

5.3.1 Regional Setting

The Study Area is located in the Upper St. Lawrence section of the Great Lakes – St. Lawrence Forest Region, which contains a wide variety of both coniferous and deciduous species, including yellow birch (*Betula alleghaniensis*), white ash (*Fraxinus americana*), green ash (*Fraxinus pennsylvanica*), eastern hemlock (*Tsuga canadensis*), white pine (*Pinus strobus*) and balsam fir (*Abies balsamea*), sugar maple (*Acer saccharum*)

and American beech (*Fagus grandifolia*) in combination with basswood (*Tilia americana*), red maple (*Acer rubrum*), red oak (*Quercus rubra*), white oak (*Quercus alba*), and bur oak (*Quercus macrocarpa*), bitternut hickory (*Carya cordiformis*), butternut (*Juglans cinerea*), and silver maple (*Acer saccharinum*) (Rowe 1972).

5.3.2 Ecological Land Classification

Overall, the Site consists of a large corn field, open cultural woodland, and a former residential/farm lot. Many of the trees that occur on the Site were planted historically. Intensive logging has also occurred historically by previous landowners. The Study Area includes the Site plus thicket swamp, marsh, a small meadow, and additional woodland, agricultural fields, rural residential properties, forests, and swamps.

During the field surveys conducted on Site and the Study Area, four upland plant communities, four wetland communities, in addition to agricultural fields. Some areas within the Study Area, outside of the Site, were not accessible or easily observed from the road, so mapping is based primarily on review of aerial imagery. No rare plant communities were identified. Plant communities are shown on **Figure 2** and are described below in **Table 2** and **Table 3**.

Table 2: Plant Communities on the Site and in the Study Area (ELC)

ELC PLANT COMMUNITIES		
Plant Community	Description	SRANK ^a
CUM1-1 Regenerating Mixed Meadow	This is a small upland meadow in the middle of the wetland at the western edge of the Study Area. Soils are a thin layer of organics over loamy sand. It is dominated by forbs such as wild carrot (<i>Daucus carota</i>), grass-leaved goldenrod (<i>Euthamia graminifolia</i>), and common milkweed (<i>Asclepius syriaca</i>). Grasses are less dominant with species such as linear-leaved panicgrass (<i>Dichanthelium linearifolium</i>). Of note is the presence of whorled milkwort (<i>Polygala verticillata</i>), which was widespread in this community, and is designated as "S2?", possibly vulnerable in Ontario. This species is not designated under the ESA or the SARA. This meadow is relatively dry and is slowly regenerating back to forest, with seedling trees present such as trembling aspen (<i>Populus tremuloides</i>) and white birch (<i>Betula papyrifera</i>).	N/A
CUW1/CUS1 Sugar Maple Cultural Woodland/Cultural Savannah	This community is represented by two areas where immature sugar maples were planted. The area around the trees was semi-manicured in the past and has since naturalized. Soils are sand to loamy sand and disturbed in some locations. The trees are immature and interspersed with meadow communities. Meadow plants include a variety of forbs and grasses such as smooth brome (<i>Bromus inermis</i>), white sweet clover (<i>Melilotus albus</i>), and Canada goldenrod (<i>Solidago canadensis</i>). Scattered shrubs also occur such as common buckthorn (<i>Rhamnus cathartica</i>), and common prickly ash (<i>Zanthoxylum americanum</i>). Snags and large cavity trees are absent, downed woody debris is rare.	N/A
RES/CUW /Rural Residential/Cultural Woodland	This community includes the area where the abandoned residence and farm buildings occur, as well as some remnant strips and patches of trees along the roads. There is a mosaic of historically manicured areas, becoming semi-naturalized, interspersed with small stands of trees, scattered trees, and patches of shrubs. Trees are primarily planted, although some wild trees and shrubs do occur. Examples of species are red pine (<i>Pinus resinosa</i>), black walnut (<i>Juglans nigra</i>), white spruce (<i>Picea glauca</i>), blue spruce (<i>Picea pungens</i>), and trembling aspen. Snags are rare and large cavity trees are absent, downed woody debris is occasional to rare. The most mature trees present are planted spruce and pine.	N/A
FOC Coniferous Forest	This community is two small woodlots that were not accessed in the Study Area. It is obvious from the roadside and imagery that they are dominated by coniferous trees such as spruce and pine. They appear to have been planted, at least in part, historically.	N/A

ELC PLANT COMMUNITIES		
Plant Community	Description	SRANK ^a
SWT/SWM	This is a mosaic of swamp communities, with smaller marsh pockets, northwest of the Site in the Study Area	N/A
ANTHROPOGENIC		
AGRC-H Hayfield	This is represented by one field north of the Site, planted as hay during the study period. The field appears to be typical hayfield, dominated by grasses, with some forbs also present.	N/A
AGRC- R Row Crop	This is a large agricultural field on the Site, and smaller fields in the Study Area that were planted with corn during the study period.	N/A

Notes: ^a SRANK is a provincial-level rank indicating the conservation status of a species or plant community and is assigned by the NHIC in Ontario (NHIC 2025). SRANKs are not legal designations but are used to prioritize protection efforts in the province. SRANKs for plant communities in Ontario are defined in the Significant Wildlife Habitat Technical Guide (MNRF 2000) and by NHIC. Ranks 1-3 are considered extremely rare to uncommon in Ontario; Ranks 4 and 5 are considered to be common and widespread. N/A indicates a community that has not been ranked.

Table 3: OWES Wetland Plant Communities in the Study Area

Wetland Plant Community	Dominant Forms	Dominant Species
gcM1 Forb Mineral Meadow Marsh	gc, ne	<i>Eupatorium perfoliatum</i> , <i>Symphotrichum</i> spp, <i>Euthamia graminifolia</i> , <i>Lythrum salicaria</i> , <i>Equisetum arvense</i> , <i>Carex</i> spp., <i>Juncus nodosus</i> , <i>Poa palustris</i>
	Description This community is a relatively dry meadow marsh near the western edge of the wetland southwest of the Site. It has been disturbed in recent years but has regenerated with a mixture of wetland forbs and graminoids. Woody vegetation is restricted to scattered seedlings and saplings. Substrate is moderately deep organics over sand with mottles present. There is no evidence of flooding or pooling of water, however the water table is near the surface.	
neM2 Bulrush-Sedge Mineral Shallow Marsh	ne, gc	<i>Scirpus cyperinus</i> , <i>Phalaris arundinacea</i> , <i>Leersia oryzoides</i> , <i>Carex</i> spp., <i>Juncus</i> spp., <i>Eupatorium perfoliatum</i> , <i>Eutrochium maculatum</i>
	Description This community is a small marsh along an intermittent tributary near the southern corner of the wetland southwest of the Site. It has had some, but minimal, disturbance in recent years and appears to be at a later successional stage than the meadow marsh. It is dominated with graminoids and forbs, with scatter woody vegetation. Substrate is moderately deep organics over sand, with mottles present. Some flooding occurs in early spring, but it is primarily dry by late summer.	
tsS1 Willow Thicket Swamp	ts, gc, ne	<i>Salix</i> spp., <i>Cornus stolonifera</i> , <i>Fraxinus pennsylvanica</i> , <i>Populus balsamea</i> , <i>Equisetum arvense</i> , <i>Eupatorium perfoliatum</i> , <i>Lythrum salicaria</i> , <i>Carex</i> spp., <i>Phalaris arundinacea</i> , <i>Poa palustris</i>
	Description This community is the dominant wetland community southwest of the Site. It is a mosaic of mature thicket swamp interspersed with areas regenerating after disturbance. It is dominated by shrubs, but many sapling and seedling trees also occur. Substrate is shallow organics over sand and loamy sand, with mottles present. Flooding occurs throughout several portions in early spring but is primarily dry by late summer. There are several areas of seepage throughout, where water appears to eventually feed the watercourse that flows south off-Site.	

5.3.3 Vascular Plants

A total of 132 vascular plants were identified on the Site during the field surveys. For a list of plants identified at the Site, refer to **Appendix C**. The plant communities observed are typical of the habitats found on the Site and are primarily disturbed and heavily influenced by anthropogenic activities. Butternut (*Juglans cinerea*) was identified adjacent to the abandoned residence on the Site; however, these few individual trees were planted by previous landowners (and occur primarily in rows), along with several other tree species on the property. They appear to be pure butternuts, although the genetic make-up is not known, and it is possible that they have hybrid origins. These were not planted as part of an ESA permit or authorization, and therefore they have no protection under the ESA. One species of provincially rare plant, whorled milkwort (*Polygala verticillata*; S3?) was identified in the Regenerating Mixed Meadow (ELC code: CUM1), southwest of the Site, within the Study Area. For more information on this species refer to **Section 6.7.3** below. No other SAR, provincially rare or regionally significant plants were observed during field surveys.

5.4 Wildlife

A list of all wildlife or wildlife signs encountered on the Site during field surveys is provided in **Appendix D**.

5.4.1 Herptiles

A total of six herptile species were identified on the Site and in the Study Area. This included five species of anurans observed during nocturnal anuran surveys and visual encounter surveys. The main anurans observed were full chorus of spring peepers (*Pseudacris crucifer*) in the wetlands in the Study Area. The rest of the anuran species were represented by a few individuals. Refer to **Table 4** for the data collected during nocturnal surveys. In addition, three individual eastern garter snakes (*Thamnophis sirtalis sirtalis*) were observed during field surveys at different locations across the Site. No turtles were observed during any surveys, and turtle habitat was limited on the Site. No SAR or provincially rare herptiles were observed during surveys on the Site or within the Study Area.

Table 4: Nocturnal Amphibian Survey Results

Station #	Date (2023)	Species	Call Code*	# Individuals	Inside/Outside Target Feature
1	April 20	Spring peeper	3	FC	Inside
		Northern leopard frog (<i>Lithobates pipiens</i>)	1	1	Inside
	May 18	Spring peeper	2	~10	Inside
	June 20	Gray tree frog (<i>Hyla versicolor</i>)	1	3	Outside
2	April 20	Spring peeper	3	FC	Inside
	May	Spring Peeper	3	FC	Inside
	June 20	Gray tree frog	1	1	Inside
		Green frog	1	2	Inside
3	April 20	Spring peeper	3	FC	Inside/Outside
	May 18	Spring peeper	3	FC	Inside/Outside
		American toad (<i>Anaxyrus americanus</i>)	1	1	Inside
	June 20	Gray tree frog	2	5	Inside

Notes: *Call Codes: 1 - Calls do not overlap; 2 – Calls sometimes overlap, estimate of individuals possible; 3/FC – Full chorus, estimate of individuals not possible.

5.4.2 Birds

A total of 49 bird species were identified on the Site and in the Study Area. This included a mix of rural, open woodland/meadow, thicket, wetland, and edge species such as yellow warbler (*Setophaga petechia*), song sparrow (*Melospiza melodia*), swamp sparrow (*Melospiza georgiana*), and house wren (*Troglodytes aedon*).

No SAR or provincially rare bird species were observed. Breeding evidence of vesper sparrow (*Pooecetes gramineus*) and savannah sparrow (*Passerculus sandwichensis*) was observed on the Site and in the Study Area, which can be indicators of Significant Wildlife Habitat (SWH; see **Section 6.7.3**).

No nests of the bird species listed as having year-round protection per the MBR 2022 were observed on the Site.

5.4.3 Mammals

A total of seven species of mammal were identified on the Site and in the Study Area. This included species that are common in the region and rural habitats such as white-tailed deer (*Odocoileus virginianus*) and racoon (*Procyon lotor*).

A single woodchuck (*Marmota monax*) den was identified near the abandoned residence. No evidence of unusual mammal concentrations, or other notable or potentially significant habitat features for mammals were observed during any of the field surveys. No SAR or provincially rare mammals were identified during surveys. Potential roosting habitat of SAR bats was not identified during habitat surveys. Forested habitat is absent on the Site, and the individual trees present were surveyed during leaf-off to search for presence of features that may support bat maternity roosting. Most trees on the Site are immature, lacking suitable cavities and loose bark, or are coniferous.

5.4.4 Bumblebees, Dragonflies, and Butterflies

A total of 12 insect species were identified during the field surveys on the Site. This included common species such as black swallowtail (*Papilio polyxenes*), brown-belted bumblebee (*Bombus griseocollis*), and white-faced meadowhawk (*Sympetrum obtrusum*). Common milkweed (*Asclepius syriaca*) and swamp milkweed (*Asclepius incarnata*) were fairly common in the wetland and meadow at the far western edge of the Study Area, but no monarch (*Danaus plexippus*) were observed. No unusual concentrations, SAR, or provincially rare insects were identified on the Site; however, yellow-banded bumblebee (*Bombus terricola*) is an inconspicuous species that is difficult to survey, and has a moderate likelihood of occurrence (see **Appendix E**).

5.5 Aquatic Habitat and Fish

A multi-reached unnamed tributary of Kemptville Creek occurs in the wetland southwest of the Site. This tributary is represented by three intermittent reaches that connect with a permanent reach before flowing out of the Study Area to the southwest. Two of the three intermittent reaches and the permanent reach are for the most part anthropogenically channelized and are disconnected from the rest of the wetland with berms and banks, most of the year. The intermittent reaches have rapid flow early in the season, which slowly diminishes as summer progresses, depending on the local precipitation amounts. The permanent reach maintained flow all year during the study period. The bankful width of the unnamed tributary ranged from 1.5 to 3.6 m, depth ranged from 2 to 32 cm, when water was present, and the substrate was primarily sand with some fines and other organic debris present throughout. Instream and overhanging vegetation varied from sparse to dense, depending on the specific location. Large numbers of small-bodied fish, primarily Cyprinids, were observed throughout all reaches.

The wetland southwest of the Site undergoes some flooding in certain locations in spring, from snowmelt, rain, as well as groundwater inputs. There are a few small seeps/springs scattered throughout the wetland, most of which

appear to feed the unnamed tributary. Some portions of this wetland, where the flooding connects with the unnamed tributary, are likely fish habitat for at least part of the year; however, the majority of the wetland is relatively dry, with water only occurring in the substrate, and would not be accessible to fish.

Information on the thermal regime of the unnamed tributary is not available in published sources; however, temperature monitoring in the feature was undertaken by WSP during July and August 2024 and in 2025 (WSP 2025). Based on the analysis of the data (described in **Section 4.6**), the unnamed tributary exhibits a warmwater thermal regime, with temperatures exceeding 22 °C in both years of monitoring. Plots of the surface water temperatures recorded at SG-1, SG-3 and 21-03 are provided on **Appendix F**.

Off-Site, approximately 1.2 km west of the Site, is Kemptville Creek. Kemptville Creek is known to support a fish community consisting of banded killifish (*Fundulus diaphanus*), black crappie (*Pomoxis nigromaculatus*), blackchin shiner (*Miniellus heterodon*), blacknose dace (*Rhinichthys atratulus*), blacknose shiner (*Notropis heterolepis*), bluegill (*Lepomis macrochirus*), bluntnose minnow (*Pimephales notatus*), brassy minnow (*Hybognathus hankinsoni*), brook stickleback (*Culaea inconstans*), brown bullhead (*Ameiurus nebulosus*), central mudminnow (*Umbra limi*), common carp (*Cyprinus carpio*), common shiner (*Luxilus cornutus*), creek chub (*Semotilus atromaculatus*), fallfish (*Semotilus corporalis*), fathead minnow (*Pimephales promelas*), finescale dace (*Chrosomus neogaeus*), golden shiner (*Notemigonus crysoleucas*), iowa darter (*Etheostoma exile*), johnny darter (*Etheostoma nigrum*), largemouth bass (*Micropterus nigricans*), logperch (*Percina caprodes*), longnose dace (*Rhinichthys cataractae*), longnose sucker (*Catostomus catostomus*), mottled sculpin (*Cottus bairdii*), muskellunge (*Esox masquinongy*), northern pike (*Esox lucius*), northern redbelly dace (*Chrosomus eos*), northern sunfish (*Lepomis peltastes*), pumpkinseed (*Lepomis gibbosus*), rock bass (*Ambloplites rupestris*), smallmouth bass (*Micropterus dolomieu*), stonecat (*Noturus flavus*), tadpole madtom (*Noturus gyrinus*), walleye (*Sander vitreus*), white sucker (*Catostomus commersonii*), and yellow perch (*Perca flavescens*) (MNRF 2025b).

6 SIGNIFICANT NATURAL FEATURES AND IMPACT ASSESSMENT

This section assesses the significance of natural features and functions (as outlined in **Section 2**) observed on the Site or in the Study Area, as well as the potential impacts to those features that may result from the proposed extraction, in consideration of the proposed rehabilitation and recommended mitigation measures.

6.1 Habitat of Endangered or Threatened Species

Based on the background review and field surveys, a single endangered or threatened species and/or its habitat was identified as being present or potentially present on the Site (**Appendix E**), namely, Blanding's turtle (*Emydoidea blandingii*).

Blanding's Turtle

Blanding's turtle is designated as threatened under the ESA. There are records of Blanding's turtle within 2 kilometres (km) of the Site (NHIC 2024), although none were observed during targeted field surveys at the Site and in the Study Area.

Blanding's turtle habitat is characterized in the General Habitat Description (Ontario 2021) as the following:

- Category 1 – Nest and the Area within 30 m or overwintering sites and the area within 30 m.
- Category 2 – The wetland complex (i.e., all suitable wetlands or waterbodies within 500 m of each other) that extends up to 2 km from an occurrence, and the area within 30 m around those suitable wetlands or waterbodies.

- Category 3 – Area between 30 m and 250 m around suitable wetlands/waterbodies identified in Category 2, within 2 km of an occurrence.

However, the revised definition of habitat in the amended ESA is simply “*a dwelling-place (nests, dens, etc.) that is occupied or habitually occupied by one or more members of a species for breeding, rearing, staging, wintering, or hibernating, and the immediate surrounding area necessary for breeding, rearing, staging, or hibernation.*”

To assess whether or not Blanding’s turtles are dwelling in the wetlands southwest of the Site, multiple surveys were completed as noted in **Section 4**. No Blanding’s turtles or evidence of nesting was identified on the Site or in the Study Area during targeted surveys following MNR protocols. The wetlands in the Study Area do not contain sufficient water during the late fall to support turtle over-wintering, nor was any evidence of turtle over-wintering or nesting observed during targeted surveys. This species may move through the wetland southwest of the Site, or the Site itself during periods of movement between other habitat patches; however, migration and foraging habitat is specifically excluded from the definition of habitat in the amended ESA.

The wetlands and the area within 15 m of them are excluded from the proposed extraction area. Based on the results of the Level 1 and Level 2 Water Report (WSP 2025), no impacts to the hydrology of the wetlands are expected to result from the proposed extraction (see detailed assessment in **Section 6.2**).

The proposed Rehabilitation Plan for the Site includes the creation of an 18.1 ha pit pond, 17.1 ha of meadow and a small 0.1 ha wetland in the northwest corner of the Site. All these habitats will be suitable habitat for this species, and may provide suitable residence habitat (i.e., permanent surface water feature) within the proposed pit pond, which is currently lacking at the Site.

Mitigation to protect individuals of this species during site preparation and operations are presented in **Section 8.1**.

Since the proposed extraction will not result in any loss or damage of habitat for this species, and mitigations will protect individuals during operations, it is WSP’s opinion that no permits or authorizations under the ESA are required for this species.

The Study Area (off-Site) has the potential to provide habitat for additional endangered or threatened species as outlined in **Appendix E**. None of the off-Site habitats are expected to be impacted as a result of the proposed extraction, as detailed throughout **Section 6**, therefore no impacts to any off-Site habitat for endangered or threatened species are anticipated. Mitigation measures to protect individual wildlife, as well as standard measures relating to noise and dust, are discussed in **Section 8.1**.

6.2 Significant Wetlands and Coastal Wetlands

Significant wetlands are areas identified as provincially significant by the MNR using evaluation procedures established by the province. In Ontario, the province has established the OWES (MNR 2022) which assesses wetlands based on a range of criteria, including biology, hydrology, societal value and special features.

A single unevaluated wetland is mapped immediately southwest of the Site. This wetland has undergone recent logging and modification by previous landowners. The wetland was evaluated in accordance with the OWES, by a provincially certified wetland evaluator (Fergus Nicoll, Dip.T.), and the wetland was found to not meet the threshold for provincial significance. This information was submitted to the Municipality of North Grenville and the MNR, in accordance with OWES procedures. This wetland is not identified as a Locally Significant Wetland

(Schedule A1; MNG 2018). The wetland is fed primarily by groundwater infiltration and, to a lesser degree, by surface runoff from a small portion of the Site (WSP 2025).

The wetland is approximately 15 m from the proposed limits of extraction, and is located outside of the estimated drawdown radius of influence associated with the flattening of the water table at the Site (**Figure 1**). As a result, impacts to the wetland as a result of lowering of the water table are not predicted (WSP 2025).

Under existing conditions, the wetland receives some direct runoff from the Site. Under operational and rehabilitated conditions, approximately 6.4 ha (i.e., 74% of the total area within the Site reporting to the wetland) will be subject to changes in land use; however, the wetland is assumed to be fed primarily by groundwater flow from the east, and the water balance conducted by WSP (2025) shows the infiltration from the Site increasing slightly (2% to 12%) in operations and rehabilitation phases. This infiltration will continue reporting to the east as shallow groundwater flow (WSP 2025).

Overall, the potential impacts on the wetland are expected to be minor based on the information available at this time and the results of this assessment. Monitoring of surface water features is discussed in **Section 8.2** and general mitigation relating to wetlands is presented in **Section 8.1**.

Additional unevaluated wetlands are present outside the Study Area, and outside of the estimated drawdown radius. As such, no impacts to these features are anticipated.

Coastal wetlands are those located on the shores of the five great lakes, their connecting channels, or on a direct tributary of the lakes or their connecting channels within 2 km of the lake or connecting channel shoreline. There are no coastal wetlands on the Site or in the Study Area.

6.3 Fish Habitat

Based on observations made during the field surveys, the unnamed tributary southwest of the Site is considered fish habitat, due to fish being observed and its direct connection to Kemptville Creek to the west.

As discussed in **Section 6.2**, wetland containing the unnamed tributary lays outside the limits of extraction, and outside of the estimated drawdown radius of influence associated with the flattening of the water table. As a result, impacts to the unnamed tributary within the wetland from lowering of the water table are not predicted. Further, although 74% of the over-all catchment for these features will be altered, the main source of water for these features is understood to be groundwater (WSP 2025). As infiltration will increase during operations and rehabilitation (by 2% to 12%), and will continue reporting to the east as shallow groundwater flow, reduction in flows in the unnamed tributary are expected to be minor.

Operation of the proposed pit is also not predicted to contribute to flooding in the unnamed tributary (WSP 2025). The presence of the pit lake is expected to result in a minor overall reduction of peak flows relative to existing conditions during operations and rehabilitated conditions as no off-Site surface discharges from the pit lake will occur.

The unnamed tributary exhibits a warmwater thermal regime, with temperatures exceeding 22 °C in both years of monitoring (WSP 2025). As the feature is warmwater, any minor changes to the temperature of the groundwater inputs resulting from development of the pit lake are not expected to result in any changes to the habitat suitability for the existing fish community (i.e., warmwater fish communities are tolerant to a range of temperatures).

Overall, the potential impacts to the unnamed tributary are expected to be minor based on the information available at this time and the results of this assessment, and no death of fish or harmful alteration, disruption or

destruction of fish habitat are anticipated provided the mitigation measures discussed in **Section 8.1** are implemented.

Monitoring of surface water features is discussed in **Section 8.2**.

6.4 Significant Woodlands

According to the PPS, significant woodlands are to be identified within Ecoregions 6E and 7E using criteria established by the MNR in the NHRM (MNRF 2010), and the local planning authority is to refine and apply the NHRM criteria within their jurisdiction to identify significant woodlands (MNRF 2010).

There are no woodlands at the Site.

There are woodland communities in the Study Area northeast and south of the Site, and they are identified as Woodlands per the Municipality of North Grenville Official Plan (Schedule A1). The Official Plan does not map significant woodlands (although this label does appear in the legend for Schedule A1); however, the Official Plan notes that significance is to be determined using the NHRM (MNRF 2010) criteria where development is proposed in or adjacent to woodlands. This Study has taken the conservative approach of assuming that the woodlands northeast of the Site are significant, based on their size and connectivity to larger woodlands to the north (**Figure 2**). The woodland south of the Site is not considered significant given its small size, immaturity, plantation history and isolation from other natural features.

A portion of the woodland northeast of the Site lies within the predicted zone of influence of the proposed pit. The trees in this area are not wetland species, so they are unlikely to be dependent on the water table for their water needs; they are reliant on surface water inputs (rain, snow melt, etc.). Based on the results of the groundwater elevation monitoring at the Site from 2021-2025, maximum groundwater levels below the woodland are approximately 2.0 m bgs; at rehabilitation, the average groundwater level in this area is expected to be drawn down by less than one metre (0.4 metres at 21-01; WSP 2025). This change will be gradual, occurring over the operational phase of the project. This change is not expected to affect the trees in the significant woodland. Implementation of standard mitigation measures and setbacks as outlined in **Section 8.1** will further protect these woodlands.

6.5 Significant Valleylands

Significant valleylands should be defined and designated by the planning authority in Ecoregions 6E and 7E. General guidelines for determining significance of these features are presented in the NHRM (MNRF 2010). Recommended criteria for designating significant valleylands include prominence as a distinctive landform, degree of naturalness, importance of its ecological functions, restoration potential, and historical and cultural values.

The topography of the Site and Study Area is flat to undulating, and therefore there are no significant valleylands on the Site or in the Study Area.

6.6 Significant Areas of Natural or Scientific Interest

Significant Areas of Natural and Scientific Interest (ANSIs) are areas identified as provincially significant by the MNR using evaluation procedures established by the province (MNRF 2010).

There are no provincially significant ANSI identified on the Site or in the Study Area.

6.7 Significant Wildlife Habitat

The NHRM includes high level guidance for identifying SWH, which is further refined in the Significant Wildlife Habitat Technical Guide (SWHTG) and the Significant Wildlife Habitat Criteria Schedules (SWHCS) (MNR 2000, MNR 2015b). These documents are the basis for identifying areas and features that are considered SWH by the province, and were used in this study, in combination with the results of field surveys, to determine SWH at the Site and within the Study Area.

There are four general categories of significant wildlife habitat: seasonal concentration areas, rare vegetation communities or specialized habitats for wildlife, species of conservation concern, and animal movement corridors. Each category includes several different types of SWH.

The province's guidance for identifying SWH consists of two factors: presence of suitable habitat and evidence of use that meets certain thresholds (e.g., presence of certain species, presence of certain numbers of individuals, etc.). For an area to qualify as SWH, both factors must be present. The table provided in **Appendix G** outlines all the types of SWH that are to be considered in Ecoregion 6E according to the SWHCS, and includes an assessment of whether or not the criteria for 'candidate' SWH is present at the Site for each type (i.e., the first factor: habitat). Where 'candidate' SWH is present at the Site, the table goes on to compare the habitats and results of field surveys at the Site to the defining criteria as listed in the SWHCS to determine presence/absence of 'confirmed' SWH (i.e., the second factor: use). Where 'confirmed' SWH is identified through the analysis presented in **Appendix G**, those types of SWH are discussed below in the context of the proposed extraction. Where presence of 'confirmed' SWH cannot be ruled out, a conservative approach has been implemented by identifying 'candidate' SWH. Where only 'candidate' SWH is identified, but the defining criteria for 'confirmed' SWH are not present, those types of SWH are absent (i.e., there is suitable habitat, but the habitat is not being used; therefore, no SWH is present).

6.7.1 Seasonal Concentration Areas

Seasonal concentration areas are areas where wildlife occur in aggregations at certain times of year. Examples include concentrations of wildlife during migration, hibernation, wintering areas or specialized breeding areas for colonial species.

The SWHCS for Ecoregion 6E identifies the following types of seasonal concentrations of animals that may be considered significant wildlife habitat:

- Waterfowl stopover and staging areas (aquatic and/or terrestrial)
- Shorebird migratory stopover areas
- Raptor wintering areas
- Bat hibernacula
- Bat maternity roost colonies
- Turtle wintering areas
- Reptile hibernaculum
- Colonially nesting bird breeding habitat (bank / cliff)
- Colonially nesting bird breeding habitat (tree / shrub)

- Colonially nesting bird breeding habitat (ground)
- Migratory butterfly stopover areas
- Landbird migratory stopover areas
- Deer yarding and winter congregation areas

Although one type of candidate seasonal concentration area from the above list was identified based on the habitats present at the Site, no defining criteria were present for that candidate area; therefore no confirmed types of seasonal concentration area SWH have been identified at the Site based on the analysis presented in **Appendix G**.

Within the Study Area, no types of seasonal concentration areas were identified as potentially present as outlined in **Appendix G**.

Mitigation measures to protect individual wildlife, as well as standard measures relating to noise and dust, are discussed in **Section 8.1**.

6.7.2 Rare Vegetation Communities or Specialized Habitats for Wildlife

6.7.2.1 Rare Vegetation Communities

Rare vegetation communities are those that are considered rare in the province [communities assigned an SRANK of S1 to S3 (extremely rare to rare-uncommon) by the NHIC] as well as vegetation communities that may be rare in a planning area. Such habitats are considered more likely to support rare species of plants or wildlife. Rare vegetation communities to be considered in Ecoregion 6E are:

- Cliffs and talus slopes
- Sand barren
- Alvar
- Savannah
- Tallgrass prairie
- Other communities considered provincially rare
- Old growth forests

No candidate or confirmed types of rare vegetation community SWH from the above list have been identified at the Site based on the analysis presented in **Appendix G**.

Within the Study Area, based on observations from roads, and an analysis of imagery, no rare vegetation communities are expected to be present, as outlined in **Appendix G**. Further, none of the off-Site habitats are expected to be impacted as a result of the proposed extraction, as detailed throughout **Section 6**, therefore no impacts to any off-Site rare vegetation communities, if present, are anticipated. Mitigation measures relating to dust are discussed in **Section 8.1**.

6.7.2.2 Specialized Habitats for Wildlife

Specialized habitats are those habitats that support wildlife during a critical part of life processes, primarily during breeding, but also includes specific features or micro-habitats, such as seeps. Specialized habitats that are to be considered in Ecoregion 6E are:

- Waterfowl nesting areas
- Bald eagle (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*) nesting, foraging and perching habitat
- Woodland raptor nesting habitat
- Turtle nesting areas
- Seeps and springs
- Amphibian breeding habitat (woodland / wetland)
- Woodland area sensitive bird breeding habitat

Although a few types of candidate specialized habitat for wildlife from the above list were identified based on the habitats present at the Site, no defining criteria were present for those candidate areas; therefore, no confirmed types of specialized habitat for wildlife SWH have been identified at the Site based on the analysis presented in **Appendix G**.

Within the Study Area, several types of specialized habitats for wildlife were identified as potentially present as outlined in **Appendix G**. None of the off-Site habitats are expected to be impacted as a result of the proposed extraction, as detailed throughout **Section 6**, therefore no impacts to any off-Site specialized habitats are anticipated.

Mitigation measures to protect individual wildlife, as well as standard measures relating to noise and dust, are discussed in **Section 8.1**.

6.7.3 Habitat for Species of Conservation Concern

Habitat for species of conservation concern (SCC) includes certain habitats for groups of species that are declining provincially, as well as individual species that are considered rare. The types of habitat for SCC to be considered in Ecoregion 6E are:

- Marsh bird breeding habitat
- Open country bird breeding habitat
- Shrub / early successional bird breeding habitat
- Terrestrial crayfish
- Special concern or rare wildlife species, including:
 - Species that are ranked S1-S3 by the NHIC and/or are provincially tracked
 - Species with populations that are significantly declining or have a high percentage of their global population in Ontario

- Species listed as special concern under the ESA
- Species listed as threatened or endangered under SARA only
- Regionally or locally rare species, where credible lists are available

Only one type of candidate habitat for species of conservation concern was identified at the Site based on habitats present per the analysis presented in **Appendix G**, namely suitable habitat for special concern or rare wildlife (yellow-banded bumble bee). This species was not observed during surveys; however, it is a cryptic species and may be present despite not being observed. Portions of the Site outside of the proposed extraction area will continue to provide suitable habitat for this species, and extensive similar or better habitats are present within the Study Area and local landscape. Further, post-extraction, the rehabilitated Site will provide suitable habitats for this species in the form of meadows. Based on this, the proposed extraction is not expected to negatively impact this type of SWH on the Site, if present.

Within the Study Area, southwest of the Site, one SCC species was identified during field surveys. A scattered colony of whorled milkwort was identified in the Regenerating Cultural Meadow (ELC code: CUM1-1) (**Figure 2**). This species is considered rare in Ontario and is designated as S3? by NHIC. This portion of the Study Area is beyond 120 m of the Site and not within the predicted radius of influence. Based on this, the proposed pit will not negatively affect this species.

The Study Area has the potential to provide habitat for a variety of additional SCC as outlined in **Appendix E** and **Appendix G**. None of the off-Site habitats are expected to be impacted as a result of the proposed extraction, as detailed throughout **Section 6**, therefore no impacts to any off-Site habitat for SCC are anticipated. Mitigation measures to protect individual wildlife, as well as standard measures relating to noise and dust, are discussed in **Section 8.1**.

6.7.4 Animal Movement Corridors

Animal movement corridors are naturally vegetated parts of the landscape used by animals to move from one habitat to another, typically in response to different seasonal habitat requirements. The SWHCS indicates that movement corridors are to be identified only where certain types of SWH have been confirmed according to the SWHCS, including:

- Amphibian movement corridors: to be identified when significant amphibian breeding habitat (wetland) is present.
- Deer movement corridors: to be identified when deer wintering habitat is present.

Since no amphibian breeding SWH was identified in the Study Area, no amphibian SWH corridors occur. No deer wintering habitat is mapped by MNR at the Site or in the Study Area, and therefore no SWH deer movement corridors are to be identified.

The Study Area is not adjacent to any major watercourse or major landscape feature that would act as a natural corridor for wildlife. The Study Area is located in a landscape characterized by gently rolling to flat topography and a matrix of open and forested habitats, and so does not provide a linkage between different habitat types, or habitats providing different seasonal requirements for wildlife. For these reasons, no animal movement corridors have been identified on the Site or in the Study Area.

6.8 Natural Heritage System

The NER must identify if the Site is located within a natural heritage system that has been identified by a municipality in Ecoregions 6E and 7E, or by the province as part of a provincial plan. There are no such designations applied to the Site.

The wetlands southwest of the Site are identified as part of the UCLG Natural Heritage System, but no Natural Heritage Features or Areas are identified (UCLG Official Plan Appendix 2).

Where development is proposed within or adjacent to the Natural Heritage System, an EIS is required to determine whether any potentially significant Natural Heritage Features or Areas, or important linkages, corridors and restoration opportunities may exist. According to the UCLG Official Plan, Natural Heritage Features or Areas include: PSW, SWH, ANSI, and significant valleylands. The Municipality of North Grenville Official Plan expands this definition to include habitat for endangered and threatened species, fish habitat, woodlands and locally significant wetlands.

Based on the results of this Study, the Natural Heritage Features (per the UCLG and the Municipality of North Grenville definition) found off-Site in the Study Area are: fish habitat, woodlands, and SWH. These features lie outside of the proposed extraction area and based on the results of this study and the Level 1 and Level 2 Water Report (WSP 2025), no negative impacts to them are expected to result from the proposed extraction (see full discussion of each in **Sections 6.1** through **6.7**).

7 CUMULATIVE IMPACTS

As the proposed extraction represents a temporary land use, and post-rehabilitation the Site will be returned to natural cover (including lakes), the proposed extraction will not contribute to cumulative impacts to natural cover in the local landscape in the long-term. Cumulative impacts relating to surface water and groundwater are discussed in the Level 1 and Level 2 Water Report (WSP 2025).

8 MITIGATION AND MONITORING

8.1 Mitigation

As no significant natural features are proposed for removal, and none are likely to be negatively affected by the proposed pit, mitigation has focused on applying setbacks, protection of adjacent features and wildlife, and rehabilitation of the Site after extraction.

Impacts to adjacent lands will be mitigated by the implementation of setbacks. The lands adjacent to the proposed extraction boundary will be buffered by:

- 30 m setbacks along all adjacent public roads
- 15 m setbacks along the wetland southwest of the Site
- 10 m setback from the identified archaeological site in the northeast corner of the Site

Within the setbacks, existing vegetation will remain untouched during all phases of the project with the exception of the placement of acoustic berms, as previously noted (**Figure 1**). These setbacks will provide a buffer to the adjacent natural features and maintain natural areas on the Site that will provide habitat for wildlife.

During site preparation and earth-moving operations, sediment control measures will be implemented wherever a grade exists such that movement of sediment into adjacent natural areas could occur, particularly along the setback to the wetland.

To avoid contravention of the MBCA, no clearing of vegetation shall take place within the core breeding bird season (April 1 – August 31) unless a nesting survey has been completed by a qualified biologist within 24 hours prior to the clearing, and no active nests were observed. If an active nest is observed, the area must be buffered and vegetation clearing at that location postponed until the nest is no longer active.

Prior to site preparation, and for the duration of operations at the Site, turtle exclusion fencing shall be installed along the southwestern edge of the Site to deter Blanding's turtle from entering the work area. The exclusion fencing will consist of metal or wooden frame with wire mesh. The fencing will be designed to be heavy-duty and suitable for long-term use. Installation methods will follow MNR guidance (MNR 2021), including:

- Minimum height of 0.6 m
- Minimum buried depth of 0.1 m
- Back-filled and compacted soil on both sides
- Install turn-arounds at the ends of each fence segment of at least 0.5 m wide and 2.0 m long

Turtle fencing is to be installed prior to April 1st in the year that site preparation occurs and remain in place for the duration of the operational lifespan of the pit. Designated staff from the licensee will inspect the permanent fencing once a month throughout the turtle active season (between April 15th and October 15th each year). Any deficiencies will be addressed immediately.

A SAR Training Program and Encounter Protocol is to be prepared and implemented. The materials will address SAR that may be present on the Site or in the local landscape, and identify what to do if one is observed on the Site. The Training Program will include:

- Information / training on identifying SAR
- What to do if a SAR or any wildlife is observed on the Site (Encounter Protocol)
- How to protect a turtle or bird nest
- Information on how to report a SAR sighting

Standard best management practices for noise and dust mitigation at pit operations will be employed during operations to reduce impacts on adjacent lands, and the habitats they provide.

8.2 Monitoring

Based on the finding of this report, no specific ecological monitoring is required or recommended. As noted, regular inspection of the turtle exclusion fencing will occur. As detailed in the Level 1 and Level 2 Water Report (WSP 2025), a Site-specific water level monitoring program has been developed to measure and evaluate the actual effects on potential receptors associated with long-term development of the proposed East Oxford Pit.

9 SUMMARY AND RECOMMENDATIONS

The proposed project has been assessed for potential ecological impacts under the ARA Provincial Standards, the PPS, policies of the UCLG and the Municipality of North Grenville, as well as other relevant provincial and federal legislation. Based on these analyses, it is expected that the proposed extraction will be in compliance with all applicable legislation. These conclusions are based on the following recommendations, which are to be applied to the Site Plans:

- Setbacks are to be clearly demarcated and respected. Existing natural vegetation communities will be retained within the setbacks, except where acoustic berms are required.
- Implement sediment and erosion control measures along the limit of disturbance prior to site preparation wherever a grade exists such that movement of sediment into adjacent natural areas could occur, particularly along the setback to the wetland.
- To comply with the *Migratory Birds Convention Act*, no clearing of vegetation shall occur within the core breeding bird season (April 1 – August 31) unless a nesting survey has been completed by a qualified biologist within 24 hours of the clearing, and no active nests were observed. If an active nest is observed, the area must be buffered and vegetation clearing at that location postponed until the nest is no longer active.
- To deter Blanding's turtle from entering the Site, turtle exclusion fencing is to be installed along the western edge of the Site prior to April 1st in the year that site preparation occurs and remain in place for the duration of the operational lifespan of the pit. The exclusion fencing will consist of metal or wooden frame with wire mesh. The fencing will be designed to be heavy-duty and suitable for long-term use. Installation methods will follow MNR guidance (MNR 2021), including:
 - Minimum height of 0.6 m
 - Minimum buried depth of 0.1 m
 - Back-filled and compacted soil on both sides
 - Install turn-arounds at the ends of each fence segment of at least 0.5 m wide and 2.0 m long
- Designated staff from the licensee will inspect the permanent fencing once a month throughout the turtle active season (between April 15th and October 15th each year). Any deficiencies will be addressed immediately.
- Implement a SAR Training Program and Encounter Protocol. The SAR Training Program is to be provided for all new on-Site staff as part of orientation training. The Training Program will include:
 - Information / training on identifying SAR
 - What to do if a SAR or any wildlife is observed (Encounter Protocol)
 - How to protect a turtle or bird nest
 - Information on how to report a SAR sighting
- Standard best management practices shall be implemented to reduce dust and noise and shall be continued during operation of the project.

- Undertake rehabilitation as outlined in the Rehabilitation Plan.

The mitigation measures listed here are to be included on the Site Plan for the project.

10 CLOSING

We trust this report meets your current needs. If you have any questions regarding this report, please contact the undersigned.

Curriculum vitae of the authors are provided in **Appendix H**.

Signature Page

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FN/GW/ld

[https://wsponline.sharepoint.com/sites/gld-148378/project files/6 deliverables/natural environment/ner/21471757_r_rev0_tomlinson east oxford ner_19687-001_draft_dec2025.docx](https://wsponline.sharepoint.com/sites/gld-148378/project%20files/6%20deliverables/natural%20environment/ner/21471757_r_rev0_tomlinson%20east%20oxford%20ner_19687-001_draft_dec2025.docx)

REFERENCES

- Bat Conservation International (BCI). 2025. Range Maps. Available: <http://batcon.org/index.php/all-about-bats/species-profiles.html>
- Bird Studies Canada. 2003. Marsh Monitoring Program: Training Kit and Instructions for Surveying Marsh Birds, Amphibians and their Habitats. 40 pp.
- Bookhout, T.A., Editor. 1994. Research and management techniques for wildlife and habitats. Fifth ed. The Wildlife Society, Bethesda M.D. 740 pages.
- Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier, editors. 2007. Atlas of the Breeding Birds of Ontario. Co-published by Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp. ISBN 978-1-896059-15-0.
- Canada, Government of (Canada). 1985. *Fisheries Act*. R.S.C. 1985, c. F-14.
- Canada, Government of (Canada). 1994. *Migratory Birds Convention Act*. S.C. 1994, c. 22.
- Canada, Government of (Canada). 2002. *Species at Risk Act*. S.C. 2002, c. 29.
- Chapman, L.S. and D.F. Putnam. 1984. The Physiography of Southern Ontario. Ontario Geological Survey, Special Volume 2. Ontario Ministry of Natural Resources. Toronto.
- Crins, W.J., P.A. Gray, P.W.C. Uhlig, and M.C. Wester. 2009. The Ecosystems of Ontario, Part I: Ecozones and Ecoregions. Ontario Ministry of Natural Resources, Inventory, Monitoring and Assessment Section, Science and Information Branch, Peterborough, Ontario.
- Dobbyn, J.S. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists, Toronto. 120 pp.
- Cornell Lab of Ornithology. 2025. eBird Online Database of Bird Distribution and Abundance (Online). Available: www.ebird.org. Ithaca, NY.
- Environment and Climate Change Canada (ECCC). 2025. Species at Risk Public Registry. Available: http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm
- Fisheries and Oceans Canada (DFO). 2019. Fish and Fish Habitat Protection Policy Statement, August 2019. Ecosystem Programs Policy. Her Majesty the Queen in Right of Canada. Available: <https://www.dfo-mpo.gc.ca/pnw-ppe/policy-politique-eng.html>
- Fisheries and Oceans Canada (DFO). 2024. Projects Near Water. Available: <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>
- Fisheries and Oceans Canada (DFO). 2025. Aquatic Species at Risk Mapping (Online). Available: <http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/index-eng.htm>
- iNaturalist. 2025. Observations of species at risk from the Study Area. Retrieved from iNaturalist : <https://www.inaturalist.org>

- Jones, C., and Stoneman, M. 1996. A Simple Method to Classify Stream Thermal Stability with Single Observations of Daily Maximum Water and Air Temperatures. *North American Journal of Fisheries Management*, 16(4): 728-737.
- Jones, C., R. Layberry, and A. Macnaughton. 2025. Ontario Butterfly Atlas Online. Toronto Entomologists' Association. Available: http://www.ontarioinsects.org/atlas_online.htm.
- Land Information Ontario (LIO). 2025. Available: <http://www.ontario.ca/environment-and-energy/land-information-ontario>.
- 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, South Central Region, Science Development and Transfer Branch. SCSS Field Guide FG02.
- Leslie J. 2018. Vascular Plants at Risk in Ontario. Savanta Inc. May 2018. Available: http://cms.savanta.ca/sites/default/files/2018-08/SAR_Document_2018_05_25_1.pdf. 96 p.
- McDiarmid, R. W. 2012. Reptile Biodiversity. Standard Methods for Inventory and Monitoring. Mercedes S. Foster, Craig Guyer, J. Whitfield Gibbons, Neil Chernoff (Eds.). University of California Press. 412 pages.
- MNG. 2018. Municipality of North Grenville Official Plan. Retrieved from Municipality of North Grenville.
- NHIC. 2024. Personal communication. Email transfer of Elemental Occurrence data. Natural Heritage Information Centre; Government of Ontario.
- NHIC. 2025. Provincial Status Rankings for Plants, Wildlife and Plant Communities. Retrieved from Natural Heritage Information Centre; Government of Ontario: <https://www.ontario.ca/page/natural-heritage-information-centre>
- Ontario, Government of (Ontario). 1990a. *Aggregate Resources Act*, R.S.O. 1990, Chapter A.8.
- Ontario, Government of (Ontario). 1990b. *Planning Act*, R.S.O. 1990, Chapter P.13.
- Ontario, Government of (Ontario). 2007. *Endangered Species Act*, R.S.O. 2007.
- Ontario, Government of (Ontario). August 2020. Aggregate Resources of Ontario Standards: A compilation of the four standards adopted by Ontario Regulation 244/97 under the Aggregate Resources Act. Part 2: Aggregate Resources of Ontario: Technical Reports and Information Standards. ISBN 978-1-4868-4700-6 PDF. 52 pp.
- Ontario, Government of (Ontario). 2021. Blanding's Turtle General Habitat Description. Available: <https://www.ontario.ca/page/blandings-turtle-general-habitat-description>
- Ontario (Government of Ontario). 2025. Bill 5 – Protect Ontario by Unleashing our Economy Act. Available: <https://www.ola.org/en/legislative-business/bills/parliament-44/session-1/bill-5>
- Ontario Ministry of Municipal Affairs and Housing (MMAH). 2024. Provincial Planning Statement. Available: <https://www.ontario.ca/page/provincial-planning-statement-2024>
- Ministry of the Environment, Conservation and Parks (MECP). 2025. Species at Risk in Ontario – Ontario Regulation 230/08. Available: <https://www.ontario.ca/page/species-risk-ontario>

- Ontario Ministry of Natural Resources and Forestry (MNRF). 2000. Significant Wildlife Habitat Technical Guide (SWHTG). 151 pp.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2010. Natural Heritage Reference Manual for Natural Heritage Polices of the Provincial Policy Statement, 2005 Second Edition.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2011. Bats and Bat Habitats: Guidelines for Wind Power Projects. Available: <https://www.ontario.ca/page/bats-and-bat-habitats-guidelines-wind-power-projects>
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2013. May. Reptile and Amphibian Training Workshop. Elbow Lake Environmental Education Centre, Kingston, Ontario.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2014. Significant Wildlife Habitat Mitigation Support Tool. Version 2014.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2015a. Occurrence Survey Protocol for Blanding's Turtle (*Emydoidea blandingii*) in Ontario. Peterborough, Ontario: Ministry of Natural Resources and Forestry, Species at Risk Branch.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2015b. Significant Wildlife Habitat 6E Criterion Schedule. 39 pp.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2016. Survey Protocol for Ontario's Species at Risk Snakes. Ontario Ministry of Natural Resources and Forestry, Species Conservation Policy Branch. Peterborough, Ontario. ii + 17 pp.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2021. Reptile and Amphibian Exclusion Fencing. Available: <https://www.ontario.ca/page/reptile-and-amphibian-exclusion-fencing>
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2022. Ontario Wetland Evaluation System – Southern Manual (OWES). Fourth Edition. Queen's Printer for Ontario.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2025a. Make-a-Map Natural Heritage Explorer. Available:
http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2025b. Land Information Ontario, Aquatic Resources Area Layer. Fisheries Section, Species Conservation Policy Branch.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2025c. Ontario Land Cover Compilation. Science and Research Branch, Ministry of Natural Resources and Forestry.
- Ontario Nature. 2019. Ontario Reptile and Amphibian Atlas. Available:
http://www.ontarionature.org/protect/species/herpetofaunal_atlas.php.
- Rowe, J.S. 1972. Forest Regions of Canada. Publication No. 1300. Ottawa: Canadian Forestry Service, Department of the Environment.

RVCA. 2024. RVCA Floodplain and Regulations Mapping. Retrieved from <https://www.rvca.ca/regulations-planning/map-a-property>

Sauer, J. R., J. E. Hines, and J. Fallon. 2008. The North American Breeding Bird Survey, Results and Analysis 1966 – 2007. Version 5.15.2008. USGS Patuxent Wildlife Research Center, Laurel, Maryland, USA.

UCLG. 2016. United Counties of Leeds and Grenville Official Plan. Retrieved from United Counties of Leeds and Grenville: <https://www.leedsgrenville.com/en/government/planning-services.aspx>

WSP Canada Inc. (WSP). December 2025. Level 1 and Level 2 Water Report - Proposed East Oxford Pit, Ontario. Project No. CA-GLD-21471757. Prepared for R. W. Tomlinson Limited.

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The report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings in the assessment.

The conclusions presented in this report are based on work performed by trained, professional, and technical staff, in accordance with their reasonable interpretation of current and accepted engineering and scientific practices at the time the work was performed.

The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

WSP disclaims any obligation to update this report if, after the date of this report, any conditions appear to differ significantly from those presented in this report; however, WSP reserves the right to amend or supplement this report based on additional information, documentation or evidence.

WSP makes no other representations whatsoever concerning the legal significance of its findings.

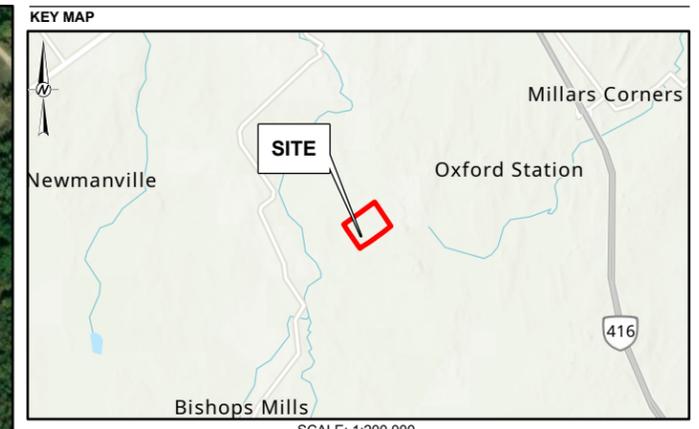
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Benchmark and elevations used in this report are primarily to establish relative elevation differences between the specific testing and/or sampling locations and should not be used for other purposes, such as grading, excavating, construction, planning, development, etc.

FIGURES



- LEGEND**
- CANDIDATE SIGNIFICANT WOODLANDS
 - SIGNIFICANT WILDLIFE HABITAT
 - PROPOSED LIMIT OF EXTRACTION
 - SITE / PROPOSED LICENCE BOUNDARY
 - STUDY AREA
 - APPROXIMATE BOUNDARY OF TOMLINSON PROPERTY
 - PREDICTED GROUNDWATER LEVEL DRAWDOWN RADIUS OF INFLUENCE
 - ROADWAY
 - WATERCOURSE
 - PERMANENT STREAM
 - INTERMITTENT STREAM
 - 2025 WSP EVALUATED - NOT SIGNIFICANT WETLANDS
 - UNEVALUATED WETLANDS



- NOTE(S)**
1. ALL LOCATIONS ARE APPROXIMATE
- REFERENCE(S)**
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
 2. BASE MAP: VANTOR, ESRI, NASA, NGA, USGS, SOURCES: ESRI, TOMTOM, GARMIN, FAO, NOAA, USGS, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
 3. COORDINATE SYSTEM: NAD 1983 CSRS UTM ZONE 18N

CLIENT
R.W. TOMLINSON LIMITED

PROJECT
NATURAL ENVIRONMENT REPORT AND ENVIRONMENTAL
IMPACT STUDY, PROPOSED EAST OXFORD PIT, NORTH
GRENVILLE, ONTARIO

TITLE
SIGNIFICANT NATURAL FEATURES

CONSULTANT	YYYY-MM-DD	2025-12-05
	DESIGNED	FN
	PREPARED	BR
	REVIEWED	FN
	APPROVED	GW

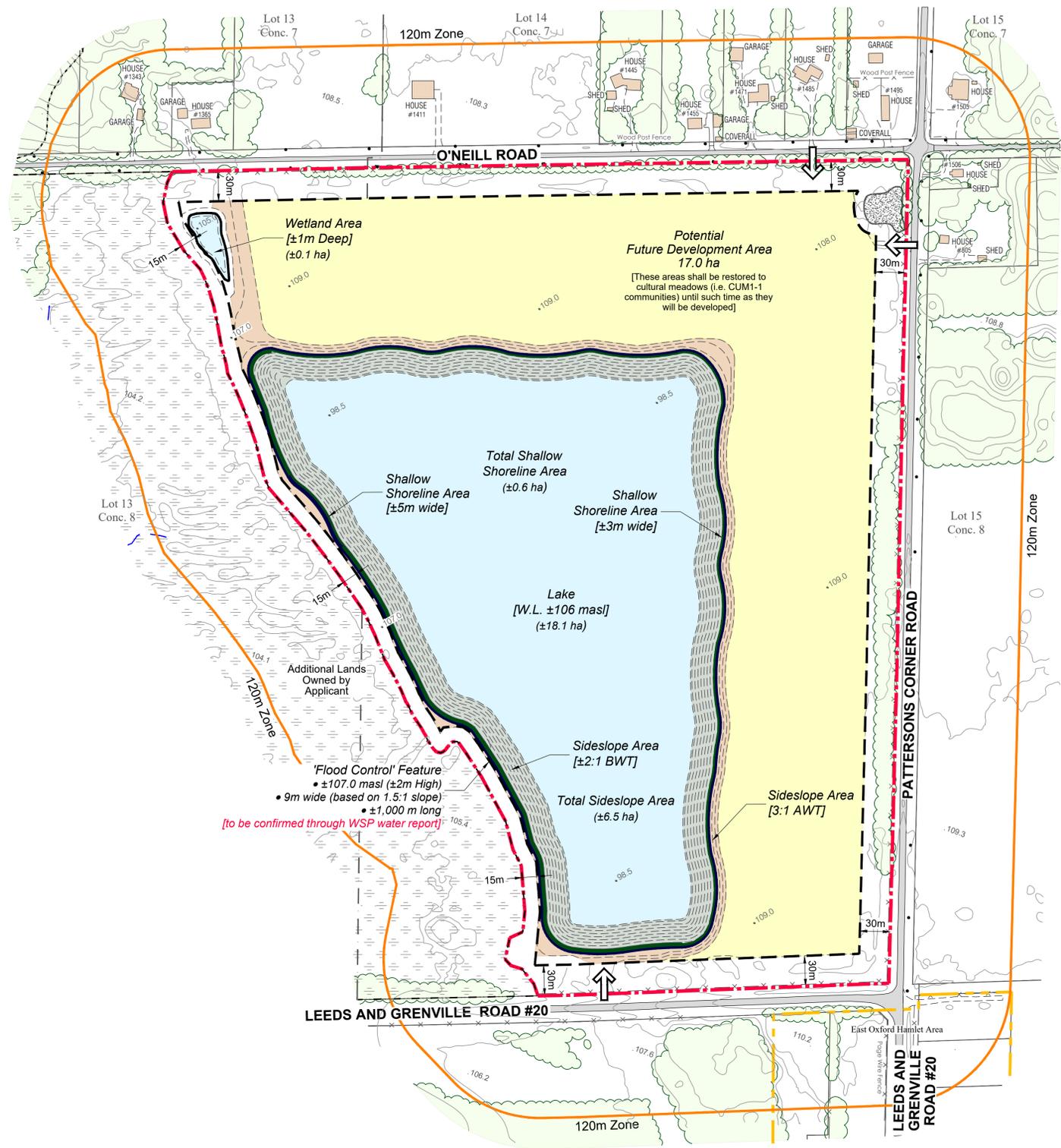
PROJECT NO. 21471757 CONTROL 0006 REV. 0 FIGURE 2

P:\21471757\21471757_0006-FIB-0009.aprx PRINTED ON: AT: 10:10:13 AM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

APPENDIX A

Rehabilitation Plan



Legal Description
 PART OF LOTS 13 AND 14
 CONCESSION 8
 (geographic township of Oxford on Rideau)
 MUNICIPALITY OF NORTH GRENVILLE
 COUNTY OF LEEDS AND GRENVILLE

Legend

	Boundary of Area to be Licensed		Limit of Extraction ALL SETBACKS ARE DRAWN TO SCALE AND SHOW LABELLED DISTANCES
	Contour with Elevation METRES ABOVE SEA LEVEL		Proposed Contour METRES ABOVE SEA LEVEL
	Existing Spot Elevation METRES ABOVE SEA LEVEL		Proposed Elevation REHABILITATED ELEVATION
	Building/Structure LOCATION AND USE FOR BUILDINGS ON-SITE AND WITHIN 120m ARE SHOWN ON THIS PAGE		Post Extraction Pond
	Existing Fence PAGE WIRE FENCE UNLESS OTHERWISE NOTED		Proposed Wetland Area (SEE DETAIL ON THIS PAGE)
	Field Access		Proposed Shoreline Area (SEE DETAIL ON THIS PAGE)
	Existing Vegetation		Nodal Planting Areas LOCATION APPROXIMATE
	Unevaluated Wetland (ONTARIO GEOHUB)		
	Evaluated Wetland (CAMBIUM INC. 2024)		
	Archaeological Site		
	Cross Sections SEE PAGE 5 OF 5 FOR EXISTING AND REHABILITATED CROSS SECTIONS		

Site Plan Amendments

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
 200-540 BINGEMANS CENTRE DR. KITCHENER, ON. N2B 3X9 | P: 519.576.3650 | WWW.MHBCPLAN.COM

MNR Approval Stamp

Applicant
TOMLINSON
 R. W. Tomlinson Limited
 100 CitiGate Drive, Ottawa Ontario, K2J 6K7
 Tel: (613) 822-1867 Fax: (613) 822-6844

Rob Price
 R. W. Tomlinson Limited
 Vice President Planning and Development

Project
East Oxford Pit

ARA Licence Reference No.	Pre-approval review:
Plan Scale 1:3,000 (Arch D)	For Client Review - November 2025
Plot Scale 1:2.5 [1mm = 2.5 units] MODEL	
SCALE 50 0 50 100 METRES	Drawn By D.G.S. File No. 9137AR
	Checked By N.D.

File Name **REHABILITATION PLAN**
 Drawing No. **4 OF 5**

K:\9137AR-Tomlinson-East Oxford\A\Tomlinson East Oxford Pit Rehaplan4of5 November2025.dwg

APPENDIX B

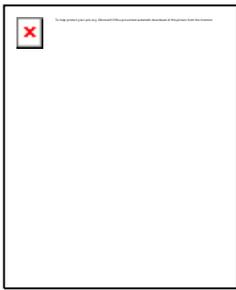
Agency Correspondence

From: Gwendolyn Weeks
Sent: April 26, 2024 4:28 PM
To: NHICrequests@ontario.ca
Subject: BLTU Occurrences - East Oxford
Attachments: East Oxford.kmz

Hi There,

I am preparing an Environmental Impact Statement for a property near East Oxford, Ontario (see attached KMZ for Site Boundary). In the NHIC, there are several EO for Blanding's Turtle in the vicinity of the Site boundary (within 2 km). I have the Sensitivity Training, and I am hoping you can provide the location of the closest EO's so that I determine if any Category 2 or 3 habitat for this species overlaps my Site, and then map it accordingly.

Many thanks,
-Gwendolyn



Gwendolyn Weeks
Senior Project Manager - Senior Ecologist
Cambium - Ottawa
📞 613.683.9792
📞 866.217.7900
🌐 cambium-inc.com



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From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: April 18, 2024 4:38 PM
To: Gwendolyn Weeks; ARA Approvals (MNRF); Species at Risk (MECP)
Subject: RE: East Oxford - Significant Natural Features - Natural Environment Report
Attachments: Client Guide to Preliminary Screening.pdf

This message's attachments contains at least one web link. This is often used for phishing attempts. Please only interact with this attachment if you know its source and that the content is safe. If in doubt, confirm the legitimacy with the sender by phone.

Hello Gwendolyn,

Thank you for your submission to the Ministry of the Environment, Conservation and Parks (MECP) about species at risk (SAR).

MECP is responsible for the administration of the *Endangered Species Act, 2007* (ESA) ([Endangered Species Act, 2007, S.O. 2007, c. 6 \(ontario.ca\)](#)). The ESA provides for the protection and recovery of species on the Species at Risk in Ontario (SARO) List ([O. Reg. 230/08: SPECIES AT RISK IN ONTARIO LIST](#)). The ESA includes prohibitions against killing, harming, harassing, capturing or taking a living member of a species listed as extirpated, endangered, or threatened on the SARO List (section 9) and against damaging or destroying the habitat of a species listed as endangered or threatened on the SARO List (section 10), without an exemption or authorization.

Seeking an ESA authorization or exemption is a proponent-led process. **This means that the person carrying out an activity is responsible for determining whether SAR and their habitat are present on or around the site of the activity, and ultimately ensuring their actions do not contravene the ESA.**

For information about assessing which SAR may be present on or in the area of your site, please refer to the MECP's draft "Client's Guide to Screening for Species at Risk" (attached).

You may proceed with the screening on your own or you may wish to consider hiring a qualified professional to perform a screening on your behalf. MECP recommends that the services of a professional environmental consultant be retained to assist in the completion of a screening, field assessments and surveys. An environmental consultant will be able to provide advice and direction on the type of surveys that should be performed and will be able to interpret the results of any surveys carried out.

If after carrying out a thorough SAR screening, including any field assessments and surveys that might be necessary, there is **no evidence of SAR or SAR habitat located on or adjacent to the site of your activity** and your activity will therefore not cause any prohibited impacts, an exemption or authorization under the ESA would not be necessary to proceed. The ministry strongly recommends that you document your SAR screening and assessment and rationale for avoiding prohibited impacts for future reference if needed. Proponents are responsible for ensuring their actions do not contravene the ESA.

If there IS evidence of species at risk and/or habitat on or around the location of your activity, the ministry recommends that you carry out the work necessary to prepare an [Information Gathering Form \(IGF\)](#). This includes consideration of all the elements in your SAR screening data collection and further levels of assessment of impacts and potential to minimize adverse effects.

After considering all the data and information in the IGF, if you have determined that the activity can be carried out in such a way that you WILL NOT have adverse impacts prohibited by sections 9 and/or 10 of the ESA, an exemption or authorization under the ESA would not be necessary to proceed if the activity is carried out in that way. Again, proponents are responsible for ensuring their actions do not contravene the ESA.

If after considering all the data and information in the IGF you have determined that the proposed activities COULD POTENTIALLY have adverse impacts prohibited by sections 9 and/or 10 of the ESA, an exemption or authorization may likely be required before you proceed. If there is no applicable exemption in regulations under the ESA, submit the IGF to the ministry at SAROntario@ontario.ca to seek a permit or agreement. Please visit [How to get an Endangered Species Act permit or authorization | ontario.ca](#) to obtain information on how to get an ESA permit or authorization.

Please consider in your project planning that it takes an average of 12-15 months from the submission of a complete IGF to a decision about a permit, if one is needed. This considers the time required to conduct the technical review of the application as well as to carry out public and Indigenous consultation, along with factors such as project complexity, seasonal nature of field survey and data collection required, volume of applications and quality of submissions. It is recommended that proponents submit a complete IGF well in advance of the activity's proposed start date. Failure to submit a complete and accurate IGF with supporting rationale and not allowing adequate time for review and the issuance of any required authorizations could result in delays to the activity's anticipated start date.

Thank you,

Species at Risk Branch

From: Gwendolyn Weeks <Gwendolyn.Weeks@cambium-inc.com>

Sent: Tuesday, April 16, 2024 11:44 AM

To: ARA Approvals (MNRF) <ARAApprovals@ontario.ca>; Species at Risk (MECP) <SAROntario@ontario.ca>

Subject: East Oxford - Significant Natural Features - Natural Environment Report

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi There,

I am preparing a Natural Environment Report in support of a license application under the Aggregate Resources Act for a site located on Parts of Lots 13 and 14, Concession 8 in the Municipality of North Grenville, Ontario (see attached .kmz file of the location).

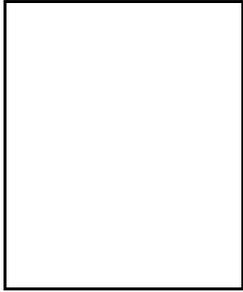
I have conducted a desktop assessment for significant natural features, including Species at Risk, by reviewing a range of publicly available sources, such as: the NHIC, wildlife atlases, DFO mapping, MNRF Aquatic Resources Layers, county and municipal official plans, etc. If you have any information relating

to known significant natural features on or within 2 km of the Site, I would appreciate receiving such information.

If you have any questions, please contact me.

Many thanks,

-Gwendolyn

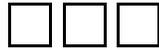


Gwendolyn Weeks
Senior Project Manager - Senior Ecologist
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APPENDIX C

List of Vascular Plants

Common Name	Scientific Name	Origin ^a	Global Rarity Status ^b	Ontario Rarity Status ^b	SARA ^c	ESA ^d
<i>Acer negundo</i>	Manitoba maple	N	G5	S5	-	-
<i>Acer rubrum</i>	Red maple	N	G5	S5	-	-
<i>Acer saccharum</i>	Sugar maple	N	G5	S5	-	-
<i>Achillea millefolium</i>	Common yarrow	I	G5	S5	-	-
<i>Agalinis tenuifolia</i>	Slender-leaved false foxglove	N	G5	S4S5	-	-
<i>Anemone cylindrica</i>	Long-headed anemone	N	G5	S4	-	-
<i>Ambrosia artemisiifolia</i>	Common ragweed	N	G5	S5	-	-
<i>Asclepias syriaca</i>	Common milkweed	N	G5	S5	-	-
<i>Barbarea vulgaris</i>	Bitter wintercress	I	GNR	SNA	-	-
<i>Betula papyrifera</i>	Paper birch	N	G5	S5	-	-
<i>Bidens cernua</i>	Nodding beggarticks	N	G5	S5	-	-
<i>Bidens frondosa</i>	Devil's beggarticks	N	G5	S5	-	-
<i>Bromus ciliatus</i>	Fringed brome	N	G5	S5	-	-
<i>Bromus inermis</i>	Smooth brome	I	G5T5	SNA	-	-
<i>Calystegia sepium</i>	Hedge false bindweed	N	G5	S5	-	-
<i>Carex bebbii</i>	Bebb's sedge	N	G5	S5	-	-
<i>Carex hystericina</i>	Porcupine sedge	N	G5	S5	-	-
<i>Carex lacustris</i>	Lake sedge	N	G5	S5	-	-
<i>Carex pseudocyperus</i>	Cyperus-like sedge	N	G5	S5	-	-
<i>Carex retrorsa</i>	Retorse sedge	N	G5	S5	-	-
<i>Carex stipata</i>	Awl-fruited sedge	N	G5	S5	-	-
<i>Carex viridula</i>	Greenish sedge	N	G5	S5	-	-
<i>Carex vulpinoidea</i>	Fox sedge	N	G5	S5	-	-
<i>Chelone glabra</i>	White turtlehead	N	G5	S5	-	-
<i>Chenopodium album</i>	Common lamb's-quarters	I	G5	SNA	-	-
<i>Cicuta bulbifera</i>	Bulbous water-hemlock	N	G5	S5	-	-
<i>Cirsium arvense</i>	Canada thistle	I	G5	SNA	-	-
<i>Cirsium vulgare</i>	Bull thistle	I	GNR	SNA	-	-
<i>Clematis virginiana</i>	Virginia clematis	N	G5	S5	-	-
<i>Comus stolonifera</i>	Red-osier	N	G5	S5	-	-
<i>Daucus carota</i>	Wild carrot	I	GNR	SNA	-	-
<i>Dichanthelium linearifolium</i>	Linear-leaved panicgrass	N	G5	S5	-	-
<i>Digitaria sanguinalis</i>	Hairy crabgrass	I	G5	SNA	-	-
<i>Eleocharis</i> sp.	Spikerush sp.	N	?	?	-	-
<i>Equisetum arvense</i>	Field horsetail	N	G5	S5	-	-
<i>Erigeron philadelphicus</i>	Philadelphia fleabane	N	G5	S5	-	-
<i>Eupatorium perfoliatum</i>	Common boneset	N	G5	S5	-	-
<i>Euphorbia maculata</i>	Spotted spurge	I	G5?	SNA	-	-
<i>Euthamia graminifolia</i>	Grass-leaved goldenrod	N	G5	S5	-	-
<i>Eutrochium maculatum</i>	Spotted joe pye weed	N	G5T5	S5	-	-
<i>Fragaria virginiana</i>	Wild strawberry	N	G5	S5	-	-
<i>Fraxinus pennsylvanica</i>	Green ash	N	G4	S4	-	-
<i>Glyceria striata</i>	Fowl mannagrass	N	G5	S5	-	-
<i>Hypericum perforatum</i>	Common st. john's-wort	I	GNR	SNA	-	-
<i>Impatiens capensis</i>	Spotted jewelweed	N	G5	S5	-	-
Juglans cinerea	Butternut	N	G3	Planted	PLANTED	PLANTED
<i>Juglans nigra</i>	Black walnut	N	G5	S4?	-	-
<i>Juncus brevicaudatus</i>	Short-tailed rush	N	G5	S5	-	-
<i>Juncus effusus</i>	Soft rush	N	G5	S5	-	-
<i>Juncus nodosus</i>	Knotted rush	N	G5	S5	-	-
<i>Juncus</i> sp.	Rush	N	?	?	-	-
<i>Larix laricina</i>	Tamarack	N	G5	S5	-	-
<i>Leersia oryzoides</i>	Rice cutgrass	N	G5	S5	-	-
<i>Lobelia inflata</i>	Indian-tobacco	N	G5	S5	-	-
<i>Lolium arundinaceum</i>	Tall ryegrass	I	GNR	SNA	-	-
<i>Lonicera tatarica</i>	Tatarian honeysuckle	I	GNR	SNA	-	-
<i>Lycopus uniflorus</i>	Northern water-horehound	N	G5	S5	-	-
<i>Lythrum salicaria</i>	Purple loosestrife	I	G5	SNA	-	-
<i>Lythrum salicaria</i>	Purple loosestrife	I	G5	SNA	-	-
<i>Melilotus albus</i>	White sweet-clover	I	G5	SNA	-	-
<i>Muhlenbergia mexicana</i>	Mexican muhly	N	G5	S5	-	-
<i>Nepata cataria</i>	Catnip	I	GNR	SNA	-	-
<i>Oenothera biennis</i>	Common evening-primrose	N	G5	S5	-	-
<i>Onoclea sensibilis</i>	Sensitive fern	N	G5	S5	-	-
<i>Osmunda regalis</i>	Royal fern	N	G5	S5	-	-
<i>Oxalis stricta</i>	Upright yellow wood-sorrel	I	G5	SNA	-	-
<i>Panicum capillare</i>	Witch grass	N	G5	S5	-	-
<i>Parthenocissus inserta</i>	Virginia creeper	N	G5	S5	-	-
<i>Penstemon digitalis</i>	Foxglove beardtongue	N	G5	S4S5	-	-
<i>Persicaria amphibia</i>	Water smartweed	N	G5	S5	-	-
<i>Phalaris arundinacea</i> var. <i>arundinacea</i>	Reed canarygrass	N	G5TNR	S5	-	-
<i>Phleum pratense</i>	Common timothy	I	GNR	SNA	-	-
<i>Phleum pratense</i>	Common timothy	I	GNR	SNA	-	-
<i>Picea glauca</i>	White spruce	N	G5	S5	-	-
<i>Picea pungens</i>	Blue spruce	I	G5	SNA	-	-
<i>Pinus resinosa</i>	Red pine	N	G5	S5	-	-

Common Name	Scientific Name	Origin ^a	Global Rarity Status ^b	Ontario Rarity Status ^b	SARA ^c	ESA ^d
<i>Plantago lanceolata</i>	English plantain	I	G5	SNA	-	-
<i>Plantago major</i>	Common plantain	I	G5	SNA	-	-
<i>Poa compressa</i>	Canada bluegrass	I	GNR	SNA	-	-
<i>Poa palustris</i>	Fowl bluegrass	N	G5	S5	-	-
<i>Poa pratensis</i>	Kentucky bluegrass	I	G5T5	SNA	-	-
<i>Polygala verticillata</i>	Whorled milkwort	N	G5	S3?	-	-
<i>Populus balsamifera</i>	Balsam poplar	N	G5	S5	-	-
<i>Populus tremuloides</i>	Trembling aspen	N	G5	S5	-	-
<i>Potentilla argentea</i>	Silvery cinquefoil	I	GNR	SNA	-	-
<i>Potentilla norvegica</i>	Rough cinquefoil	N	G5	S5	-	-
<i>Potentilla reptans</i>	Creeping cinquefoil	I	GNR	SNA	-	-
<i>Potentilla simplex</i>	Old-field cinquefoil	N	G5	S5	-	-
<i>Prunus pensylvanica</i>	Pin cherry	N	G5	S5	-	-
<i>Prunus serotina</i>	Black cherry	N	G5	S5	-	-
<i>Prunus virginiana</i>	Chokecherry	N	G5	S5	-	-
<i>Pseudognaphalium obtusifolium</i>	Fragrant cudweed	N	G5	S5	-	-
<i>Quercus macrocarpa</i>	Bur oak	N	G5	S5	-	-
<i>Rhamnus cathartica</i>	European buckthorn	I	GNR	SNA	-	-
<i>Rhamnus frangula</i>	Glossy buckthorn	I	GNR	SNA	-	-
<i>Rhus typhina</i>	Staghorn sumac	N	G5	S5	-	-
<i>Rubus allegheniensis</i>	Allegheny blackberry	N	G5	S5	-	-
<i>Rubus idaeus</i>	Red raspberry	N	G5	S5	-	-
<i>Rubus pubescens</i>	Dwarf raspberry	N	G5	S5	-	-
<i>Rudbeckia hirta</i>	Black-eyed susan	N	G5	S5	-	-
<i>Sagittaria latifolia</i>	Broad-leaved arrowhead	N	G5	S5	-	-
<i>Salix discolor</i>	Pussy willow	N	G5	S5	-	-
<i>Salix humilis</i>	Prairie willow	N	G5	S5	-	-
<i>Salix humilis</i>	Prairie willow	N	G5	S5	-	-
<i>Salix petiolaris</i>	Meadow willow	N	G5	S5	-	-
<i>Schoenoplectus tabernaemontani</i>	Soft-stemmed bulrush	N	G5	S5	-	-
<i>Scirpus atrovirens</i>	Dark-green bulrush	N	G5	S5	-	-
<i>Scirpus cyperinus</i>	Common woolly bulrush	N	G5	S5	-	-
<i>Silene latifolia</i>	White campion	I	GNR	SNA	-	-
<i>Silene vulgaris</i>	Bladder campion	I	GNR	SNA	-	-
<i>Solidago canadensis var. canadensis</i>	Canada goldenrod	N	G5T5	S5	-	-
<i>Solidago gigantea</i>	Giant goldenrod	N	G5	S5	-	-
<i>Solidago juncea</i>	Early goldenrod	N	G5	S5	-	-
<i>Solidago nemoralis</i>	Grey goldenrod	N	G5	S5	-	-
<i>Solidago rugosa</i>	Rough-stemmed goldenrod	N	G5	S5	-	-
<i>Sonchus arvensis</i>	Field sow-thistle	I	GNR	SNA	-	-
<i>Symphotrichum ericoides</i>	White heath aster	N	G5	S5	-	-
<i>Symphotrichum lateriflorum</i>	Calico aster	N	G5	S5	-	-
<i>Symphotrichum novae-angliae</i>	New england aster	N	G5	S5	-	-
<i>Symphotrichum puniceum</i>	Purple-stemmed aster	N	G5	S5	-	-
<i>Taraxacum officinale</i>	Common dandelion	I	G5	SNA	-	-
<i>Teucrium canadense</i>	Canada germander	N	G5	S4S5	-	-
<i>Thelypteris palustris</i>	Marsh fern	N	G5	S5	-	-
<i>Thuja occidentalis</i>	Eastern white cedar	N	G5	S5	-	-
<i>Trifolium pratense</i>	Red clover	I	GNR	SNA	-	-
<i>Trifolium repens</i>	White clover	I	GNR	SNA	-	-
<i>Typha latifolia</i>	Broad-leaved cattail	N	G5	S5	-	-
<i>Ulmus americana</i>	White elm	N	G4	S5	-	-
<i>Verbascum thapsus</i>	Common mullein	I	GNR	SNA	-	-
<i>Verbena stricta</i>	Hoary vervain	N	G5	S4	-	-
<i>Vicia cracca</i>	Cow vetch	I	GNR	SNA	-	-
<i>Zanthoxylum americanum</i>	Common prickly-ash	N	G5	S5	-	-

Notes:

a Origin: N = Native; (N) = Native but not in study area region; I = Introduced.

b Ranks based upon determinations made by the Ontario Natural Heritage Information Centre.

G = Global; S = Provincial; Ranks 1-3 are considered imperiled or rare; Ranks 4 and 5 are considered secure.

SNA = Not applicable for Ontario Ranking (e.g. Exotic species)

c Canada Species at Risk Act (Schedule 1)

d Ontario Endangered Species Act (O.Reg.230/08)

APPENDIX D

List of Wildlife

Common Name	Scientific Name	Origin ^a	G-Rank ^b	S-Rank ^b	SARA ^c	ESA ^d
Mammals						
Coyote	<i>Canis latrans</i>	N	G5	S5	-	-
Eastern Chipmunk	<i>Tamias striatus</i>	N	G5	S5	-	-
Raccoon	<i>Procyon lotor</i>	N	G5	S5	-	-
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	N	G5	S5	-	-
Red Fox	<i>Vulpes vulpes</i>	N	G5	S5	-	-
White-tailed Deer	<i>Odocoileus virginianus</i>	N	G5	S5	-	-
Woodchuck	<i>Marmota monax</i>	N	G5	S5	-	-
Birds						
Alder Flycatcher	<i>Empidonax alnorum</i>	N	G5	S5B	-	-
American Crow	<i>Corvus brachyrhynchos</i>	N	G5	S5B	-	-
American Goldfinch	<i>Spinus tristis</i>	N	G5	S5B	-	-
American Redstart	<i>Setophaga ruticilla</i>	N	G5	S5B	-	-
American Robin	<i>Turdus migratorius</i>	N	G5	S5B	-	-
American Woodcock	<i>Scolopax minor</i>	N	G5	S4B	-	-
Black-and-white Warbler	<i>Mniotilta varia</i>	N	G5	S5B	-	-
Blue Jay	<i>Cyanocitta cristata</i>	N	G5	S5	-	-
Canada Goose	<i>Branta canadensis</i>	N	G5	S5	-	-
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	N	G5	S5B	-	-
Chipping Sparrow	<i>Spizella passerina</i>	N	G5	S5B	-	-
Common Grackle	<i>Quiscalus quiscula</i>	N	G5	S5B	-	-
Common Raven	<i>Corvus corax</i>	N	G5	S5	-	-
Common Yellowthroat	<i>Geothlypis trichas</i>	N	G5	S5B	-	-
Eastern Bluebird	<i>Sialia sialis</i>	N	G5	S5B	-	-
Eastern Kingbird	<i>Tyrannus tyrannus</i>	N	G5	S4B	-	-
Eastern Phoebe	<i>Sayornis phoebe</i>	N	G5	S5B	-	-
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	N	G5	S4B	-	-
European Starling	<i>Sturnus vulgaris</i>	I	G5	SNA	-	-
Gray Catbird	<i>Dumetella carolinensis</i>	N	G5	S4B	-	-
Great Blue Heron	<i>Ardea herodias</i>	N	G5	S4	-	-
House Finch	<i>Carpodacus mexicanus</i>	N	G5	SNA	-	-
House Wren	<i>Troglodytes aedon</i>	N	G5	S5B	-	-
Indigo Bunting	<i>Passerina cyanea</i>	N	G5	S4B	-	-
Killdeer	<i>Charadrius vociferus</i>	N	G5	S5B, S5N	-	-
Mallard	<i>Anas platyrhynchos</i>	N	G5	S5	-	-
Merlin	<i>Falco columbarius</i>	N	G5	S5B	-	-
Mourning Dove	<i>Zenaidura macroura</i>	N	G5	S5	-	-
Northern Flicker	<i>Colaptes auratus</i>	N	G5	S4B	-	-
Northern Harrier	<i>Circus cyaneus</i>	N	G5	S4B	-	-
Red-eyed Vireo	<i>Vireo olivaceus</i>	N	G5	S5B	-	-
Red-tailed Hawk	<i>Buteo jamaicensis</i>	N	G5	S5	-	-
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	N	G5	S4	-	-
Ring-billed Gull	<i>Larus delawarensis</i>	N	G5	S5B, SZN	-	-
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	N	G5	S4B	-	-
Rock pigeon	<i>Columba livia</i>	I	G5	SNA	-	-
Savannah sparrow	<i>Passerculus sandwichensis</i>	N	G5	S5B	-	-
Song Sparrow	<i>Melospiza melodia</i>	N	G5	S5B	-	-
Spotted Sandpiper	<i>Actitis macularius</i>	N	G5	S5	-	-
Swamp Sparrow	<i>Melospiza georgiana</i>	N	G5	S5B	-	-
Tree Swallow	<i>Tachycineta bicolor</i>	N	G5	S4B	-	-
Turkey Vulture	<i>Cathartes aura</i>	N	G5	S5B	-	-
Veery	<i>Catharus fuscescens</i>	N	G5	S4B	-	-
Vesper Sparrow	<i>Pooecetes gramineus</i>	N	G5	S4B	-	-
White-throated Sparrow	<i>Zonotrichia albicollis</i>	N	G5	S5B	-	-
Wild Turkey	<i>Meleagris gallopavo</i>	N	G5	S5	-	-
Willow Flycatcher	<i>Empidonax traillii</i>	N	G5	S5B, SZN	-	-
Wilson's Snipe	<i>Gallinago delicata</i>	N	G5	S5B, SZN	-	-
Yellow warbler	<i>Setophaga petechia</i>	N	G5	S5B	-	-
Herpetiles						
American toad	<i>Anaxyrus americanus</i>	N	G5	S5	-	-
Eastern Garter Snake	<i>Thamnophis sirtalis</i>	N	G5T5	S5	-	-
Gray Tree Frog	<i>Hyla versicolor</i>	N	G5	S5	-	-
Green Frog	<i>Lithobates clamitans</i>	N	G5	S5	-	-
Northern leopard frog	<i>Lithobates pipiens</i>	N	G5	S5	-	-
Spring Peeper	<i>Pseudacris crucifer</i>	N	G5	S5	-	-

Common Name	Scientific Name	Origin ^a	G-Rank ^b	S-Rank ^b	SARA ^c	ESA ^d
Bumblebees, Butterflies and Dragonflies						
Beaverpond Baskettail	<i>Epithea canis</i>	N	G5	S5	-	-
Black Swallowtail	<i>Papilio polyxenes</i>	N	G5	S5	-	-
Brown-belted bumblebee	<i>Bombus griseocollis</i>	N	G5	S4S5	-	-
Clouded Sulphur	<i>Colias philodice</i>	N	G5	S5	-	-
Common Eastern Bumble Bee	<i>Bombus impatiens</i>	N	G5	S4S5	-	-
Common Green Darner	<i>Anax junius</i>	N	G5	S5	-	-
Lucy's Azure	<i>Celastrina lucia</i>	N	G5	S5	-	-
Mourning Cloak	<i>Nymphalis antiopa</i>	N	G5	S5	-	-
Red Admiral	<i>Vanessa atalanta</i>	N	G5	S5	-	-
Viceroy	<i>Limenitis archippus</i>	N	G5	S5	-	-
White Admiral	<i>Limenitis arthemis</i>	N	G5	S5	-	-
White-faced Meadowhawk	<i>Sympetrum obtrusum</i>	N	G5	S5	-	-

Notes:

^a Origin: N = Native; (N) = Native but not in study area region; I = Introduced.

^b Ranks based upon determinations made by the Ontario Natural Heritage Information Centre (2024).

G = Global; S = Provincial; Ranks 1-3 are considered imperiled or rare; Ranks 4 and 5 are considered secure.

SNA = Not applicable for Ontario Ranking (e.g. Exotic species)

^cCanada Species at Risk Act (Schedule 1)

^dOntario Endangered Species Act (O.Reg.230/08)

APPENDIX E

Species at Risk Screening

Appendix E - Species at Risk Screening
Natural Environment Report, East Oxford Pit, North Grenville, Ontario
RW Tomlinson Ltd.

COMMON NAME	SCIENTIFIC NAME	ESA	SARA	COSEWIC	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	Likelihood of Occurrence on Site	Likelihood of Occurrence in Study Area
Birds								
Bank Swallow	<i>Riparia riparia</i>	THR	THR	THR	S4B	The Bank Swallow is a small songbird of around 12 cm long with a distinctive dark breast band, that flies with quick and erratic wingbeats (1). It nests in burrows in natural and human-made settings where there are vertical faces in silt and sand deposits. This can include banks of rivers and lakes, bluffs, active sand and gravel pits, road cuts and stockpiles of soils. However, they prefer sand-silt substrates for excavating their nest burrows. They often use large wetlands as communal nocturnal roosts post-breeding or during wintering periods (2).	Low - No suitable bluff or bank habitat, none observed during surveys.	Low - No suitable bluff or bank habitat; none observed during surveys.
Barn Swallow	<i>Hirundo rustica</i>	SC	THR	SC	S4B	The Barn Swallow is a mid-sized songbird with steel-blue backs and wings, glossy in males, and a line of white spots across its upper tail. It lives in a variety of open habitats for foraging, such as grassy fields, pastures, certain agricultural crops, shorelines, cottage areas, wetlands, or subarctic tundra (2). They prefer to nest within human made structures such as barns, bridges, and culverts. Barn Swallow nests are cup-shaped and made of mud, typically attached to horizontal beams or vertical walls underneath an overhang (1).	Low - No individuals or nests observed during surveys.	Moderate - Suitable nesting structures and foraging habitat occurs; none observed during surveys.
Black Tern	<i>Chlidonias niger</i>	SC	No Status	NAR	S3B	The Black Tern is a small waterbird with a forked tail, straight pointed bill, slender shape, and black head during breeding season. It builds floating nests in loose colonies in shallow marshes, with a preference for cattails. They breed primarily in the marshes along the edges of the Great Lakes, but may also use wetlands further north if suitable (1).	Low - No suitable marsh habitat occurs.	Low - No suitable marsh habitat occurs.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	SC	S4B	The Bobolink is a mid-sized songbird of tan colour with black stripes, except for males during summer breeding season who are black with a white back and yellow collar. It prefers tall, grassy meadows, hayfields and some croplands, and feeds (largely on insects) on the ground in dense grasses (1). It tends to nest in forage crops: hayfields and pastures dominated by species including clover, bluegrass, and broadleaf plants (2).	Low - No suitable grassland habitat, none observed during surveys.	Low - Suitable grassland habitat is limited, none observed during surveys; none observed during surveys.
Canada Warbler	<i>Cardellina canadensis</i>	SC	THR	SC	S4B	The Canada Warbler is a small songbird with bright yellow underparts and bluish-grey back and tail (1). It can be found in a variety of forest types, but is most abundant in moist, mixed forests with a well-developed, dense shrub layer. Nests are usually located on or near the ground on mossy logs, and along stream banks (3).	Low - No suitable forest habitat, none observed during surveys.	Low - Forests off-site within the Study Area are small, and mainly plantations; none observed during surveys.
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	END	S2B	The Cerulean Warbler, a small songbird, is blue-green with white eyebrows and two prominent white wing bars (1). It requires relatively large tracts of mature deciduous forest (>100 ha), and nests in older, second-growth deciduous forests. During breeding season, it is found in relatively large tracts of mature deciduous forests that feature large, tall trees and an open understory (4).	Low - No suitable forest habitat, none observed during surveys.	Low - Forests off-site within the Study Area are small, and mainly plantations; none observed during surveys.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	THR	S4B,S4N	The Chimney Swift is a small bird, between 12 and 14 cm, with a brown, cigar-shaped body, slender wings, and an erratic flight pattern. Prior to settlement, the Chimney Swift would mainly nest in cave walls and hollow trees. Now, it is found mostly near urban and suburban areas where the presence of chimneys or other manmade structures provide nesting and roosting habitat. They also tend to stay in habitat close to the water (1).	Low - None observed during surveys, no suitable nesting habitat occurs.	Moderate - Suitable nesting structures occur; none observed during surveys.

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COMMON NAME	SCIENTIFIC NAME	ESA	SARA	COSEWIC	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	Likelihood of Occurrence on Site	Likelihood of Occurrence in Study Area
Common Nighthawk	<i>Chordeiles minor</i>	SC	SC	SC	S4B	The Common Nighthawk is a medium-sized bird with long, pointed wings, a long tail with a notch, and large eyes. Its plumage of dark brown with black and white specks blends with its roost site. It is typically found in open areas such as gravel beaches, rock outcrops and burned woodlands, that have little to no ground vegetation. This species can also be found in highly disturbed locations such as clear cuts, mine tailing areas, cultivated fields, urban parks, gravel roads, and orchards (1).	Low - No suitable habitat, none observed during surveys.	Moderate - Suitable nesting habitat may occur; none observed during surveys.
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	THR	S4B	The Eastern Meadowlark is a medium-sized migratory songbird with a bright yellow throat and belly, a black V shape on its chest, and a pointed bill. It prefers pastures and hayfields, but is also found to breed in orchards, shrubby fields, human-use areas such as airports and roadsides, or other open areas. The Eastern Meadowlark can nest from early May to mid-August, in nests that are built on the ground and well-camouflaged with a roof woven from grasses (1).	Low - No suitable grassland habitat, none observed during surveys.	Low - Suitable grassland habitat is limited, none observed during surveys.
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	SC	THR	SC	S4B	The Eastern Whip-poor-will is a medium-sized bird with mottled brown and grey feathers to blend in with its surroundings, a large flattened head, and small bill. They are usually found in areas with a mix of open and forested areas such as patchy forests with clearings, forests that are regenerating after major disturbances, savannahs, open woodlands or openings in more mature forests. Breeding habitat is dependent on forest structure rather than composition, although common tree associations are pine and oak, and it nests directly on the forest floor (2). The species prefers to nest in semi-open or patchy forests with clearings as it forages in open areas and uses forested areas for roosting (1).	Low - No suitable forest habitat occurs.	Low - No suitable forest habitat occurs.
Eastern Wood-Pewee	<i>Contopus virens</i>	SC	SC	SC	S4B	The Eastern Wood-pewee is a species of 'flycatcher', a bird that eats flying insects. It grows to approximately 15 cm, has greyish-olive upper parts and pale bars on its wings. This species lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It prefers intermediate-age forest stands with little understory vegetation (1). It typically creates nests on tree branches 2-12 m in height (2).	Low - None observed during surveys.	Moderate - Forests off-site within the Study Area may be suitable; none observed during surveys.
Golden Winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	THR	S4B	The Golden-winged Warbler is a small songbird with distinctive yellow wing patches and patches behind their eyes. It inhabits early successional habitat of old fields and favour areas where trees are spread out or forest edges to use for perching, singing, and searching for food. They seem to prefer regeneration zones with young shrub growth, surrounded by mature forest, locations that have recently been disturbed, such as field edges, hydro or utility right-of-ways, or logged areas for their breeding sites; often frequenting clusters of herbaceous plants and low bushes (1).	Low - None observed during surveys.	Low - Suitable habitat is limited; none observed during surveys.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	SC	S4B	The Grasshopper Sparrow is a small songbird with a streaked back, a white stripe down the center of its crown, a flattish head, and a conical beak. It inhabits open grasslands and prairies with well-drained soil, preferring areas that are sparsely vegetated. It will also nest in hayfields and pastures, as well as alvars and occasionally grain crops such as barley (1).	Low - No suitable grassland habitat, none observed during surveys.	Low - Suitable grassland habitat is limited; none observed during surveys.

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COMMON NAME	SCIENTIFIC NAME	ESA	SARA	COSEWIC	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	Likelihood of Occurrence on Site	Likelihood of Occurrence in Study Area
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	THR	S4B	The Least Bittern is a small member of the heron family, reaching around 30 cm in length. It has brown and beige plumage with chestnut patches on its wings (1). The species nests in marshes (> 5 ha) and swamps dominated by emergent vegetation, preferably cattails, interspersed with patches of woody vegetation and open water. Although Least Bitterns usually nest in larger marshes territorial individuals have been found in marshes as small as 0.4 ha. They require dense vegetation and open water with stable levels within 10 m for nesting, and access to clear, open water for foraging (3).	Low - No suitable marsh habitat of the right type occurs, none observed during surveys.	Low - Suitable marsh habitat occurs; but none were observed during surveys.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	END	S1B	The Loggerhead Shrike is a small bird with a black, hooked bill, grey crown, and white throat and chest. This species has specific habitat requirements that are dependent on active livestock grazing, or grassland areas that have naturally short grass cover (i.e. alvar communities). They also require spiny, multi-branched shrubs, or barbed fencing, to catch prey. They prefer grassland habitats that have sporadic occurrences of low trees and shrubs; particularly hawthorn species, which are used as part of their feeding behaviour (1).	Low - No suitable habitat occurs, none observed during surveys.	Low - No suitable habitat occurs; none observed during surveys.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	SC	S4B	The Olive-sided Flycatcher is a medium-sized songbird with olive colouring, often seen perching on top of tall trees waiting to catch their prey. It prefers open areas along natural mature forest edges, forest edges near natural openings such as rivers or swamps, human-made openings, or burned forest openings with numbers of dead trees. Breeding habitat usually consists of coniferous or mixed forests adjacent to rivers or wetlands, in Ontario often nesting in White and Black Spruce, Jack Pine, and Balsam Fir (1).	Low - None observed during surveys.	Moderate - Forests off-site within the Study Area may be suitable; none observed during surveys.
Peregrine Falcon	<i>Falco peregrinus</i>	SC	SC	NAR	S3B	The Peregrine Falcon is a bird of prey with a slate blue back, cream-coloured chest with dark markings, and pointed wings spanning around 1 m. It also has bright yellow feet and legs. This species can be found nesting on tall, steep cliff ledges close to large bodies of water. They prefer open habitats such as wetlands, tundra, savanna, sea coasts and mountain meadows for hunting, but may also be found above open forests. This species has also adapted well to living and nesting in urban areas, and has been documented using the ledges of tall buildings and other tall man-made structures for perches and nesting (1).	Low - None observed during surveys; no suitable habitat occurs.	Low - No suitable habitat occurs.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	END	END	END	S4B	The Red-headed Woodpecker is a mid-sized bird, at around 20 cm long, with a vivid red head, neck and breast as well a strong bill. The species can be found in open woodland and woodland edges, often near man-made landscapes such as parks, golf courses and cemeteries. These areas must contain a large number of dead trees for perching and nesting (1).	Low - None observed during surveys.	Moderate - Suitable treed habitat may occur.
Short-eared Owl	<i>Asio flammeus</i>	THR	SC	THR	S2N,S4B	The Short-eared Owl has a large round head with small tufts of feathers, long wings, a short tail, and cryptic colouring of brown streaks. This species is found in scattered pockets across the province where suitable open habitat, including grasslands, tundra, peat bogs and marsh, can be found in sufficient quantities. Adults build nests on the ground in grassy areas and occasionally agricultural fields (1). The main factor influencing their choice in habitat is believed to be an abundance of their food source, primarily rodents and other small mammals (2).	Low - Habitat is limited, none observed during surveys.	Moderate - Suitable open habitat may occur.

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COMMON NAME	SCIENTIFIC NAME	ESA	SARA	COSEWIC	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	Likelihood of Occurrence on Site	Likelihood of Occurrence in Study Area
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	THR	S4B	The Wood Thrush is a medium-sized songbird of around 20 cm with rusty brown coloured upper parts and white underparts with large dark spots. It breeds in deciduous and mixed forests with moderate understories, shade and abundant leaf litter where it forages for food, including larval and adult insects as well as plant material. They prefer moist stands of trees with well-developed undergrowth and tall trees for perches (1).	Low - None observed during surveys.	Moderate - Suitable treed habitat may occur.
Fish								
American Eel	<i>Anguilla rostrata</i>	END	No Status	THR	S1?	The American Eel is a long, slender bodied fish, with one long fin extending down the back and around the tail, and two small pectoral fins. It has thick lips, and a protruding lower jaw that extends out above the upper jaw. At the juvenile stage, they swim up the St. Lawrence River to reach Lake Ontario and connected tributaries where they will remain for 8 to 23 years before migrating back to their spawning grounds. In Ontario, the American eel prefers mud, sand or gravel substrates during the juvenile stage when they reside primarily in the benthic zone of waterbodies. More mature eels are able to thrive in most environments provided there is available cover during daylight hours, and the habitat is accessible (2).	Low - No suitable waterbodies occur.	Low - No suitable waterbodies occur.
Lake Sturgeon	<i>Acipenser fulvescens</i>	END	No Status	THR	S2	The Lake Sturgeon, a large freshwater fish, has an extended snout with four whisker-like organs hanging near the mouth and is dark to light brown or grey on its back and sides with a lighter belly. In Ontario, this fish is found in the rivers of the Hudson Bay Basin, the Great Lakes basin, and their connecting waterways. Lake Sturgeon's live almost exclusively in freshwater lakes and rivers with soft bottoms of mud, sand or gravel and are usually found at depths of 5 to 20 m. They spawn in relatively shallow, fast-flowing water or if available deeper water habitat as well (1).	Low - No suitable waterbodies occur.	Low - No suitable waterbodies occur.
Northern Sunfish (Great Lakes - Upper St. Lawrence population)	<i>Lepomis peltastes</i>	SC	SC	SC	S3	The Northern Sunfish is a small (about 130 mm long), typical looking member of the sunfish family (Centrarchidae). It has a deep, laterally compressed and olive coloured body with bright blue and red markings. In Ontario, the Northern Sunfish lives in shallow vegetated areas of quiet, slow flowing rivers and streams, as well as warm lakes and ponds, with sandy banks or rocky bottoms. Northern Sunfish prefer to be near aquatic vegetation where they can avoid strong currents. The Great Lakes - Upper St. Lawrence Populations are found throughout southern Ontario including waters flowing into Lake Huron, Georgian Bay, Lake St. Clair, Lake Erie and Lake Ontario, as well as rivers and small lakes in eastern Ontario (1).	Low - The stream on Site is too shallow, and rapidly flowing for this species.	Moderate - Limited, potentially suitable habitat occurs in the unnamed stream downstream of the Site. In addition, there are records of this species further downstream in Kemptville Creek.
River Redhorse	<i>Moxostoma carinatum</i>	SC	SC	SC	S2	The River Redhorse is large and thick-bodied, growing up to 80 cm, with a flat-topped head and prominent snout. Its tail fin is tinted red, its belly is white, its back is brown or olive coloured, and its sides are yellowish green or coppery. It can be found in medium to large sized rivers with substantial flows. Adult River Redhorses migrate in spring from deeper, slower moving pools to shallow riffle-run habitats with coarse substrate and faster flow (1).	Low - No suitable waterbodies occur.	Low - No suitable waterbodies occur.

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Natural Environment Report, East Oxford Pit, North Grenville, Ontario
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COMMON NAME	SCIENTIFIC NAME	ESA	SARA	COSEWIC	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	Likelihood of Occurrence on Site	Likelihood of Occurrence in Study Area
Herptiles								
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	END	END	S3	Blanding's Turtles are identifiable by their bright yellow throat and chin and domed shell. They spend the majority of their life cycle in the aquatic environment, usually in large wetlands or shallow lakes with high densities of water plants (1). These turtles prefer shallow, nutrient rich water with organic sediment and dense vegetation. They use terrestrial sites for travel between habitat patches and to lay clutches of eggs, often going hundreds of meters from their nearest water body. Blanding's Turtles nest in dry coniferous and mixed forest habitats, as well as fields and roadsides (2). From late October until the end of April, they hibernate in the mud at the bottom of permanent water bodies (1).	Moderate - No suitable waterbodies occur and none were observed during targeted surveys; however, this species may move through the Site during terrestrial migrations.	Moderate - Suitable habitat may occur in wetlands in the Study Area; none observed during targeted surveys.
Eastern Milksnake	<i>Lampropeltis triangulum</i>	—	SC	SC	S4	The Eastern Milksnake's colouration is grey or tan with reddish alternating blotches outlined in black along its back and sides (5). It has recently been delisted from being a species at risk in Ontario (1). This species tends to use open habitats such as rocky outcrops, fields and forest edges. The preferred prey of milksnakes are mice, small rodents, and ground nesting birds which are amply found in and surrounding agricultural outbuildings. The milksnake is secretive and is not likely to be encountered during the day or at night while hunting (5).	Moderate - Although none were observed during surveys, this species is cryptic, and may still occur.	Moderate - The mosaic of habitats in the Study Area may be suitable.
Eastern Musk Turtle	<i>Sternotherus odoratus</i>	SC	SC	SC	S3	The Eastern Musk Turtle is small with a narrow carapace, a dark brown body and two light stripes on each side of their head (5). It is a small freshwater turtle found primarily in slow moving water bodies with abundant emergent vegetation and mucky bottoms along the southern edge of the Canadian Shield within which they burrow into overwinter. Nesting sites vary, but must be close to the water and exposed to direct sunlight (1).	Low - No suitable waterbodies occur, none were observed during surveys.	Low - No suitable waterbodies occur.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	SC	S4	The Eastern Ribbonsnake is slender with three bright yellow stripes running down its back and sides and a white crescent in front of each eye. This snake is usually found close to water as they are strong swimmers, often fleeing predators by diving into shallow water. It prefers wetland habitats where its prey species, frogs and small fish, are abundant. Over winter, they congregate in underground burrows or rock crevices to hibernate (1).	Low - No suitable waterbodies occur, none were observed during surveys.	Moderate - Small marshes in the Study Area may be suitable.
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	-	SC	SC	S4	The Midland Painted Turtle has a olive to black carapace with red or dark orange markings on the marginal scutes, as well as red and yellow stripes on the head and neck. The species uses a variety of waterbodies including, ponds, marshes, lakes and slow-moving creeks with a soft bottom and an abundance of basking sites and aquatic vegetation. This species usually hibernates on the bottom of waterbodies (5).	Low - No suitable waterbodies occur, none were observed during surveys.	Moderate - Small marshes and channels in the Study Area may be suitable.
Northern Map Turtle	<i>Graptemys geographica</i>	SC	SC	SC	S3	The Northern Map Turtle is a medium sized turtle identified by its carapace's map contour-like patterning. It lives in larger lakes and rivers, requiring high water quality to support their primary prey species: molluscs. This species can often be seen in large groups basking together on rocks and logs. In the winter, the Northern Map Turtle can be found hibernating on the bottom of slow-moving rivers (1).	Low - No suitable waterbodies occur, none were observed during surveys.	Low - No suitable waterbodies occur.
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	SC	S3	The Snapping Turtle, with its large serrated carapace, small plastron, and spiked tail, is Canada's largest freshwater turtle (5). It spends the majority of its life in water, preferring shallow water with soft mud and leaf litter, and will travel upland to gravel or sandy embankments, roadsides, along railway lines or beaches to lay their eggs (1).	Low - No suitable waterbodies occur, none were observed during surveys.	Moderate - Small marshes in the Study Area may be suitable.

Appendix E - Species at Risk Screening
Natural Environment Report, East Oxford Pit, North Grenville, Ontario
RW Tomlinson Ltd.

COMMON NAME	SCIENTIFIC NAME	ESA	SARA	COSEWIC	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	Likelihood of Occurrence on Site	Likelihood of Occurrence in Study Area
Spotted Turtle	<i>Clemmys guttata</i>	END	END	END	S2	The Spotted Turtle is named after the distinct yellow spots on its carapace. The species is semi-aquatic and prefers ponds, marshes, bogs and even ditches with slow-moving, unpolluted water and an abundant supply of aquatic vegetation. This species usually hibernates in wetlands or seasonally wet areas with structures such as overhanging banks, hummocks, tree roots, or aquatic animal burrows (1).	Low - No suitable waterbodies occur, none were observed during surveys.	Low - No suitable waterbodies occur.
Western Chorus Frog	<i>Pseudacris triseriata</i>	-	THR	THR	S3	The Western Chorus Frog is small with a dark stripe running through its eye and a light stripe underneath (5). It is primarily a lowland terrestrial species that requires access to terrestrial and aquatic habitats in close proximity to one another. Relying on marshes and wooded wetlands adjacent to forested habitats, this species also requires isolated, predator free pools for breeding. Temporary pools, such as vernal pools in wooded areas, are preferred. This species hibernates terrestrially in a variety of environments, including leaf litter, wood debris, and vacant animal burrows (2).	Low - None observed during surveys.	Low - none observed during surveys.
Invertebrates								
Monarch Butterfly	<i>Danaus plexippus</i>	SC	END	END	S2N,S4B	The Monarch is an orange and black butterfly with small white spots and a wingspan of around 10 cm. It relies on milkweed plants as a food source for growing caterpillars, but the adult butterflies forage in diverse habitats for nectar from wildflowers (1).	Low - None observed during surveys; no concentrations of milkweed plants.	Moderate - Suitable habitat may occur.
West Virginia White	<i>Pieris virginiensis</i>	SC	—	—	S3	The West Virginia White is a small, dingy white butterfly. This species is found in moist deciduous woods, and requires a supply of toothwort, a small, spring-blooming plant, which provides the only source of food for its larvae. The West Virginia White is found mostly in the central and southern parts of Ontario, but its range extends north to Manitoulin and St. Joseph islands (1).	Low - No suitable forest habitat, none observed during surveys.	Moderate - Suitable habitat may occur.
Yellow-banded Bumble Bee	<i>Bombus terricola</i>	SC	SC	SC	S3S5	The Yellow-banded Bumble Bee is a medium-sized bumble bee with a distinct yellow and black abdominal band pattern found on its queens, males, and workers. This species is a forage and habitat generalist, able to use a variety of nectaring plants and environmental conditions. It prefers mixed and coniferous woodlands, particularly for nesting and overwintering, as well as a variety of open habitat such as native grasslands, farmlands and urban areas. The Yellow-banded Bumble Bee ranges from the Mixedwood Plains of southern Ontario to the Hudson Bay Lowlands in the north (1). Their nest sites are often found underground in abandoned burrows or decomposing logs.	Moderate - Suitable habitat occurs, and this species may have been missed during surveys.	Moderate - Suitable habitat may occur.
Mammals								
Eastern Red Bat	<i>Lasiurus borealis</i>	END	—	END	S4	The eastern red bat has similar habitat needs to the hoary bat. It roosts among the foliage of trees and occasionally shrubs. Eastern red bats roost alone, including at maternity roosts (with pups), and prefer sites with foliage overhead for cover, and open areas for flight below. Deciduous, mixed, and coniferous forests are used, but roost trees are usually deciduous trees. Trees used for maternity roosts are typically mature tall trees, with a large diameter, reaching or exceeding the height of the surrounding canopy. Foraging habitat includes a variety of open habitats. (3)	Low - Treed habitats are limited to scattered trees and small patches of coniferous plantations.	Moderate - Forests off-site within the Study Area may be suitable.

Appendix E - Species at Risk Screening
Natural Environment Report, East Oxford Pit, North Grenville, Ontario
RW Tomlinson Ltd.

COMMON NAME	SCIENTIFIC NAME	ESA	SARA	COSEWIC	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	Likelihood of Occurrence on Site	Likelihood of Occurrence in Study Area
Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	—	—	S2S3	The Eastern Small-footed Myotis has fur with black roots and shiny brown tips as well as very small feet. In the spring and summer, the Eastern Small-footed Myotis will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. They change their roosting locations daily and hunt at night for insects. They hibernate in winter, often in caves and abandoned mines choosing colder and drier sites than other similar bats (1).	Low - No suitable rocky habitat occurs.	Moderate - Suitable rocky habitat may occur.
Hoary Bat	<i>Lasiurus cinereus</i>	END	—	—	S4	The Hoary bat has similar habitat needs to the eastern red bat. It roosts among the foliage of trees and occasionally shrubs. Hoary bats roost alone, including at maternity roosts (with pups), and prefer sites with foliage overhead for cover, and open areas for flight below. Deciduous, mixed, and coniferous forests are used, but roost trees are usually deciduous trees. Trees used for maternity roosts are typically mature tall trees, with a large diameter, reaching or exceeding the height of the surrounding canopy. Foraging habitat includes a variety of open habitats. (3)	Low - Treed habitats are limited to scattered trees and small patches of coniferous plantations.	Moderate - Forests off-site within the Study Area may be suitable.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	END	S4	The Little Brown Myotis has glossy brown fur and a fleshy projection covering the entrance to its ears. This species roosts in trees and buildings, often selecting attics, abandoned buildings and barns for summer colonies where they can raise their young. Little Brown Bats hibernate from October/November to March/April, most often in caves or abandoned mines that are humid and remain above freezing (1).	Low - Treed habitats are limited to scattered trees and small patches of coniferous plantations.	Moderate - Forests off-site within the Study Area may be suitable.
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	END	S3	The Northern Myotis has dull yellow-brown fur with pale bellies and long, rounded ears. This species is found in boreal forests, roosting under loose bark and in the cavities of trees. These bats hibernate from October/November to March/April, most often in caves or abandoned mines (1).	Low - Treed habitats are limited to scattered trees and small patches of coniferous plantations.	Moderate - Forests off-site within the Study Area may be suitable.
Silver-haired Bat	<i>Lasiorycteris noctivagans</i>	END	—	—	S4	Silver haired bats primarily roost under the bark and in the cavities of trees. They are reliant on mature forests where large cavity and decaying trees occur such as mature or semi-mature forests. Although they can utilize both deciduous and coniferous trees, deciduous trees more commonly have the characteristics required by this species. Old woodpecker cavities are commonly used. Maternity roosts usually include small groups of females within these habitat features. Foraging habitat is not well understood but includes openings within forests, and along forest edges. (3)	Low - Treed habitats are limited to scattered trees and small patches of coniferous plantations.	Moderate - Forests off-site within the Study Area may be suitable.
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	END	S3?	The Tri-colored Bat is small, with pale brown with orange-red forearms, muzzle, and ears. It is named for the black, yellow, and brown hairs on its back. It is considered rare in this region of Ontario which is at the northernmost limit of the natural range. These bats prefer to nest in foliage, tree cavities and woodpecker holes, but are occasionally found in buildings; though this is not their preferred habitat. Winter hibernation takes place in caves, mines and deep crevices. Tri-colored Bats prefer an open forest habitat type in proximity to water (6).	Low - Treed habitats are limited to scattered trees and small patches of coniferous plantations.	Moderate - Forests off-site within the Study Area may be suitable.

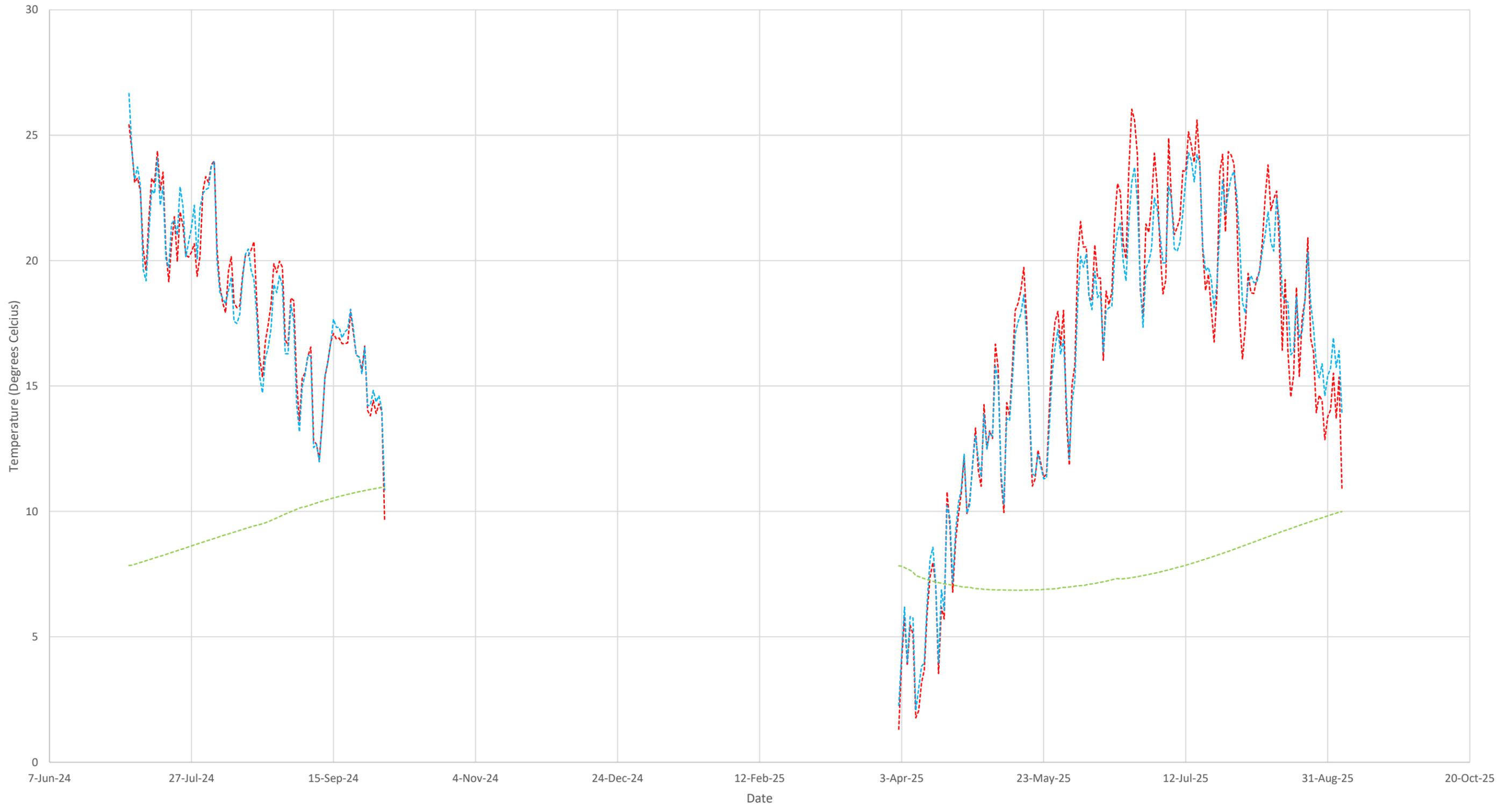
COMMON NAME	SCIENTIFIC NAME	ESA	SARA	COSEWIC	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	Likelihood of Occurrence on Site	Likelihood of Occurrence in Study Area
Plants, fungi and lichens								
American Ginseng	<i>Panax quinquefolius</i>	THR	END	END	S2	American Ginseng is a perennial plant which grows up to 60 centimetres in height. The leaves typically have five leaflets arranged in a whorl at the end of the leaf stem. The root looks like a gnarly parsnip. The flowers are an inconspicuous green-white in colour, but the berries are bright red and arranged in a cluster. In Ontario, the American Ginseng typically grows in rich, moist, and mature deciduous woods dominated by Sugar Maple, White Ash, and American Basswood. It typically grows in deep, nutrient rich soil over limestone or marble bedrock (1).	Low - No suitable forest habitat, none observed during surveys.	Moderate - Forests off-site within the Study Area may be suitable.
Black Ash	<i>Fraxinus nigra</i>	END	—	THR	S4	The Black Ash is a smaller-sized tree with a narrow crown, light grey and scaly bark, and green, oval leaflets on a central stalk. It grows everywhere in Ontario except for the far north, preferring moist climates and soils such as swampy woodlands or bogs (1).	Low - None observed during surveys.	Moderate - Suitable habitat may occur.
Blunt-lobed Woodsia	<i>Woodsia obtusa</i>	END	THR	THR	S1	The Blunt-lobed Woodsia is a mid-sized fern, with blunt and rounded lobes of leaves (called fronds) reaching up to 60 cm in length and 15 cm in width. Their leaf stalk is brittle and straw coloured, and they typically have 8-17 pairs of leaflets. In Ontario, this plant is only found in south-facing locations with a warmer microclimate, typically on steep rock faces or escarpments on the Precambrian Shield (1).	Low - No suitable rock faces occur.	Low - No suitable rock faces occur.
Broad Beech Fern	<i>Phegopteris hexagonoptera</i>	SC	SC	SC	S3	The Broad Beech Fern has large divided leaves, from 25 to 75 cm long. The leaf blades are broadly triangular, tapering at the top (1). The species can grow to a height of 50 cm, and it has a creeping, scaly root (2). They prefer to grow in rich, moist soils found in deciduous forests, typically in areas of full shade (1).	Low - No suitable forest habitat, none observed during surveys.	Moderate - Forests off-site within the Study Area may be suitable.
Butternut	<i>Juglans cinerea</i>	END	END	END	S2?	The Butternut is a medium sized tree reaching 30 m in height. It has large compound leaves with 11 to 17 leaflets. The fruit is oval, fuzzy and sticky. In Ontario, the Butternut prefers moist, well-drained soil, often along streams, or occasionally well-drained gravel sites. It grows alone or in small groups in deciduous forests (1).	Low - Butternut observed on the Site were planted by the previous owner.	Moderate - Suitable habitat may occur.
Pale-bellied Frost Lichen	<i>Physconia subpallida</i>	END	END	END	S3	The Pale-bellied Frost Lichen resembles a light dusting of frost on a dark tree trunk. This species is found throughout eastern North America, growing in wooded areas rich in hardwood species, such as White Ash, Hop Hornbeam (Ironwood), Black Walnut, and American Elm. It is also common to find this species growing on fenceposts or boulders within or near these wooded areas (1).	Low - None observed during surveys.	Moderate - Suitable habitat may occur.

References:

1. Ministry of Environment, Conservation and Parks. (2022). Species at Risk in Ontario. Retrieved from <https://www.ontario.ca/page/species-risk-ontario-en.html#/species?ranges=5&sortBy=commonNameSort&sortDirection=asc&pageSize=10>
3. Committee on the Status of Endangered Wildlife in Canada. (2008).
4. Environment Canada. (2018).
5. Ontario Nature. (2020). Reptiles and Amphibians. Retrieved from <https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/species/>
6. University of Michigan Museum of Zoology. (2004).
7. Ontario Breeding Bird Atlas. (2020).
8. Government of Canada. (2021). Aquatic Species at Risk Map. <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>

APPENDIX F

Temperature Monitoring Data



--- SG1 Daily Average - - - SG3 Daily Average - - - BH21-03 Daily Average

CLIENT
R.W. TOMLINSON LIMITED

PROJECT
PROPOSED EAST OXFORD PIT
WATER REPORT

CONSULTANT
wsp

YYYY-MM-DD	2024-11-12
PREPARED	CAMC
DESIGN	BH
REVIEW	KAM
APPROVED	KAM

TITLE
WATER TEMPERATURES AT SURFACE WATER LOCATIONS SG-1, SG-3 AND
MONITORING WELL 21-03

PROJECT No.	PHASE	Rev.	FIGURE
21471757		0	10

APPENDIX G

**Significant Wildlife Habitat
Assessment**

Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Confirmed or Candidate?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources				Defining Criteria	Site
<p>1. Waterfowl Stopover and Staging Areas (Terrestrial)</p> <p>Rationale: Habitat important to migrating waterfowl.</p>	<p>American Black Duck American Wigeon Blue-winged Teal Gadwall Green-winged Teal Mallard Northern Pintail Northern Shoveler Wood Duck</p>	<p>CUM1 CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.</p>	<p>Fields with sheet water during Spring (mid-March to May).</p> <ul style="list-style-type: none"> Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available ^{cxlviii}. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. Reports and other information available from Conservation Authorities Sites documented through waterfowl planning processes (e.g. EHJV implementation plan) Field Naturalist Clubs Ducks Unlimited Canada Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area 	<p>No - no sheet flooding present in the fields</p>	<p>Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi}</p> <ul style="list-style-type: none"> Any mixed species aggregations of 100@ or more individuals required. The flooded field ecosite habitat plus a 100-300m radius, dependant on local site conditions and adjacent land use is the significant wildlife habitat. Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). SWH MiST Index #7 provides development effects and mitigation measures. 	<p>N/A</p>	<p>Absent</p>	<p>Absent – no sheet flooding observed</p>
<p>2. Waterfowl Stopover and Staging Areas (Aquatic)</p> <p>Rationale: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.</p>	<p>American Black Duck American Wigeon Black Scoter Blue-winged Teal Brant Bufflehead Cackling Goose Canada Goose Canvasback Common Goldeneye Common Merganser Gadwall Greater Scaup Green-winged Teal Hooded Merganser Lesser Scaup Long-tailed Duck Northern Pintail Northern Shoveler Red-breasted Merganser Redhead Ring-necked duck Ruddy Duck Ruddy Duck Snow Goose Surf Scoter White-winged Scoter</p>	<p>MAS1 MAS2 MAS3 SAF1 SAM1 SAS1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7</p>	<ul style="list-style-type: none"> Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water) <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Environment Canada Naturalist clubs often are aware of staging/stopover areas. OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. Sites documented through waterfowl planning processes (e.g. EHJV implementation plan) Ducks Unlimited projects Element occurrence specification by Nature Serve: http://www.natureserve.org Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area 	<p>No - no suitable habitat to support required numbers</p>	<p>Studies carried out and verified presence of:</p> <ul style="list-style-type: none"> Aggregations of 100@ or more of listed species for 7 days@, results in > 700 waterfowl use days. Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH^{cxlix} The combined area of the ELC ecosites and a 100m radius area is the SWH^{cxlviii} Wetland area and shorelines associated with sites identified within the SWHTG^{cxlviii} Appendix K^{cxlix} are significant wildlife habitat. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi} Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). SWH MIST^{cxlix} Index #7 provides development effects and mitigation measures. 	<p>N/A</p>	<p>Absent</p>	<p>Absent – no suitable habitat to support required numbers</p>

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Confirmed or Candidate?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>3. Shorebird Migratory Stopover Area</p> <p><u>Rationale:</u> High quality shorebird stopover habitat is extremely rare and typically has a long history of use.</p>	<p>American Golden-Plover Baird's Sandpiper Black-bellied Plover Dunlin Greater Yellowlegs Hudsonian Godwit Least Sandpiper Lesser Yellowlegs Marbled Godwit Pectoral Sandpiper Purple Sandpiper Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Semipalmated Plover Semipalmated Sandpiper Short-billed Dowitcher Solitary Sandpiper Spotted Sandpiper Stilt Sandpiper White-rumped Sandpiper</p>	<p>BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 MAM1 MAM2 MAM3 MAM4 MAM5 SDO1 SDS2 SDT1</p>	<ul style="list-style-type: none"> Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Western hemisphere shorebird reserve network. Canadian Wildlife Service (CWS) Ontario Shorebird Survey. Bird Studies Canada Ontario Nature Local birders and naturalist clubs Natural Heritage Information Centre (NHIC) Shorebird Migratory Concentration Area 	No - suitable habitat not present	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of 3 or more of listed species and > 1000¹ shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) Whimbrel stop briefly (<24hrs) during spring migration, any site with >100¹ Whimbrel used for 3 years or more is significant. The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area ^{cxlviii} Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi} SWH MiST^{cxlix} Index #8 provides development effects and mitigation measures. 	N/A	Absent	Absent – no suitable habitats
<p>4. Raptor Wintering Area</p> <p><u>Rationale:</u> Sites used by multiple species, a high number of individuals and used annually are most significant</p>	<p>American Kestrel Northern Harrier Red-tailed Hawk Rough-legged Hawk Snowy Owl</p> <p><u>Special Concern:</u> Bald Eagle Short-eared Owl</p>	<p><u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC.</p> <p>Upland: CUM; CUT; CUS; CUW.</p> <p><u>Bald Eagle:</u> Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).</p>	<ul style="list-style-type: none"> The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering (hawk/owl)sites need to be > 20 ha ^{cxlviii, cxlix} with a combination of forest and upland ^{xvi, xvii, xviii, xix, xx, xxi}. Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands ^{cxlix} Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water and large trees and snags available for roosting^{cxlix} <p><u>Information Sources:</u></p> <ul style="list-style-type: none"> OMNRF Ecologist or Biologist Naturalist clubs Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area Data from Bird Studies Canada Results of Christmas Bird Counts Reports and other information available from Conservation Authorities. 	No – only open fields are row crops; no shorelines present	<p>Studies confirm the use of these habitats by:</p> <ul style="list-style-type: none"> One or more Short-eared Owls or; One of more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species[©] To be significant a site must be used regularly (3 in 5 years)^{cxlix} for a minimum of 20 days by the above number of birds[©]. The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area[©] Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi} SWH MiST^{cxlix} Index #10 and #11 provides development effects and mitigation measures. 	N/A	Absent	Absent – no suitable habitats

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Confirmed or Candidate?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>5. Bat Hibernacula</p> <p>Rationale: Bat hibernacula are rare habitats in all Ontario landscapes.</p>	<p>Big Brown Bat Tri-coloured Bat</p>	<p>Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)</p>	<ul style="list-style-type: none"> Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites should not be considered as SWH The locations of bat hibernacula are relatively poorly known. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF for possible locations and contact for local experts Natural Heritage Information Centre (NHIC) Bat Hibernaculum Ministry of Northern Development and Mines for location of mine shafts. Clubs that explore caves (e.g., Sierra Club) University Biology Departments with bat experts. 	<p>No - no suitable crevices, caves, karst or abandoned mines / foundations</p>	<ul style="list-style-type: none"> All sites with confirmed hibernating bats are SWH ©. The area includes 200m radius around the entrance of the hibernaculum© for most development types and 1000m for wind farms^{ccv}. Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”^{ccv}. SWHMiST^{cxlix} Index #1 provides development effects and mitigation measures. 	<p>N/A</p>	<p>Absent</p>	<p>Absent – no known features / karst topography</p>
<p>6. Bat Maternity Colonies</p> <p>Rationale: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.</p>	<p>Big Brown Bat Silver-haired Bat</p>	<p>Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM</p>	<ul style="list-style-type: none"> Maternity colonies can be found in tree cavities, vegetation and often in buildings^{xxii, xxv, xxvi, xxvii, xxxi} (buildings are not considered to be SWH). Maternity roosts are not found in caves and mines in Ontario^{xxii}. Maternity colonies located in Mature deciduous or mixed forest stands^{ccix, ccx} with >10/ha large diameter (>25cm dbh) wildlife trees^{ccvii} Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 ^{ccxiv} or class 1 or 2 ^{ccxii}. Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred^{ccx} <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF for possible locations and contact for local experts University Biology Departments with bat experts. 	<p>No – no forested habitats present</p>	<ul style="list-style-type: none"> Maternity Colonies with confirmed use by; >10 Big Brown Bats© >5 Adult Female Silver-haired Bats© The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies©. Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”^{ccv}. SWHMiST^{cxlix} Index #12 provides development effects and mitigation measures. 	<p>N/A</p>	<p>Absent</p>	<p>Absent – mainly plantations</p>

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Confirmed or Candidate?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>7. Turtle Wintering Areas</p> <p>Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.</p>	<p>Midland Painted Turtle</p> <p>Special Concern: Northern Map Turtle Snapping Turtle</p>	<p>Snapping and Midland Painted turtles, ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO</p> <p>Northern Map Turtle - Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.</p>	<ul style="list-style-type: none"> For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. ^{cix, cx, cxi, cxviii} Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <p>Information Sources</p> <ul style="list-style-type: none"> EIS studies carried out by Conservation Authorities. Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. OMNRF Ecologist or Biologist Field Naturalist clubs Natural Heritage Information Center (NHIC) 	<p>No - no areas of the wetlands contain water of sufficient depth to support turtle over-wintering; no turtles observed</p>	<ul style="list-style-type: none"> Presence of 5 over-wintering Midland Painted Turtles is significant¹. One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant¹. The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May) ^{cvii}. Congregation of turtles is more common where wintering areas are limited and therefore significant ^{cix, cx, cxi, cxii}. Congregation of turtles is more common where wintering areas are limited and therefore significant ^{cix, cx, cxi, cxii}. SWH MiST^{cxlix} Index #28 provides development effects and mitigation measures for turtle wintering habitat. 	<p>N/A</p>	<p>Absent</p>	<p>Absent – not wetlands with suitable conditions</p>
<p>8. Reptile Hibernaculum</p> <p>Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.</p>	<p>Snakes: Eastern Gartersnake Northern Brownsnake Northern Red-bellied Snake Northern Ring-necked Snake Northern Watersnake Smooth Green Snake</p> <p>Special Concern: Eastern Ribbonsnake Milksnake</p> <p>Lizard: Special Concern (Southern Shield population): Five-lined Skink</p>	<p>For all snakes, habitat may be found in any ecosite in central Ontario other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats.</p> <p>Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator.</p> <p>For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3</p>	<ul style="list-style-type: none"> For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures. <p>Information Sources</p> <ul style="list-style-type: none"> In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g., old dug wells). Reports and other information available from Conservation Authorities. Field Naturalist Clubs University herpetologists Natural Heritage Information Centre (NHIC) OMNRF ecologist or biologist may be aware of locations of wintering skinks 	<p>Yes - mammal burrows may be present; outside range for skink</p>	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (e.g., foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct)¹ Note: If there are Special Concern Species present, then site is SWH Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m buffer is the SWH¹ SWHMiST^{cxlix} Index #13 provides development effects and mitigation measures for snake hibernacula. Presence of any active hibernaculum for skink is significant. SWHMiST ^{cxlix} Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat. 	<p>No - no concentrations of snakes observed during surveys</p>	<p>Absent</p>	<p>Candidate – suitable habitat may be present</p>

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Confirmed or Candidate?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>9. Colonially -Nesting Bird Breeding Habitat (Bank and Cliff)</p> <p>Rationale: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario ^{ccix}.</p>	<p>Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)</p>	<p>Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns.</p> <p>Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1</p>	<ul style="list-style-type: none"> Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. Does not include a licensed/permitted Mineral Aggregate Operation. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Reports and other information available from Conservation Authorities. Ontario Breeding Bird Atlas Bird Studies Canada; NatureCounts http://www.birdscanada.org/birdmon/ Field Naturalist Clubs. 	<p>No - no banks or cliffs present</p>	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. A colony identified as SWH will include a 50m radius habitat area from the peripheral nests Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" ^{ccxi} SWHMiST ^{cxlix} Index #4 provides development effects and mitigation measures 	<p>N/A</p>	<p>Absent</p>	<p>Absent – no suitable habitats</p>
<p>10. Colonially -Nesting Bird Breeding Habitat (Tree/Shrubs)</p> <p>Rationale: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.</p>	<p>Black-crowned Night-Heron Great Blue Heron Great Egret Green Heron</p>	<p>SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1 SWM2 SWM3 SWM5 SWM6</p>	<ul style="list-style-type: none"> Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. Most nests in trees are 11 to 15 m from ground, near the top of the tree. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Ontario Breeding Bird Atlas ^{ccv}, colonial nest records. Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). Natural Heritage Information Centre (NHIC) Mixed Wader Nesting Colony Aerial photographs can help identify large heronries. Reports and other information available from Conservation Authorities. MNRF District Offices. Field Naturalist Clubs 	<p>No - no suitable swamp habitat present</p>	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of 5¹ or more active nests of Great Blue Heron or other listed species. The edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH ^{cc}. ^{ccvii} Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells SWHMiST ^{cxlix} Index #5 provides development effects and mitigation measures. 	<p>N/A</p>	<p>Absent</p>	<p>Absent – no suitable habitats</p>

APPENDIX G
Significant Wildlife Habitat Assessment

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Confirmed or Candidate?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>11. Colonially -Nesting Bird Breeding Habitat (Ground)</p> <p><u>Rationale:</u> Colonies are important to local bird population, typically sites are only known colony in area and are used annually.</p>	<p>Brewer's Blackbird Caspian Tern Common Tern Great Black-backed Gull Herring Gull Little Gull Ring-billed Gull</p>	<p>Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map).</p> <p>Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird)</p> <p>CUM CUT CUS MAS1-3; MAM1-6;</p>	<ul style="list-style-type: none"> Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. Brewer's Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Ontario Breeding Bird Atlas, rare/colonial species records. Canadian Wildlife Service. Reports and other information available from Conservation Authorities. Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area MNRF District Offices. Field Naturalist Clubs. 	<p>No - no suitable islands or peninsulas in large bodies of water present</p>	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern[Ⓞ]. Presence of 5 or more pairs for Brewer's Blackbird[Ⓞ]. Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant[Ⓞ]. The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH ^{cc,cvii} Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi} SWHMiST^{cxlix} Index #6 provides development effects and mitigation measures. 	<p>N/A</p>	<p>Absent</p>	<p>Absent – no suitable habitats</p>
<p>12. Migratory Butterfly Stopover Areas</p> <p><u>Rationale:</u> Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.</p>	<p>Painted Lady Red Admiral</p> <p><u>Special Concern</u> Monarch</p>	<p>Combination of ELC Community Series; need to have present one Community Series from each land class:</p> <p><u>Field:</u> CUM CUT CUS</p> <p><u>Forest:</u> FOC FOD FOM CUP</p> <p>Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.</p>	<p>A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario ^{cxlix}.</p> <ul style="list-style-type: none"> The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south ^{xxxii, xxxiii, xxxiv, xxxv, xxxvi}. The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat ^{cxlviii, cxlix}. Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes ^{xxxvii, xxxviii, xxxix, xl, xli}. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF (NHIC) Agriculture Canada in Ottawa may have list of butterfly experts. Field Naturalist Clubs Toronto Entomologists Association Conservation Authorities 	<p>No - not within 5 km of Lake Ontario No - not within 5 km of Lake Ontario</p>	<p>Studies confirm:</p> <ul style="list-style-type: none"> The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)^{xliii}. MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day^{xxxvii}, significant variation can occur between years and multiple years of sampling should occur ^{xl, xlii}. Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant.^l SWHMiST ^{cxlix} Index #16 provides development effects and mitigation measures. 	<p>N/A</p>	<p>Absent</p>	<p>Absent</p>

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Confirmed or Candidate?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>13. Landbird Migratory Stopover Areas</p> <p>Rationale: Sites with a high diversity of species as well as high numbers are most significant.</p>	<p>All migratory songbirds.</p> <p>Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1</p> <p>All migrant raptors species:</p> <p>Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)</p>	<p>All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD</p>	<ul style="list-style-type: none"> Woodlots need to be >10 ha¹ in size and within 5 km^{iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv} of Lake Ontario. If multiple woodlots are located along the shoreline those Woodlands <2km from Lake Ontario are more significant^{cxlix}. Sites have a variety of habitats; forest, grassland and wetland complexes^{cxlix}. The largest sites are more significant^{cxlix} Woodlots and forest fragments are important habitats to migrating birds^{ccxviii}, these features located along the shore and located within 5km of Lake Ontario are Candidate SWH^{cxlviii}. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Bird Studies Canada Ontario Nature Local birders and field naturalist club Ontario Important Bird Areas (IBA) Program 	<p>No - not within 5 km of Lake Ontario</p> <p>No - not within 5 km of Lake Ontario</p>	<p>Studies confirm:</p> <ul style="list-style-type: none"> Use of the woodlot by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates¹. This abundance and diversity of migrant bird species is considered above average and significant. Studies should be completed during spring (Apr./May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi} SWHMiST^{cxlix} Index #9 provides development effects and mitigation measures. 	N/A	Absent	Absent
<p>14. Deer Yarding Areas</p> <p>Rationale: Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.</p>	<p>White-tailed Deer</p>	<p>Note: OMNRF to determine this habitat.</p> <p>ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC.</p> <p>Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT</p>	<ul style="list-style-type: none"> Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%^{cxciiv}. OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual"^{cxcv} Woodlots with high densities of deer due to artificial feeding are not significant. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> MNRF District Offices LIO/NRVIS 	<p>No - no deer yarding areas mapped by MNR at the Site</p>	<p>No Studies Required:</p> <ul style="list-style-type: none"> Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH.^{lvi,lvii,lviii,lix,lx, 16} Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations.^{cxcv} If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. SWHMiST^{cxlix} Index #2 provides development effects and mitigation measures. 	N/A	Absent	Absent

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Confirmed or Candidate?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>15. Deer Winter Congregation Areas</p> <p><u>Rationale:</u> Deer movement during winter in the southern areas of Eco-region 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions ^{cxlviii}.</p>	White-tailed Deer	<p>All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD</p> <p>Conifer plantations much smaller than 50 ha may also be used.</p>	<ul style="list-style-type: none"> ▪ Woodlots will typically be >100 ha in size[©]. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. ▪ Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. ▪ If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. ▪ Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha . ▪ Woodlots with high densities of deer due to artificial feeding are not significant[©]. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> ▪ MNRF District Offices. ▪ LIO/NRVIS 	No - no deer wintering areas mapped by MNR at the Site	<p>Studies confirm:</p> <ul style="list-style-type: none"> ▪ Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF ^{cxlviii}. ▪ Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF ⁱ. ▪ Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques ^{ccxxiv}, ground or road surveys. or a pellet count deer density survey ^{ccxxv}. ▪ If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. ▪ SWHMiST ^{cxlix} Index #2 provides development effects and mitigation measures. 	N/A	Absent	Absent

Rare Vegetation Communities

Rare Vegetation Community	CANDIDATE SWH			Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources		Defining Criteria		Site	Study Area
<p>16. Cliffs and Talus Slopes</p> <p>Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.</p>	<p>Any ELC Ecosite within Community Series:</p> <p>TAO CLO TAS CLS TAT CLT</p>	<p>A Cliff is vertical to near vertical bedrock >3m in height.</p> <p>A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris</p>	<p>Most cliff and talus slopes occur along the Niagara Escarpment.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> The Niagara Escarpment Commission has detailed information on location of these habitats. OMNRF Districts Natural Heritage Information Centre (NHIC) has location information available on their website. Field Naturalist Clubs Conservation Authorities 	No - none present	<ul style="list-style-type: none"> Confirm any ELC Vegetation Type for Cliffs or Talus Slopes lxxviii SWHMIST^{cxlix} Index #21 provides development effects and mitigation measures. 	N/A	Absent	Absent
<p>17. Sand Barren</p> <p>Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry</p>	<p>ELC Ecosites: SBO1 SBS1 SBT1</p> <p>Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.</p>	<p>Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.</p>	<p>A sand barren area >0.5ha in size[©].</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF Districts. Natural Heritage Information Centre (NHIC) has location information available on their website. Field Naturalist Clubs Conservation Authorities 	No - none present	<ul style="list-style-type: none"> Confirm any ELC Vegetation Type for Sand Barrens lxxviii Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics)¹. SWHMIST^{cxlix} Index #20 provides development effects and mitigation measures. 	N/A	Absent	Absent
<p>18. Alvar</p> <p>Rationale: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.</p>	<p>ALO1 ALS1 ALT1 CUM2 CUS2 CUT2-1 CUW2 FOC1 FOC2</p> <p>Five Alvar Indicator Species: 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum</p> <p>These indicator species are very specific to Alvars within Ecoregion 6E^{©cxlix}</p>	<p>An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover lxxviii.</p>	<p>An Alvar site > 0.5 ha in size lxxv.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Alvars of Ontario (2000), Federation of Ontario Naturalists. Ontario Nature – Conserving Great Lakes Alvars. Natural Heritage Information Centre (NHIC) has location information available on their website. OMNRF Districts. Field Naturalist Clubs. Conservation Authorities. 	No - none present	<ul style="list-style-type: none"> Field studies that identify four of the five[©] Alvar Indicator Species lxxv,cxlix at a Candidate Alvar site is Significant. Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses lxxv SWHMIST^{cxlix} Index #17 provides development effects and mitigation measures. 	N/A	Absent	Absent

Rare Vegetation Community	CANDIDATE SWH			Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources		Defining Criteria		Site	Study Area
<p>19. Old Growth Forest</p> <p>Rationale: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.</p>	<p>Forest Community Series: FOD FOC FOM SWD SWC SWM</p>	<p>Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.</p>	<p>Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest ©.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF Forest Resource Inventory mapping OMNRF Districts. Field Naturalist Clubs Conservation Authorities Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. Municipal forestry departments 	No - none present	<p>Field Studies will determine:</p> <ul style="list-style-type: none"> If dominant trees species of the ecosite are >140 years old, then the area containing these trees is Significant Wildlife Habitat ^{cxlviii} The forested area containing the old growth characteristics will have experienced no recognizable forestry activities ^{cxlviii} (cut stumps will not be present) The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. Determine ELC vegetation types for the forest area containing the old growth characteristics ^{lxxviii} SWHMiST^{cxlix} Index #23 provides development effects and mitigation measures. 	N/A	Absent	Absent
<p>20. Savannah</p> <p>Rationale: Savannahs are extremely rare habitats in Ontario.</p>	<p>CUS2 TPS1 TPS2 TPW1 TPW2</p>	<p>A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60% ^{lxxix, lxxx, lxxxi, lxxxii, lxxxiii}</p>	<p>No minimum size to site ^í Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Natural Heritage Information Centre (NHIC) has location data available on their website. OMNRF Districts. Field Naturalists Clubs. Conservation Authorities. 	No - none present	<p>Field studies confirm one or more of the Savannah indicator species listed in ^{lxxv} Appendix N should be present ^í. Note: Savannah plant spp. list from Ecoregion 6E should be used^{cxlviii}.</p> <ul style="list-style-type: none"> Area of the ELC Ecosite is the SWH. Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). SWHMiST^{cxlix} Index #18 provides development effects and mitigation measures. 	N/A	Absent	Absent

Rare Vegetation Community	CANDIDATE SWH			Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources		Defining Criteria		Site	Study Area
<p>21. Tallgrass Prairie</p> <p>Rationale: Tallgrass Prairies are extremely rare habitats in Ontario.</p>	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. ^{lxxxix, lxxx, lxxxi, lxxxii, lxxxiii}	<p>No minimum size to site ^l. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> ▪ OMNRF Districts. ▪ Natural Heritage Information Centre (NHIC) has location information available on their website. ▪ Field Naturalists Clubs. ▪ Conservation Authorities. 	No - none present	<p>Field studies confirm one or more of the Prairie indicator species listed in ^{lxxxv} Appendix N should be present ^l. Note: Prairie plant spp. list from Ecoregion 6E should be used^{cxlviii}</p> <ul style="list-style-type: none"> ▪ Area of the ELC Ecosite is the SWH. ▪ Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). ▪ SWHMiST^{cxlix} Index #19 provides development effects and mitigation measures. 	N/A	Absent	Absent
<p>22. Other Rare Vegetation Communities</p> <p>Rationale: Plant communities that often contain rare species which depend on the habitat for survival.</p>	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG ^{cxlviii} . Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	<p>ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M ^{cxlviii}</p> <p>The OMNRF/NHIC will have up to date listing for rare vegetation communities.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> ▪ Natural Heritage Information Centre (NHIC) has location information available on their website. ▪ OMNRF Districts. ▪ Field Naturalists Clubs. ▪ Conservation Authorities. 	No - none present	<p>Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG^{cxlviii}</p> <ul style="list-style-type: none"> ▪ Area of the ELC Vegetation Type polygon is the SWH. ▪ SWHMiST ^{cxlix} Index #37 provides development effects and mitigation measures. 	N/A	Absent	Absent

Specialized Habitats of Wildlife

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>23. Waterfowl Nesting Area</p> <p>Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.</p>	<p>American Black Duck Blue-winged Teal Gadwall Green-winged Teal Hooded Merganser Mallard Northern Pintail Northern Shoveler Wood Duck</p>	<p>All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4</p> <p>Note: includes adjacency to Provincially Significant Wetlands</p>	<p>A waterfowl nesting area extends 120 m^{cxlix} from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur^{cxlix}.</p> <ul style="list-style-type: none"> Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Ducks Unlimited staff may know the locations of particularly productive nesting sites. OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. Reports and other information available from Conservation Authorities. 	<p>Yes - upland habitat 120 m wide beside wetland habitat present</p>	<p>Studies confirmed:</p> <ul style="list-style-type: none"> Presence of 3 or more nesting pairs for listed species excluding Mallards¹, or; Presence of 10 or more nesting pairs for listed species including Mallards¹. Any active nesting site of an American Black Duck is considered significant. Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi} A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m^{cxlviii} from the wetland and will provide enough habitat for waterfowl to successfully nest. SWHMiST^{cxlix} Index #25 provides development effects and mitigation measures. 	<p>No – no waterfowl nesting observed during surveys</p>	<p>Absent</p>	<p>Absent – no waterfowl nesting observed during surveys</p>
<p>24. Bald Eagle and Osprey Nesting, Foraging and Perching Habitat</p> <p>Rationale: Nest sites are fairly uncommon in Eco-region 6E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.</p>	<p>Osprey</p> <p>Special Concern: Bald Eagle</p>	<p>ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands</p>	<p>Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water.</p> <ul style="list-style-type: none"> Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Natural Heritage Information Centre (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. Nature Counts, Ontario Nest Records Scheme data. OMNRF Districts. Check the Ontario Breeding Bird Atlas^{ccv} or Rare Breeding Birds in Ontario for species documented Reports and other information available from Conservation Authorities. Field Naturalists clubs 	<p>No - no large waterbodies present</p>	<p>Studies confirm the use of these nests by:</p> <ul style="list-style-type: none"> One or more active Osprey or Bald Eagle nests in an area^{cxlviii}. Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH^{ccvii}, maintaining undisturbed shorelines with large trees within this area is important^{cxlviii}. For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH^{cvi, ccvii} Area of the habitat from 400-800m is dependant on sight lines from the nest to the development and inclusion of perching and foraging habitat^{cvi} To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥ 3 years or suspected of not being used for >5 years before being considered not significant.^{ccvii} Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi} SWHMiST^{cxlix} Index #26 provides development effects and mitigation measures 	<p>N/A</p>	<p>Absent</p>	<p>Absent – no large waterbodies present</p>

APPENDIX G

Significant Wildlife Habitat Assessment

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>25. Woodland Raptor Nesting Habitat</p> <p>Rationale: Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species.</p>	<p>Barred Owl Broad-winged Hawk Cooper's Hawk Northern Goshawk Red-shouldered Hawk Sharp-shinned Hawk</p>	<p>May be found in all forested ELC Ecosites.</p> <p>May also be found in SWC, SWM, SWD and CUP3</p>	<p>All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat^{lxxxviii, lxxxix, xc, xci, xciii, xciv, xcvi, cxxxiii}. Interior habitat determined with a 200m buffer^{cxlviii}</p> <ul style="list-style-type: none"> Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF Districts. Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. Check data from Bird Studies Canada. Reports and other information available from Conservation Authorities. 	No - no forested habitats present	<p>Studies confirm:</p> <ul style="list-style-type: none"> Presence of 1 or more active nests from species list is considered significant^{cxlviii}. Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha of suitable habitat is the SWH^{ccvii}. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) Barred Owl – A 200m radius around the nest is the SWH^{ccvii}. Broad-winged Hawk and Coopers Hawk, – A 100m radius around the nest is the SWH^{ccvii}. Sharp-Shinned Hawk – A 50m radius around the nest is the SWH^{ccvii}. Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. SWHMiST^{cxlix} Index #27 provides development effects and mitigation measures. 	N/A	Absent	Absent – forests with suitable interior habitat not present
<p>26. Turtle Nesting Areas</p> <p>Rationale: These habitats are rare and when identified will often be the only breeding site for local populations of turtles.</p>	<p>Midland Painted Turtle</p> <p>Special Concern Species: Northern Map Turtle Snapping Turtle</p>	<p>Exposed mineral soil (sand or gravel) areas adjacent (<100m)^{cxlviii} or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1</p>	<ul style="list-style-type: none"> Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. Natural Heritage Information Centre (NHIC) Field Naturalist Clubs 	Yes - exposed mineral soils next to wetland habitat present	<p>Studies confirm:</p> <ul style="list-style-type: none"> Presence of 5 or more nesting Midland Painted Turtles^l One or more Northern Map Turtle or Snapping Turtle nesting is a SWH^l. The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH.^{cxlviii} Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat. 	No - no evidence of nesting observed; exposed mineral soils are actively managed cropland that is not conducive to successful nesting	Absent	Candidate – areas adjacent to wetlands are present

APPENDIX G

Significant Wildlife Habitat Assessment

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>27. Seeps and Springs</p> <p>Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.</p>	<p>Ruffed Grouse Salamander spp. Spruce Grouse White-tailed Deer Wild Turkey</p>	<p>Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.</p>	<p>Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system ^{cxvii, cxlix}.</p> <ul style="list-style-type: none"> Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species ^{cxix, cxx, cxxi, cxxii, cxiii, cxiv}. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Topographical Map. Thermography. Hydrological surveys conducted by Conservation Authorities and MOE. Field Naturalists Clubs and landowners. Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped. 	<p>No – no seeps observed</p>	<p>Field Studies confirm:</p> <ul style="list-style-type: none"> Presence of a site with 2 or more¹ seeps/springs should be considered SWH. The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation of the habitat. SWHMiST Index #30 provides development effects and mitigation measures 	<p>N/A</p>	<p>Absent</p>	<p>Absent – seeps occur within the wetland south of the Site. However they are within a thicket community not a forest and thus do not meet the criteria.</p>
<p>28. Amphibian Breeding Habitat (Woodland)</p> <p>Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations</p>	<p>Blue-spotted Salamander Eastern Newt Gray Treefrog Spotted Salamander Spring Peeper Western Chorus Frog Wood Frog</p>	<p>All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD</p> <p>Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians</p>	<ul style="list-style-type: none"> Presence of a wetland, pond or woodland pool (including vernal pools) >500m² (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat^{cxlviii} <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. OMNRF Districts OMNRF wetland evaluations Field Naturalist clubs Canadian Wildlife Service Amphibian Road Call Survey Ontario Vernal Pool Association: http://www.ontariovernalpools.org 	<p>No – no wetland habitat present</p>	<p>Studies confirm;</p> <ul style="list-style-type: none"> Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3[©]. A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. The habitat is the wetland area plus a 230m radius of woodland area ^{lxiii, lxx, lxxi, lxxii, lxxiii, lxxiv, lxxv, lxxvi}. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. SWHMiST ^{cxlix} Index #14 provides development effects and mitigation measures. 	<p>N/A</p>	<p>Absent</p>	<p>Absent – surveys did not identify calling in required numbers</p>

APPENDIX G

Significant Wildlife Habitat Assessment

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
		ELC Ecosite Codes	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>29. Amphibian Breeding Habitat (Wetlands)</p> <p>Rationale: Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.</p>	<p>American Toad Blue-spotted Salamander Bullfrog Eastern Newt Four-toed Salamander Gray Treefrog Green Frog Mink Frog Northern Leopard Frog Pickerel Frog Spotted Salamander Western Chorus Frog</p>	<p>ELC Community Classes SW, MA, FE, BO, OA and SA.</p> <p>Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands</p>	<ul style="list-style-type: none"> Wetlands >500m² (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats . Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. Bullfrogs require permanent water bodies with abundant emergent vegetation. <p>Information Sources</p> <ul style="list-style-type: none"> Ontario Herpetofaunal Summary Atlas (or other similar atlases) Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. OMNRF Districts and wetland evaluations. Reports and other information available from Conservation Authorities. 	No - habitat not present	<p>Studies confirm:</p> <ul style="list-style-type: none"> Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3[Ⓢ]. or; Wetland with confirmed breeding Bullfrogs are significant. The ELC ecosite wetland area and the shoreline are the SWH. A combination of observational study and call count surveys ^{cviii} will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. SWHMIST ^{cxlix} Index #15 provides development effects and mitigation measures. 	N/A	Absent	Absent – habitat not present
<p>30. Woodland Area-Sensitive Bird Breeding Habitat</p> <p>Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.</p>	<p>Blackburnian Warbler Black-throated Blue Warbler Black-throated Green Warbler Blue-headed Vireo Northern Parula Ovenbird Red-breasted Nuthatch Scarlet Tanager Veery Winter Wren Yellow-bellied Sapsucker</p> <p>Special Concern: Canada Warbler Cerulean Warbler</p>	<p>All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD</p>	<ul style="list-style-type: none"> Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. ^{cv, cxoxi, cxoxii, cxoxiii, cxoxiv, cxoxv, cxoxvi, cxoxvii, cxoxviii, cxoxix, cxi, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cli, clii, cliii, cliv, clv, clvi, clvii, clviii, clix} Interior forest habitat is at least 200 m from forest edge habitat. ^{clxiv} <p>Information Sources</p> <ul style="list-style-type: none"> Local birder clubs. Canadian Wildlife Service (CWS) for the location of forest bird monitoring. Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species Reports and other information available from Conservation Authorities. 	No - no forest present at the Site	<p>Studies confirm:</p> <ul style="list-style-type: none"> Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. [Ⓢ] Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. [Ⓢ] Conduct field investigations in spring and early summer when birds are singing and defending their territories. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} SWHMIST ^{cxlix} Index #34 provides development effects and mitigation measures. 	N/A	Absent	Absent – woodlands in Study Area do not meet interior forest criteria

Habitats of Species of Conservation Concern

Wildlife	Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
		ELC Ecosite	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>31. Marsh Breeding Bird Habitat</p> <p>Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.</p>	<p>American Bittern American Coot Common Loon Common Moorhen Green Heron Marsh Wren Pied-billed Grebe Sandhill Crane Sedge Wren Sora Trumpeter Swan Virginia Rail</p> <p>Special Concern: Black Tern Yellow Rail</p>	<p>MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1</p> <p>For Green Heron: All SW, MA and CUM1 sites.</p>	<ul style="list-style-type: none"> Nesting occurs in wetlands. All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present ^{cxxiv}. For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF District and wetland evaluations. Field Naturalist clubs Natural Heritage Information Centre (NHIC) Records. Reports and other information available from Conservation Authorities. Ontario Breeding Bird Atlas. 	No – no wetland habitat present	<p>Studies confirm:</p> <ul style="list-style-type: none"> Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species ©. Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH ©. Area of the ELC ecosite is the SWH. Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” SWHMiST Index #35 provides development effects and mitigation measures 	N/A	Absent	Absent – no breeding by listed species observed during targeted surveys
<p>32. Open Country Bird Breeding Habitat</p> <p>Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly in the past 40 years based on CWS (2004) trend records.</p>	<p>Grasshopper Sparrow Northern Harrier Savannah Sparrow Upland Sandpiper Vesper Sparrow</p> <p>Special Concern: Short-eared Owl</p>	<p>CUM1 CUM2</p>	<ul style="list-style-type: none"> Large grassland areas (includes natural and cultural fields and meadows) >30 ha ^{clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix}. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years) ^l. Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Agricultural land classification maps, Ministry of Agriculture. Local bird clubs. Ontario Breeding Bird Atlas EIS Reports and other information available from Conservation Authorities. 	No - no meadow habitat meeting size criteria or longevity criteria present	<p>Field Studies confirm:</p> <ul style="list-style-type: none"> Presence of nesting or breeding of 2 or more of the listed species. ^l A field with 1 or more breeding Short-eared Owls is to be considered SWH. The area of SWH is the contiguous ELC ecosite field areas. Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi} SWHMiST ^{cxlix} Index #32 provides development effects and mitigation measures 	N/A	Absent	Absent – habitat not present

Wildlife	Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
		ELC Ecosite	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>33. Shrub/Early Successional Bird Breeding Habitat</p> <p>Rationale: This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records ^{cxix}.</p>	<p>Indicator Spp: Brown Thrasher Clay-coloured Sparrow</p> <p>Common Spp.: Black-billed Cuckoo Eastern Towhee Field Sparrow Willow Flycatcher</p> <p>Special Concern: Golden-winged Warbler Yellow-breasted Chat</p>	<p>CUT1 CUT2 CUS1 CUS2 CUW1 CUW2</p> <p>Patches of shrub ecosites can be complexed into a larger habitat for some bird species</p>	<p>Large field areas succeeding to shrub and thicket habitats >10ha^{clxiv} in size.</p> <ul style="list-style-type: none"> Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years) ^l. Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species ^{clxxiii}. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Agricultural land classification maps, Ministry of Agriculture. Local bird clubs. Ontario Breeding Bird Atlas Reports and other information available from Conservation Authorities. 	No - no shrub / early successional habitat present	<p>Field Studies confirm:</p> <ul style="list-style-type: none"> Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. ^l A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. ^l The area of the SWH is the contiguous ELC ecosite field/thicket area. Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi} SWHMIST ^{cxlix} Index #33 provides development effects and mitigation measures. 	N/A	Absent	Absent
<p>34. Terrestrial Crayfish</p> <p>Rationale: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. ^{ccii}</p>	<p>Chimney or Digger Crayfish; (<i>Fallicambarus fodiens</i>)</p> <p>Devil Crawfish or Meadow Crayfish; (<i>Cambarus Diogenes</i>)</p>	<p>MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM</p> <p>CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish.</p>	<p>Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish.</p> <ul style="list-style-type: none"> Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998 	No - outside range	<p>Studies Confirm:</p> <ul style="list-style-type: none"> Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or terrestrial sites ^{cci} Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult SWHMIST ^{cxlix} Index #36 provides development effects and mitigation measures. 	N/A	Absent	Absent

Wildlife	Species	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
		ELC Ecosite	Habitat Criteria and Information Sources		Defining Criteria		Site	Study Area
<p>35. Special Concern and Rare Wildlife Species</p> <p>Rationale: These species are quite rare or have experienced significant population declines in Ontario.</p>	<p>All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC).</p>	<p>All plant and animal element occurrences (EO) within a 1 or 10km grid.</p> <p>Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.</p>	<p>When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites ^{lxviii}</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> ▪ Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. ▪ NHIC Website "Get Information": http://nhic.mnr.gov.on.ca ▪ Ontario Breeding Bird Atlas ▪ Expert advice should be sought as many of the rare spp. have little information available about their requirements. 	<p>Yes - suitable habitat for yellow-banded bumble bee is present (see Appendix C)</p>	<p>Studies Confirm:</p> <ul style="list-style-type: none"> ▪ Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. ▪ The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. ▪ SWHMIST ^{cxlix} Index #37 provides development effects and mitigation measures. 	<p>No yellow-banded bumble bee observed, but this species is cryptic and may be present.</p>	<p>Candidate for yellow-banded bumble bee</p>	<p>Confirmed presence of whorled milkwort; Candidate – suitable habitat for several SOCC occur in the Study Area (see Appendix C)</p>

Animal Movement Corridors

Habitat	SPECIES	CANDIDATE SWH		Habitat Criteria Present on Site?	CONFIRMED SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
		ELC Eco-sites	Habitat Criteria and Information Sources				Defining Criteria	Site
<p>36. Amphibian Movement Corridors</p> <p>Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.</p>	<p>American Toad Blue-spotted Salamander Bullfrog Eastern Newt Four-toed Salamander Gray Treefrog Green Frog Mink Frog Northern Leopard Frog Pickeral Frog Spotted Salamander Western Chorus Frog</p>	<p>Corridors may be found in all ecosites associated with water.</p> <ul style="list-style-type: none"> Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1 	<p>Movement corridors between breeding habitat and summer habitat ^{clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi}.</p> <p>Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule ¹.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> MNRF District Office. Natural Heritage Information Centre (NHIC). Reports and other information available from Conservation Authorities. Field Naturalist Clubs. 	<p>No - not to be identified in absence of Amphibian Breeding (Wetland) SWH</p>	<ul style="list-style-type: none"> Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant ^{cxlix}. Corridors should have at least 15m of vegetation on both sides of waterway ^{cxlix} or be up to 200m wide ^{cxlix} of woodland habitat and with gaps <20m ^{cxlix}. Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat ^{cxlix}. SWHMiST ^{cxlix} Index #40 provides development effects and mitigation measures 	<p>N/A</p>	<p>Absent</p>	<p>Absent</p>
<p>37. Deer Movement Corridors</p> <p>Rationale: Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.</p>	<p>White-tailed Deer</p>	<p>Corridors may be found in all forested ecosites.</p> <p>A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.</p>	<p>Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule. [©]</p> <ul style="list-style-type: none"> A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion ^{clxxxii, clxxxiii, cxlix, cxliv}. Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <p><u>Information Sources</u></p> <ul style="list-style-type: none"> MNRF District Office. Natural Heritage Information Centre (NHIC). Reports and other information available from Conservation Authorities. Field Naturalist Clubs. 	<p>No - not to be identified in absence of MNR-mapped deer yarding areas</p>	<ul style="list-style-type: none"> Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. Corridors should be at least 200m wide ^{cxlix} with gaps <20m ^{cxlix} and if following riparian area with at least 15m of vegetation on both sides of waterway ^{cxlix}. Shorter corridors are more significant than longer corridors ^{cxlix}. SWHMiST ^{cxlix} Index #39 provides development effects and mitigation measures 	<p>N/A</p>	<p>Absent</p>	<p>Absent</p>

Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 6E

EcoDistrict	Wildlife Habitat and Species	Candidate SWH			Habitat Criteria Present on Site?	Confirmed SWH	Defining Criteria Present on Site?	SWH Absent, Candidate or Confirmed?	
		Ecosites	Habitat Description	Habitat Criteria and Information		Defining Criteria		Site	Study Area
<p>6E-14</p> <p>Rationale: The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracts with mast-producing tree species is important for bears. ^{clxxxvi, ccxvii}</p>	<p>Mast Producing Areas</p> <p>Black Bear</p>	<p>All forested habitat represented by ELC Community Series:</p> <p>FOM FOD</p>	<ul style="list-style-type: none"> Black bears require forested habitat that provides cover, winter hibernation sites, and mast producing tree species. ^{Clxxxv, clxxxvii, clxxxviii, clxxxix, cx, cxci, cxcii, cxci, ccxvii} 	<p>Woodland ecosites >30 ha with mast-producing tree species, either soft (cherry) or hard (oak and beech).</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Important forest habitat for black bears may be identified by OMNRF. 	<p>N/A – Site is not in this ecodistrict</p>	<ul style="list-style-type: none"> All woodlands > 30ha with a 50% composition of these ELC Vegetation® Types are considered significant: FOM1-1, FOM2-1, FOM3-1, FOD1-1, FOD1-2, FOD2-1, FOD2-2, FOD2-3, FOD2-4, FOD4-1, FOD5-2, FOD5-3, FOD5-7, FOD6-5 SWHMiST ^{cxlix} Index #3 provides development effects and mitigation measures. 	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>
<p>6E-17</p> <p>Rationale: Sharp-tailed grouse only occur on Manitoulin Island in Eco-region 6E, Leks are an important habitat to maintain their population</p>	<p>Lek</p> <p>Sharp-tailed Grouse</p>	<p>CUM CUS CUT</p>	<ul style="list-style-type: none"> The lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography ^{ccxix}. Leks are typically a grassy field/meadow >15ha with adjacent shrublands and >30ha with adjacent deciduous woodland. Conifer trees within 500m are not tolerated ^{ccxix}. 	<p>Grasslands (field/meadow) are to be >15ha when adjacent to shrubland and >30ha when adjacent to deciduous woodland ^{ccxix}.</p> <ul style="list-style-type: none"> Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying) Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting ^{ccxix}. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF District Office Bird watching clubs Local landowners Ontario Breeding Bird Atlas 	<p>N/A – Site is not in this ecodistrict</p>	<p>Studies confirming lek habitat are to be completed from late March to June.</p> <ul style="list-style-type: none"> Any site confirmed with sharp-tailed grouse courtship activities is considered significant. The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the lek habitat SWHMist ^{cxlix} Index #32 provides development effects and mitigation measures. 	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>

APPENDIX H

Curriculum Vitae



GWENDOLYN WEEKS, H.B.Sc.Env

Lead Ecologist and Project Manager



PROFILE

Gwendolyn has been providing ecological consulting services since 2004, with particular knowledge in the field of terrestrial ecology. Supported by her depth of experience, Gwendolyn thrives on anticipating and providing pro-active solutions for clients' needs as they navigate the natural environment approvals process. She is skilled at agency and community liaison, and prides herself on providing creative, efficient and positive outcomes for her clients.

Gwendolyn has authored numerous environmental impact statements, natural environment reports, species at risk studies, natural heritage assessments, and due diligence reports for a variety of sectors, including residential development, recreational development, aggregates, energy projects (transmission lines, pipelines and renewable energy), as well as for municipalities, and federal and provincial agencies. She has also provided terrestrial ecology peer review services.

Gwendolyn's expertise is founded on years of direct in-field experience, where she gained extensive skills in identifying and understanding the ecology of Ontario's flora, fauna, and plant communities. Gwendolyn is certified in both the Ministry of Natural Resources (MNR) Ecological Land Classification (ELC) and Ontario Wetland Evaluation System (OWES), as well as being an MNRF certified Butternut Health Assessor.

Areas of practice

Terrestrial Ecology

Vegetation and Wildlife

Impact Assessment

Permitting

Project Management

Languages

English

EDUCATION

B.Sc. Environmental Science (Hons), Major in Natural Resources Management, University of Guelph 2004

PROFESSIONAL DEVELOPMENT

Ecological Land Classification – MNR Certification	2004
Ontario Wetland Evaluation System – MNR Certification	2005
Butternut Health Assessor – MNR Certification	2011
Wetland Creation Course – Toronto Zoo	2010
Habitat Restoration Planning and Implementation - Northwest Environmental Training Centre	2014
Ontario Stream Assessment Protocol (OSAP) - Headwater Drainage Features – MNR Certification	2017

PROFESSIONAL ASSOCIATIONS

Field Botanists of Ontario, since 2006 FBO

CAREER

Lead Ecologist, Ontario Environment and Planning, WSP	2025 – Present
Senior Ecologist, Cambium Inc., Ottawa, ON	2024 – 2025
Lead Ecologist, Ontario Environment and Planning, Golder Associates Ltd. (WSP Acquisition), Ottawa, ON	2010 – 2023
Ecologist, Stantec Consulting Ltd., Guelph, ON	2004 - 2010



PROFESSIONAL EXPERIENCE

Construction Materials

- *PEMBROKE QUARRY, Renfrew, Ontario. Prepared a Natural Environment Report for Thomas Cavanagh Construction Ltd. according to the Aggregate Resources Act requirements for a new limestone quarry operation. Work included discussions with the MNR and MECP, field studies, and authoring the Natural Environment Report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation plans and rehabilitation plans. Gwendolyn acted as the natural environment component lead.
- RENFREW GOLF PIT, Renfrew, Ontario. Prepared a Natural Environment Report for Thomas Cavanagh Construction Ltd. according to the Aggregate Resources Act requirements for a new sand pit operation. Work included scoping the detailed field investigations, discussions with the MNR and MECP, field studies, and authoring the Natural Environment Report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation plans and rehabilitation plans. Gwendolyn acted as the natural environment component lead.
- GILBERT QUARRY EXTENSION, South Frontenac, Ontario. Prepared a Natural Environment Report for G. Tackaberry and Sons Construction Company Ltd.'s proposed Gilbert Quarry extraction area expansion within the licensed area of their existing quarry. Gwendolyn acted as the natural environment component lead.
- STITTSVILLE II QUARRY EXPANSION, Ottawa, Ontario. Prepared a Natural Environment Report for R.W. Tomlinson Ltd. according to the Aggregate Resources Act requirements for a limestone quarry expansion. Work included scoping the detailed field investigations, discussions with the City of Ottawa, MNR and MECP, field studies, and authoring the Natural Environment Report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Work included evaluation of wetlands according to the updated Ontario Wetland Evaluation System (OWES). Gwendolyn acted as the natural environment component lead.
- BANK STREET QUARRY EXTENSION, Ottawa, Ontario. Prepared a Natural Environment Level II report for Thomas Cavanagh Construction Ltd. according to the Aggregate Resources Act requirements for a small limestone quarry expansion. Work included discussions with the MNR and MECP, field studies, and authoring the Natural Environment Report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Gwendolyn acted as the natural environment component lead.
- HIGHLAND LINE PIT, Lanark, Ontario. Prepared a Natural Environment Report for Thomas Cavanagh Construction Ltd. according to the Aggregate Resources Act requirements for a new sand pit operation. Work included discussions with the DFO, MNR, and MECP, field studies, and authoring the Natural Environment Report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation plans and rehabilitation plans. Gwendolyn acted as the natural environment component lead.
- WEST CARLETON QUARRY EXPANSION, Ottawa, Ontario. Prepared a Natural Environment Report for Thomas Cavanagh Construction Ltd. according to the Aggregate Resources Act requirements for a small limestone quarry expansion.



GWENDOLYN WEEKS, H.B.Sc.Env

Lead Ecologist and Project Manager

Work included discussions with the City of Ottawa, MNR and MECP, field studies, and authoring the Natural Environment Report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Gwendolyn acted as the natural environment component lead.

- NAVAN QUARRY EXPANSION, Ottawa, Ontario. Prepared a Natural Environment Level II report for Lafarge Canada Inc. according to the Aggregate Resources Act requirements for a limestone quarry expansion. Work included discussions with the City of Ottawa, MNR and MECP, field studies, and authoring the Natural Environment Report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Gwendolyn acted as the natural environment component lead.
- ARNOTT PIT, Lanark, Ontario. Prepared a Natural Environment Level II report for Thomas Cavanagh Construction Ltd. according to the Aggregate Resources Act requirements for a new aggregate pit operation. Work included discussions with the MNR and MECP, field studies, and authoring the Natural Environment Report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Gwendolyn acted as the natural environment component lead.
- RIDEAU ROAD QUARRY EXPANSION, Ottawa, Ontario. Prepared a Natural Environment Level II report for R.W. Tomlinson Ltd. according to the Aggregate Resources Act requirements for a small limestone quarry expansion. Work included discussions with the MNR, field studies, and authoring the Natural Environment Report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Gwendolyn acted as the natural environment component lead.
- KENNEDY PIT, Ottawa, Ontario. Prepared a Natural Environment Level II report for Karson Aggregates according to the Aggregate Resources Act requirements for a new sand pit operation. Work included discussions with the MNR, designing and undertaking the field studies, and authoring the Natural Environment Report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Worked with the Mississippi Valley Conservation Authority to develop an environmental monitoring program. Gwendolyn acted as the natural environment component lead.
- MCMACHEN PIT SPECIES AT RISK, Rideau Lakes, Ontario. Designed and undertook a baseline study and mitigation plan for a sensitive species at risk on G. Tackaberry and Sons Construction Company Ltd.'s proposed aggregate pit expansion lands in accordance with O.Reg. 242/08 under the Endangered Species Act. Gwendolyn acted as the natural environment component lead, Lead Ecologist and project manager.

*Completed while employed at another organization.



FERGUS NICOLL, Dip.T.

Senior Ecologist, Project Manager

Areas of practice

Terrestrial Ecology

Wetland Ecology

Aquatic Ecology

Study Design

Impact Assessment

Project Management

Languages

English

PROFILE

Fergus Nicoll is a Senior Ecologist with over 25 years of demonstrated experience. He provides expertise in wetland ecology, ornithology, botany, and terrestrial ecology, with a strong supporting role in aquatic ecology. Fergus has experience in the development and logistical support of ecological projects, assessing the impacts of development on natural landscapes, permitting and other requirements under various provincial and federal regulations. He also has experience in project management, study design, leading complex field programs, as well as reporting and impact assessment. He also has strong field skills in all aspects of ecology, terrestrial and aquatic, including the identification of all taxa.

Fergus' consulting experience includes risk assessments, environmental impact statements, environmental assessments, federal, provincial, and municipal, aggregate resources act natural environment reports, ecological surveys and inventories, species at risk inventories and authorizations, tree conservation plans, habitat design and inventory, and construction compliance monitoring.

Fergus is certified, trained, and experienced in several ecological programs and methodologies, including the Ontario Wetland Evaluation System, The Canadian Wetland Classification System, Identification et delimitation de milieux humides du Quebec meridional, Ecological Land Classification, and the Ontario Stream Assessment Protocol. He is a leader in wetland assessment and has successfully participated in Ontario Land Tribunal hearings.

EDUCATION

Fisheries and Wildlife Management Diploma, Sault College, Sault Ste. Marie 2005

Parks and Outdoor Recreation Diploma, Sault College, Sault Ste. Marie, Ontario 2005

PROFESSIONAL DEVELOPMENT

Wilderness First Aid Training, Canadian Red Cross

Ecological Land Classification, MNR 2008

Butternut Health Assessor, MNR 2010, 2019

ATV Training Certificate, Canadian Safety Council 2010

Surface Minor Training, Ontario MLITSD 2011

Ontario Wetland Evaluation System, MNR 2011

Small Non-Pleasure Vessel Basic Safety (MED A3) 2011

Reptile and Amphibian Field Training Workshop, MNR 2012

Data Sensitivity Training, NHIC 2013

Ontario Stream Assessment Protocol, MNR 2017

Defensive Driver Training, Canadian Safety Council 2021

Pollinator Steward Certification, Pollinator Partnership Canada 2022



FERGUS NICOLL, Dip.T.
Senior Ecologist, Project Manager

Backpack Electrofishing Certifications, WSP Inc.	2023
Marine and Basic First Aid, CPR Level C, and AED, Canadian Red Cross	2024

PROFESSIONAL ASSOCIATIONS

Ontario Field Ornithologists, 2005	OFO
Bird Studies Canada, 2005	BSC
Field Botanists of Ontario, 2008	FBO
Entomological Society of Canada, 2012	ESC
Mississippi Madawaska Land Trust, 2020	MMLT

CAREER

Senior Ecologist, Ontario Environment and Planning, WSP	2025 – Present
Ecologist, Cambium Inc., Ottawa, ON	2023– 2025
Ecological Technical Specialist, Golder Associates Ltd. (WSP Acquisition), Ottawa, ON	2008– 2023
Field Station Coordinator/Biologist, Bird Studies Canada, Port Rowan, ON	2002– 2008
Aquatic and Fisheries Technician. Laurentian University, Sudbury, ON	2001– 2002
Ecologist, Environment and Climate Change Canada, Ottawa, ON	2000– 2001
Field Biologist, University of New Brunswick, Fredericton, NB	1999– 2000
Mammal Species at Risk Biologist, United States Geological Survey, Fort Collins, CO	1998- 1999
Fisheries Ecologist, Ontario Ministry of Natural Resources, Bracebridge, ON	1998- 1999
Tree Planter, Osgoode Forestry Services, Timmins, ON	1997-1998

PROFESSIONAL EXPERIENCE EXAMPLES

Transportation and Infrastructure

— J.L RICHARDS MANOTICK WATERMAIN PHASE I AND II, Ottawa, Ontario.

Natural Environment Coordinator/Lead. Responsible for scoping field studies and helping to prepare the Natural Environment Existing Conditions and Impact Assessment report. Provided input to EA team to chose preferred alternative. Reporting included an assessment of significant natural features and associated provincial and municipal policies, as well as recommended mitigation measures and permitting requirements.

— CITY OF OTTAWA EARL ARMSTRONG ROAD EXTENSION, Ottawa, Natural Environment Coordinator/Lead. Provided support of the Environmental Assessment for the proposed Earl Armstrong Road Extension. This involved supporting



FERGUS NICOLL, Dip.T.

Senior Ecologist, Project Manager

multi-disciplinary input to the Municipal Class EA, being prepared by Parsons, as well as scoping and managing deliverables for wetlands and headwaters. Provided input to EA team to chose preferred alternative. As part of this project, Fergus co-authored a formal wetland evaluation under the provincial Ontario Wetland Evaluation System

— MARTEN FALLS FIRST NATION COMMUNITY ACCESS ROAD ENVIRONMENTAL ASSESSMENT, Northwestern Ontario

Discipline Lead-Birds/Assistant to other disciplines. Responsible for the bird component of a joint federal/provincial Environmental Assessment of an all-season access road to the remote community of Marten Falls (Ogoki Post). Designed and implemented a massive multi-season, multi-year bird program over a large 200km long remote Study Area (helicopter access only). Included a variety of survey types in all seasons for all groups of birds such as breeding birds, fall migration, overwintering birds, aerial surveys, and automated recording units (ARUS). Conducted many surveys, including helicopter surveys, and responsible for managing a large team of multiple crews. Required working with several other disciplines (ecology and others), as part of a large complex project team. Also lead field surveys, and provided input on several other disciplines (e.g., aquatics, vegetation and peatlands, ungulates, wolverine, bats, pollinators, and other wildlife). Responsible for bird baseline, and existing conditions reporting under the EA. Also assisted with other disciplines baseline, and existing conditions reporting. Included interacting with agencies, local First Nations communities, and the public, by responding to comments, giving presentations, and being in agency and public meetings.

— GREEN INFRASTRUCTURE PARTNERS (GIP) FORMERLY AECON CONSTRUCTION EAST, HIGHWAY 417 EXTENSION, RENFREW COUNTY, ONTARIO

Project Manager/Field Lead. Responsible for overseeing and conducting ecology program for an Ontario Ministry of Transportation highway lane expansion, culvert replacement, and overpass construction project. Provided the client with support on several natural environment related aspects, including migratory birds, fish habitat and fish rescue, and sediment and erosion control monitoring. Included planned work and on-call work, as well as monthly compliance reporting to the Ontario Ministry of Transportation.

— AECON CONSTRUCTION EAST, CARP RIVER RESTORATION. OTTAWA, ONTARIO.

Project Manager/Field Lead. Developed, managed, and implemented a construction monitoring program for a river restoration project to meet conditions of a Fisheries and Oceans Canada authorization, and requirements from other agencies (e.g., City of Ottawa, Conservation Authority). Includes extensive fish sampling and fish rescue in all seasons. SAR training, SAR related construction monitoring, erosion and sediment control monitoring, water quality monitoring, provided input on rehabilitation and vegetation plans, and provided on-call advise and services at all phases of the project.

— CANADIAN NATIONAL RAIL COMPANY (CN), MILE 109 RECLAMATION PROJECT. RENFREW COUNTY, ONTARIO

Ecology Component Lead. Provided ecology support on large remediation project of abandoned rail line, at eastern end of Algonquin Park. Responsible for overseeing and implementing wetland and aquatic ecosystem monitoring, fish rescues, SAR surveys including turtles, and construction mitigation (including ESA permitting requirements), and related reporting. Assisted with surface water program, agency consultation and meetings.



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Senior Ecologist, Project Manager

— ONTARIO MINISTRY OF TRANSPORTATION (MTO), EXISTING CONDITIONS STUDIES, EASTERN AND CENTRAL ONTARIO.

Field Lead/Project Support. Conduct field visits at multiple MTO sites for Aquatic and Terrestrial Ecosystem Existing Conditions and Impact Assessment Reports across eastern and central Ontario. Works were primarily focuses on bridges and water crossings. Provided input and assistance on proposals, costing, and reporting.

— ROBINSON CONSULTANTS INC., PRINCE OF WALES DRIVE COORDINATED NETWORKS MODIFICATIONS. OTTAWA, ONTARIO

Field Lead/Project Team Member. Developed and implemented multi-taxa field program as part of natural environment assessment for City of Ottawa Improvements for a portion of Prince of Wales Drive. Provided assistance with baseline and impact assessment reporting.

Land Development

Tomlinson Land Development

— ROSEFELLOW HOLDINGS, COMMERCIAL DEVELOPMENT, 405 HUNTMAR DRIVE, OTTAWA, ONTARIO

Field Lead/Project Team Member. Scoped Environmental Impact Statement for a commercial development. Conducted ecological field surveys, prepared a tree conservation report, and assisted with reporting.

— REGIONAL GROUP PATHWAYS (REMER LANDS) RESIDENTIAL DEVELOPMENT, OTTAWA, ONTARIO.

Field Lead/Field Coordinator. The project was to assist Regional Group to clear conditions for their draft-approved subdivision in Ottawa. This included an Environmental Management Plan, Tree Conservation Report, Environmental Impact Statement, wetland monitoring, design input on and post-construction monitoring of a constructed naturalized channel. Lead and coordinated multiple field programs, ecology, and others. Assisted with proposal, and report writing, including the lead on the tree conservation report. Worked on a team as part of an Endangered Species Act permit for butternut, conducted butternut health assessments and reporting on 180 trees. Participated in multiple agency and stakeholder meetings, including site visits.

— LANDLAB INC., LAKEPORT BEACH DEVELOPMENT. LAKEPORT, ONTARIO

Field Lead/Ecology Component Lead. To support an ongoing proposed residential development application, retained to prepare an Environmental Impact Statement including all relevant studies. Developed and implemented a multi-taxa field program, lead, and supervised field crews. This included the preparation of wetland mapping and a wetland evaluation using the Ontario Wetland Evaluation System, and co-authoring of the EIS. Worked closely with a multi-discipline team, and environmental planners on the project.

— FINDLAY CREEK PROPERTIES, FINDLAY CREEK DEVELOPMENT, OTTAWA, ONTARIO

Ecology Component Lead/Field Lead. Provided support to Findlay Creek Properties, for several aspects of their residential development. This included input on design of a channel realignment of Findlay Creek, pre and post construction fish surveys. It also included the development of a long-term monitoring program of constructed aquatic and terrestrial habitat areas, as well as long-term monitoring in the adjacent Provincially



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Significant Wetland. Worked closely with Fisheries and Oceans Canada, as well as the Ministry of the Environment, Ministry of Natural Resources, and South Nation Conservation.

— MAPLEVIEW HOMES RESIDENTIAL DEVELOPMENT, BROCKVILLE, ONTARIO

— Project Coordinator/Field Lead. Environmental Impact Study for a proposed residential development. Lead field crews for multi-taxa field program. Assisted with report writing and assisted other teams with field work and reporting (e.g., contaminated lands).

— CLARIDGE HOMES INC., PROPOSED SUBDIVISION, GREENBANK ROAD, OTTAWA, ONTARIO.

Field Lead/Project Team Member. Environmental Impact Statement and Tree Conservation Report in support of a proposed residential development. Lead multi-taxa ecological field program, prepared a tree conservation report, and assisted with reporting and responses to agency comments.

Energy – Transmission and Power Generation

— ONTARIO POWER GENERATION (OPG), OTTO HOLDEN GENERATION STATION, MATTAWA, ONTARIO

Project Manager/Field Lead. species at risk and biodiversity study. Responsible for management, as well as study design, conducting and overseeing multi-taxa field program (birds, bats, mammals, herptiles, fish, pollinators), ecological land classification and plant community mapping, reporting and provide recommendations to OPG.

— HYDRO ONE, WAASIGAN TRANSMISSION LINE PROJECT, NORTHERN ONTARIO

Component Lead/Field Crew Lead – Birds. Field Crew Lead – Plant Communities and Bats. Responsible for study plan development and overseeing field crews as part of a larger Environmental Assessment of a proposed transmission line. Conducted helicopter reconnaissance of routes, assisted other components with implementation of their desktop and field programs. Assisted with baseline and existing conditions reporting.

— ONTARIO POWER GENERATION (OPG), DES JOACHIMS GENERATING STATION, ROLPHTON, ONTARIO

Project Manager/Field Lead. species at risk and biodiversity study. Responsible for management, as well as study design, conducting and overseeing multi-taxa field program, ecological land classification, and reporting/recommendations.

— ONTARIO POWER GENERATION (OPG), CHENAUX GENERATING STATION, RENFREW, ONTARIO

Project Manager/Field Lead. species at risk and biodiversity study. Responsible for management, as well as study design, conducting and overseeing multi-taxa field program, ecological land classification, and reporting/recommendations.

— ONTARIO POWER GENERATION (OPG), R.H. SAUNDERS GENERATING STATION, CORNWALL, ONTARIO

Project Manager/Field Lead. Species at risk and biodiversity study. Responsible for management, as well as study design, conducting and overseeing multi-taxa field program, ecological land classification, and reporting/recommendations.



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— NEXTBRIDGE INFRASTRUCTURE, EAST WEST TIE TRANSMISSION LINE PROJECT, NORTHWESTERN ONTARIO (2018-2019)

Field Crew Lead/Project Team Member. Responsible for conducting multi-taxa surveys on large Environmental Assessment project (i.e., birds, bats, plant communities, fish, and fish habitat). Provided input on study design, agency consultation, public meetings, and baseline, existing conditions, and impact assessment reporting. Use of GIS tools to develop survey design. Included helicopter reconnaissance of all routes.

— EDP RENEWABLES, NATION RISE/SOUTH BRANCH RENEWABLE ENERGY PROJECT. MOREWOOD, ONTARIO (2017)

Field Crew Lead. Responsible to conduct terrestrial and aquatic habitat, plant community, and bird surveys as part of a renewable energy application for a wind farm. Assisted with data management and report writing.

— ONTARIO POWER GENERATION (OPG), GRASSY BAY ECOLOGICAL MONITORING, CALABOGIE, ONTARIO

Project Manager/Field Lead. Lead studies related to effects of water level changes on ecology of Grassy Bay Provincially Significant Wetland and Calabogie Lake. Included a marsh monitoring program (birds and frogs), monitoring of overwintering herptiles, and monitoring of wild rice population, water levels, and water chemistry parameters. Responsible for client and project management, as well as study design, conducting and overseeing multi-taxa, four-season field program and field staff. Author of several monitoring reports, which included data analysis, reporting on findings, and providing recommendations to OPG.

— ONTARIO POWER GENERATION (OPG), CHATS FALLS GENERATING STATION, CORNWALL, ONTARIO

Project Manager/Field Lead. Lead a species at risk and biodiversity study, and a wetland study. Responsible for management, as well as study design, conducting and overseeing multi-taxa field program, ecological land classification, and reporting/recommendations.

— ONTARIO POWER GENERATION (OPG), SIR ADAM BECK RESERVOIR REPAIRS, Cornwall, Ontario

Field Crew Lead. Assist with large comprehensive fish capture and removal program as part of repairs to the reservoir. Included several weeks of fish capture using multiple techniques. This included, trap netting, gillnetting, seine netting, and electrofishing. Large numbers of several species were captured, processed, and relocated. Conducted at risk plant and reptile surveys on adjacent areas; assisted with reporting and permitting.

— VARIOUS RENEWABLE ENERGY PROJECTS, ONTARIO

Field Crew Lead/Assistant Report Author. Conducted field surveys for various renewable energy projects throughout Ontario. This includes extensive bird surveys, reptile and mammal surveys, habitat and vegetation surveys, aquatic surveys, species at risk surveys, as well as mortality surveys. Authoring of avian and vegetation reports, and support on other aspects of project reporting.

Aggregates and Mining

— R.W. TOMLINSON INC., ONTARIO TRAP ROCK (OTR) II QUARRY, BRUCE MINES, ONTARIO

Ecology Field Lead/Coordinator. Developed and lead multi-taxa field program for a Natural Environment Report under the Aggregate Resources Act. Assisted with proposal



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writing, and scope/cost. Lead on a wetland evaluation, using OWES. Project is ongoing, currently in data analysis phase.

— R.W. TOMLINSON LTD., STITTSVILLE II QUARRY, OTTAWA, ONTARIO

Ecology Field Lead/Coordinator. Developed and lead multi-tax field multi-year program for a Natural Environment Report under the Aggregate Resources Act. Co-authored two evaluations using the Ontario Wetland Evaluation System and participated as a main expert witness on a successful Ontario Land Tribunal hearing, arguing that two small wetlands were not part of the larger Provincially Significant Wetland. Project is currently at the final submission of the ARA application package.

— R.W. TOMLINSON INC., STITTSVILLE QUARRY, Ottawa, Ontario

Ecology Field Lead/Coordinator. Responsible to lead multi-taxa field multi-year monitoring program as part of an Environmental Compliance Approval permit. Includes wetland and adjacent upland monitoring. Responsible for the field program, field crews, as well as the ecology annual monitoring report, and responding to agency comments/concerns.

— CBM AGGREGATES., POLLINATOR MONITORING, Southern, Ontario

Project Manager/Field Lead. Designed and implemented a long-term pollinator monitoring program at two quarry sites near Peterborough, and Guelph Ontario. Included a monitoring program, and summary reporting, with recommendations for future monitoring and habitat improvement.

THOMAS CAVANAGH CONSTRUCTION LTD., RENFREW PIT, Renfrew, Ontario

Ecology Field Lead/Coordinator. Developed and lead multi-taxa field program for a Natural Environment Report, under the Aggregate Resources Act. Assisted with proposal writing, and scope/cost. Assisted with NER report writing and providing input to multi-discipline team. Project is in draft reporting phase.

LAFARGE CANADA INC., KLOCK QUARRY EXPANSION, Aylmer, QC

Ecology Lead. Designed and lead terrestrial, aquatic, and wetland field programs for an expansion of a quarry in Quebec. Responsible for developing and conducting a long-term wetland monitoring program, including support in writing of the annual report.

KARSON AGGREGATES, KENNEDY PIT, Ottawa, Ontario.

Ecology Lead. Developed and lead multi-taxa field program for a Natural Environment Level II Study and Report, under the Aggregate Resources Act. Assisted with proposal writing, and scope/cost. Assisted with report writing and providing input to multi-discipline team. Assist with responses to agency comments, including authorizations related to endangered species. Attended agency meetings, and public open house. Responsible for implementing long term annual monitoring in an adjacent Provincially Significant Wetland, including writing of annual reports. The pit is currently licensed and active, with wetland monitoring ongoing.

THOMAS CAVANAGH CONSTRUCTION LTD. HENDERSON II QUARRY, Ottawa, Ontario

Natural Environment Component Lead. Responsible for all phases of Natural Environment Level II study and report, including scoping, proposal, field program design, and final reporting. Included submission of report, attending open houses, agency meetings, and development of a post-construction wetland monitoring program in an adjacent Provincially Significant Wetland. The quarry is currently licensed and active with wetland monitoring ongoing.



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— ONTARIO MINISTRY OF TRANSPORTATION (MTO), AGGREGATE SITES, Northern, and Central, Ontario.

Ecology Field Lead/Coordinator. Developed and participate in field programs at multiple proposed aggregate sites, for the Ontario Ministry of Transportation. Assisted with Natural Environment Level II reporting.

— LAFARGE CANADA INC., NAVAN QUARRY EXTENSION, Navan, Ontario

Ecology Field Lead/Coordinator. Developed and lead multi-taxa field program for a Natural Environment Level II study and report, under the Aggregate Resources Act. Assisted with proposal writing, and scope/cost. Assisted with report writing and providing input to multi-discipline team. Assist with responses to agency comments.

— THOMAS CAVANAGH CONSTRUCTION LTD., BANK STREET QUARRY, Ottawa, Ontario

Ecology Field Lead/Coordinator. Developed and lead multi-taxa field program for a Natural Environment Level II study and report, under the Aggregate Resources. Assisted with proposal writing, and scope/cost, as well as reporting. The quarry is currently licensed and active.

— G. TACKABERRY AND SONS CONSTRUCTION LTD., PERTH II QUARRY, Perth, Ontario

Ecology Component Lead. Responsible for all phases of Natural Environment Level II study and report, including scoping, proposal, field program design, and final reporting. Included submission of final report, attending open houses, agency meetings, and development of a post-construction wetland monitoring program in an adjacent Provincially Significant Wetland. The quarry is currently licensed and active.

— SCOTIAN MATERIALS LTD., GOFFS QUARRY EXPANSION. Halifax County, Nova Scotia

Ecology Lead. Developed and lead multi-taxa field program for an environmental assessment, as part of an expansion of an existing quarry. Assisted with proposal writing, and scope/cost. Assisted with report writing and providing input to multi-discipline team. Assist with responses to agency comments.

— OSISKO HAMMOND REEF GOLD MINE. Atikokan, Ontario

Field Lead/Project Support. Provided support and lead field crews for ecology aspects of the submission of an Environmental and Social Impact Assessment for the development of the mine and associated infrastructure. Supervised and completed all aspects of terrestrial and aquatic field program in a remote part of northern Ontario. Helped on final reporting, including writing, as well as responding to agency comments.

— EWL MANAGEMENT LTD. MADAWASKA MINE CLOSURE, Bancroft, Ontario

Ecology Component Lead. Developed and implemented ecological program, as part of an Environmental Assessment for a closed uranium mine. Included a multi-taxa field program, baseline reporting, impact assessment reporting, and recommendations/mitigation.



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— R.W. TOMLINSON LTD., MOORE FARM QUARRY. Ottawa, Ontario

Ecology Component Lead. Developed and implemented a multi-taxa field program for a Natural Environment Level II study and report. Used the Ontario Wetland Evaluation System to update the existing provincially significant wetland boundary and wetland file. Involved in permitting for threatened species, under the Endangered Species Act. This included an overall benefit and compensation plan.

— TACORA RESOURCES INC., WABUSH MINE, Sept-Iles, Quebec

Field Lead. Sensitive Area and Wetland Surveys. Classified and assessed wetland areas, as well as sensitive areas such as watercourses and species at risk habitat. Delineated wetlands and sensitive areas within the project area.

— ENDANGERED SPECIES ACT (ESA) SCREENINGS, Eastern and Southern Ontario

Field Lead. Conducted site visits, screenings, and habitat assessments at multiple existing ARA licensed sites, for screenings under the 2007 Endangered Species Act. Included several clients such as Cruickshank Construction Ltd., R.W. Tomlinson Inc., Thomas Cavanagh Construction Ltd., G. Tackaberry and Sons Construction Ltd., CBM Aggregates, and Lafarge Canada Inc.

Waste Management

— WASTE MANAGEMENT HOLDINGS INC., WEST CARLETON LANDFILL EXPANSION, Ottawa, Ontario

Field Lead/Project Team Member. WSP was retained by Waste Management to conduct an update to the ecological and species at risk findings of an approved Environmental Assessment for the proposed expansion of the West Carleton Landfill. Responsible for developing and conducting a field program, as well as providing input on reporting, permitting, and mitigation recommendations.

— OTTAWA VALLEY WASTE RECOVERY CENTRE, ENVIRONMENTAL COMPLIANCE APPROVAL MONITORING, Pembroke, Ontario.

Ecology Component Lead. As required by conditions under an Environmental Compliance Approval Permit, helped to develop and implement a long-term sediment and benthic monitoring program adjacent to a landfill Site. Responsible for leading field programs, data management, prepping of benthic and sediment samples, and annual reporting. Lead a team of ecologists on all aspects of the field program, analysis, and reporting on the findings.

— TOWNSHIP OF NORTH DUNDAS, BOYNE LANDFILL EXPANSION. North Dundas, Ontario.

Field Lead/Project Team Member. Ecological Studies, impact assessment, and reporting, as part of a Environmental Assessment for a proposed landfill expansion. Responsible for developing and leading a multi-taxon, multi-year field program. Provided assistance with proposal writing, scoping, reporting, impact assessment, and consultation with agencies.

— ALGONQUINS OF PIKWAKANAGAN FIRST NATION SOLID WASTE FEASIBILITY STUDY, Pikwakanagan, Ontario

Field Lead. Natural Environment Support, for a larger feasibility study, for a landfill expansion. Conducted species at risk and other ecological field surveys. Provided assistance with background review and reporting.



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Senior Ecologist, Project Manager

— TAGGART MILLER ENVIRONMENTAL SERVICES, CAPITAL REGION RESOURCE RECOVERY CENTRE, Ottawa, Ontario.

Ecology Coordinator/Project Team Member. Golder (now WSP) was retained to provide a range of services in support of an Environmental Assessment for a new integrated waste management facility. Responsible for designing and implementing a multi-taxon, multi-season field program as part of the Environmental Assessment. Lead headwater drainage feature assessments, and a field program as part of a request for review, by the Department of Fisheries and Oceans Canada. Also assisted in data analysis, reporting, and obtaining approvals from South Nation Conservation, Fisheries and Oceans Canada, and the Ministry of Natural Resources and Forestry.

— EXPANSION OF BRIGHTON COMMUNITY RECYCLING CENTRE, NORTHUMBERLAND COUNTY, Brighton, Ontario.

Field Lead/Project Team Member. Environmental Assessment for waste facility and landfill expansion. Responsible for designing and leading a multi-taxa field study for the ecological component of the EA. Lead data analysis and reporting team for preparation of the natural environment sections of the Environmental Assessment.

Federal Properties

— DEFENSE CONSTRUCTION CANADA, CFB 8 WING TRENTON, Trenton, Ontario

Field Lead/Coordinator. WSP was retained by Defense Construction Canada to complete a species at risk and migratory birds study north of Hangar 1, at CFB 8 Wing Trenton. Responsible for helping to develop and lead a species at risk and migratory bird field program, over two years. Also assisted with reporting and providing mitigation recommendations.

— NATIONAL CAPITAL COMMISSION, OTTAWA, ONTARIO, Gatineau, Quebec.

Field Lead/Project Manager/Project Team Member. Conducted natural environment characterization studies at multiple National Capital Commission properties, throughout the Ottawa Capital Region. Project Manager on some sites, field lead on all sites. This included various species at risk surveys, wetland surveys, botanical inventories, and tree inventories. Assisted with report writing and providing recommendations. Examples of properties include Rideau Hall, 24 Sussex, RCMP headquarters, Gatineau Park, Victoria Island, New Edinburgh Club Boathouse, Westboro Beach, Champlain Node, O'Brian House, Harrington Lake, and Lac Leamy Park.

— PUBLIC WORKS AND GOVERNMENT SERVICES CANADA., Multiple Sites, Canada

Ecology Component Lead. Conducted species at risk, habitat, and plant health assessments at various sites throughout most provinces and territories in Canada. Included desktop work, field work, and reporting. Assessments were included as lines of evidence in human health and ecological risk assessments at federally owned and managed sites.

— DEFENSE CONSTRUCTION CANADA, MARLANT, Halifax, Nova Scotia.

Field Lead/Project Team Member. Golder (now WSP) was retained to evaluate potential risks to aquatic and terrestrial receptors related to PFAS impacted media. Responsible to lead field programs characterize the ecological receptors on the site. Assisted with reporting, as well as client meetings.



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— TRANSPORT CANADA, FORMER FIREFIGHTER TRAIN AREA, THUNDER BAY AIRPORT, Thunder Bay, Ontario.

Field Lead/Project Team Member. Responsible for developing, and conducting wildlife, plant community, and plant health assessments, of contaminated areas at the Thunder Bay Airport, to characterize ecological receptors. Co-authored the final report.

— FISHERIES AND OCEANS CANADA, SPECIES AT RISK AND HABITAT ASSESSMENTS, Multiple Sites, Ontario, and British Columbia.

Project Team Member. Responsible to conduct background review, habitat assessments, and species at risk screenings at multiple properties owned by Fisheries and Oceans Canada. Co-authored final deliverable.

— DEFENSE CONSTRUCTION CANADA, CFB 8 WING TRENTON EXPANSION LANDS, Trenton, Ontario

Project Manager. Responsible for developing, managing, and implementing a multi-taxon, multi-year species at risk study and assessment at proposed expansion lands for the base. Also included interacting with landowners, and other stakeholders, reporting and providing mitigation recommendations.

Energy – Oil and Gas

— TC Energy, Pipeline Species at Risk and Migratory Bird Surveys, Across Ontario
Component Lead/Technical Reviewer. Assisted with species at risk and migratory bird surveys, as part of pipeline vegetation management. Review technical procedures, report, and provide on call technical support to all field crews. Author of monitoring reports.

— ENBRIDGE INC., ALMONTE REINFORCEMENT PROJECT, Almonte, Ontario

Field Lead. Natural environment component of an Environmental Effects Evaluation for a proposed natural gas line under the Mississippi River in Almonte. Responsible for leading ecology field programs and aiding on reporting. Also helped archeology team to assess plant community disturbance, species at risk, and provided mitigation, related to clearing of vegetation as part of archeological digs.

— Coastal Gaslink Pipeline Ltd, Pipeline Construction, Northern British Columbia

Field Crew Lead. Golder (now WSP) was retained to provide natural environment construction support, during the construction portion of this project. Responsible for leading a field crew for migratory bird and bird nesting surveys, amphibian surveys, as well as amphibian and fish rescues, including species at risk. Responsible for daily progress reports.

— TC ENERGY, EASTERN MAINLINE PROJECT, Cornwall to Markham, Ontario.

Field Crew Lead/Project Team Member. Natural Environment components of an Environmental Assessment for a proposed new natural gas pipeline. Responsible for helping to design and implement a multi-taxa study across the entire study area. Lead field crews on multiple ecological surveys. Assisted with data analysis, and consultation with agencies, landowners, and local First Nations communities.



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— ENCANA CORPORATION, NARROWS LAKE OIL SANDS, Narrows Lake, Alberta.

Field Crew Lead/Project Team Member. Responsible for leading field crews on bird, wildlife, and plant community surveys as part of an Environmental Assessment for an oil sands production expansion in Northern Alberta. Assisted with study design, reporting, and impact assessment.

Other Ecological

— ENVIRONMENT CANADA, MINISTRY OF NATURAL RESOURCES, ARU INTERPRETATION, throughout Ontario.

Responsible for Interpretation and Transcription of >2000 acoustic files, recorded by Automated Recording Units. Extensive use of specialized software such as Raven Pro, and Wild Trax.

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