

Schmidt Estate Industrial Lands, Baden

Environmental Impact Study

Prepared for:

Kelly & Co.
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Waterloo, Ontario N2L 1T2

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Aquatic, Terrestrial and Wetland Biologists

Schmidt Estate Industrial Lands, Baden

Environmental Impact Study

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by Kelly & Co., on behalf of the Estate of Enid Schmidt (the "Proponent"), to complete an Environmental Impact Study (EIS) associated with the proposed re-zoning of two land parcels owned by the Proponent, located in Baden, Ontario. The two land parcels, referred to as the eastern and western blocks, are shown in Appendix I and are proposed to be re-zoned from agricultural to industrial land use. Note that the proponent's Draft Plan of Residential Subdivision that is proposed to the north of the proposed industrial lands is addressed as part of a separate EIS. See Map 1 for lands owned by the Proponent that were the subject of this industrial lands rezoning EIS, referred to herein as the "subject lands".

The subject lands currently comprise row crop agricultural fields and contain a portion of Baden Creek and associated floodplain hazard lands that are regulated by the Grand River Conservation Authority (GRCA). The subject lands contain "Environmentally Constrained Lands" associated with Baden Creek as shown on Map 3 of the Wilmot Township Official Plan (Township of Wilmot 2024). There are no designated natural features as mapped in the Region of Waterloo's Greenlands Network (Regional Official Plan Map 4; Region of Waterloo 2024), and no wetlands are present on the subject lands according to GRCA online mapping resources (GRCA 2024).

The subject lands are bounded to the northwest and southwest by agricultural lands, to the northeast by residential lands, to the southeast by commercial lands. The lands are immediately bounded by Foundry Street and Gingerich Road on the northeast and southeast sides, respectively. Herein, for simplicity, the subject lands will be referred to such that true northwest is referred to as "north", true northeast is referred to as "east", etc.

This report summarizes background information on natural heritage features, as well as results of field surveys completed within the subject lands and adjacent study area portions of the Schmidt Estate lands. This information was used to define natural features as development constraints based on significance and sensitivity of the features, to inform the delineation of development constraints on the subject lands.

2.0 Project Scoping

2.1.1 Background Information Review

In order to determine a study approach for the EIS, existing natural heritage information was first gathered and reviewed to identify key natural heritage features and species that are known or have potential to occur within the study area. Existing background information was requested from the Ontario Ministry of Natural Resources (OMNR) Guelph District Office and the GRCA. Written responses to these information requests were received by NRSI on July 12 and June 28, 2017 from the OMNR and GRCA, respectively.

Background information on the natural environment features within the study area vicinity was also gathered from the Natural Heritage Information Centre (NHIC) significant species database (OMNR 2025), the OMNR's Land Information Ontario, Fisheries and Oceans Canada (DFO), provincial Aquatic Resource Area (ARA) point data (Ontario GeoHub 2025) Aquatic Species at Risk mapping tool (DFO 2025) and relevant taxa-specific databases, as listed below.

Initial wildlife species lists were compiled to provide information on species reported from the vicinity of the subject lands (10km radius) using various atlases including the Ontario Breeding Bird Atlas (BSC et al. 2008), Ontario Reptile and Amphibian Atlas (Ontario Nature 2019), Ontario Mammal Atlas (Dobbyn 1994), Ontario Butterfly Atlas (Macnaughton et al. 2024), and the Ontario Odonata Atlas Database (OOAD 2023). Since several of the atlases provide data based on 10x10km survey squares, information from the square that overlaps the study area (17NJ20) was compiled. These initial species lists were used to guide the scope and type of field surveys required as outlined in the following sections.

The Township of Wilmot Official Plan (Township of Wilmot 2024) and the Region of Waterloo Official Plan (Region of Waterloo 2024) was also reviewed to inform project scoping.

Based on the findings of the background review, a draft Terms of Reference (TOR) for the EIS was prepared by NRSI and submitted to the GRCA and Region of Waterloo on July 19, 2017. The TOR covered both the proposed industrial lands as well as the lands associated with the proposed residential subdivision, because the original intent was for the EIS to address all of these lands collectively. Written comments were received from the Region on July 24, 2017 and from the GRCA on August 3, 2017. In response to the draft TOR, Regional staff confirmed that EIS review by the Region would not be required due to the lack of Regionally-designated features on or adjacent to the subject lands, unless features of Regional significance were

identified during the EIS. See Appendix II for records of communication with agency staff. A finalized version of the TOR was subsequently prepared and recirculated on August 15, 2017.

Subsequent to the initiation of this EIS for the proposed industrial lands re-zoning, NRSI initiated an updated EIS for the Schmidt Estate proposed residential subdivision development to the north. As part of the updated residential subdivision EIS, NRSI circulated an updated TOR, dated August 18, 2025, to the Township and GRCA. By virtue of the proposed industrial lands falling within the study area for the residential subdivision EIS, the TOR prepared for the residential subdivision EIS also incorporated updated field surveys that would extend into the proposed industrial lands. The 2025 draft EIS TOR for the residential subdivision lands therefore has applicability to the proposed industrial lands. See Appendix III for the 2025 EIS TOR.

Aboud and Associates, on behalf of the Township, provided comments on October 9, 2025 following their review of the draft TOR. Township staff subsequently agreed that responses to the TOR comments could be addressed through completion of the residential subdivision EIS, with inclusion of a comment-response table indicating how comments have been addressed, in lieu of updates to and circulation of a final TOR for the residential subdivision EIS (A. Martin, Township of Wilmot, pers. comm., October 2025). Consistent with this approach, this EIS report has been prepared such that the October 2025 TOR review comments have been addressed. See Appendix IV for a comment-response table indicating how the comments have been addressed within the report, where applicable.

2.1.2 Significant Species and Habitat Screening

Species at Risk Habitat Screening

Species at Risk (SAR) are those listed on the Species at Risk in Ontario (SARO) List (MECP 2025). These include species identified by the Committee on the Status of Species at Risk in Ontario (COSSARO) as provincially Endangered, Threatened, or Special Concern. Species listed as Endangered or Threatened are protected by the provincial *Endangered Species Act* (ESA), which includes protection of their habitat.

Provincial species of Special Concern are included in the definition of Species of Conservation Concern (SCC), which includes the following:

- species designated provincially as Special Concern,

- species that have been assigned a conservation status (S-Rank) of S1 to S3 or SH by the Natural Heritage Information Centre, and
- species that are designated federally as Threatened or Endangered by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) but not provincially by the COSSARO. These species are protected by the federal *Species at Risk Act* (SARA) but not provincially by the ESA.

Habitats of SCC are considered a form of Significant Wildlife Habitat (SWH) (OMNR 2010) which is afforded protection under the Provincial Planning Statement (OMMAH 2024) and various municipal natural heritage protection policies. For the purposes of this report, the term "SAR" will refer to provincially Threatened and Endangered species regulated under the ESA while provincial species of Special Concern will be considered SCC and addressed in the context of SWH.

Based on the results of preliminary background information review, SAR with occurrence records within 10km of the subject lands were identified. Based on the habitat preferences/requirements for these species (e.g., OMNR 2000) and review of the existing features based on satellite imagery review, a screening for suitable habitats was completed. As noted above, this screening was originally completed for both the proposed industrial lands as well as the proposed residential subdivision lands, to inform the original 2017 TOR. This preliminary screening information further informed the surveys required as part of the EIS scope, described below.

See Section 5.2 for the results of the SAR assessment that was completed, incorporating the results of background information review and field surveys, and which account for updates to the SARO list and ESA legislation that has occurred since the time of the original 2017 TOR and SAR habitat screening.

Significant Wildlife Habitat Screening

A preliminary screening for the presence of Significant Wildlife Habitat (SWH) was also completed for the subject lands. As noted above, this screening was originally completed for both the proposed industrial lands as well as the proposed residential subdivision lands, to inform the TOR. The Significant Wildlife Habitat Technical Guide (SWHTG) outlines the types of habitats that the OMNR considers significant in Ontario as well as criteria to identify these habitats for Ecoregion 6E (OMNR 2000, MNRF 2015a). The SWHTG groups SWH into four

broad categories: seasonal concentration areas, rare vegetation communities and specialized wildlife habitat, habitats for Special Concern and Rare Species (i.e., SCC), and animal movement corridors. Habitat screening for SCC, representing a component of SWH, was completed as part of the SAR/SCC habitat screening as included in the 2017 EIS TOR.

See Section 5.4 for the results of the SWH assessment that was completed, incorporating the results of background information review and field surveys, that are specific to the industrial lands EIS study area.

2.1.3 Relevant Policies, Legislation and Regulations

Table 1 provides an overview of natural heritage-based policies, regulations and legislation that were considered and informed the EIS. To help inform suitable land-use concepts, guide the layout of development, and identify areas to be protected, inventoried natural features were evaluated against relevant policies, regulations and legislation outlined in the following sections. The specific implications of these policies to the proposed development are discussed in further in Section 5.0.

Table 1. Relevant policies, legislation and regulations.

Policy/Legislation	Description	Project Relevance

Provincial Planning Statement (OMMAH 2024).	• Issued under the authority of Section 3 of the Planning Act and came into effect on October 20, 2024, replacing the 2020 Provincial Policy Statement.
	• Section 4.1 of the PPS – Natural Heritage establishes clear direction on the adoption of an ecosystem approach and the protection of resources that have been identified as 'significant'.
	• The Natural Heritage Reference Manual (OMNR 2010) and the Significant Wildlife Habitat Technical Guide (OMNR 2000, MNRF 2015a) were prepared by the MNRF to provide guidance on identifying natural features and in interpreting the Natural Heritage sections of the PPS.
		• Natural features that occur or may occur within the study area, and which receive protection under the PPS, include:
		  ○ Fish Habitat,
		  ○ Potential Significant Wildlife Habitat, and
		  ○ Potential habitat for Endangered and Threatened species.
		• Section 4.1.5 of the PPS states that development or site alteration shall not be permitted in Significant Wildlife Habitat unless it has been demonstrated that there will be no negative impacts on the features or their ecological functions.
		• Section 4.1.6 of the PPS states that development or site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.
		• Section 4.1.8 of the PPS states that development and site alteration shall not be permitted on adjacent lands to the natural features described above unless it is demonstrated that there will be no negative impacts to the natural features or their ecological functions.
		• Section 4.1.7 of the PPS states that development or site alteration shall not be permitted in habitat of Endangered or Threatened species except in accordance with provincial or federal requirements.
		• Section 4.1.2 of the PPS states that the connectivity of natural features in an area should be maintained, restored, or where possible, improved.

Endangered Species Act	• The original ESA, written in 1971, underwent a year-long review which resulted in a number of changes which came into force in 2007. • The ESA prohibits killing, harming, harassing or capturing SAR and protects their habitats from damage and destruction.	• Based on a preliminary assessment, certain SAR were identified as having the potential to occur within the study area based on presence of suitable habitat.

Policy/Legislation	Description	Project Relevance
Protect Ontario by Unleashing our Economy Act	• Bill 5, the Protect Ontario by Unleashing our Economy Act, 2025, received Royal Assent on June 5, 2025. • Interim changes to the ESA will be in effect from Royal Assent of Bill 5 until the SCA is officially in force. Key changes include: • With the passing of Bill 5 on June 5, 2025, habitat is defined as physical dwellings (e.g., dens, nests, hibernacula) and the immediate surrounding area necessary for breeding, rearing, or hibernation. • Going forward, proponents will no longer have the option to pay a conservation charge instead of undertaking on-the-ground mitigation. The associated fund will also be dissolved, and the species conservation charge regime will be discontinued.	• If Species at Risk protected by the ESA and/or their habitat are confirmed within the study area, a mitigation plan, project registration, or permit from the MECP may be required.
Migratory Birds Convention Act	• Prohibits the disturbance, destruction, or taking of a nest or eggs of migratory birds.	• Any vegetation removal required for construction of the proposed development must have regard for this legislation in the form of timing window restrictions or other suitable mitigation measures.
Region of Waterloo Official Plan (2024)	• The Regional Official Plan (ROP) includes policies related to the natural environment through the conservation and enhancement of the Region's sensitive natural areas and native biodiversity, and the promotion of informed stewardship. • Core Environmental Features are identified within the ROP (2024) as environmental features which are considered provincially or regional significant. • As of January 1, 2025, the ROP became an OP for each of the Region's lower-tier area municipalities. It is now the responsibility of the Township of Wilmot to implement the policies of the ROP.	• There are no designated natural features as mapped in the Region of Waterloo's Greenlands Network. • The potential for habitat for Endangered or Threatened species to occur was also identified which, if confirmed, is considered Core Environmental Feature.
Official Plan of the Township of Wilmot (2024)	• The Township of Wilmot Official Plan sets out the land use policy framework for maintaining and enhancing the long-term	• The subject lands contain "Environmentally Constrained Lands" associated with Baden Creek as shown on Map 3 of the Township Official Plan.

Policy/Legislation	Description	Project Relevance
	physical, agricultural, environmental, social, economic, natural and heritage resources while promoting the sustainable growth of the Township. • Section 8.1 states that development in significant environmental areas must be compatible to ensure natural features and functions are conserved and enhanced. • Environmental Areas include: environmental preservation areas, environmentally sensitive policy areas, PSWs, fish habitat, sensitive groundwater recharge areas, headwaters, locally significant natural areas, and significant woodlands.	
Conservation Authorities Act and Ontario Regulation 41/24	• Enacted on April 1, 2024, Ontario Regulation 41/24: Prohibited Activities, Exemptions and Permits replaces previous the conservation authority-specific regulations under the *Conservation Authorities Act* to outline where various development activities are prohibited under the Act. • Through this regulation, the GRCA has the responsibility to regulate activities in hazardous areas (i.e., areas in and near rivers, streams, floodplains, wetlands, and slopes).	• The subject lands contain or are adjacent to (within 120m of) natural watercourses (Baden Creek, Baden Creek Tributary and the Huehn Award Drain) and their associated floodplains. These features are regulated by the GRCA. • As such, permitting from the GRCA must be obtained for proposed works within their regulation areas. • An EIS is required to demonstrate that the proposed development will result in no negative impact to the regulated natural features and their ecological functions.
Fisheries Act	• Under the updated federal *Fisheries Act*, fish are protected through two core prohibitions: Section 34.4(1) the death of fish by means other than fishing, and Section 35(1) the harmful alteration, disruption, or destruction (HADD) of fish habitat (Government of Canada 2019). • Any proposed work, undertaking, or activity should aim to avoid causing the death of fish, or the harmful alteration, disruption or destruction of fish habitat through the	• The subject lands include Baden Creek, which provides fish habitat and is protected under the *Fisheries Act*. • If works are to be completed in the vicinity of watercourses that contain fish habitat, a proponent-led DFO assessment may be required to ensure that the works will result in no residual negative effects to fish or fish habitat.

Policy/Legislation	Description	Project Relevance
	course or as a result of any proposed undertaking. Fish habitat is defined as "spawning grounds and any other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes". • If there is any proposed work below the high-water mark or channel itself, a proponent-led Department of Fisheries and Oceans (DFO) assessment must be completed for the proposed works to determine if the works have the potential to contravene the *Fisheries Act* and require a request for review by the Fisheries Protection Program. • If impacts to fish or fish habitat cannot be mitigated effectively, a *Fisheries Act* Authorization may be required.	
Fish and Wildlife Conservation Act	• The *Fish and Wildlife Conservation Act* (FWCA) provides protection for certain bird species not protected under the MBCA (e.g., raptors), as well as furbearing mammals and their dens or habitual dwellings, aside from the Red Fox (*Vulpes vulpes*) and Striped Skunk (*Mephitis mephitis*)	• The timing of construction activities, especially vegetation clearing and site grading must have consideration for bird nesting and den sites for furbearing mammals. • Wildlife sweeps by a qualified biologist are recommended in advance of any vegetation clearing and site grubbing during the bird active season to ensure that no active nests/dens are present.
Species at Risk Act	• The *Species at Risk Act* (SARA) is a federal piece of legislation that protects species listed as Endangered, Threatened or Special Concern on Schedule 1 of the Act. • SARA prohibits killing, harming, harassing, capturing, or taking of individuals. • Under SARA, prohibitions regarding individuals and residences for migratory birds and aquatic species at risk apply wherever they occur in Canada (including private lands).	• The study area contains suitable habitat for migratory bird species that are subject to protections under the SARA. Protections to individuals and their habitats may apply. • The study area is not known to contain habitat for federally-listed aquatic species protected under the SARA.

Policy/Legislation	Description	Project Relevance
	• For terrestrial species at risk, these prohibitions only apply on federal lands. • In the case of a migratory bird species listed under the *Migratory Birds Convention Act*, certain SARA prohibitions protecting individuals and residences (e.g., nests or dens) of endangered, threatened and extirpated species apply automatically. Additionally, Critical Habitat for these species, where identified, is protected. • In the case of aquatic species at risk, SARA prohibitions protect individuals, residence (e.g., fish spawning areas, mussel beds or burrows) and identified critical habitat.	
Township of Wilmot Zoning By-law (2024)	• The Township zoning by-law establishes and regulates land use within Wilmot Township by implementing the policies of the Official Plan.	• The subject lands are currently zoned Z1 (Agricultural) • A zoning by-law amendment is required to permit the proposed industrial land use.

3.0 Field Methods

Terrestrial and aquatic field surveys were carried out across 32 site visits within the industrial lands EIS study area (which incorporates portions of the Schmidt Estate proposed residential subdivision lands to the north) over the period May 2017-October 2025. Table 2 provides a summary of field surveys undertaken within the study area. Details of the survey methodologies are presented below.

3.1 Vegetation Community Mapping and Vascular Flora Inventory

Vegetation communities within the study area were mapped and classified following the Ecological Land Classification (ELC) system for southern Ontario (Lee et al. 1998). Any natural feature coverage located outside of the lands owned by the proponent that were inaccessible to NRSI biologists was mapped based on aerial imagery and based on what could be viewed from the property boundaries. Details of the vegetation communities were recorded including species composition, dominance, uncommon species or features, surficial soil types, and evidence of human impacts.

A two-season (late spring (May 19 and June 2) and summer (July 4) inventory of vascular flora was initially completed for the Schmidt Estate proposed residential and industrial lands in 2017. The vascular plant list was compiled by ELC polygon with an abundance code assigned (dominant, abundant, occasional, rare) in one or more strata (canopy, sub-canopy, shrub layer, groundcover). This inventory also recorded any federally, provincially, or regionally significant vegetation species. In 2018, the spatial extent of the proposed industrial parcels was expanded westwards to capture additional lands located to the southwest and west of Baden Creek. A supplementary vegetation inventory was completed on May 11, 2018 as part of additional work to characterized these lands.

An additional fall-based vegetation inventory was completed by NRSI on October 23, 2020 with a focus on the proposed residential subdivision lands. However, this inventory included vegetation communities along the southern limits of the residential lands, bordering Baden Creek, that also fall within the proposed industrial parcel lands (e.g., cultural meadow and the southern isolated woodland along Baden Creek). Furthermore, additional spring- and summer-based NRSI vegetation inventories that were completed for the Baden Trunk Sanitary Sewer Environmental Assessment (EA) (NRSI 2022) within the Schmidt Estate residential and industrial lands on May 17 and July 20, 2021 have been accounted for in this report.

Table 2. Field survey summary.

Survey Type	Survey Protocol	Dates	Time	Weather Conditions				
				Air Temp. (°C)	Precip.	Cloud Cover (%)	Wind (Beaufort Scale)	Staff
Vegetation community mapping and inventory	Lee et al. 1998 Comprehensive area search by ELC polygon	May 19, 2017	13:00	14	None	80	2-3	J. McCarter
		June 2, 2017	6:15-9:00	16	None	0	1	E. Gosnell
		July 4, 2017	7:17	16	None	0	1	C. Perkin
		May 11, 2018	11:30	10	None	95	2	K. Ellis, G. MacVeigh
		October 1, 2020	-	-	-	-	-	A. Dean
		October 23, 2020	-	21	None	40	4	A. Dean
		May 17, 2021	-	7	None	0	1	A. Dean
		July 20, 2021	-	19	None	100	2	A. Dean
		August 6, 2025	8:30	25	None	75	1	M. Douglas
		September 23, 2025	9:00-10:40	19	None	100	1	M. Douglas
Woodland boundary delineation and agency confirmation	N/A	October 28, 2025	-	-	-	-	-	M. Douglas
Bat habitat assessments	MNRF 2017	May 19, 2017	13:00	14	None	80	2-3	J. McCarter
	MECP 2022a, b	March 5, 2024	13:20-17:00	15	None	90	0	S. DeWeerd
		October 22, 2024	-	-	-	-	-	R. Archer
Breeding bird surveys	BSC 2001	June 2, 2017	6:15-9:00	16	None	0	1	E. Gosnell
		July 4, 2017	7:15	16	None	0	1	R. Archer
	Birds Canada et al. 2021	June 9, 2021	6:35	20	None	0	2	R. Archer
		June 24, 2021	6:15	15	None	85	1	E. Voogjarv
		June 25, 2025	6:55	21	None	100	1	R. Archer
		July 7, 2025	6:43	22	None	95	3	E. Woodman, N. Joakim
Aquatic habitat assessments	Stanfield 2017	July 20, 2017	09:40-14:10	20	Light Rain	100	2	S. Burgin, C. Perkin
		May 14, 2018	15:45-16:35	24	None	90	1	G. MacVeigh
		October 22, 2024	09:30-11:30	25	None	0	2	S. Burgin
		July 15, 2025	19:30-13:00	24	None	25	1-2	S. Burgin, N. Joakim

Survey Type	Survey Protocol	Dates	Time	Weather Conditions				
				Air Temp. (°C)	Precip.	Cloud Cover (%)	Wind (Beaufort Scale)	Staff
		September 2, 2025	9:00-14:10	21	None	25	1-2	S. Burgin
Fish community survey	Stanfield 2017	July 20, 2017	09:40-14:10	20.0	None - Light Rain	100	2	S. Burgin, C. Perkin
Badger habitat assessment	Diemer pers. comm. 2016	July 4, 2017	7:15	16	None	0	1	R. Archer
		July 24, 2017	-	-	-	-	-	R. Archer
		October 22, 2024	-	-	-	-	-	R. Archer

An updated two-season (summer and fall) vegetation inventory was completed for the proposed industrial lands on August 6 and September 23, 2025, respectively. These surveys were completed in conjunction with an updated inventory of the proposed subdivision lands to the north. Species were inventoried by ELC community separately between the proposed industrial and residential subdivision lands.

3.2 Woodland Boundary Delineation and Confirmation

An NRSI biologist flagged the dripline boundary of the single woodland that falls within the study area, located along Baden Creek. The flagged woodland dripline boundary was reviewed and confirmed in the field during a site meeting completed with Township staff on October 28, 2025. The NRSI biologist GPS-georeferenced the confirmed woodland dripline boundary to sub-metre accuracy for mapping purposes.

3.3 Bat Habitat Assessments

A general assessment of treed bat habitat was completed within the Schmidt Estate proposed residential and industrial lands during the May 19, 2017 site investigation. The survey was completed in accordance with existing provincial guidelines (MNRF 2017) and included examination of trees for the presence of cavities or loose/peeling bark that may provide suitable bat roosting habitat. The results of this assessment were used to identify the presence of potential SAR bat habitat within the study area.

Due to the length of time since the original field surveys were completed, an updated bat cavity tree assessment was completed on March 5, 2024, which focused on the proposed residential subdivision lands but included the Baden Creek riparian channel and woodland bordering the proposed industrial lands. This updated assessment was completed in accordance with updated survey guidelines for treed habitats (MECP 2022a, b) and was completed during the leaf-off period. A supplementary bat habitat assessment was completed for the entirety of the proposed industrial lands during an October 22, 2024 site investigation. Although the updated cavity tree assessment was completed before the trees were in a fully leaf-off condition, due to the relatively few trees and isolated tree growth within the subject lands, a reasonably good view of the trees could be obtained.

3.4 Breeding Bird Surveys

Two rounds of breeding bird surveys were originally completed on June 2 and July 4, 2017 and followed the survey protocol for the 2nd Ontario Breeding Bird Atlas (OBBA) (BSC 2001), which was the current protocol at the time. Surveys were completed between a half-hour before sunrise and 10:00am and were timed to occur at least 10 days apart. Bird species presence and behaviour was recorded according to OBBA breeding evidence codes for possible, probable, or confirmed breeding. Species were recorded according to ELC community or land cover type through comprehensive area search of the subject lands.

Subsequent breeding bird survey work was completed on June 9 and 24, 2021 within the EIS study area as part of the Baden Trunk Sanitary Sewer EA natural heritage assessment (NRSI 2022), and those results have been accounted for in this report. An updated set of two breeding bird surveys was completed for the proposed industrial lands on June 25 and July 7, 2025. These surveys were completed in conjunction with updated breeding bird surveys completed within the proposed subdivision lands to the north. Surveys were completed in accordance with the 3rd OBBA protocol (Birds Canada et al. 2021), which is generally consistent with that of the 2nd OBBA protocol, and was also completed via a comprehensive area search of the subject lands.

3.5 Aquatic Habitat Assessments

Aquatic habitat assessments were completed within the study area on multiple occasions between 2017 and 2025, as summarized in Table 2. These assessments utilized a modified assessment methodology adapted from the Ontario Stream Assessment Protocol (Stanfield 2017) to collect detailed information on watercourses within the study area. Several more generalized assessments were also conducted during this time to collect supplemental information and to note specific changes in previously observed conditions.

As part of the aquatic habitat assessment biologists collected information on channel morphology, substrate composition, instream habitat and cover, flow conditions, and made note of significant and sensitive features and/or conditions (e.g. Watercress (*Nasturtium officinale*), potential spawning areas etc.). In situ water quality was also collected, which included water temperature, pH, conductivity, and dissolved oxygen.

3.6 Fish Community Survey

Fish community sampling was completed on July 20, 2017 as part of the initial assessment of Baden Creek at three locations. The fish community assessments were undertaken by a two-person crew using a Smith-Root LR-20B Electrofishing Backpack. Within Baden Creek, electrofishing followed a single-pass screening level assessment based on the Ontario Stream Assessment Protocol (OSAP, Stanfield 2017) and surveyed a variety of habitat types and areas of cover within Baden Creek. This method is designed to provide a qualitative assessment of fish species abundance and generally characterize the fish community in the sampling reach.

3.7 Badger Habitat Assessment

A comprehensive area search for the presence of potential American Badger (*Taxidea taxus jacksonii*) burrows was completed on July 4 and 24, 2017 with a focus on agricultural field edges. The survey was completed to assess the presence of this species within the subject lands due to its potential to occur broadly within Waterloo Region. Surveys were completed by searching for mammal burrows that exhibited signs that are diagnostic of badger use (e.g., D-shaped openings, lateral claw marks).

Due to the length of time since the original surveys were completed, an updated search for potential badger burrows was completed along the field edges within the proposed industrial lands during the October 22, 2024 site investigation.

3.8 Wildlife Habitat Assessment and Incidental Wildlife Observations

All incidental observations of wildlife (e.g., amphibians, reptiles, mammals, butterflies, odonates (dragonflies and damselflies)) were documented during all field visits. This included both direct and indirect (e.g., tracks, scat, dens, nests, etc.) observations of wildlife presence. Features and species that may be indicative of SWH were documented during the course of all site investigations.

4.0 Existing Conditions

4.1 Soil, Terrain and Drainage

The subject lands are located within a physiographic region of southern Ontario known as the Waterloo Hills (Ontario Ministry of Northern Development and Mines 2017). This region occupies approximately 777km^2, centred primarily in Waterloo Region. It is dominated by sandy hills, with sandy till ridges, kames or kame moraines, and sandy outwash in the intervening hollows (Chapman and Putnam 1984). The well-drained soils of the Waterloo Hills may be characterized as mature Grey Brown Luvisolic soils (Chapman and Putnam 1984). The Waterloo Interlobate Moraine overlays the majority of Wilmot Township and contains extensive ice-contact and glaciofluvial stratified deposits either at the surface or buried beneath till units (Ontario Geological Survey and Planning and Engineering Initiatives Limited 1998). The subject lands soils east of Baden Creek are characterized by the imperfectly-drained loam and loamy sand of the Grand-Kirkland soil series (Chapman and Putnam 1984). This soil series formed on recent alluvial deposits. The soils west of Baden Creek are characterized by the imperfectly draining silty-clay loam Huron St. Clements soil series (Chapman and Putnam 1984). This soil series is formed on till or lacustrine deposits.

The terrain within the subject lands is relatively flat to gently rolling. The western industrial block within the subject lands slopes downward from southwest to northeast toward Baden Creek, with elevations ranging from 357.5m to 343.3m. The eastern industrial block slopes downward from west to east, toward the north-south leg of Baden Creek, with elevations ranging from 344.8m to 339.2m (WalterFedy 2025).

The subject lands are located within the Grand River watershed. Baden Creek, which drains from a dammed mill pond north of the subject lands, flows southwards and eastwards along the north side of the subject lands before turning south to cross Gingerich Road. Baden Creek flows into the Nith River, which is a tributary of the Grand River. The Huehn Award Drain empties into Baden Creek along the east side of the subject lands, just west of Foundry Street. Generally, both the eastern and western industrial blocks drain from west to east towards Baden Creek (WalterFedy 2025). Small, ephemeral drainage features drain small surface catchments within agricultural lands to the west of Baden Creek, and flow into Baden Creek within the west end of the subject lands. The Baden Creek Tributary, which represents an intermittent watercourse, drains lands to the north and empties into Baden Creek to the north of the subject lands (Map 2).

Groundwater monitoring at the site was initiated in October 2024, with subsequent groundwater level measurements taken during December 2024 and January 2025. The groundwater monitoring is going to October 2025 (Pinchin 2025a, b). Based on the results of this monitoring, groundwater levels at the site ranged from 0.7m - 4.2m below ground surface within the eastern block, and from 0.6m - 4.0m below ground surface within the western block. In general, groundwater flows in a northerly and easterly direction toward Baden Creek within the subject lands (Pinchin 2025a, b). In addition, as discussed below, NRSI biologists observed evidence of groundwater seepage or upwelling within the Baden Creek reach adjacent to the subject lands, suggesting a seasonally higher water table in the riparian channel (see below for further discussion).

4.2 Vegetation

4.2.1 Vegetation Communities

Until recently (2025), the subject lands have almost entirely consisted of actively farmed agricultural lands (planted with soybeans in 2024). However, in part due to installation of a municipal trunk sanitary sewer through the subject lands and at the Gingerich Street crossing, large portions of the subject lands were disturbed and re-graded as shown on Map 2. Agricultural use of the lands was ceased in 2025, and the remaining former agricultural lands existed as fallow field or very early successional cultural meadow (CUM1) in 2025. These lands were also largely disturbed due to site access and activity associated with the infrastructure installation works.

Natural feature coverage is mainly limited to the Baden Creek corridor that follows the north and east edges of the lands, including fringing cultural meadow and a small lowland deciduous woodland. Small areas of natural growth (too small to be mapped using ELC (Lee et al. 1998) follow the ephemeral drainage features and represent areas of disturbed, fallow agricultural field. A narrow line of cultural meadow with sparse/isolated tree and shrub growth follows the south boundary line against the Gingerich Road right-of-way, as well as along the west property boundary. A summary of ELC vegetation communities identified within and adjacent to the subject lands is provided in Table 3 and shown on Map 2. See Appendix V for ELC field data forms associated with the proposed industrial subject lands as well as adjacent proposed residential subdivision lands that fall within the EIS study area. See Appendix VI for a photolog of existing natural features and lands within the subject lands as observed during 2025 site investigations.

A detailed dripline boundary for the small Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3) was reviewed and confirmed during a site meeting held with staff of the Township on October 28, 2025. See Map 2 for the surveyed woodland dripline boundary.

Table 3. Vegetation communities within the subject lands.

ELC Ecosite Type	ELC Description	Environmental Characteristics
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest	This lowland riparian vegetation community occurs along Baden Creek within the subject lands. The canopy and sub-canopy are dominated by Crack Willow (*Salix fragilis*) and Manitoba Maple (*Acer negundo*), with some White Elderberry (*Sambucus gaudichaudiana*) and Black Walnut (*Juglans nigra*) in the sub-canopy. The understorey layer is characterized by Manitoba Maple, Crack Willow, and Common Buckthorn (*Rhamnus cathartica*) with some Gray Dogwood (*Cornus racemosa*) and Slender Willow (*Salix petiolaris*). Groundcover vegetation is comprised of Kentucky Bluegrass (*Poa pratensis* ssp. *pratensis*), Orchard grass (*Dactylis glomerata*), Reed Canary Grass (*Phalaris arundinacea*), Canada Goldenrod (*Solidago canadensis*), teasel (*Dipsacus* sp.), Stinging Nettle (*Urtica dioica*), Garlic Mustard (*Alliaria petiolata*), and Common Burdock (*Arctium minus* ssp. *minus*).
CUM1	Mineral Cultural Meadow	This vegetation community type follows both sides of the Baden Creek channel along the northern and eastern limits of the subject lands. Topography within the feature is characterized by rolling upland habitat, which slopes gently towards Baden Creek. This vegetation community has been disturbed resulting from the historic and current use of the subject lands for agriculture. The understory is characterized by Large-toothed Aspen, Red-osier Dogwood (*Cornus stolonifera*), Bebb's Willow (*Salix bebbiana*), and Horse Chestnut (*Aesculus hippocastanum*). Groundcover vegetation within this community is comprised of various grass species including Smooth Brome (*Bromus inermis ssp. inermis*), Quack Grass (*Elymus repens*), Reed Canary Grass, Kentucky Bluegrass, and Orchard grass. Other dominant groundcover species include Canada Goldenrod, Rough Cinquefoil (*Potentilla norvegica ssp. monspeliensis*), White Clover (*Trifolium repens*), Common Plantain (*Plantago major*), and the invasive Garlic Mustard (*Alliaria petiolata*). Very early successional meadow has started establishing within fallow areas of what was active row crop agriculture most recently in 2024. This area largely comprises a ground layer of abundant White Goosefoot (*Chenopodium album*), Canada Horseweed (*Erigeron canadensis*), Eastern Black Nightshade (*Solanum emulans*), and Field Penny-cress (*Thlaspi arvense*).

4.2.2 Vascular Flora

The two-season (summer and fall) vegetation inventory completed in 2025 represented a comprehensive updated inventory for the subject lands, whereby inventory data was collected specific to the proposed industrial lands. This contrasts with previous vegetation inventory work in which field data were more fully integrated across the broader Schmidt Estate land holdings (i.e., including the residential subdivision lands) and therefore with field data less readily isolated to the proposed industrial lands. For this reason, the vegetation inventory data presented herein relies on the 2025 updated inventory data whereas the previous vegetation inventory results are considered supplementary background information.

In total, 68 vascular plant species were inventoried within the subject lands in 2025. See Appendix VII for a complete list of inventoried species. None of the inventoried species represent SAR or SCC. One regionally significant species, Black Walnut (*Juglans nigra*), was inventoried within the subject lands. However, Black Walnut, in the context of the subject lands, is not considered significant as the individuals are not demonstrably indigenous and suspected to be of anthropogenic origin (Richardson and Martin 1999). No other significant vegetation species were inventoried within the subject lands as part of previous NRSI vegetation survey work. The majority of the observed species are common species that are habitat generalists and are adapted to ecologically disturbed conditions associated with the former agricultural use of the lands and current conditions.

The coefficient of conservatism (CC) is a value ranging from 0 (low) to 10 (high), which is based on a species' tolerance of disturbance and fidelity to a specific habitat integrity (Oldham et al. 1995). Higher values are assigned to species that have specific environmental growing requirements and are less tolerant of disturbance. In general, average CC values for the subject lands are very low (1.69 for the FOD7-3 forest; 0.28 for the CUM1 cultural meadow). The highest inventoried CC-value species was Alternate-leaved Dogwood (*Cornus alternifolia*; CC of 6), which was inventoried within the FOD7-3 community. Of the 67 inventoried species, 59 (88%) had low CC values of 0-3. Overall, 49% of the inventoried species are non-native in Ontario. The results are indicative of a small, isolated forest stand that is highly subject to ecological edge effects and historical disturbance from adjacent agricultural land use, and a cultural meadow community that is of low floristic quality and dominated by non-native/invasive species.

4.3 Wildlife

4.3.1 Birds

The breeding bird surveys completed in 2025 represented a complete update to previous NRSI bird survey data completed within the subject lands, whereby the 2025 survey data was collected specific to the proposed industrial lands. This contrasts with previous NRSI breeding bird surveys in which field data were more fully integrated across the broader Schmidt Estate land holdings (i.e., including the proposed residential subdivision lands) and therefore with field data less readily isolated to the proposed industrial lands. For this reason, the breeding bird survey data presented herein relies on the 2025 updated survey data whereas the previous survey results are considered supplementary background information.

In total, 74 bird species were reported from within 10km of the subject lands based on the OBBA (BSC et al. 2008). Twenty-two (22) of these species were documented within the subject lands during 2025 field surveys. All but three of these species displayed evidence of possible, probable or confirmed breeding based on OBBA breeding evidence codes (Birds Canada et al. 2021). The observed species are representative of agricultural landscapes, including small agricultural woodlots, as well as areas subject to human use/disturbance or near areas of human habitation (e.g., House Sparrow (*Passer domesticus*), Indigo Bunting (*Passerina cyanea*), Horned Lark (*Eremophila alpestris*), European Starling (*Sturnus vulgaris*)). All of the observed species are common on the landscape and have secure or apparently secure populations in Ontario (MNRF 2021). See Appendix VIII for a complete list of bird species recorded within the subject lands.

Significant Species

No significant bird species were observed during the 2025 breeding bird surveys. However, one bird SAR, Bank Swallow, was previously (2017) observed adjacent to the subject lands. Bank Swallow is listed as Threatened both federally and provincially (Government of Canada 2025, MECP 2025). Bank Swallow nesting sites are a limiting factor for species presence. They often nest in sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water (MNRF 2015b). A single Bank Swallow was observed perched on a fence on the property on July 4, 2017 (one individual during one breeding bird survey). Suitable Bank Swallow nesting habitat does not exist within or adjacent to the subject lands; therefore, it is anticipated that the observed individual originated from a nesting colony within the surrounding

area. The agricultural lands, creek and cultural meadow habitats on the subject lands provide foraging habitat for this species. However, since foraging habitat is not protected under the 2025-amended ESA, Bank Swallow habitat that is subject to protections under the ESA is considered absent within the study area.

One bird SCC, Barn Swallow, was previously (2017) recorded within the subject lands. Barn Swallow is listed as Threatened federally, and as a species of Special Concern provincially (Government of Canada 2025, MECP 2025). Barn Swallow often nests on man-made structures and is adaptable to human presence (MNRF undated). Multiple Barn Swallows were observed during field surveys (up to five individuals during a single survey) foraging over the subject lands on July 4, 2017. There are no man-made structures on the subject lands that would provide suitable nesting habitat. The observed Barn Swallows originated from nest sites located on adjacent or nearby properties, likely within 500m of the subject lands. The mill pond located to the north of the subject lands also provides good quality foraging habitat due to the abundance of insect prey it provides.

4.3.2 Herpetofauna

The inventoried herpetofauna species presented in this EIS represent species that were documented within the portions of the Schmidt Estate lands that included the industrial parcels or areas adjacent to (within 120m) of the industrial parcels. Although a 2017 visual reptile survey that focused on the proposed residential subdivision lands included the Baden Creek riparian corridor, which bounds the north and east sides of the proposed industrial lands, no other targeted herpetofauna surveys have been completed within the subject lands.

According to the Ontario Amphibian and Reptile Atlas (Ontario Nature 2019), 15 species of herpetofauna were reported within 10km of the subject lands. Two herpetofauna species were incidentally observed during 2017 field surveys: an Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) observed adjacent to the subject lands to the north of Baden Creek, and a single Green Frog (*Lithobates clamitans melanota*) that was observed dead on Foundry Street at the Huehn Award Drain crossing location. No additional herpetofauna were incidentally observed within the subject lands during site investigations completed in subsequent years of NRSI field surveys, including during 2021 site investigations completed for the Baden trunk sanitary sewer EA (NRSI 2022). A complete list of herpetofauna reported from the study area, based on background information, and observations made as part of this study (all years), is included in Appendix IX. No federally, provincially or regionally significant reptile or amphibian species

were observed on the subject lands (Region of Waterloo 1985a, Government of Canada 2025, MECP 2025).

4.3.3 Mammals

The inventoried mammal species presented in this EIS represent species that were documented across the Schmidt Estate lands during the period 2017-2021, including the proposed residential subdivision lands to the north of the proposed industrial parcels, since observations within these lands were not distinguished for the proposed industrial lands prior to 2024. The mammal habitat conditions are generally consistent across the proposed industrial and residential lands (primarily open agricultural and cultural meadow habitats with small lowland deciduous woodlands). However, species documented from surveyed vegetation areas that are not present the study area for the proposed industrial lands (i.e., the mill pond at the north end of the proponent's lands) have not been included in this EIS. No mammal species were incidentally observed within the proposed industrial lands during 2024 or 2025 site investigations.

According to the Mammal Atlas of Ontario (Dobbyn 1994), 46 mammal species were reported within 10km of the subject lands. Of these, nine species were observed within the study area during surveys completed between 2017 and 2021. The majority of these species are relatively common and ubiquitous on the surrounding landscape, and have secure populations in Ontario. A complete list of mammals reported from the vicinity of the subject lands, based on background information and observations made as part of this study is included in Appendix X.

Significant Species

The Virginia Opposum (*Didelphis virginiana*) has been listed as regionally rare and the Coyote (*Canis latrans*) as considered regionally scarce (Region of Waterloo 1985b). These species, or evidence of their presence, were observed within the Schmidt Estate lands. However, these species may no longer be considered significant on the basis of their being regionally "scarce" or "rare", relative to the age of the regional mammal significance rankings (1985).

No federally or provincially significant mammal species were observed (Government of Canada 2025, MECP 2025).

As part of the field work completed in 2017, NRSI conducted surveys of mammal burrows along the edges of the agricultural fields due to the known presence of American Badger in Waterloo

Region (Appendix III). Based on this survey, six potential badger burrows were identified. A memo including photos and descriptions of the burrows was sent for review to the MNRF on August 21, 2017 (Appendix II). The OMNR confirmed on September 15, 2017 that none of the burrows observed represent past or present American Badger burrows, and that there are no historic or recent records of the species in Baden, Ontario (G. Buck, OMNR, pers. comm., September 2017). An updated assessment for the presence of mammal burrows was completed within the proposed industrial lands during the October 22, 2024 site investigation. No potential badger burrows were observed during that survey.

Six bat SAR species, Little Brown Myotis, Northern Myotis, Tri-colored Bat, Eastern Red Bat, Hoary Bat, and Silver-haired Bat have the potential to occur within the subject lands. An updated bat cavity tree assessment was completed on March 5, 2024 with a focus on the proposed residential subdivision lands, but included tree growth along the Baden Creek corridor that forms the north boundary of the proposed industrial lands. Based on that assessment, a total of nine potential bat habitat trees were identified within or adjacent to (within 120m of) the proposed industrial lands. The majority of these trees were found within the FOD7-3 woodland (Map 3).

As part of the October 22, 2024 investigation of the proposed industrial lands, a bat cavity tree assessment was completed for trees along the east, south, west and northwest sides of the lands that may be subject to tree removals for development. None of these trees showed evidence of potential bat roosting habitat features (e.g., suitable cavities or loose, sloughing bark). The majority of the tree growth along these property edges is relatively young and not as likely to provide suitable bat roosting conditions.

4.3.4 Insects

Butterflies

According to the Ontario Butterfly Atlas (Macnaughton et al. 2024), 45 butterfly species are known to occur within 10km of the subject lands. Three butterfly species, Cabbage White (*Pieris rapae*), European Skipper (*Thymelicus lineola*), and Monarch (*Danaus plexippus*), were observed during site investigations across the 2017-2025 period. Cabbage White and European Skipper are considered common in Ontario. Monarch is considered a species of Special Concern in Ontario but is listed as nationally Endangered by COSEWIC (MECP 2025, Government of Canada 2025). Monarch is therefore considered a SCC in Ontario. A complete

list of butterfly species observed and known to occur in the subject lands vicinity is provided in Appendix XI.

Significant Species

Two Monarch individuals were observed flying through the subject lands during the October 22, 2024 site investigation. None were observed on their host plant, Common Milkweed (*Asclepias syriaca*). Relatively few Common Milkweed plants were observed within or adjacent to the subject lands. These lands are therefore not considered to represent important or sensitive habitat for Monarch.

No regionally significant butterfly species were observed within or adjacent to the subject lands (Linton 2012).

Odonates

According to the Ontario Odonate Atlas Database (OOAD 2023), 19 dragonfly and damselfly species are known to occur within 10km of the subject lands. During aquatic habitat assessments completed in 2025, several damselfly and dragonfly species were observed along Baden Creek, mainly associated with areas of accumulated fine substrates and aquatic vegetation. In particular, damselflies were observed in high abundance. A complete list of odonate species reported from the subject lands vicinity is provided in Appendix XII.

4.4 Aquatic Habitat

Baden Creek, which drains from a dammed mill pond north of the subject lands, flows west and then south before turning to an easterly direction to bound the northern limits of the proposed industrial blocks. The watercourse then turns south, parallel to Foundry Street where it flows along the eastern limit of the subject lands before continuing south of Gingerich Road. Baden Creek flows into the Nith River approximately 4.5km south of the study area. The Nith River flows to the Grand River in the town of Paris, which eventually connects to Lake Erie. Baden Creek was initially assessed on July 20, 2017 from the mill pond to the culvert crossing at Gingerich Road. Two ephemeral tributaries to Baden Creek were also assessed (Map 2) on May 14, 2018. Additional assessments were completed on October 22, 2024 and July 15, 2025 to update and/or confirm conditions noted during previous assessments.

4.4.1 Ephemeral Features

Two ephemeral features (Ephemeral 1 and Ephemeral 2; Map 2) were assessed within and adjacent to the subject lands. Both features originate along the western edge of, or just outside of, the subject lands within active agricultural fields and travel northeast, ultimately connecting to Baden Creek outside of the subject lands boundary. Both features were dry during the October, 2024 assessment, but appear to contain water at times throughout the year as evidenced by the presence of exposed gravel/pebble/cobble and incised channels. Given the surrounding landscape, water is expected to only flow within these features during spring freshet and in response to precipitation events. Neither feature provides direct fish habitat since there is no direct connection to Baden Creek. The lower portions of the features appear to only travel as sheet flow across cultural meadow habitat (CUM1-1) before connecting to the creek.

Ephemeral 1 did not exhibit an overly defined channel and during the assessment soy beans were observed growing through the feature. Ephemeral 2 exhibits a more heavily incised channel and appears to convey a higher volume of water than Ephemeral 1. The overall width and depth of the channel throughout its upstream section was measured at 1.0 – 2.0m and 0.5 – 1.0m, respectively. This transitions to a more shallow and wider channel further east where flow becomes less confined and moves as sheet flow across the agricultural field and cultural meadow towards Baden Creek.

4.4.2 Baden Creek and Inflowing Tributaries

Several aquatic features occur within the study area, but fall outside the boundaries of the subject lands. The primary aquatic feature is Baden Creek, which occurs as a permanent watercourse and traverses the northern and eastern boundaries of the subject lands, generally flowing southeast. The Baden Creek Tributary originates northwest of the study area and flows into Baden Creek near the northwest corner of the study area while the Huehn Award Drain originates northeast of the study area and flows generally southwest, crossing Foundry Street before flowing into Baden Creek near the north corner of the study area. The Baden Creek floodplain and extent of natural vegetation extends greater than 10m on both sides of the channel throughout its upstream reach within the subject lands. The adjacent natural cover from this upstream reach is comprised of a naturalized cultural meadow and included Spotted Jewelweed (*Impatiens capensis*), Reed Canary Grass (*Phalaris arundinacea*), and other various terrestrial grasses and herbaceous plants. Overhanging bank vegetation (variety of grass species) was found throughout the middle and lower reaches of Baden Creek through the study area. Aquatic vegetation was observed throughout Baden Creek including Slender Pondweed

(*Potamogeton pusillus*), Arrowhead (*Sagittaria latifolia*) and Watercress (*Nasturtium officinale*), which were observed in moderate to high abundance. Baden Creek appears channelized (straightened) throughout its lower reaches and also exhibits evidence of bank erosion and channel incising. Channel stability is poor to fair and bank height varies from approximately 0.2 – 2.5m.

Baden Creek flows over a low-medium gradient and gently meanders within the confines of the corridor and its channel. The channel banks are relatively high (>1.5m in many locations) and while evidence of erosion was noted in 2017, it appears that this has continued and may have accelerated in some locations. The quality and amount of shade provided through Baden Creek decreases from upstream to downstream within the study area, although recent plantings of trees and shrubs were observed between the creek and Foundry Street, which will improve the amount and overall quality of shade as they mature. However, bank and riparian vegetation generally consist of grasses and forbs, which overhang the channel in some areas, but do not provide high quality shade. Riffles, shallow run habitats, deep run habitats, and pools all occur within Baden Creek. The wetted width of the channel also varies depending on location and type of feature present (pool, riffle, run), generally ranging from approximately 1.0m to 5.0m. The substrates throughout vary from gravel and cobble to silt and sand, to exposed hard-pan clay. An old tractor crossing (two failing corrugated steel pipes (CSP) and broken concrete derived from a small bridge structure) occurs along the northwest border of the east industrial block, which negatively affects flow and sediment transport, and is likely to inhibit upstream fish movement. The reach upstream from this failed crossing is characterized primarily by fine substrates, including sand and silt. This supports the growth of aquatic vegetation, which was observed in high abundance. In-stream habitat and cover are provided through pools, riffles, aquatic vegetation (submergent, emergent, and floating), backwater areas, undercut banks, woody debris, rock, and cobble. Baden Creek, the Baden Creek Tributary and the Huehn Award Drain have all previously been observed with Watercress growing within their channels, in addition to noted areas of iron staining, suggesting the likely input of groundwater to each of the watercourses. In addition, cold water temperatures previously measured within the Huehn Award Drain indicate that the feature exhibits a coldwater thermal regime. These observations were confirmed in 2025, with areas of dense watercress growth observed throughout Baden Creek adjacent to the subject lands. Watercress abundance was particularly high in areas associated with soft substrates, including the reach upstream from the failing CSP crossing

where fine sediments have accumulated. This area was also noted to support a variety of other submergent, emergent, and floating aquatic plants in relatively high abundances.

Baden Creek provides direct fish habitat for a variety of adult and young-of-year fish, although upstream fish movement is inhibited in a few locations. Specifically, fish habitat is inhibited by the old tractor crossing in addition to an active beaver dam (approximately 0.5m high), which was observed near the outlets from the Ephemeral 1 and 2 channels. This is in addition to other beaver dams that were observed further upstream, with one located south of the Baden Creek Tributary (approximately 0.75m high) and the second (and largest) occurring upstream from the tributary (approximately 1.4m high). The Baden Creek Tributary, which is an intermittent feature, also provides direct habitat for fish primarily throughout its lower section when water is present. In 2025, the beaver dam downstream from the tributary was causing backflooding on its upstream side, which was noted to inundate the lower portion of the tributary. The lower section of the Huehn Award Drain was also confirmed to provide direct fish habitat up to its crossing of Foundry Street where it flows through a perched CSP culvert.

Notable changes observed in 2025 when compared to the initial 2017 assessment include the three active beaver dams upstream from the subject lands; the additional accumulation of fine sediments in many areas, which in some cases appear to be covering previously rocky substrates; additional erosion and bank slumping; and the presence of more abundant filamentous algae throughout Baden Creek. One other notable change includes the installation of a double concrete box culvert at the crossing of Gingerich Road, which replaced a single concrete box culvert. This activity has resulted in a wider and more shallow channel immediately upstream from the crossing, ultimately changing the area from riffle/run habitat to shallow riffle habitat.

4.5 Fish Community Characteristics

Fish community sampling was completed as part of the assessment of Baden Creek at three locations in 2017. The fish community assessments were undertaken by a two-person crew using a Smith-Root LR-20B Electrofishing Backpack. Within Baden Creek, electrofishing followed a single pass screening level assessment based on the Ontario Stream Assessment Protocol (OSAP, Stanfield 2017). This method is designed to provide a qualitative assessment of fish species abundance and generally characterize the fish community in the sampling reach.

The observed electrofishing conditions, settings and total sampling time are summarized in Table 5 for each sampling site. All captured fish were identified, enumerated and released.

Table 4. Electrofishing Conditions, Settings, and Shocking Time

	EMS-001	EMS-002	EMS-003
Date	July 20, 2017	July 20, 2017	July 20, 2017
Sampling start time	0900hrs	1100hrs	1300hrs
Sampling end time	0940hrs	1130hrs	1330hrs
Air temperature (°C)	20.0	23.0	25.0
Water temperature (°C)	19.5	19.7	20.0
Time water temp. taken	0940hrs	1130hrs	1330hrs
Number of Netters	1	1	1
Voltage (V)	150	150	150
Pulsating Frequency (Hz)	60	60	60
Ampere (Amps)	2.0-3.0	2.0-3.0	3.0
Shocking time (sec.)	262	278	304

Twelve species of fish were captured within the three reaches assessed on July 20, 2018. The following table provides a list of the species and where they were captured from. The MNRF and the GRCA online mapping also provided additional fish community information.

Table 5. Fish Species Identified within Baden Creek

Common Name	Scientific Name	Thermal Preference[1]	Tolerance[1]	EMS-001	EMS-002	EMS-003	ARA[2]
Blacknose Dace	*Rhinichthys obtusus*	Coolwater	Intermediate	X	X	X	X
Bluntnose Minnow	*Pimephales notatus*	Warmwater	Intermediate	X			
Brook Stickleback	*Culaea inconstans*	Coolwater	Intermediate	X			X
Central Stoneroller	*Campostoma anomalum*	Coolwater	Intermediate	X			
Common Shiner	*Luxilus cornutus*	Coolwater	Intermediate	X		X	X
Creek Chub	*Semotilus atromaculatus*	Coolwater	Intermediate	X	X	X	X
Emerald Shiner	*Notropis atherinoides*	Coolwater	Intermediate				X
Fathead Minnow	*Pimephales promelas*	Warmwater	Tolerant	X	X		X
Johnny Darter	*Etheostoma nigrum*	Coolwater	Tolerant	X	X	X	X
Largemouth Bass	*Micropterus salmoides*	Warmwater	Tolerant	X			
Longnose Dace	*Rhinichthys cataractae*	Coolwater	Intermediate			X	X
Northern Hog Sucker	*Hypentelium nigricans*	Warmwater	Intermediate	X		X	X

Rainbow Darter	*Etheostoma caeruleum*	Coolwater	Intolerant				X
White Sucker	*Catostomus commersonii*	Coolwater	Tolerant	X	X	X	

[1] Eakins R.J. 2025
[2] Ontario GeoHub 2025

The species known from Baden Creek are either cool or warmwater fish made up of a combination of highly tolerant and moderately tolerant species. These species are considered relatively common and widespread within Ontario. None of the fish species known from Baden Creek are SAR. The background review did not reveal the presence of any SAR fish or mussels species (DFO 2025).

5.0 Natural Environment Development Constraints

Analysis of the significance of existing natural features was used to identify those features and habitats that are sensitive to disturbance based on the rarity or sensitivity of the feature or the functions/processes that contribute toward their significance. These areas are identified as "constraints" to the proposed development, and are discussed in the context of natural heritage policies governing their protection. Conversely, opportunities for development may occur outside of these natural environment constraints within the lands. Development or site alteration within certain natural feature constraints may be permitted by the regulatory agencies subject to permitting and/or implementation of recommended measures to appropriately mitigate anticipated impacts as discussed below.

5.1 Watercourses and Fish Habitat

Baden Creek and the lower portion of the Huehn Award Drain, up to the perched culvert at Foundry Street, provide direct year-round habitat for a variety of cool and warmwater fish species. Baden Creek is considered a warmwater feature, but water temperatures are maintained at the lower range due to groundwater influence, evidenced by the presence of Watercress and iron staining throughout the channel. The Huehn Award Drain is a coldwater feature, providing coldwater inputs, which also helps to maintain cooler water temperatures within Baden Creek downstream from the confluence.

Baden Creek and the Huehn Award Drain are considered Supporting Environmental Features as described by the policies of the Township OP. These watercourses also represent fish habitat and fall under the protections afforded by the Regional and Township OPs and the federal *Fisheries Act*. Finally, as GRCA-regulated features, these watercourses and their adjacent floodplain and slope hazards and associated allowances are subject to Ontario Regulation 41/24 under the *Conservation Authorities Act*.

Erosion and sedimentation was noted within the aquatic features on site due to their close proximity to active agricultural lands and location downstream from highly developed areas, including stormwater management facilities, which influence the natural hydrologic regimes of each feature. In addition, historical channelization along Baden Creek would also influence the flow regimes of the features and increase erosion and sedimentation. Attempts should aim to manage these issues, where possible, to improve the aquatic habitats within the watercourse features on site. Further, groundwater influence has been noted within Baden Creek and the Huehn Award Drain and should be maintained and improved, if possible.

The two ephemeral features that occur on the subject lands, Ephemeral 1 and Ephemeral 2, are not considered GRCA-regulated features and do not provide fish habitat. These features therefore do not fall within any natural heritage policy or legislative protections, but should be accounted for as part of future grading and stormwater management considerations for the site.

5.2 Species at Risk

As described in Section 4.3.1, the study area has been identified as foraging habitat for the SAR Bank Swallow. However, since bird foraging habitat is not protected under the 2025-amended ESA, Bank Swallow is not considered further in this report. Potential roosting habitat for bat SAR were also identified within the subject lands, and is discussed further below.

See Appendix XIII for the complete results of the SAR/SCC habitat assessment completed for the study area, including rationale with respect to the confirmed/potential presence or assumed absence of SAR within the study area. Note that SCC are addressed as components of SWH within the category of Special Concern/Rare Species, as discussed below.

5.2.1 Potential Bat Species at Risk Habitat

Nine potential bat habitat trees were mapped within the study area (Map 3). Of these, seven occur within the FOD7-3 woodland while the other two are located north of the proposed industrial lands. These trees should be assumed to represent SAR bat habitat for Little Brown Myotis, Northern Myotis or Silver-haired Bat (species that utilize these feature types in treed habitats). This woodland should also be assumed to represent potential habitat for Eastern Red Bat and Hoary Bat, which typically roost singly in tree canopies, favouring sun-exposed southern edges and supercanopy trees (Map 3). However, since Eastern Red Bats and Hoary Bats roost singly in trees with solar exposure, including isolated and hedgerow trees. Therefore, the intermittent tree growth that occurs along the south and west sides of the subject lands as well as within the Baden Creek riparian corridor may also provide roosting habitat for Eastern Red Bat and/or Hoary Bat. Since these trees do not occur within a defined ELC community and because trees have not been individual inventoried, these individual trees are not specifically mapped on Map 3.

5.3 Locally Significant Woodland

The FOD7-3 woodland on the subject lands does not meet the criteria to be considered a Core Environmental Feature as described in Section 7.C.1 of the Regional OP (2024). For example, it has not been confirmed to contain habitat for Threatened or Endangered Species, and is too

small to be considered a Significant Woodland. Section 8.1.5.2 (b) of the Township OP identifies “locally significant woodlands” as a category of Supporting Environmental Features (Township of Wilmot 2024). However, locally significant woodlands are not defined in the OP. Based on a precautionary approach, the southernmost FOD7-3 woodland within the subject lands is assumed to represent a Locally Significant Woodland, and therefore would represent a form of Supporting Environmental Feature (Map 3).

In accordance with Section 8.1.5.4 of the Township OP, development and site alteration may be permitted within or adjacent to a Supporting Environmental Feature provided it is demonstrated in an EIS that the development will not result in adverse environmental impacts to the features or their ecological functions.

5.4 Significant Wildlife Habitat

Based on the results of background information review and field studies, one form of SWH was confirmed within the subject lands: Special Concern/Rare Wildlife Habitat for the SCC Barn Swallow. Additionally, one category of Candidate SWH was identified: Bat Maternity Colonies. SWH is considered a form of Supporting Environmental Feature in the Township. Development proposals within or adjacent to Supporting Environmental Features are subject to the requirements of OP Section 8.1.5.4 in which it must be demonstrated that no negative impacts to the environmental features or functions will occur.

Targeted field surveys were not completed that could rule out the presence of the SCC Snapping Turtle, which was identified as having suitable habitat along the Baden Creek corridor (Section 2.1.2). However, with consideration for provincially significant habitats, the Baden Creek corridor is not considered to represent a form of SWH for this species, as it is not a sensitive or highly important part of Snapping Turtle core habitat. Rather, the Baden Creek channel may be used as a movement path by the species. See Section 5.5 for further discussion about wildlife movement paths in the study area, and Section 6.3.3 for potential for development effects on these.

See Appendix XIV for the complete results of the SWH assessment completed for the study area, including rationale with respect to the confirmed/potential presence or absence of SWH within the study area.

5.4.1 Confirmed Significant Wildlife Habitat

Barn Swallow is listed as a species of Special Concern on the Species at Risk in Ontario list (MECP 2025), and is therefore considered a SCC in Ontario whose habitat may be considered SWH. Multiple Barn Swallows were recorded foraging over the subject lands during one of the breeding bird surveys. Although no nesting habitat was identified on the subject lands, foraging habitat represents a form of Barn Swallow habitat as was previously described by the OMNR when Barn Swallow was an ESA-regulated species. Specifically, foraging habitat was defined as Category 3 habitat within the three-level categorization of general habitat for the Barn Swallow, in which Category 3 habitat was considered most tolerant to disturbance (MNRF undated). All of the open subject lands areas are assumed to represent existing foraging habitat for Barn Swallow. This includes the existing agricultural fields, CUM1 meadow features, and the fallow/disturbed/cleared areas, but excludes the FOD7-3 woodland feature. Due to the large expanse of these areas within the study area, they are not shown on Map 3.

5.4.2 Candidate Significant Wildlife Habitat

Bat maternity colonies represent a form of seasonal wildlife concentration area, and bat species maintain a high fidelity to these areas which are selected due to their optimal habitat conditions. Bat maternity colony habitat is highly sensitive and the success of colonies is critical to the survival of local bat populations (MNRF 2014). These habitats are used by females for giving birth and raising young.

Bat Maternity Colony SWH can be located within any forest community, or in deciduous, mixed or coniferous swamps. A woodland is considered Candidate SWH for Bat Maternity Colonies if it meets the criterion of >10/ha large-diameter trees (>25cm diameter-at-breast-height) (MNRF 2015a). The FOD7-3 woodland was investigated for the presence of suitable bat roosting habitat trees. During the course of that work it was confirmed that the woodland meets the minimum density threshold of large-diameter trees. Specifically, a density of 10 suitable wildlife trees/ha was recorded. The FOD7-3 woodland is therefore considered Candidate SWH for Bat Maternity Colonies. Confirmation of the SWH type would require targeted bat surveys to assess the specific species and associated numbers of individuals using the feature.

5.5 Environmental Linkages

The Baden Creek riparian channel with its adjacent meadow lands represents the primary ecological corridor for land-based wildlife through the study area. This watercourse corridor would primarily benefit small to medium-sized wildlife species such as amphibians, mammals,

and possibly turtles to access nearby suitable habitats. Given the highly developed agricultural landscape surrounding the channel, as well as its location adjacent to the urban developed area of Baden, the wildlife species utilizing the watercourse corridor are expected to be relatively urban-adapted and tolerant species. However, this corridor may be traversed by the SCC Snapping Turtle given its connection to the dammed mill pond. Due to its narrow width and highly modified form, the study area extent of the Baden Creek riparian corridor represents a relatively low quality ecological linkage, although when considered in its landscape context it may represent a locally important movement path for certain wildlife species and for fish.

Environmental Linkages are considered a form of Supporting Environmental Feature in the Township. Development proposals within or adjacent to Supporting Environmental Features are subject to the requirements of OP Section 8.1.5.4 in which it must be demonstrated that no negative impacts to the environmental features or functions will occur.

6.0 Impact Assessment

6.1 Description of the Proposed Development

The Estate of Enid Schmidt proposes to rezone a portion of the estate lands as two industrial blocks to be located along Gingerich Road, west of Foundry Street. There is no specific development proposal for the lands; the proponent will prepare the lands for future industrial development through grading and servicing. The lands will be serviced from existing municipal sanitary and water infrastructure located under the Gingerich Road and Foundry Street rights-of-way. A stormwater management concept for the lands has been prepared for the site for which water quantity and quality targets have been identified, and which proposes runoff from the site to drain into Baden Creek. The development area identified for the site accounts for the trunk sanitary sewer that has been installed along the north and east sides of the industrial blocks, parallel to Baden Creek. The Baden Creek floodplain within the subject lands is proposed to be modified through downstream culvert improvements at Gingerich Road in order to increase developable area within the east industrial block. A grading plan for the site, which also illustrates the proposed modified floodline, is included in Appendix I and is overlaid on Map 4.

6.2 Approach to Impact Assessment

Potential impacts arising from the proposed development are determined by comparing the details of the proposed undertaking with the characteristics of the existing natural features and their ecological functions. Where the development limits overlap with the natural features or indirectly affect their functions, impacts may arise. The following is a description of the types of impacts which will be discussed.

- Direct impacts to the natural features within the subject lands associated with disruption or displacement caused by the actual proposed footprint of the development, including impacts caused by site grading.
- Indirect impacts associated with changes in site conditions such as drainage, water balance and water quantity/quality, and effects of construction on adjacent natural features and habitats.
- Induced impacts associated with post-construction human use of the development such as disturbance or degradation of adjacent natural features and species habitats caused by increased human habitation/use of the area.

6.3 Direct Impacts

6.3.1 Recommended Buffers

The approach to identifying and delineating the subject property natural features was used to avoid direct impacts from development on significant and sensitive natural features. Within the subject lands, the significant natural features to be avoided comprise Baden Creek and the small Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3) that is considered a Locally Significant Woodland.

Buffers are required for natural heritage features such as woodlands and watercourses to protect them from impacts during and post-construction. At their most basic level, buffers spatially offset development areas from natural features such that direct impacts to the features are avoided. Buffers also represent an important component of a larger suite of recommended measures to mitigate impacts to the adjacent natural features, such as by reducing edge effects. Based on the significance and sensitivity of the natural features within the study area, ecological buffers must be considered in defining the limits of development on the subject lands.

Vegetated buffers play an important role in protecting aquatic habitats by stabilizing the creek banks, and by providing overhead cover and a source of large woody material for habitat diversity within the creek. In addition, vegetated buffers filter overland runoff and improve water quality. In recognition of the ecological sensitivity of the watercourses and fish habitat to disturbances and to mitigate potential for impacts, it is recommended that watercourse buffers be applied to the Baden Creek and Huehn Award Drain watercourses where they occur within or adjacent to the subject lands (Map 4). Variable-width buffers from the watercourses are recommended based on their ecological sensitivities. A 30m buffer is recommended from the Huehn Award Drain due to its status as a coldwater watercourse, while a 15m buffer is recommended from Baden Creek.

Woodland buffers are prescribed based on protecting the trees and their root zones as well as providing associated open habitats required by forest wildlife species or for movement. Buffers from woodland driplines are important in maintaining the condition and function of trees within the woodland while protecting them from impacts of adjacent site alteration. The FOD7-3 woodland has relatively low ecological sensitivity from a vegetative standpoint and has some degree of resiliency given its long history of cultural influences within and adjacent to this feature. However, it may contain significant habitat for bats with respect to potential maternity colony SWH as well as potential habitat for SAR bats. A 10m buffer from the woodland edge is

therefore recommended. The 10m buffer ensures that existing root zones from woodland edge trees will be sufficiently protected while allowing room for future growth. It also provides an area of natural woodland edge regeneration and active restoration to enhance the buffering capacity of the feature. This open buffer area also provides a movement corridor for bats moving in and out of the woodland habitat as well as woodland edge foraging habitat.

Implementation of these recommended buffers will ensure that direct impacts to the significant on-site natural features are avoided. As shown on Map 4, the proposed development limits are well outside of the recommended buffer limits. This is because the proposed development will be set-back from the FOD7-3 woodland and Baden Creek by the trunk sanitary sewer alignment as well as account for the Baden Creek floodplain limit constraints.

6.3.2 Vegetation Removal and Site Grading

The majority of the subject lands comprise former row crop agricultural field that has since gone fallow and/or has been cleared or disturbed for on-site works such as the trunk sanitary sewer installation. Relatively little natural vegetation cover will require removal to accommodate the proposed grading plan. Natural vegetation removal will be limited to culturally-influenced and early successional growth that is located within and along the southern and western limits of the former agricultural field on the subject lands, as well as along portions of the ephemeral drainage features. No federally, provincially or regionally significant vegetation species will require removal, and the species to be removed are all relatively common on the landscape. A Tree Protection Plan may be required at the Site Plan Approval stage of development to quantify and identify compensation requirements for tree removals. Vegetation that falls within the modified floodplain zone (Map 4) will be retained in its existing condition.

6.3.3 Impacts to Wildlife and Their Habitats

Barn Swallow Significant Wildlife Habitat

Nesting habitat, which represents the most sensitive form of Barn Swallow habitat, is absent within the subject lands and elsewhere within the Schmidt Estate lands. The subject lands were observed to provide foraging habitat for SCC Barn Swallows. Barn Swallows are no longer protected under the ESA, but when they were previously listed their foraging habitats, as a component of their general habitat description, were comprised an area of between 5m-200m from the nest (MNRF undated). This area is therefore assumed to represent SWH for Barn Swallow. Since the location of the nesting habitats from which the observed Barn Swallows originated is not known, including its distance from the subject lands, the entirety of the open

habitats within the subject lands are assumed to represent foraging habitat that is considered SWH for Barn Swallow.

Foraging habitat was classified as Category 3 habitat in the three-level classification of Barn Swallow general habitat when it was regulated under the ESA. Category 3 habitat is considered to have the highest tolerance to alteration (MNRF undated). In the short term, the proposed grading of the subject lands is not expected to negatively impact Barn Swallow foraging habitat quality as the lands are still expected to produce insect prey to a similar extent that the current agricultural lands do, and possibly to a greater extent once the application of agricultural pesticides on the lands ceases. However, it is anticipated that the future development of the lands for industrial purposes will result in the majority of the subject lands being converted to structures and impervious surfaces (e.g., parking lots) that will result in a reduction in the functional area and/or quality of foraging habitat for the species.

Suitable foraging habitat is abundant on the surrounding landscape, particularly in the form of open agricultural lands. Barn Swallows may forage over developed areas where natural cover and tree growth is maintained or established. For example, Barn Swallows are known to occur in urban and suburban environments (Brown and Brown 2020). It is therefore recommended that green spaces and other landscaped areas be incorporated into future site plans for the industrial lands to mitigate loss of Barn Swallow foraging habitat. Negative impacts to Barn Swallow SWH are not expected. Although ESA-protected habitat for the SAR Bank Swallow is absent within the study area (see Section 5.2), the above-recommended measures will also benefit the maintenance of Bank Swallow foraging habitat within the subject lands.

Potential Species at Risk Bat Habitat and Candidate Bat Maternity Colony Significant Wildlife Habitat

The FOD7-3 woodland feature represents potential SAR bat habitat for Little Brown Myotis, Northern Myotis, Tri-colored Bat, Silver-haired Bat, Hoary Bat, and Eastern Red Bat. This feature also represents Candidate SWH for Bat Maternity Colonies. Since the FOD7-3 woodland will be retained outside of the proposed development limits, no direct impacts to this potential significant habitat will occur.

Other intermittent tree growth along the south and west boundaries of the subject lands, and along the Baden Creek riparian corridor, also represents potential SAR habitat for Eastern Red Bat and Hoary Bat. Tree growth within the Baden Creek riparian channel will not be directly impacted by the undertaking. However, tree growth along the south and west peripheries of the

subject lands may require removal to accommodate the future land development. The removal of these trees will represent a proportionally small amount of potential habitat in relation to what is available on the landscape, and therefore the potential for negative habitat impacts is very limited. Furthermore, negative impacts to individual bat species can be effectively mitigated by ensuring that the trees and other vegetation that is >1m in height are removed outside of the period April 1-November 30. Provided this tree removal timing window is implemented, consultation with the MECP is not considered necessary and no further actions with respect to *Endangered Species Act* conformance should be required.

Other Wildlife Species

The majority of other wildlife species that occur within the property are common and ubiquitous on the landscape, and have secure populations in Ontario (MNRF 2021). Many of these species are tolerant and adaptable to urbanized conditions. Species that occupy the woodland and Baden Creek riparian zones (e.g., Cedar Waxwing (*Bombycilla cedrorum*), Blue Jay (*Cyanocitta cristata*), Warbling Vireo (*Vireo gilvus*), Green Frog) are expected to persist post-development. However, certain species (Killdeer (*Charadrius vociferus*), Horned Lark (*Eremophila alpestris*), Coyote, Woodchuck (*Marmota monax*), and White-tailed Deer (*Odocoileus virginiana*)), which prefer large open habitats, are expected to be displaced from the subject lands following industrial development. These species (including Coyote despite its 1985 Regional significance ranking (Region of Waterloo 1985b)) are relatively common and alternate suitable habitats are abundant in surrounding areas; negative impacts to their local populations are not expected. White-tailed Deer may continue to use the Baden Creek riparian corridor as a movement path. Habitat for the SCC Snapping Turtle, whose habitat under existing conditions is limited to the Baden Creek channel, will not be directly impacted.

Vegetation clearing has the potential to directly impact bird breeding activity through damage and destruction of nests, eggs and young, or avoidance of the area by breeding adults. Vegetation removal should therefore occur outside the bird nesting season of April 1-November 30 so as to limit disturbances to nesting activities of birds and to avoid destruction of active nests while also avoiding impacts to SAR bats (as described above). Vegetation that is <1m in height that is not subject to SAR bat habitat protections should be removed outside of the period April 1-August 31 to avoid damage or destruction to bird nests and or disturbance to bird nesting activities The destruction of migratory birds and their nests is prohibited under the federal *Migratory Birds Convention Act* (MBCA).

Wildlife Movement

The Baden Creek riparian channel and adjacent meadow lands represents the primary ecological corridor for land-based wildlife through the study area, although certain species (e.g., White-tailed Deer) will cross directly through the agricultural field. This riparian movement corridor will be preserved under the post-development condition, and due to the opportunity for restoration of the modified floodplain (see Section 7.0), can be enhanced relative to existing conditions. Negative impacts to wildlife movement through the study area are therefore not expected.

The future development of the industrial lands, in combination with the future development of the residential subdivision lands to the north, may have the effect of further funneling wildlife movement through the Baden Creek corridor. This may lead to increased wildlife crossing at the Baden Creek crossing of Gingerich Road. However, this potential effect may be mitigated as long as lands to the west and northwest of the subject lands remain in an open agricultural condition, and accessible as an alternative movement area for wildlife. The Baden Creek culverts under Gingerich Road may also provide conditions for small to medium-sized wildlife to cross.

6.3.4 Removal of Aquatic Features

The proposed development plans to remove most, or parts of two ephemeral features; Ephemeral 1 and Ephemeral 2, located across the northwestern corner of the subject lands. Under existing conditions, these features act to convey surface drainage from the surrounding agricultural fields towards Baden Creek. The landscape through which these ephemeral features flow is primarily agricultural land, which generally lacks the vegetative groundcover that would help to minimize soil erosion and sedimentation to receiving water bodies. The exception to this is a narrow cultural meadow (CUM1-1) corridor along Baden Creek, which is likely to reduce sedimentation to some degree. However, when water is present and flowing through these features, the potential for suspended sediments to be carried to Baden Creek as the receiving water body still exists. This water could also carry excess nutrients, which would affect water quality within Baden Creek. There is an opportunity to mitigate the existing erosion and sedimentation associated with these features and improve water quality as part of the proposed development by implementing an appropriate system for managing and treating stormwater prior to its release to Baden Creek. This is further discussed in sections 6.4.3 and 6.4.4.

The current drainage pattern for the lands in the vicinity of the ephemeral features conveys seasonal flows (e.g. spring freshet) and stormwater towards Baden Creek. Site grading and the stormwater management plan should consider this in order to properly manage the water that occurs within these features through both the short-term and long-term. It is expected that stormwater water will continue to travel as sheet flow in the general direction of Ephemeral 1 and Ephemeral 2 as long as the existing grade is maintained, which may result in newly eroded flow paths across graded land. This drainage pattern should also be considered and accounted for during the future preparation of the stormwater management plan during the Site Plan Application stage. Further, while a change in the direction of the graded landscape would change the flow path direction for these features, it is still expected that the direction of flow would ultimately be toward Baden Creek, and should be managed appropriately.

6.3.5 Impacts to Fish and Fish Habitat

As noted in Section 4.4, neither of the ephemeral features that occur within the subject lands provide fish habitat. Therefore, there are no direct impacts anticipated as a result of their removal. Further, the proposed development does not overlap any adjacent watercourses that exist within the broader study area (Baden Creek, Huehn Award Drain, or the Baden Creek Tributary), and therefore, no direct impacts are anticipated for those fish habitat features.

There are opportunities for potential enhancements to the aquatic habitat associated with the adjacent watercourses. As noted in Section 6.3.4, the proper management of stormwater that currently flows to Baden Creek from the subject lands is likely to help reduce sedimentation to the creek and also provides an opportunity to improve the overall water quality within the system. Further, the area of land captured between the refined floodplain boundary (Map 4) and Baden Creek, which currently occurs as fallow/former agricultural land, provides an opportunity for enhancement of the riparian corridor for the creek. See Section 7.0 for further discussion about aquatic habitat restoration and enhancement opportunities.

6.4 Indirect Impacts

6.4.1 Construction Disturbance to Adjacent Natural Features and Habitats

Vegetation clearing, site grading and other construction activities have the potential to inadvertently destroy, damage and degrade existing vegetation along the development limits unless the development limit boundaries are clearly marked. For example, construction activities can cause scarring and decreased health of adjacent trees whose branches or root systems have been damaged by machinery or affected by construction-related dust and

sedimentation. Damage to trees and other vegetation can also be caused by the compaction of soils within tree rooting zones along woodland edges.

Direct damage and indirect disturbances can cause stresses on the natural features that weaken their ecological integrity. In these states, natural features are more prone to establishment and proliferation of invasive, non-native species such as Common Buckthorn. Proliferation of invasive, non-native species within natural communities decreases their ecological value such as by suppressing native species, diminishing biodiversity and reducing habitat suitability.

The potential for construction-related vegetation disturbance is greatest along the south, west and northwest limits of the development area, where it occurs adjacent to early successional regenerative tree and shrub growth along those property boundaries, as well as some planted trees along the west property boundary. Disturbance to this vegetation can be avoided or mitigated by clearly delineating the limits of construction along the development limits and ensuring that construction activity is maintained within the construction area only.

Tree protection fencing should be installed where directed by a future Tree Protection Plan, if required, and must conform to municipal guidelines in terms of fencing type, signage requirements, etc. Tree protection fencing is expected to be required around the dripline limits of localized tree growth that occurs along the south, west and northwest development limits where it is determined by a Certified Arborist or Registered Professional Forester that those trees can be retained and protected outside of the development. Protective tree fencing should be installed at least 1m from dripline where possible to adequately protect the root zone from soil compaction and other disturbances. All tree protection fencing must be installed prior to site alteration and construction activities, and inspected by a certified arborist or environmental inspector. Where tree protection fencing is not required along construction area limits, other forms of boundary demarcation should be used which may include silt fencing for erosion and sediment control purposes or brightly-coloured snow fencing. Tree protection fencing can be combined with silt fencing where both of these fencing functions are required by attaching geotextile fabric to the tree protection fencing and appropriately keying it into the ground.

Designated areas for construction lay-down, vehicle access and parking, equipment storage, materials stockpiling, and any on-site construction offices should be maintained within the development lands and not located within the Baden Creek floodplain lands.

When construction equipment is moved from one site to another, it has the potential of inadvertently transporting seeds and other vegetative material of non-native and invasive plant species. This may therefore lead to the introduction and colonization of a site's natural features with invasive plants. Construction vehicles and machinery should therefore be properly cleaned of soils, mud and water to ensure that invasive plant species are not transported to the subject property where they can establish within the natural features. The following general steps should be taken:

- Vehicles and equipment should be inspected before leaving the site, or if moving from one part of the site to another where one area is known to contain a concentration of invasive plant species;
- Vehicles and equipment should be inspected after having transported soil that has the potential to contain invasive plant species;
    - Vehicles and equipment should be inspected for dirt, plant material and seeds that may be lodged in or adhered to surfaces;
- Based on the above inspections, vehicles and equipment should be thoroughly cleaned in an area where there is no risk of spreading invasive species. The interior and exterior of vehicles and equipment should be cleaned to remove mud and debris, including along undersides and around wheels.

See the *Clean Equipment Protocol for Industry* (Halloran et al. 2016) for additional details of methods that should be followed to mitigate the spread of invasive plant species between natural areas.

During construction activities such as vegetation clearing and site grading, dust can potentially result in the following:

- Changes in vegetation due to increased heat absorption and decreased transpiration,
- Immediate visual impacts.

Impacts due to dust should be mitigated for by moistening areas of bare, dry soil with water as needed during construction activities to reduce the amount of dust produced.

Excessive noise, vibrations, artificial lighting and human presence as a result of site preparation and construction activities may cause wildlife to temporarily avoid the area. These impacts can

be mitigated by restricting the daily timing of construction activities to between 7:00hr and 19:00hr. This timing restriction should also apply to the use of generators or pumps insofar as possible. Any artificial lighting used for construction purposes should be turned off or directed away from the adjacent natural features following the completion of daily construction activities.

Such impacts resulting from dust, noise, and vibrations are expected to be temporary, minimal and localized during the construction of the proposed development. Significant effects on wildlife are not anticipated and it is expected that displaced wildlife species will return to the vicinity of the subject lands following construction.

6.4.2 Changes to Hydrological Regime

Surface Water Drainage and Quantity Control

Under the existing condition, surface water runoff within the subject lands sheet flows toward Baden Creek following the gently sloping topography. The proposed development concept for these lands will maintain this drainage pattern, whereby flows from the site will be drained to Baden Creek. This will be achieved through the proposed site grading, which will maintain the general downward topographic gradient toward the creek. Conceptual locations of storm sewer outlets to Baden Creek have been identified on the Grading Plan (WalterFedy 2024) included in Appendix I.

A detailed stormwater management plan will be developed as part of a future Site Plan application for the subject lands. However, general stormwater quantity control targets have been set for the lands whereby post-development peak flow rates are to be maintained to pre-development flow rates. This will be achieved through underground and/or surface-level water storage (e.g., designated ponds) and flow control orifices (WalterFedy 2025). By adhering to this target, post-development water quantities directed to Baden Creek from the subject lands will not exceed existing conditions. Provided no changes to groundwater contributions to Baden Creek occur (see below), no changes to the hydrological regime of the watercourse or its riparian channel (e.g., in terms of water levels, flow rates) are therefore expected.

Infiltration and Groundwater Recharge

The future development of the industrial blocks will increase the impervious cover of the lands, which currently comprise completely pervious areas (former agricultural field and natural land cover). However, due to the silty clay to clayey silt soils of the subject lands, relatively low levels of infiltration occur under existing conditions (Pinchin 2025a, b). It is therefore anticipated

that the groundwater regime within the subject lands, including the areas of groundwater upwelling or seepage within Baden Creek, are not strongly influenced by runoff volumes that naturally infiltrate within the subject lands themselves and are instead influenced by a broader surrounding area of the landscape. It is nevertheless important to achieve a site-wide pre- vs post-development infiltration water balance to ensure negative impacts to the adjacent aquatic features do not occur.

On-site infiltration will be required as part of future development plans in order to achieve a pre- and post-development water balance for the site (Pinchin 2025a, b). Due to the site's tight soils and relatively high groundwater table, it will be necessary to import fill to raise site grades in low-lying areas to allow for the installation of stormwater infiltration measures (e.g., LID) as part of the stormwater management plan

Provided a water balance can be achieved, and provided the surface water quantity target described above is met, no changes to the hydrological regime of Baden Creek and its riparian channel are anticipated.

Watercourse Thermal Regime

Baden Creek was classified as a warmwater watercourse, but with temperatures maintained in the cooler range due to the influence of shallow groundwater inputs as well as the inflow of the coldwater Huehn Award Drain. Baden Creek provides habitat for warmwater and coolwater fish species. In general, development adjacent to watercourses can exert warming effects on the watercourse such as due to relative increases in warm, sun-exposed surface water inputs. Efforts should be made to mitigate the further warming of Baden Creek as caused by adjacent land development and look for opportunities to improve thermal conditions within the creek. This can principally be achieved by maintaining a pre- vs. post-development stormwater infiltration balance on the development lands to avoid reductions in size, volume, or locations of cold groundwater contribution areas to the watercourse. It is also recommended that discharged stormwater outflow paths within the floodplain be planted up with native tree and shrub species to provide a shading effect where the lands are currently open. See Section 7.0 for further discussion about ecological restoration and enhancement recommendations for the subject lands. Maximizing stormwater storage within underground chambers, as opposed to surface-level ponding, will also mitigate thermal effects and promote cooler water inputs to Baden Creek. The proposed development, and associated floodplain modification, also offers the opportunity to increase shading along Baden Creek through native woody vegetation

plantings (see Section 7.0). Provided these measures are taken, it is expected that thermal effects on Baden Creek can be avoided, and that opportunities to further cool the Baden Creek water temperatures through the site may be realized. Doing so may increase the quality of the aquatic habitats for coolwater fish species that occur on-site.

6.4.3 Sedimentation and Erosion

Construction-Stage

During vegetation removal and site grading activities, areas of bare soil will be exposed which have the potential to erode during rainfall events and impact adjacent natural features. Increased stormwater surface flow and erosion processes may cause the deposition of sediments onto down-slope vegetation and the receiving watercourse, ultimately causing vegetation die-back or impaired health and reductions in water quality.

Soil compaction also has potential to occur as a result of heavy machinery in the area of development. Soil compaction can greatly reduce the permeability of soils and affect their ability to retain water during rain/snow melt events. This will result in an increase in surface water run-off which will ultimately increase the erosion potential and the amount of sediment being transported into adjacent natural features.

In order to protect on-site natural features from potential impacts due to sediment, an Erosion and Sediment Control (ESC) Plan must be developed and implemented prior to initiation of site grading activities. Another ESC Plan should also be developed as part of the future Site Plan application stage. The primary principles associated with sedimentation and erosion protection measures are to: (1) minimize the duration of soil exposure, (2) retain existing vegetation, where feasible, (3) encourage re-vegetation, (4) divert runoff away from exposed soils, (5) keep runoff velocities low, and (6) trap sediment as close to the source as possible.

The following general recommendations should be implemented to mitigate erosion and sedimentation impacts, to be refined within the detailed ESC Plan as required:

- Installation of silt fencing along the construction limits in all locations where run-off will discharge to adjacent lands and natural features. Geotextile material can be attached to tree protection fencing where this fencing type overlaps with silt fencing requirements.
- ESC measures must be regularly inspected and repaired or replaced in a timely manner. Accumulated sediment must be removed as needed. It has specifically been

recommended that visual monitoring be completed bi-weekly and within 24 hours of any rainfall event of ≥25mm. Accumulated sediments are to be removed once their capture capacity has been decreased by one-third (WalterFedy 2025).

- A nurse crop (e.g., Annual Oats (*Avena sativa*), Annual Rye (*Lolium multiflorum*), or White Millet (*Panicum miliaceum*)) should be applied to graded areas that will not be constructed on for extended periods to increase soil stabilization.
- Topsoil piles should be located away from adjacent natural features and that silt fencing be installed around piles to prevent off-site migration of water-borne sediments.
- The use of construction vehicles and equipment within buffer and floodplain areas should be minimized except to when required in order to mitigate soil compaction.

See the Functional Servicing and Stormwater Management Report (WalterFedy 2025) for further details of recommended ESC measures.

During the intervening period between site grading and construction of an industrial development on the site, the silt fencing installed prior to grading must be left in place unless or until the soils have sufficiently stabilized and re-vegetated such that they do not pose a sedimentation and erosion risk, as determined by qualified personnel. During this intervening period, the silt fencing must be periodically inspected, including after heavy rainstorms, to confirm its proper functioning. Any damaged areas of fencing should be replaced within 24 hours.

Post-Construction Stormwater Drainage Flow Rates

As described in Section 6.4.2, post-development stormwater flow rates will be controlled to meet pre-development outflow rates to Baden Creek. This will be achieved through measures such as sufficient on-site storage of stormwater and through use of outlet flow controls. These measures will help mitigate the potential for downstream erosion of natural features receiving the flows.

It is further recommended that the stormwater outlet infrastructure be designed to encourage the dissipation and dispersion of flows such that discharged stormwater sheet flows through the vegetated floodplain lands before reaching the creek. For example, this can be achieved through use of a level spreader at the outlet locations. This will further mitigate the potential for channelized flow paths to be eroded down-slope of the outlets, with resulting sedimentation

effects within the creek. Stormwater outlet design will be undertaken during the Site Plan application stage. Natural re-vegetation of the floodplain lands with native herbaceous and woody land cover will also help to promote the dissipation of flows toward the creek.

6.4.4 Water Quality

Decreases in water quality, such as through discharge of deleterious substances in stormwater runoff, can cause both acute and chronic toxicity impacts within biological communities. These impacts include increased mortality rates, impaired health conditions, decreased reproductive productivity and other reproductive impairments in wildlife. Environmental contaminants are also known to biomagnify “up the food chain”, where higher-level predators are particularly susceptible to impacts. Water quality impairments can also pose health risks to humans wherever there is potential to come into contact with untreated or inadequately treated water discharge. The water quality of aquatic receptors can also be compromised when excess nutrient concentrations, such as from fertilizers, cause eutrophic conditions which subsequently decrease oxygen availability for fish and other aquatic organisms.

A detailed stormwater management plan for the site will be developed at the Site Plan application stage. However, to achieve applicable Regional and Township stormwater control criteria for the site, a water treatment plan has been identified to achieve “Enhanced” level water quality treatment (i.e., 80% long-term average annual total suspended solids removal). Specifically, water quality treatment objectives will be met through use of oil-grit separator (OGS) units in conjunction with a treatment train approach that incorporates bioswales or ponds and other water storage features (WalterFedy 2025). The OGS units and other LID features will require periodic cleaning and maintenance to maintain effectiveness over time. All surface runoff from internal road/drive aisle and parking areas, which will contain oil, sediments, and other deleterious substances, must first pass through the water treatment path before being released into Baden Creek. Only “clean” runoff from roofs or pervious surfaces such as grassed/landscaped areas may flow uncontrolled toward the woodland or watercourse.

Improper use and application of winter road salt can cause salt loading impacts to the receiving natural features, particularly Baden Creek and the portions of the riparian floodplain that will receive flow runoff. Since on-site salt treatment methods are infeasible, proper control and application rates for road salt represent the best methods to mitigate this impact. Salt loading on the development’s paved surfaces should be minimized by limiting the application of winter road salts and/or applying non-chloride de-icing alternatives (e.g., sand) where feasible.

Contractors carrying out salting activities should also be familiar with best practices to limit salt application to conditions in which its use will be effective, and to ensure equipment is not over-applying salt.

Construction-stage measures should be implemented to ensure that spills, debris and other deleterious substances are prevented from migrating off-site into the adjacent natural features and watercourse. These measures should be incorporated into the ESC Plan for the development. Vehicle refueling and equipment stockpiling must be completed outside of the watercourse floodplain. A Spill Response Plan should be prepared and be ready to be implemented on-site if required.

Through implementation of these recommendations to mitigate water quality impacts, the proposed development plan provides an opportunity to improve the quality of the Baden Creek aquatic system. For example, inflows of flashy stormwater runoff from the agricultural fields that carry sediments, fertilizers, and other deleterious substances, such as via the ephemeral drainage features, will cease within the subject lands. The recommended approach to ecologically restoring and enhancing the Baden Creek channel and modified floodplain (see Section 7.0) will also allow for increased dissipation and natural filtration of runoff sheet flow before it reaches Baden Creek.

6.5 Induced Impacts

A detailed development plan for the site has not yet been prepared. However, the conversion of the agricultural lands to future industrial employment use may increase the potential for disturbance impacts, such as due to increased human presence and activities. Based on the proposed use as employment lands, the potential for encroachment disturbances (e.g., trail formation and vegetation damage) to the woodland and watercourse floodplain corridor is not considered to be significant, such as compared to a residential subdivision. However, the proposed development presents the potential for impact as caused by dumping garbage and debris within the adjacent natural areas. It is recommended that permanent chain-link fencing be installed along the limits of the development where they face the natural features to inhibit unauthorized access and debris dumping within these areas.

The majority of wildlife species recorded within the study area are relatively tolerant and adaptable to human-occupied landscapes such as residential subdivisions and are expected to return post-development. Species that occupy the adjacent woodland and meadow features

such as Northern Flicker, Warbling Vireo, and Gray Catbird (*Dumetella carolinensis*) are generally tolerant of human-occupied areas (Wiebe and Moore 2024, Gardali and Ballard 2020, Smith et al. 2020) and are expected to persist in these features post-development.

6.6 Cumulative Impacts

In order to evaluate the potential for cumulative impacts on the study area natural features, it is necessary to consider both the proposed development of the industrial re-zoned lands as well as current and future planned uses on adjacent lands. This approach looks at the character and potential changes that are occurring or may occur in the future on surrounding lands. Cumulative impacts may arise as a result of impacts from a number of sources adding up (or combining) if they overlap in space, overlap in time, occur at some receiver spatially removed from the undertaking, or at some future point in time. Cumulative impacts may also arise from more than one development that may not actually overlap in time or space, but affects the same component of the ecosystem.

Of key consideration in the assessment of cumulative impacts is the integrity of the Baden Creek riparian corridor, and the fish habitat and ecological linkage functions it provides. In this context the riparian corridor includes the small study area Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3) that is considered a Locally Significant Woodland and also provides potential significant bat habitat functions.

The physical integrity of the corridor and its woodland feature will remain intact as the limits of the proposed industrial re-zoning are set-back and buffered from the feature edges. As described further in Section 7.0, the proposed re-zoning is expected to provide opportunities for ecological enhancement of these features relative to their existing conditions. NRSI is undertaking an EIS for the adjacent proposed residential subdivision lands owned by the proponent. The EIS for the proposed residential lands will similarly recommended development setbacks and ecological buffers from the Baden Creek riparian corridor and the FOD7-3 woodland feature. Through implementation of these recommendations for the proposed residential lands, in combination with those presented in this report, cumulative impacts on the existing natural features associated with the development of the broader Schmidt Estate land holdings are not anticipated. NRSI is not aware of other land development applications (e.g., to the west of the subject lands, that could impose further potential for cumulative impacts on the study area natural features.

If the proposed industrial lands are prepared and constructed concurrently with construction activities on the adjacent proposed residential lands, this presents the potential for cumulative indirect construction-related impacts to the study area natural features. However, the majority of these potential impacts can be adequately mitigated through the implementation of standard construction mitigation methods and associated monitoring (see Sections 6.4.1, 6.4.3, 8.1, 8.2). Through these actions, degradation of the Baden Creek riparian channel and woodland, such as through inadvertent vegetation removal/damage, dust release or sediment runoff during the construction phase, can be avoided or controlled (e.g., via silt fencing, tree protection fencing, and dust control measures). Concurrent construction of these lands may somewhat amplify the indirect sensory effects of noise, vibrations, and human presence on wildlife that use these features. However, the wildlife species that occupy these features are generally tolerant to human-occupied landscapes and activities, and those that may temporarily avoid the area during construction are expected to return post-construction.

Stormwater management for the proposed subdivision lands to the north may require some degree of controlled discharge of treated stormwater to Baden Creek. In combination with stormwater flows that will be directed toward Baden Creek from the future industrial lands, measures will be required in development of the residential subdivision stormwater management plan to ensure that the combined inputs do not negatively impact the existing hydrological regime of Baden Creek and the fish habitat that it provides. Since the same project team is designing plans and mitigation strategies for both the proposed industrial and residential lands, a coordinated approach can readily be taken to ensure that cumulative impacts do not arise. This will consider appropriate controls on pre- vs post-development flow rates and volumes to ensure existing levels are maintained. It will also incorporate a coordinated approach to ensuring that water quality parameters, including thermal mitigation, are implemented on the development lands. Consequently, cumulative negative impacts to the quantity and quality of Baden Creek and its fish habitat associated with these developments are not anticipated.

7.0 Restoration and Enhancement

It is recommended that the buffered watercourse riparian channel of Baden Creek, including the modified Baden Creek floodplain where it extends beyond the watercourse buffers, as well as the woodland buffer, be ecologically restored with native vegetation seeding and plantings. Particularly within the eastern portion of the subject lands, this will replace large areas of disturbed and fallow row crop agricultural field with natural landcover, and will greatly enhance this area as an ecological corridor at the local scale. This naturalized floodplain will mitigate flooding events, retain and attenuate surface flows to mitigate flashy inputs to Baden Creek following rain storm and snow melt events, increase carbon capture, and improve fish habitat through greater riparian shading and inputs of natural vegetative detritus. Inputs of fertilizers and pesticides to the watercourse via stormwater runoff, relative to the current or recent agricultural condition, are also expected to decrease post-restoration. This plan should be implemented as part of a broader and integrated plan for Baden Creek buffer/floodplain restoration within the Schmidt Estate lands, including around the proposed residential subdivision lands to the north.

It is recommended that the floodplain restoration lands be seeded with a native seed mix in conjunction with a nurse crop (e.g., Annual Oats (*Avena sativa*), Annual Rye (*Lolium multiflorum*), or White Millet (*Panicum miliaceum*)) to help stabilize the soils until the native vegetation fully establishes and to suppress the establishment of weedy agricultural species. Native woody vegetation plantings should be established along the Baden Creek channel, infilling and augmenting existing woody cover, to increase watercourse shading, to provide detritus and nutrient sources, and further stabilize the creek banks. Increasing watercourse shading will also help to mitigate thermal warming effects on the watercourse and enhance the habitat quality for coolwater fish species. As stated in Section 6.4.2, woody vegetation species should also be planted at stormwater outlets to the floodplain, and along the flow paths, to provide further shading effects and mitigate thermal impacts to the watercourse.

Elsewhere within the floodplain lands, tree and shrub plantings can be established within nodes and allowed to naturally grow out to create a structurally varied and heterogeneous mix of woody growth and open meadow habitat. Lands that extend outside of the recommended buffers and the modified floodplain limit, but which occur outside of the industrial block development limits, should also be restored. This will include graded slopes that tie in the development limits to existing ground elevations, which should be vegetated with a native seed mix and nurse crop application.

As part of site restoration activities, the old tractor crossing of Baden Creek, comprising the two existing CSP culverts, and concrete slab and debris, should be removed to improve fish passage and sediment transport along the creek and to enhance general aquatic habitat quality. To further rehabilitate and enhance aquatic conditions within the creek, natural structures could be installed along the Baden Creek channel. This could include root wads around eroding outside bends to dissipate energy, thereby reducing the potential for further bank erosion and sedimentation while also providing additional in-stream cover and habitat for fish.

It is NRSI's understanding that the Township owns a narrow corridor of land between the proposed east and west industrial blocks, which is to be used as a future pedestrian trail as shown on Map 4. Until such time that the Township constructs a trail along this corridor, it is recommended that the Township-owned land receive a native seed mix to establish native vegetation growth and to mitigate establishment of non-native/invasive species that could subsequently colonize adjacent riparian/buffer natural areas.

Details of the buffer and floodplain restoration measures will be detailed in a future Restoration and Enhancement Plan, to be developed during the Site Plan application stage of the development process. At the time of Plan development, it is recommended that a review be completed to determine the need for any specific invasive species management measures that may be beneficial to complete in conjunction with the restoration and enhancement activities.

8.0 Monitoring

Pre-, during-, and post-construction monitoring is recommended to ensure that the adjacent Baden Creek riparian corridor, floodplain or woodland is not impacted throughout all stages of property development. The recommended monitoring components are described below.

8.1 Pre-Construction Monitoring

Prior to any construction activity on-site, including vegetation clearing and site grading, on-site inspections of the following should be undertaken to ensure proper installation:

- Sediment and erosion control measures (e.g., silt fencing) in accordance with the Erosion and Sediment Control Plans; and
- Tree and natural area protection measures, including proper installation of tree protection fencing in accordance with a Tree Protection Plan.

8.2 Construction Monitoring

Construction monitoring is the responsibility of the proponent and is to be undertaken by a designated environmental inspector or qualified delegate. Generally, construction monitoring must occur to ensure compliance with the conditions of various permits. Construction monitoring measures are to include the following:

- Periodic monitoring of the above fencing measures to ensure maintenance and effectiveness;
- Pruning of any limbs or roots (of trees to be retained) damaged during construction following approved arboricultural techniques;
- Inspection of the ecological buffers and floodplain lands by a qualified biologist to ensure no unauthorized construction encroachments, damage to trees, or other disturbances caused by construction activities outside of the construction limits.

8.3 Post-Construction Monitoring

The post-construction period is assumed to begin once construction of the proposed development plan has been completed and the site is in use for industrial purposes. A post-construction monitoring plan will be implemented to include the following components.

- Inspection of the buffers and floodplain restoration zones to ensure proper growth and establishment by a qualified biologist or Certified Arborist/Registered Professional

Forester. An initial inspection should be completed one year after seed mix application to ensure that the desired herbaceous species are growing in successfully, and to inform the need for any supplementary seeding. An additional inspection should be completed two years after tree/shrub planting, which typically conforms to the warranty period for tree and shrub materials. Dead tree/shrub stock should be replaced on a 1:1 basis. Remedial measures should be taken as necessary to address declining or poor-condition stock (e.g., enhanced watering schedule, installation of tree guards to mitigate deer browse, cutting back competing vegetation). All tree staking is to be removed just prior to final inspection. Note that this monitoring component is tied to the timing of seeding/vegetation planting establishment and may be initiated prior to the formal post-construction monitoring phase.

- Inspections of the natural features, buffers and floodplain restoration lands will be completed in conjunction with the above inspections to ensure that post-construction human use impacts are not occurring as a result of the development. If impacts are observed, additional mitigation measures will be considered as required.

More detailed monitoring measures are to be identified as necessary at the Site Plan application stage based on details of the proposed development plan(s) for the industrial blocks.

9.0 Summary

NRSI was retained by Kelly & Co., on behalf of the Estate of Enid Schmidt, to complete an EIS associated with the planned re-zoning of two land parcels for future industrial use. The two proposed industrial blocks form a part of the larger Schmidt Estate lands that include a proposed residential subdivision to the north; the proposed subdivision is not addressed in this report. The proposed industrial block subject lands were until recently used for row crop agriculture. Agricultural activity on the lands was ceased in 2025, and the lands were allowed to go fallow or were cleared/disturbed as part of on-site works to install the Baden trunk sanitary sewer. Natural feature coverage is predominantly associated with the Baden Creek riparian watercourse channel that bounds the lands on the north and east sides. A small Locally Significant Woodland is also located along this channel. The existing Baden Creek floodplain is proposed to be modified through downstream culvert improvements at Gingerich Road, to increase the developable area of the east industrial block. Baden Creek provides direct habitat for fish that prefer a warmwater to coolwater thermal regime.

The proponent intends to prepare the future industrial lands through site grading and subsurface servicing installations. A future Scoped EIS or EIS Addendum will be required in conjunction with a future Site Plan Application for each of the industrial blocks, to further speak to details of the development plans. This report identifies general anticipated impacts and recommended mitigation measures that should be carried forward for short-term implementation for land preparation, and for incorporation during the future Site Plan stage.

Ecological buffers have been recommended to preserve and set-back development from the Baden Creek watercourse and the woodland feature within the subject lands. Outer development limits for the industrial blocks have been defined for the purposes of the re-zoning, which fall outside of the natural features and their associated buffers. The development limits also account for the future proposed floodline modification, which will retain a relatively large area of Baden Creek floodplain, recently in agricultural production, outside of development. The modified floodplain will provide an opportunity for ecological restoration and enhancement that will increase natural feature cover on these lands and improve local ecological connectivity relative to existing conditions.

Based on the results of the impact assessment, negative impacts to the existing natural features and ecological functions associated with the proposed short-term site preparation of the lands are not anticipated, subject to implementation of the recommended measures. Future

development of the lands for industrial uses are also not anticipated to negatively impact the adjacent natural features and ecological functions, subject to implementation of the mitigation measures and in conjunction with ecological restoration, but this is subject to the results of future, more detailed EIS studies at the Site Plan stage.

Based on the proposed plan for industrial re-zoning and site preparation, and provided the recommended mitigation measures are implemented, it is expected that no negative impacts to Core Environmental Features and Supporting Environmental Features as defined by the Township, or to their ecological functions, will occur. The proposed plan, subject to implementation of the recommended mitigation measures, is expected to conform to the requirements of Section 4.1 of the 2024 Provincial Planning Statement, specifically:

- that no negative impacts on confirmed or candidate SWH in the study area are anticipated;
- that no negative impacts to fish habitat in the study area are anticipated, such that federal authorization of the proposed development activities pursuant to the *Fisheries Act* are not required; and
- that no negative impacts to potential SAR bat habitat is not anticipated, such that federal or provincial authorization of the proposed development activities pursuant to the *Endangered Species Act* or the *Species at Risk Act* are not required.

9.1 Summary of Recommendations

The following is a summary of EIS recommendations to mitigate impacts, to restore and enhance, and to monitor the existing natural features and their ecological functions within the subject lands. Please refer to the relevant section of the report for additional details about each recommendation.

Table 6. Summary of EIS Recommendations

Number	Recommendation
Direct Impact Mitigations	
1.	Watercourse buffers of 15m from the warmwater Baden Creek, and of 30m from the coldwater Huehn Award Drain, should be implemented to set-back development from these features, to avoid direct aquatic/fish habitat impacts and to mitigate adjacent land use impacts.
2.	A 10m buffer from the Locally Significant Woodland should be implemented to set-back development, to avoid direct impacts to the feature and to mitigate adjacent land use impacts.
3.	Green spaces and other landscaped areas should be incorporated to future site plans for the industrial lands to mitigate loss of SCC Barn Swallow foraging habitat.
4.	Tree and other vegetation removals should be completed outside the period April 1-August 31 to avoid contravention of the *Migratory Birds Convention Act*.
5.	Site grading and future Site Plan-stage stormwater management planning should account for existing stormwater flow conveyance via Ephemeral Drainage Features 1 and 2, to properly manage these flows while mitigating sedimentation and erosion effects on the downstream features/areas.
Indirect Impact Mitigations	
6.	Construction limit fencing, in the form of combined tree protection fencing and silt fencing, must be installed along the limits of development where dictated by a future Tree Protection Plan and Erosion and Sediment Control Plan. Other forms of boundary demarcation should be used along development limits where the above fencing types are not required.
7.	Tree protection fencing must be installed prior to the initiation of site alteration or construction activities, and in accordance with an approved Tree Protection Plan, or as otherwise approved by a Certified Arborist/Registered Professional Forester.
8.	Designated areas for construction lay-down, vehicle access and parking, equipment storage, materials stockpiling, and any on-site construction offices should be maintained within the development lands and not located within the Baden Creek floodplain lands.
9.	The Clean Equipment Protocol (Halloran et al. 2016) should be implemented to mitigate the potential spread of invasive plant species from one site to another during construction.
10.	Impacts due to dust should be mitigated for by moistening areas of bare, dry soil with water as needed during site grading and construction activities to reduce the amount of dust produced.
11.	Daily construction activity should be limited to the period 7:00hr to 19:00hr, and artificial lighting should be turned off or directed away from natural areas, to avoid disturbance to night-time wildlife habitat use.
12.	Existing drainage patterns for the site should be maintained, with flows being directed toward Baden Creek.
13.	Post-development peak flow rates are to be maintained to pre-development rates, such as through use of water storage measures and flow control orifices.
14.	Stormwater infiltration LID measures should be incorporated into the future Site Plan-stage stormwater management plans to maintain a water balance with the adjacent Baden Creek watercourse and to maintain its existing shallow groundwater contributions, and to mitigate thermal impacts.
15.	Stormwater discharge outflow paths outside of the development limits should be planted with native woody vegetation species to provide a shading effect to mitigate thermal impacts to the receiving watercourse.

16.	Underground storage chambers should be used to the extent feasible, as opposed to surface-level ponding, for on-site water storage to mitigate thermal impacts to the receiving watercourse.
17.	Construction-stage ESC measures must be implemented in accordance with an approved ESC Plan to effectively mitigate erosion and sedimentation impacts on the woodland and watercourse features, and floodplain and buffer areas. Separate ESC Plans should be prepared for the initial site alteration plan and for the future detailed Site Plan Application.
18.	Silt fencing installed prior to grading for the initial site preparation should be left in place before construction of future industrial developments unless or until the soils have sufficiently stabilized and re-vegetated such that they do not pose a sedimentation and erosion risk, as determined by qualified personnel.
19.	Measures to dissipate and disperse flows at the floodplain stormwater outlet locations should be installed to prevent the erosion of flow paths.
20.	An “enhanced” level (80% total suspended solids removal) water quality treatment target must be met for the future development, such as through a treatment train approach incorporating use of OGS units, LID bioswales and water storage measures.
21.	All surface runoff from internal road/drive aisle and parking areas must be adequately treated before being released toward Baden Creek. Only “clean” runoff from roofs or pervious surfaces should be able to flow uncontrolled toward the watercourse/floodplain lands.
22.	Application of winter road salt to driving surfaces should be minimized to the extent possible, and alternatives to road salt should be considered.
23.	A spill response plan should be developed, and a spill kit should be kept on-site during construction activities.
24.	Vehicle refueling and equipment stockpiling must be completed outside of the watercourse floodplain.
Induced Impact Mitigations	
25.	Permanent chain-link fencing should be installed along the limits of development facing the natural features and restored floodplain areas to inhibit unauthorized access and dumping.
Restoration and Enhancement	
26.	The floodplain, watercourse riparian channel, and watercourse and woodland buffer areas should be ecologically restored with native seed mix application and targeted plantings of native tree and shrub species in accordance with a future Restoration and Enhancement Plan.
27.	Graded slopes along the limits of development, adjacent to the natural features, should receive a nurse crop and application of a native seed mix.
28.	The old tractor crossing structure in Baden Creek, comprising the CSP culverts and concrete debris, should be removed.
29.	Root wads or other measures to dissipate watercourse flow energy and to mitigate further bank erosion should be installed, such as at bends in the channel.
Monitoring	
30.	Pre-construction and construction-stage inspections of tree protection and silt fencing must be completed in accordance with Tree Protection Plan and ESC Plan requirements, respectively, to ensure proper installation and function.
32.	Any limbs or roots of trees to be retained that are damaged during construction must be inspected by a certified arborist and pruned where necessary.

33.	Construction- and post-construction inspections of the natural features, buffers and floodplain lands should be completed to ensure no unauthorized entry into or damage to these areas.
34.	Tree and shrub plantings should be inspected for survival and health condition at the end of the two-year warranty period. Remedial actions should be taken where planted individuals show signs of impaired growth (e.g., through enhanced watering during drought, installing tree guards, cutting away competing vegetation); dead individuals should be replaced on a 1:1 basis.
35.	Areas receiving native seed mix application should be inspected one year after application to ensure proper growth results. Areas of deficient growth should be re-seeded as required.

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Maps



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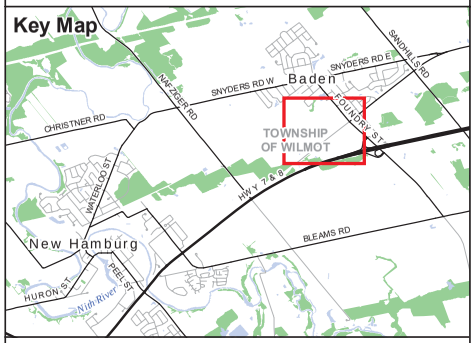
Schmidt Estate Industrial Lands

Study Area

Map 1

Key Map



Legend

- Study Area (120m)
- Schmidt Estate Lands
- Subject Lands
- Railway
- Regulation Limit (GRCA)
- Permanent Watercourse
- Intermittent Watercourse
- Water Body
- Other Wetland (Non-PSW)
- Wooded Area (OMNR Mapped)

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Aquatic, Terrestrial and Wetland Biologists

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Project: 1927B
Date: December 2, 2025

NAD83 - UTM Zone 17
Size: 11x17"
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0 50 100 150 200 250 Metres

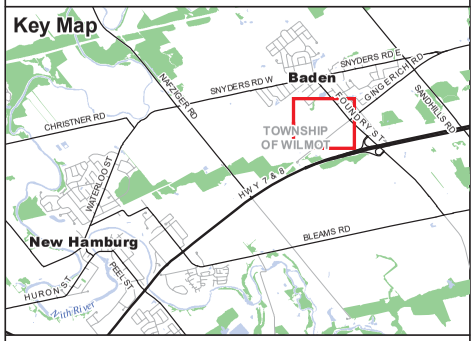
N



Schmidt Estate Industrial Lands

Aquatic Monitoring and Vegetation Communities

Map 2



Legend

- Subject Lands
- CSP Culvert
- Aquatic Habitat Point (AHP)
- Electrofishing Monitoring Station (EMS)
- Electrofishing Monitoring Station (EMS)
- Beaver Dam
- Surveyed Woodland Dripline Boundary (August 2025)
- Permanent Watercourse
- Intermittent/Ephemeral Watercourse
- Water Body
- Ecological Land Classification (ELC)
- (C) Commercial
- (CUM1) Mineral Cultural Meadow Ecosite
- (FOD7-3) Fresh - Moist Willow Lowland Deciduous Forest Type
- (L) Lawn
- (OA) Open Water
- (OAGM1) Agriculture
- (PS) Pumping Station
- (Res) Residential
- Inclusion (ELC)
- (MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type

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Project: 1927B
Date: December 4, 2025

NAD83 - UTM Zone 17
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0 50 100 150 200 Metres

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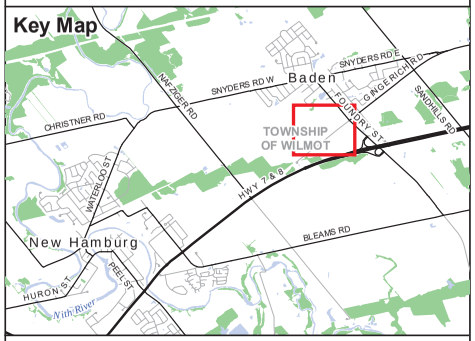
Schmidt Estate Industrial Lands

Significant Natural Features

Map 3

Key Map



Legend

- Subject Lands
- Existing Floodplain (GRCA)
- Regulation Limit (GRCA)
- Potential Bat SAR Habitat Tree
- Permanent Watercourse
- Intermittent Watercourse
- Direct Fish Habitat (Watercourse)
- Potential Bat Species at Risk Habitat and Candidate Bat Maternity Colonies SWH
- Locally Significant Woodland
- Ecological Land Classification (ELC)
- (C) Commercial
- (CUM1) Mineral Cultural Meadow Ecosite
- (FOD7-3) Fresh - Moist Willow Lowland Deciduous Forest Type
- (L) Lawn
- (OAGM1) Agriculture
- (PS) Pumping Station
- (Res) Residential

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Project: 1927B
Date: December 20, 2025

NAD83 - UTM Zone 17
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1:3,200

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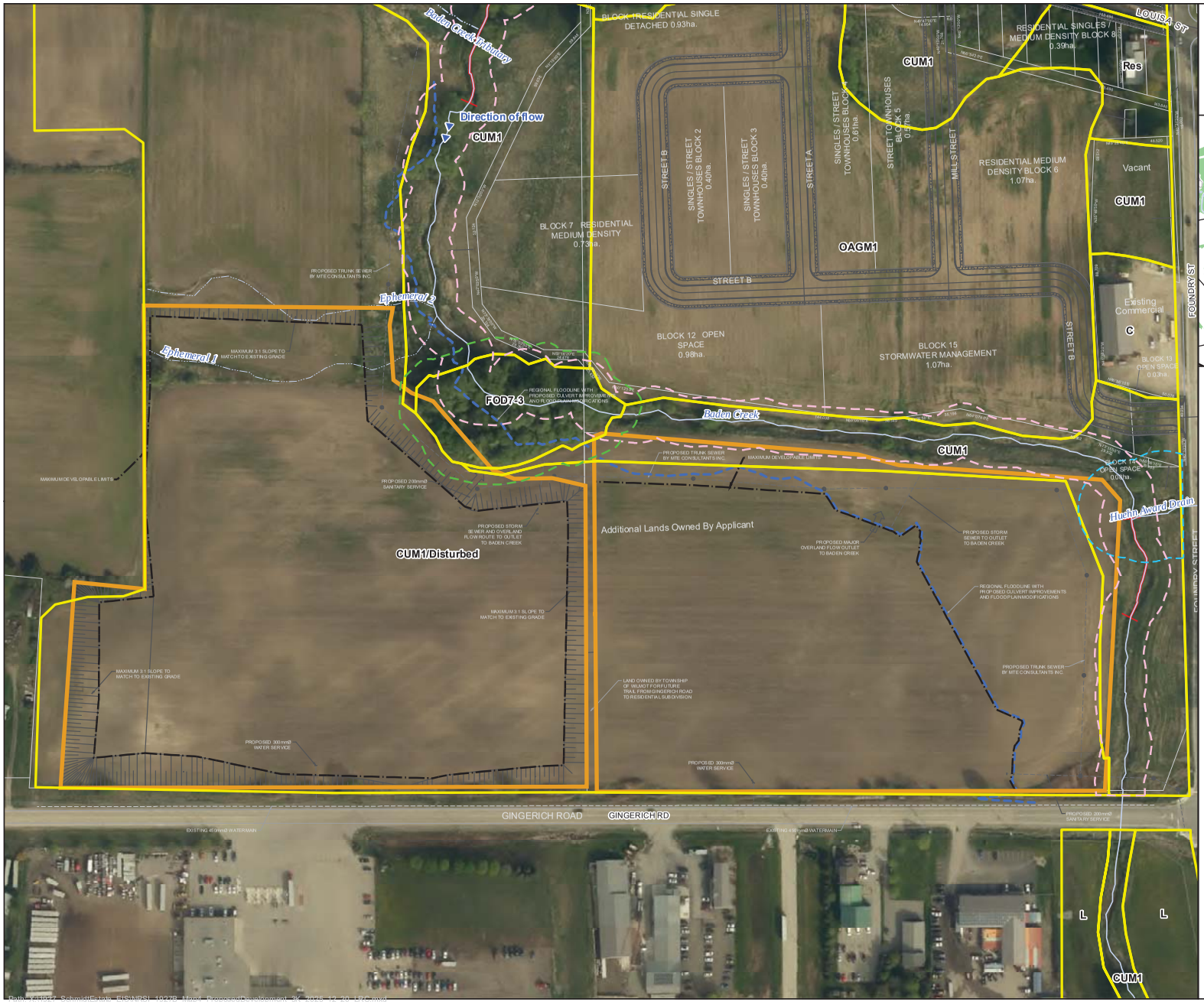
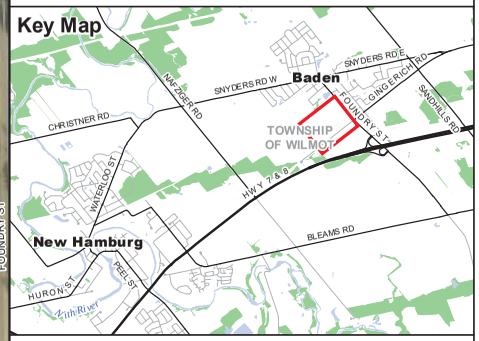


Schmidt Estate Industrial Lands

Proposed Development

Map 4

Key Map



Legend

- Subject Lands
- Electrofishing Monitoring Station (EMS)
- Permanent Watercourse
- Intermittent Watercourse
- Watercourse Buffer (15m)
- Watercourse Buffer (30m)
- Woodland Buffer (10m)
- Proposed Development Limit
- Proposed Floodline
- Proposed Site Plan
- Proposed Legal
- Proposed Services
- Existing Conditions
- Existing Legal
- Existing Services
- Ecological Land Classification (ELC)
- (C) Commercial
- (CUM1) Mineral Cultural Meadow Ecosite
- (FOD7-3) Fresh - Moist Willow Lowland Deciduous Forest Type
- (L) Lawn
- (OAGM1) Agriculture
- (Res) Residential

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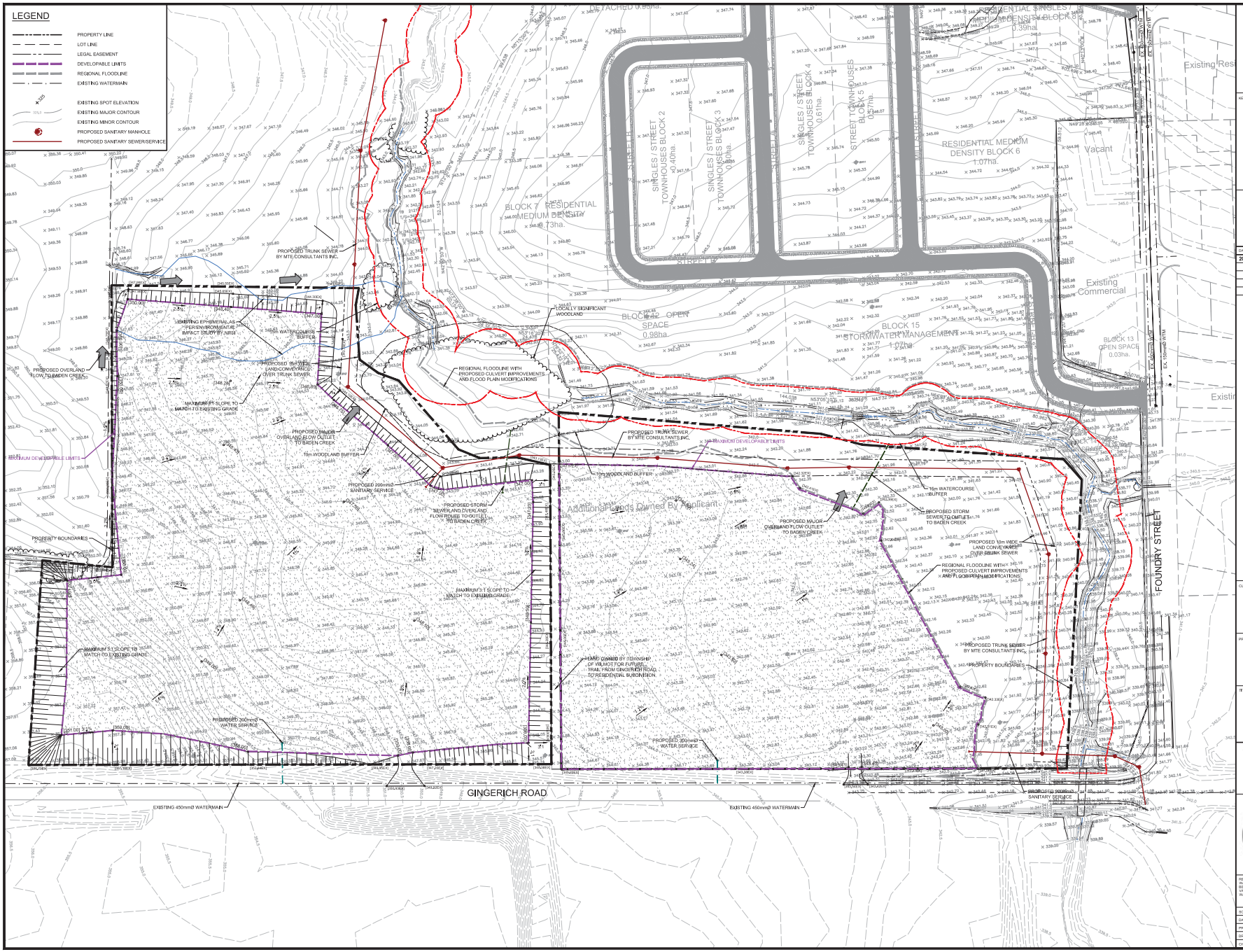
Project: 1927B
Date: December 20, 2025

NAD83 - UTM Zone 17
Size: 11x17"
1:2,300

0 50 100 150 Metres

Appendix I
Site Grading and Servicing Plan (WalterFedy 2024)



KEY PLAN



DATE	ISSUANCE	NO.
2024.12.03	ISSUED FOR ZBA	

CLIENT

SCHMIDT ESTATE

PROJECT

INDUSTRIAL BLOCKS

Gingerich Road, Baden

TITLE

FUNCTIONAL GRADING AND SERVICING PLAN

WALTERFEDY

TORONTO | CALGARY | KITCHENER | HAMILTON

800.265.1378 walterfedy.com

LICENSED PROFESSIONAL ENGINEER T. B. KELLER 100529026 2025.02.14 PROVINCE OF ONTARIO

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SCALE:	1:1000
DATE:	2025-02-13
PROJECT NO.	2016-0743-12
DRAWN BY:	TK
CHECKED BY:	DF

SHEET NO.

C200

\\BEL1\Job_Files\2016\0743\12\06-DWGS\CIVIL\2016-0743-12 - Functional; C200; None; Tyler Keller; 2025-02-13 1:49:22 PM

Appendix II
Record of Agency Correspondence

Subject: MNRF Review - potential badger burrows - Schmidt Estate property, Baden
From: "Buck, Graham (MNRF)" <Graham.Buck@ontario.ca>
Date: 15/09/2017, 2:24 p.m.
To: Ryan Archer <rarcher@nrsi.on.ca>

Hi Ryan,

I have reviewed your memo summarizing American Badger surveys completed at Schmidt Estates property in Baden. I don't believe any of the burrows described in the memo represent past or present burrows of American Badger.
The Ministry is not aware of any documented past or recent badger activity in Baden, but given the recent confirmed presence of the species near Stratford, Wellesley and Ayr there is a possibility of the species in Wilmot Township with sandy loam soils.

Sincerely,

Graham Buck

Management Biologist
Ministry of Natural Resources and Forestry
Guelph District
1 Stone Road West Guelph ON
N1G 4Y2
519 826 4505
graham.buck@ontario.ca

From: Ryan Archer [mailto:rarcher@nrsi.on.ca]
Sent: September-14-17 12:12 PM
To: Buck, Graham (MNRF)
Subject: Re: Input requested re. potential badger burrows - Schmidt Estate property, Baden

Hi Graham,

Just following up on this as to whether you've had a chance to review the information that I submitted about the potential badger burrows located on a property in Baden. Let me know if you would like to discuss our observations in more detail.

Regards,

Ryan Archer M.Sc.
Terrestrial and Wetland Biologist
Natural Resource Solutions Inc.
225 Labrador Drive, Unit 1
Waterloo, ON N2K 4M8
(p) 519-725-2227 (f) 519-725-2575
(m) 1-519-580-0758
(w) www.nrsi.on.ca (e) rarcher@nrsi.on.ca

On 8/21/2017 5:00 PM, Ryan Archer wrote:

Hi Graham,

I am in the midst of completing an EIS for a property in Baden known as the Schmidt Estate property. It is located at the corner of Gingerich St. and Foundary St. as shown on the map included in the attachment. During our fieldwork we encountered some mammal burrows that we have not been able to rule out as potential badger burrows. We have put together a brief memo that includes some photos and descriptions of the burrows for your information in case you are able to make any further conclusions about the likelihood that any of these could be badger burrows.

Thanks for your assistance.

Regards,
Ryan

--

Ryan Archer M.Sc.
Terrestrial and Wetland Biologist
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Thanks for your assistance.

Regards,

Ryan

--

Ryan Archer M.Sc.
Terrestrial and Wetland Biologist

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Waterloo, ON N2K 4M8

(p) 519-725-2227 (f) 519-725-2575
(m) 1-519-580-0758
(w) www.nrsi.on.ca (e) rarcher@nrsi.on.ca

Subject: RE: Background Information Request - Schmidt Estate, Baden, Ontario
From: "Buck, Graham (MNRF)" <Graham.Buck@ontario.ca>
Date: 12/07/2017, 10:14 a.m.
To: "jmccarter@nrsi.on.ca" <jmccarter@nrsi.on.ca>

Hi Jen,

The following information is available for the property:

1. Species at Risk
- Snapping Turtle: There is a record from 1978 from the property.

2. Fish Species Summary
- Brook stickleback, common shiner, creek chub, eastern blacknose dace, emerald shiner, fathead minnow, johnny darter/tesselated darter, longnose dace, northern hog sucker, rainbow darter, white sucker.
- Temperature regime is warm water
- No known spawning habitat

3. Wetlands
- The PSW complex in the area is the Baden East PSW. There are currently no wetlands mapped on the property, however any areas of the property determined to be wetland should be brought forward to the attention of MNRF for consideration of adding to the PSW complex.

Graham

Graham Buck
Management Biologist
Ministry of Natural Resources and Forestry
Guelph District
1 Stone Road West Guelph ON
N1G 4Y2
519 826 4505
graham.buck@ontario.ca

From: ESA Guelph (MNRF)
Sent: July-10-17 12:08 PM
To: Buck, Graham (MNRF)
Subject: FW: Background Information Request - Schmidt Estate, Baden, Ontario

---

From: Jennifer McCarter [mailto:jmccarter@nrsi.on.ca]
Sent: June-22-17 2:04 PM
To: ESA Guelph (MNRF)
Cc: Ryan Archer
Subject: Background Information Request - Schmidt Estate, Baden, Ontario

Hello,

Please find attached a Background Information Request and property map for an Environmental Impact Study for the Schmidt Estate, Baden, Ontario.

Please let myself or project manager, Ryan Archer, know if you require additional information.

Kind regards,
Jen
--

Jennifer McCarter M.Sc.
Terrestrial and Wetland Biologist
Natural Resource Solutions Inc.
225 Labrador Drive, Unit 1
Waterloo, ON N2K 4M8
(p) 519-725-2227 (f) 519-725-2575
(w)www.nrsi.on.ca (e) jmccarter@nrsi.on.ca

Subject: RE: Background Information Request - Foundry Street (Schmidt Estate)
From: Ashley Graham <agraham@grandriver.ca>
Date: 28/06/2017, 1:10 p.m.
To: Ryan Archer <rarcher@nrsi.on.ca>

Ryan,
The information we have will be available on our website. However, you may wish to touch base with the Region of Waterloo as they undertook works on the Foundry Street Bridge, over Baden Creek. The works were in 2005 so it may be a bit dated but it might be worth a look.
Sincerely,

Ashley Graham
Resource Planner
Grand River Conservation Authority
400 Clyde Road
PO Box 729
Cambridge, ON N1R 5W6
(519) 621-2763 ext 2238

From: Ryan Archer [mailto:rarcher@nrsi.on.ca]
Sent: June 27, 2017 12:59 PM
To: Ashley Graham
Cc: jmccarter@nrsi.on.ca
Subject: Re: Background Information Request - Foundry Street (Schmidt Estate)

Hi Ashley,

Our primary interest for this site is whether the GRCA has any existing information on file with respect to fish species known to use Baden Creek, other aquatic or fish habitat characteristics of the creek (e.g., thermal regime), or any Species at Risk observations that are known from the surrounding vicinity (e.g., within 1km) that may have come up as part of other studies completed in the area. Note that we have also contacted the MNRF Guelph District office for this information as well.

Regards,
Ryan

Ryan Archer M.Sc.
Terrestrial and Wetland Biologist
Natural Resource Solutions Inc.
225 Labrador Drive, Unit 1
Waterloo, ON N2K 4M8
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(m) 1-519-580-0758
(w) www.nrsi.on.ca (e) rarcher@nrsi.on.ca

On 6/27/2017 12:32 PM, Ashley Graham wrote:

> Hello Jen and Ryan,
> Thank you for your inquiry regarding the Schmidt Estate on Foundry Street in Baden. Background information is available on our website at https://www.grandriver.ca/en/Planning-Development/Map-Your-Property.aspx.
> Was there something specific that you were looking for?

Thanks

Ashley Graham
Resource Planner
Grand River Conservation Authority
400 Clyde Road
PO Box 729
Cambridge, ON N1R 5W6
(519) 621-2763 ext 2238

From: Jennifer McCarter [mailto:jmccarter@nrsi.on.ca]
Sent: June 22, 2017 1:58 PM
To: Planning
Cc: Ryan Archer
Subject: Background Information Request

Hello,

Please find attached a letter of request for Background Information for an Environmental Impact Study for the Schmidt Estate, Baden, Ontario.
Please let myself or project manager, Ryan Archer, know if you require additional information.

Kind regards,
Jen
--

Jennifer McCarter M.Sc.
Terrestrial and Wetland Biologist
Natural Resource Solutions Inc.
225 Labrador Drive, Unit 1
Waterloo, ON N2K 4M8
(p) 519-725-2227 (f) 519-725-2575
(w)www.nrsi.on.ca (e) jmccarter@nrsi.on.ca

Subject: RE: Enid Schmidt Estate, Baden - Draft EIS Terms of Reference
From: Tim Van Hinte <TVanHinte@regionofwaterloo.ca>
Date: 24/07/2017, 11:10 a.m.
To: 'Ryan Archer' <rarcher@nrsi.on.ca>, Ashley Graham <agraham@grandriver.ca>
CC: Kevin Muir <kmuir@gspgroup.ca>, Chris Pidgeon <cpidgeon@gspgroup.ca>, "davej@dsjnlaw.com" <davej@dsjnlaw.com>, "BKelly@kellylaw.com" <BKelly@kellylaw.com>, Elaine Gosnell <egosnell@nrsi.on.ca>, Bridget Coady <BCoady@regionofwaterloo.ca>

Hi Ryan:

Thanks for circulating to me - I have no issues with the Terms of Reference.

In terms of reporting, the Region will not need to review this EIS as there are no features designated for protection in the Regional Official Plan within the subject lands. However, through your review, if you find any features or functions of Regional significance please let me know.

Thanks,

Tim

From: Ryan Archer [mailto:rarcher@nrsi.on.ca]
Sent: Wednesday, July 19, 2017 2:09 PM
To: Ashley Graham; Tim Van Hinte
Cc: Kevin Muir; Chris Pidgeon; davej@dsjnlaw.com; BKelly@kellylaw.com; Elaine Gosnell
Subject: Enid Schmidt Estate, Baden - Draft EIS Terms of Reference

Hi Ashley and Tim,

Please find attached the draft Terms of Reference for the Environmental Impact Study that will be prepared as part of the application for Zoning By-law Amendment, and potentially Official Plan Amendment, associated with lands owned by the Enid Schmidt Estate west of Foundry Street in Baden.

Please let me know of any comments or questions. Based on your input I will finalize the TOR and recirculate to this group.

Regards,

--

Ryan Archer M.Sc.
Terrestrial and Wetland Biologist
Natural Resource Solutions Inc.
225 Labrador Drive, Unit 1
Waterloo, ON N2K 4M8
(p) 519-725-2227 (f) 519-725-2575
(m) 1-519-580-0758
(w) www.nrsi.on.ca (e) rarcher@nrsi.on.ca

Appendix III
2025 Schmidt Estate Residential Subdivision EIS Terms of Reference

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

August 18, 2025

Project No. 1927C

Andrew Martin
Manager of Planning and Economic Development
Township of Wilmot
60 Snyder's Road West
Baden, Ontario N3A 1A1

Dear Mr. Martin,

RE: Schmidt Estate Residential Subdivision Environmental Impact Study Terms of Reference (Draft)

On behalf of Natural Resource Solutions Inc. (NRSI), I am pleased to provide the following Terms of Reference (TOR) to undertake an Environmental Impact Study (EIS) associated with the proposed development of a residential subdivision on a parcel of land currently owned by the estate of Enid Schmidt, located within the community of Baden in the Township of Wilmot, Ontario.

This TOR represents an update of a previous TOR circulated to the Region of Waterloo and the Grand River Conservation Authority (GRCA) by NRSI for the Schmidt Estate EIS in August 2017. Since the EIS associated with the 2017 TOR was never completed, this updated TOR has been prepared in conjunction with a request by the proponent to update and complete the EIS for the proposed residential subdivision lands. Since circulation of the original TOR, the Region and GRCA are no longer responsible for ecology/natural heritage matters and EIS review pertaining to applications pursuant to the *Planning Act*. However, the GRCA has responsibilities in accordance with its regulatory mandate under the *Conservation Authorities Act* and Ontario Regulation 41/24, given the presence of GRCA-regulated lands on the subject property. Development and site alteration with GRCA-regulated lands is prohibited unless permitted by the GRCA.

As a further update to the 2017 EIS TOR, the current EIS TOR is specific to the proposed residential subdivision lands located north and east of Baden Creek. Proposed industrial lands located on the Schmidt Estate lands to the south and west of Baden Creek will be addressed within a separate EIS.

Recognizing that data from several field surveys covered under the 2017 EIS TOR are relatively dated (completed in 2017 and 2018), this TOR incorporates an updated suite of field surveys that have been or will be completed in 2025 to present an updated characterization of the subject property natural features and ecological functions. Certain other field surveys that have been completed more recently than those presented in the 2017 TOR (e.g., completed in 2024) have also been incorporated into this TOR. See below for further details about the timing and dates of EIS field surveys.

The following TOR has been prepared to outline NRSI's proposed work plan to complete the required EIS. This work plan has been scoped to accord with the Township's Official Plan requirements for Environmental Impact Statements as described in Official Plan Section 8.4.

Sincerely,



Ryan Archer, M.Sc.
Senior Terrestrial & Wetland Biologist
Natural Resource Solutions Inc.

Schmidt Estate Residential Subdivision
Environmental Impact Study Terms of Reference (Draft)

Introduction

The parcel of land that is proposed for residential development (herein referred to as the 'subject property') is bounded by St. George Street to the north, Foundry Street to the east, and Baden Creek to the south and west. For the purposes of this TOR, true northwest is referred to as 'north', true northeast is referred to as 'east', etc. The subject property is currently used for agricultural purposes and does not contain any existing dwellings or structures. Lands to the north primarily comprise commercial and residential land uses, lands to the east comprise residential uses, and lands to the south and west are predominantly agricultural. See Map 1 for the subject property location.

The subject property does not contain any Core Environmental Features of the Regional Greenlands Network as presented in Map 7 of the Township Official Plan (2024). The subject property does contain Baden Creek, as well as confluences of two tributaries (Huehn Award Drain and 'Baden Creek Tributary A') (Map 1), which provide fish habitat. Development and site alteration is prohibited in fish habitat except in accordance with provincial and federal requirements, as stated in Official Plan Section 8.1.4.2. The subject property also contains small woodland features. These features, and other natural land cover within and adjacent to the subject property (within 120m) may also provide habitat for Endangered or Threatened Species (herein referred to as 'Species at Risk (SAR) habitat') or Significant Wildlife Habitat (SWH). If present, the EIS must demonstrate no negative impact to these natural features or habitat functions; impacts to SAR habitats are subject to permitting or authorizations by federal or provincial authorities.

For the purposes of this EIS, the study area is defined as the subject property and the adjacent lands within 120m (Map 1).

Collection and Review of Background Information

Background information pertaining to the biological resources on and within 10km of the subject property has been collected and compiled. This included a review of the following sources:

- Natural Heritage Information Centre (NHIC) database of provincially-tracked species (OMNR 2025);
- Wilmot Township Official Plan (Township of Wilmot 2024);
- Ontario Breeding Bird Atlas (BSC et al. 2008);
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2019);
- Mammal Atlas of Ontario (Dobbyn 1994);
- Ontario Butterfly Atlas Online (Macnaughton et al. 2023);
- Ontario Odonata Atlas Database (OOAD 2023);
- Department of Fisheries and Oceans Aquatic Species at Risk mapping (DFO 2025); and
- Citizen science databases (iNaturalist (2025), eBird (2025)).

Species at Risk and Species of Conservation Concern Habitat Screening

Based on the review of background information, a Species at Risk (SAR) and Species of Conservation Concern (SCC) screening exercise has been completed to identify any significant species that are known to occur within the vicinity of the study area (up to 10km). A Significant Wildlife Habitat (SWH) screening exercise has also been completed based on available background information to identify any SWH types that may have the potential to occur in the study area. The SAR/SCC and SWH screening tables, informed in part by our initial site survey, are appended to this TOR.

SAR are those listed on the Species at Risk in Ontario list (MECP 2025). For the purposes of this report, SAR are defined as species listed as provincially Threatened or Endangered that are afforded protection under the *Endangered Species Act*. Within Ontario, Species of Conservation Concern (SCC) refer to:

- Species designated provincially as Special Concern;
- Species that have been assigned a conservation status (S-Rank) of S1 to S3 or SH by the NHIC;
- Species that are designated federally as Threatened or Endangered by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) but not provincially by the Committee on the Status of Species at Risk in Ontario. These species may be protected by the federal *Species at Risk Act* (SARA) if they are listed as Threatened or Endangered on Schedule 1 of the SARA.

Habitats of SCC are considered a form of SWH (OMNR 2010), which is afforded protection under the Provincial Policy Statement and the Township OP. See below for discussion about SCC habitats in the context of potential SWH in the study area.

Based on the result of the habitat screenings, the following SAR that are regulated under the *Endangered Species Act* have potentially suitable habitat that may require further investigation within the study area:

- Red-headed Woodpecker (*Melanerpes erythrocephalus*)
- Bank Swallow (*Riparia riparia*) (foraging habitat only)
- Silver-haired Bat (*Lasionycteris noctivagans*)
- Eastern Red Bat (*Lasiurus borealis*)
- Hoary Bat (*Lasiurus cinereus*)
- Little Brown Myotis (*Myotis lucifugus*)
- Northern Myotis (*Myotis septentrionalis*)
- Tri-colored Bat (*Perimyotis subflavus*)
- American Badger (*Taxidea taxus jacksoni*)

See Appendix I for the complete SAR/SCC habitat screening tables.

The following SWH types were screened as having potential to occur within the study area:

- Bat Maternity Colonies

- Special Concern and Rare Wildlife Habitat for the following species:
    - Eastern Wood-Pewee (*Contopus virens*)
    - Barn Swallow (*Hirundo rustica*) (foraging habitat only)
    - Snapping Turtle (*Chelydra serpentina*)
    - Monarch (*Danaus plexippus*)

See Appendix II for the complete SWH screening tables.

Field Studies

The following is a summary of the field survey methodology that will be used to characterize the existing natural features and ecological functions on the subject property. Note that certain field surveys described below have already been completed to meet their seasonal survey timing requirements. The field surveys described below include surveys undertaken/planned for 2025 as well as recent past surveys (completed in 2024) that will be included in the EIS.

Breeding Bird Surveys

NRSI biologists conducted two early morning breeding bird surveys within the subject property. Ten-minute point counts were conducted on two days, at least a week apart, between May 25 and July 10, 2025. Breeding evidence was recorded in accordance with the Ontario Breeding Bird Atlas (OBBA) protocol (Birds Canada et al. 2021). Any observations of significant species were recorded in detail, including their specific observation location(s), observed behaviour, and the highest level of breeding evidence.

Ecological Land Classification

Vegetation communities within the study area were mapped and classified following the Ecological Land Classification (ELC) system for southern Ontario (Lee et al. 1998). Any natural feature coverage located outside of the subject property that was inaccessible to NRSI biologists was mapped based on aerial imagery and based on what can be viewed from the subject property boundaries. Details of the vegetation communities were recorded including species composition, dominance, uncommon species or features, surficial soil types, and evidence of human impacts. Vegetation community mapping for the study area was completed during July 2025.

Vegetation Inventory

A two-season vegetation inventory will be completed during summer and fall 2025, during which the subject property will be systematically searched for plant species. Any rare species and their location(s) will be recorded with a handheld GPS unit. Vascular flora species will be recorded by ELC polygon.

Woodland Dripline Boundary Delineation

The dripline boundaries of two woodland communities that exist along the Baden Creek riparian corridor within the north and south ends of the subject property were delineated where they face the areas of proposed development. The dripline boundaries were surveyed by NRSI staff using a GPS unit capable of sub-metre accuracy for mapping purposes. The woodland dripline boundary delineations were completed during July 2025.

Butternut Health Assessment

During the course of previous NRSI field investigations within the subject property in 2020, three previously undocumented SAR Butternut (*Juglans cinereus*) trees were documented within the wooded riparian corridor at the north end of the subject property as further discussed below. An NRSI certified Butternut Health Assessor completed a Butternut Health Assessment (BHA) of the three trees during October 2020. An updated BHA will be completed for these trees during summer 2025 in accordance with standard BHA guidelines (MECP 2021) to determine their health status (Category 1, 2 or 3), and based on this, whether the trees and their habitat fall under the protection of the *Endangered Species Act*.

Bat Habitat Assessment (Treed Habitats)

An examination of trees was completed to assess their potential to provide roosting habitat for bats, based on the presence of features such as tree cavities or loose/peeling bark in accordance with provincial guidelines for treed habitats (MECP 2022a, b). This assessment was completed to identify the locations of potential habitat for SAR bats within the subject property and focused on trees that may require removal to accommodate the proposed development (i.e., outside of woodlands that will be retained). The bat habitat assessment was completed during March 2024.

Aquatic Habitat Assessment

An aquatic habitat survey of Baden Creek and on-site tributaries was completed and included documentation of the flow regime, adjacent land uses, basic channel morphology, substrates, in-water habitat and cover, riparian and shoreline habitat and cover, aquatic vegetation, important habitat features and in-situ water quality (temperature, pH, and dissolved oxygen). Aquatic features were assessed in terms of their potential to provide fish habitat and the quality of available habitat. An updated aquatic habitat assessment was completed during July 2025.

Habitat Assessments and Documentation of Other Wildlife

NRSI biologists will document incidental wildlife and their habitats within the study area during all site visits. Any features that may be indicative of SWH or habitat for SAR or SCC will be documented in detail, photographed, and georeferenced using a hand-held GPS unit. This will include an area search of agricultural field edges for the presence of potential SAR American Badger burrows. Any potential badger burrows will be documented in detail, including photographs and GPS coordinates.

Incidental observations of mammals, herpetofauna, butterflies and odonates (dragonflies/damselflies) observed on-site during site visits will be recorded. In addition to direct observations, any evidence such as dens, tracks, and scat will also be documented.

Reporting

Natural Feature Constraints Analysis

The results of the field surveys will be combined with the background information to provide a detailed summary of the existing natural features that occur within the study area, including any significant habitat features or functions that exist. This will include an assessment of significance (as Core Environmental Feature) for the on-site woodlands based on Regional criteria (Region of Waterloo 2024). Characterization of the

woodlands will include detailed vegetation community descriptions and mapping, confirmed dripline boundaries, and summaries of wildlife species based on background information review and site visits. The significance and sensitivity of fish habitat provided within Baden Creek and its tributaries will be assessed. SAR habitat mapping will be provided where SAR are confirmed to occur (e.g., Butternuts) or where potential habitat exists on-site. Confirmed and candidate SWH types will be described and mapped based on provincial criteria (MNRF 2015). Assessments of natural feature significance and sensitivity will be used to inform recommendations for ecological buffers or development setbacks.

EIS Impact Assessment, Mitigations, and Other Recommendations

An impact assessment will be completed based on details of the proposed development. NRSI will rely on technical studies and plans to be completed by other Project Team members that are relevant to the impact assessment such as hydrological/hydrogeological and stormwater management. Any areas of conflict between any significant features or ecological functions and the development will be discussed with the client and options for avoiding or minimizing impacts will be recommended. Potential impacts will be described in detail, with corresponding recommended mitigation measures where impacts cannot be avoided.

The impact of the development on the existing natural features and ecological functions will be determined based on the following:

- Direct impacts (i.e., natural feature or habitat removal) associated with the actual 'footprint' of the proposed development area. The approach to identifying and delineating constraint areas, discussed above, will be used to avoid direct impacts from the development on any significant natural features.
- Indirect impacts associated with changes in site conditions such as drainage and water quantity/quality or temporary construction-related impacts.
- Induced impacts associated with post-construction human use of the property.

Enhancement and Monitoring

Recommendations for ecological enhancement or restoration will be made where opportunities exist. Details will be based on the results of site the characterization and may include specific areas of restoration or enhancement, native species buffer plantings, invasive species management, etc. Where appropriate, monitoring recommendations may be provided to ensure that mitigation and restoration measures are functioning appropriately during and/or following construction.

EIS Report

The findings of the natural feature characterization, constraints analysis and the impact assessment with associated mitigation, enhancement, and monitoring recommendations will be summarized in an EIS report. The report will include the approved TOR, records of agency correspondence, the findings of the EIS, and a description of the proposed undertaking, including a review of the relevant guidelines and policies governing the development. Species lists will be appended and natural features will be shown on a series of maps including existing conditions, development opportunities and constraints, and the development concept.

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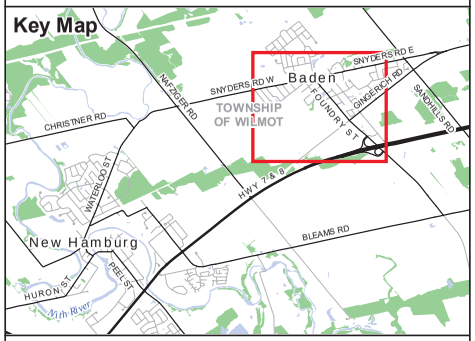
Map 1

Schmidt Estate Residential Subdivision

Study Area

Key Map



Legend

- Study Area (120m)
- Subject Property (approximate)
- Utility Line
- Railway
- Regulation Limit (GRCA)
- Permanent Watercourse
- Intermittent Watercourse
- Water Body
- Other Wetland (Non-PSW)
- Wooded Area

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Project: 1927A
Date: August 13, 2025

NAD83 - UTM Zone 17
Size: 11x17"
1:7,000

0 100 200 300 400 Metres

N

Path: X:\1927_SchmidtEstate_EIS\NRSI_1927A_Map1_StudyArea_7K_2025_08_13_KB.mxd

Appendix IV
Comment-Response Table

Table 1. Aboud and Associates comments on the NRSI Schmidt Estate Residential Subdivision EIS Terms of Reference on behalf of the Township of Wilmot (October 9, 2025)

Comment Number	Comment	Response
1.	Several additional policies (SARA, Fish & Wildlife Conservation Act, Township of Wilmot Zoning By-Law, GRCA's Policies for the Administration of Ontario Regulation 41/24 – Prohibited Activities, Exemptions and Permits) may be applicable to the work and the specifics of these policies that apply within the study area should be identified in the Terms of Reference. Policy compliance must be determined through the EIS.	The listed policies have been included and addressed as part of the larger list of policies, legislation and regulations that are applicable to the EIS study area. See Table 1 within Section 2.1.3.
2.	The background review assessment should also include the following resources: • Information request to the MNR, • MECP/NHIC requests for additional unpublished SAR records, • A review of any subwatershed studies, if available, and • Aquatic Resources Area (ARA) fish community information.	• An information request was submitted to the OMNR at the project outset (see report Section 2.1.1), which included information on Species at Risk, fisheries data and wetlands data (confirming no known wetlands are present) that are applicable to the study area. • Publicly available SAR records known from the vicinity of the study area were obtained from NHIC online database records (see Section 2.1.1). No restricted species records requiring follow-up consultation with the NHIC were identified for the study area (within 1x1km NHIC squares). • NRSI is not aware of existing subwatershed studies that are applicable to the study area. • ARA fish community data was reviewed as part of the background information review process.
3.	We note two discrepancies between the Terms of Reference text and Significant Wildlife Habitat (SWH) Screening Table, which presents conflicting conclusions regarding the candidacy of Bat Maternity Colonies and Snake Hibernaculum SWH. Please review and revise the assessment accordingly. With respect to Bat Maternity Colonies SWH, we agree with the candidate SWH determination, and the field assessments included in the Terms of Reference. Based on our review of available aerial imagery, it appears the referenced barn was removed in 2016; however, the	This comment is not directly relevant to the proposed industrial lands EIS (e.g., the former barn location is located outside of the EIS study area). As described in Section 5.4 of the report and in the SWH Assessment Tables (Appendix XIV), Bat Maternity Colonies SWH was identified as Candidate SWH within the study area, while Snake Hibernaculum SWH is considered absent. Note that these conclusions do not necessarily apply to the proposed residential subdivision EIS study area that is addressed under separate cover.

	condition and extent of the remaining concrete slab footprint cannot be confirmed. The EIS should include an evaluation of this feature's potential suitability to function as hibernaculum habitat, supported by appropriate field observations to substantiate any conclusions (e.g., evidence of cracks or entrance points, indication that the foundation extends below the frost line, or observations of snakes in the vicinity of the feature).	
4.	As Butternut has been identified within the study area, please include this species in the Species at Risk habitat screening for completeness.	Butternut has been included in the Species at Risk/Species of Conservation Concern Habitat Assessment table (Appendix XIII).
5.	The Terms of Reference should be updated to include and provide clarification on the following Field Studies:	See below for responses.
6.	• Botanical and incidental species observed should be noted by ELC community, and not the entire site.	Where data collection methods allowed, species observations have been documented according to the ELC community/land cover type there were observed in, including the vascular plant species list. See Appendices VII to XII for species lists.
7.	• The bat maternity and roosting habitat assessment must also consider newly listed bat species at risk, and their habitat requirements, which differ from maternity colony forming species.	See Section 5.2.1, which summarizes potential Species at Risk bat habitat within the study area, including for the newly listed migratory bat species.
8.	• A woodpecker nesting assessment should be completed during leaf-off to determine if pileated woodpecker or red-headed woodpecker nesting cavities are present in the study area in order to ensure compliance under the MBCA and ESA.	Red-headed Woodpecker has not been documented within the study area despite multiple breeding bird surveys and several other site investigations, and is considered absent within the study area (see the SAR/SCC Habitat Assessment table in Appendix XIII). No Pileated Woodpecker cavities were incidentally noted during the bat cavity tree assessment completed within the study area's FOD7-3 woodland feature. As described in Section 6.3, the FOD7-3 woodland within the study area will be retained in its entirety outside of the proposed development. Pileated Woodpeckers are unlikely to use any of the isolated tree growth located outside of the woodland within the study area, and no potential Pileated Woodpecker nesting cavities were incidentally noted for these trees.
9.	• The two ephemeral tributaries within the study area appear to meet the definition of headwater drainage features. However, since these features are located outside of the subject property, it is assumed that the	These features were reviewed and described within section 4.4.1 of the report.

	proposed development will not result in direct impacts to them. Therefore, we agree that a dedicated headwater drainage feature assessment is not considered necessary to demonstrate no negative impact. With this said, the aquatic habitat assessment should include a review of these features, documenting all relevant observations regarding their form and function as they relate to fish habitat.	
10.	• The aquatic habitat assessment of Baden Creek should include a review of available fish community data to summarize the sensitivity of the fish community present. Sufficient ARA survey data are available, and additional fish community sampling is therefore not considered necessary.	Fish community data has been included within section 4.5 of the report. Included within this is a summary of fish community survey data in addition to up-to-date ARA fish community data for Baden Creek.
11.	• The Woodland Dripline boundary delineation should be confirmed in the field with a Township representative.	A dripline boundary of the FOD7-3 study area woodland, where it faces the proposed industrial lands, was reviewed and confirmed in the field with Township staff on October 28, 2025.
12.	• Within the SWH assessment table 4 it is identified that the subject property is <30ha and is therefore not suitable habitat for shrub/early successional breeding habitat, however, the size criteria is >10ha, please update this assessment per the appropriate size criteria.	As described in the SWH Assessment table (Appendix XIV), suitable habitat for shrub/early successional bird breeding SWH is absent within the study area.
13.	• The analysis should include a review of the natural features present within the study area to determine if unmapped supporting environmental features are present and the applicable policies of the official plan should be considered. This includes, but is not limited to: environmental linkage function, locally significant woodlands, and permanent or intermittent watercourses.	Section 5.0 describes Supporting Environmental Features that were confirmed to occur within the study area based on the results of background review and site investigations, including identification of the relevant policy requirements to be addressed in the EIS.
14.	The EIS report summary of contents is generally acceptable, please ensure that the report summarizes studies completed by others, as applicable.	The EIS report references results of other NRSI studies that were completed within the study area of the industrial lands EIS, specifically EIS field studies completed for the proposed residential lands to the immediate north and the natural heritage assessment that was completed in support of the Baden Trunk Sanitary Sewer Environmental Assessment. NRSI is not aware of any other applicable studies completed by others (e.g., subwatershed studies) that apply to the EIS study area.

15.	The EIS appendices should include finalized ELC data cards, including photos of each community, Communication with authorities, site investigation details, vascular plant list and site photos as appropriate.	ELC data forms and vascular plant species lists for the Schmidt Estate lands (proposed industrial lands and adjacent proposed residential lands that fall within the EIS study area) are included in Appendix V. A photolog of the proposed industrial subject lands is included in Appendix VI. Records of consultation with agency staff are included in Appendix II.
16.	The analysis of impacts should also consider cumulative impacts, including a review of any adjacent proposed developments and intensification.	A cumulative impact assessment has been provided in Section 6.6 of the report.
17.	Mitigation and enhancement recommendations should include an analysis of the proposed buffer distance to the woodland and watercourse features, and justification for proposed buffers, using appropriate methods and literature review to determine buffers based on the scope of the development and the sensitivity of the natural heritage features present including a discussion of the minimum requirements of the PPS, Official Plan and Zoning.	Variable width buffers have been recommended in Section 6.3.1 of the report with reference to the relative sensitivity of the natural features that they are associated with. The recommended buffer widths presented in the report are widely applied and accepted as effective measures in combination with other buffer management recommendations (e.g., naturalization with native species growth; installation of permanent fencing along limits) to mitigate negative impacts to the protected natural features.
18.	The figure for the report should include the following components: • Location of point counts and area searches for breeding birds. • Location of candidate and confirmed SWH. • ELC Vegetation Communities. • Woodland dripline. • Species at Risk or rare species observations.	• All ELC vegetation communities and land use polygons that are displayed on Map 2 and form part of the larger Schmidt Estate land holdings have been the subject of breeding bird survey area searches. • Candidate SWH for Bat Maternity Colonies is displayed on Map 3. Since confirmed Barn Swallow foraging habitat comprises all open habitat lands, which comprise the vast majority of the study area, these areas have not been mapped. Section 5.4.1 describes that the wooded natural feature FOD7-3 is excluded from this functional habitat area. • ELC communities are displayed on Maps 2-4. The surveyed woodland driplines are clearly illustrated on Map 2 and are carried forward to define the feature limits in Maps 3 and 4. • Potential SAR habitat features/habitat areas are shown on Map 3. Since potential habitats of Eastern Red Bat and Hoary Bat could comprise all woody features >1m in height, these are not specifically mapped.
19.	The report must identify how the proposal conforms and meets the objectives of each applicable policy identified in table 1. The conclusion of the EIS must demonstrate policy compliance and no negative impact to natural heritage features or their ecological functions.	Section 9.0 of the report summarizes how the proposed development is in conformance with the principal provincial, regional and municipal natural heritage policies with respect to demonstrating no negative impact to features or ecological functions, subject to the implementation of recommended mitigation measures.

20.	For clarity, please confirm the TOR was circulated to the GRCA staff for review. The updated TOR should include a list of all recipients.	The GRCA was circulated on the TOR that was prepared for the proposed residential subdivision lands on August 18, 2025.

Appendix V
ELC and Vegetation Inventory Data Forms

South / West Boden Creek

Vegetation Species by ELC Community	Project: Schmidt Estate
	Project #: 1927C
Date: 09-23-2025	Cloud Cover (%): 90
Time: 10:40 - 11:40	Temperature (°C): 20
Observer(s): MAD	Wind: 0
Survey: Fall vegetation	Precipitation: none

Species	POLYGON NUMBER/ELC Community										
	CUM										
Canada goldenrod	✓										
Tall goldenrod	✓										
panicled aster	✓										
Galium mollugo	✓										
Acer negundo	✓										
New England Aster	✓										
Symph. pilosum	✓										
common Reed	✓										
narrowleared cattail	✓										
~~silFrost~~ aster	✓										
mentha spicata	✓										
Bidens frondosa	✓										
Epilobium hirsutum	✓										
white clover	✓										
Red clover	✓										
Canada horsetail	✓										
Lambs quarter	✓										
Field horsetail	✓										
chicory	✓										
Setaria pumila	✓										
Helianthus annuus	✓										
persicaria maculosa	✓										
Sonchus arvense	✓										
common dandelion	✓										
Bidens cernua	✓										
Elymus repens	✓										

Recent road work done in south east corner near culvert.

South / West Baden Creek

Vegetation Species by ELC Community		Project:	Schmidt Estate
		Project #:	1927 C
Date:	08-06-2025	Cloud Cover (%):	75
Time:	08:30-	Temperature (°C):	25 - humid
Observer(s):	MAD, NS	Wind:	2
Survey:	Summer Veg.	Precipitation:	none

Species	POLYGON NUMBER/ELC Community										
		FOD7-3									
Acer negundo		✓									
Vitis striaria		✓									
White mulberry		✓									
Solidago altisima		✓									
Wild cucumber		✓									
Gallium mollugo		✓									
Smooth grome		✓									
American basswood		✓									
Euro. buckthorn		✓									
Sweet cherry		✓									
Geum urbanum		✓									
Jack-in-the-pulpit		✓									
Dame's rocket		✓									
Circeae canadensis		✓									
Garlic mustard		✓									
Ribies rubrum		✓									
Herb robert		✓									
Black walnut		✓									
Spotted jewelweed		✓									
Viberum opulus		✓									
~~Virginia~~ Thicket creeper		✓									
Alternate leaved dogwood		✓									
Hawthorn sp.		✓									
Rubus occidentalis		✓									
Choke cherry		✓									
Green ash		✓									
Crack willow		✓									
Calico aster		✓									
Orchard grass		✓									
Common burdock		✓									

Vitis riparia

Species	POLYGON NUMBER/ELC Community										
	CUM1	FOD7-3									
Lamb's 1/4	A										
Plantago majort	O										
Canada horseweed	A										
Sonchus arvense	O										
Witch grass	O										
Solanum emulans	A										
Velvetleaf	O										
Yellow nut sedge	O										
Amaranthus powellii	O										
Cirsium arvense	O										
Beronica persica	O										
Persicoria meclousa	O										
White clover	O										
Queen Anne's Lace	O										
Common milkweed	O										
Setaria viridis	O										
Wild basil	O										
Thlaspi arvens	A										
Erigeron philadelphicus	O										
Chicory	O										
Barnyard grass	O										
Bull thistle	O										
Giant Ragweed	O	O									
BLJA, AGOL, SOSP		✓									
MODO, CANG, KILL	✓										

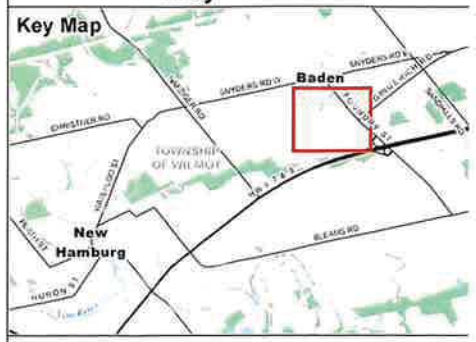
graded lands



Map 2

Schmidt Estate EIS

Vegetation Communities and Survey Locations



Legend

- Subject Property (approximate)
- CSP Culvert
- Water Quality
- Anuran Station (ANR)
- Bird Breeding Monitoring (BMB)
- Electrofishing Monitoring Station (EMS)
- Permanent Watercourse
- Intermittent Watercourse
- Water Body
- Ecological Land Classification (ELC)
- (C) Commercial
- (CUM1) Mineral Cultural Meadow Ecosite
- (CUW1) Mineral Cultural Woodland Ecosite
- (FOD7-3) Fresh - Moist Willow Lowland Deciduous Forest Type
- (L) Lawn
- (OA) Open Water
- (OAGM1) Agriculture
- (PS) Pumping Station
- (Res) Residential
- Inclusion (ELC)
- (MAM2) Mineral Meadow Marsh Ecosite
- (MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type

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Project: 1927A
Date: March 19, 2024

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

0 50 100 150 200 250 Metres

N

= measured dripline of using pole unit

CUM

*Note new MAM2-2 in NE study area (very small)

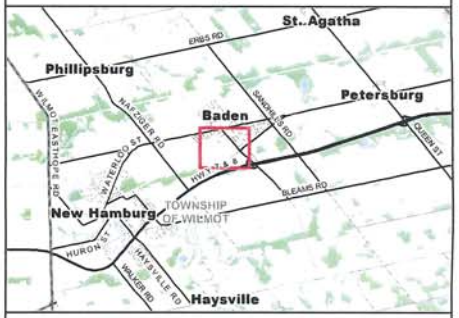
Summer veg, ELC refine July 2021 AMD



Map 1

Baden Trunk Sanitary Sewer EA

Natural Environment Assessment Study Area



Legend

- Study Area
- Railway
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Water Body
- Other Wetland (Non-PSW)
- Wooded Area

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Aquatic, Terrestrial and Wetland Biologists

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Project: 2561 Date: May 12, 2021	NAD83 - UTM Zone 17 Size: 11x17" 1:5,000

0 100 200 300 Metres

N

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description

PLANT SPECIES LIST

Site:	Baden Trunk Sanitary Sewer EA (#2561)
Polygon:	FOD7-3 (+ creek corridor)
UTM:	
Date:	July 20/21 — Time:
Surveyor(s):	AMD (+ M
Weather:	19-27 °C, wind Z/SW, overcast

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
Juncus articulatus					
Penthorum sed.					
mentha canadensis					
* Potamogeton nodosus					
↳ 526807 4805273					
Stuckenia pectinata					
Sagittaria latifolia					
yellow iris					
Carex cristatella					
Galium mollugo					
Glyceria urbanum					
Calystegia sepium					
Mentha x piperita					
Agrostis stolonifera					
Persicaria mac.					✓
Myosotis laxa					
Carex spicata					
Tragopogon pratensis					
carex vulp.					
Poa palustris					
Lycopus uniflorus					
Leersia oryz.					
Potentilla indica					
wild cucumber					
Lycopus amer					
Verbena hastata					
Veronica ag.					
Bidens cernua					
Ranunculus scel.					
Leonurus card.					
Verbena urticifolia					
Ambrosia trifida					
Scholoneplectus tab.					

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Modified ELC Community Description

PLANT SPECIES LIST

Site:	
Polygon:	CUW1 / CUM1
UTM:	
Date:	Time:
Surveyor(s):	
Weather:	

Layers: CUW1 1=canopy 2=sub-canopy 3=understorey 4=ground layer CUM1
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
Triosteum aur					
Circaea canad					
Symphyotrichum lateri					
Geum x rattingii					
Glyceria canadensis					
Erigeron annuus					
* Carex pallescens					✓ x 2
Oxalis stricta					
Geum urbanum					
Clinopodium vulg					
Quercus macro					

Species	Layer 1	2	3	4	Sample
Phleum pratense					
Lolium pratense					
Agrostis gigantea					
Danthonia spicata					
Symphyotrichum ericoides					
Symphyotrichum pilosum					
Poa comp.					
* Helianthus pauciflorus					x ✓
Plantago lance					
Carex gran.					
Erigeron strig.					
Echium vulgare					
Solidago nemoralis					
Festuca rubra					
Asclepias syriaca					
Symphyotrichum nov.					
Geum laciniatum					
Hordeum jubatum					
Convulvus arvensis					
Melilotus alba					
Juncus tenuis					
Rumex brit					✓
↳ 526559 4805477					
Solidago rang					
Symphyotrichum lanc					
Sonchus arvensis					
Epilobium parv.					
Typha angust					
Rorippa palustris					
Carex stipata					

* Helianthus pauciflorus ssp. subrhomboideus (5253) – treated as adventive., 526435 4805381

Ranunculus repens

*: row of young manitoba maple + hawthorns, bl. walnut, apple

MAM2 (incl.)

May 17/21 AMD

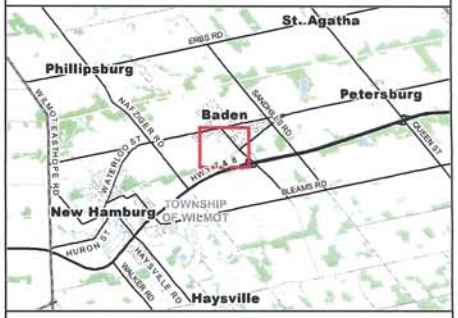
ELC, veg, herp area search



Map 1

Baden Trunk Sanitary Sewer EA

Natural Environment Assessment Study Area



Legend

- Study Area
- Railway
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Water Body
- Other Wetland (Non-PSW)
- Wooded Area

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Project: 2561
Date: May 12, 2021

NAD83 - UTM Zone 17
Size: 11x17"
1:5,000

0 100 200 300 Metres

N

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description

Page __ of __

Site:	Baden Trunk Sanitary Sewer EA (#2561)
Polygon:	A
UTM:	
Date:	May 17/21
Time:	
Surveyor(s):	AMD
Weather:	7-20°C, wind 1/S, 0% CC.

Community Classification

	Vegetation Type:	Mineral Cultural meadow (CUM1)
X	Inclusion:	Mineral Meadow Marsh (MAM2)
	Complex:	

Polygon Description

System	Substrate	Topo Feature		Community	
X Terrestrial	Organic	Lacustrine	Talus	Lake	Barren
Wetland	X Mineral Soil	Riverine	Crevice/Cave	Pond	X Meadow
Aquatic	Parent Min.	Bottomland	Alvar	River	Prairie
	Acidic Bedrock	Terrace	Rockland	Stream	Thicket
History	Basic Bedrock	Valley Slope	Beach/Bar	Marsh	Savannah
Natural	Carb. Bedrock	X Tableland	Sand Dune	Swamp	Woodland
X Cultural		X Roll. Upland	Bluff	Fen	Forest
	Site	Cliff		Bog	Plantation

Cover		Plant Form		
X Open	Open Water	Plankton	X Forb	Coniferous
Shrub	X Surficial Dep.	Submerged	Lichen	Mixed
Treed	Bedrock	Floating-Lvd.	Bryophyte	
		X Graminoid	Deciduous	

Stand Description

	Layer	HT	Cover	Species
*	~~Super-canopy~~			
1	~~Canopy~~			
2	~~Sub-canopy~~			
3	Understorey	3-4	1/2	Manitoba maple > common apple > bl. walnut
4	Groundcover	5-7	4	cool season grasses > Galium mollugo > garlic mustard

HT Codes: 1: >25m 2: 25 - 10m 3: 10 - 2m 4: 2 - 1m 5: 1 - 0.5m 6: 0.5 - 0.2m 7: <0.2m

Cover Codes: 0:none 1: 0 - 10% 2: 10 - 25 3: 25 - 60% 4: >60%

Size Class Analysis		< 10		10 - 24		25 - 50	> 50
Snags		< 10		10 - 24		25 - 50	> 50
Deadfall/Logs		< 10		10 - 24		25 - 50	> 50

Abundance Codes: N: None R: Rare O: Occasional A: Abundant

Community Age		Pioneer	X	Young		Mid-age	Mature	Old Growth

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description

Page ____of____

PLANT SPECIES LIST

Site:	
Polygon:	
UTM:	
Date:	Time:
Surveyor(s):	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer

Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
Man. maple					
Common apple					
R.O. dogwood					
bl. walnut					
trembling aspen					
horse chestnut					
Salix alba					
Rosa multi					
Juglans nigra					
Prunus avium					
Picea abies					
Populus balsam					
Amelanchier					X
Prunus virg					
autumn olive					
Thuja occ.					
Juniperus virg					
Crataegus punct.					
silver maple					
Morus alba					
Bromus inermis					

Species	Layer 1	2	3	4	Sample
Poa annua					
Shepherd's purse					
yellow rocket					
white clover					
Comm-n plantain					
wild strawberry					
garlic mustard					
orchard grass					
Poa pratensis					
Galium mollugo					
					x brms
creeping charlie					
cheeses					
Vicia cracca					
Am. stinging nettle					
Solidago alt.					
myosotis sylv.					
Danthonia spic.					
Phragmites					
Jap. knotweed					
Ambrosia tri.					
celandine					
Lamium amplex					

Wildlife and Other Notes

- MAM2 inclusion: anthropogenic, for localized water impoundment, drains SE under old grown over rail spur line into CUM1
- woodchuck

Polygon Photo Number(s)

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description

Page __ of __

Site:	(# 2561)
Polygon:	B
UTM:	
Date:	May 17/21
Time:	
Surveyor(s):	AMD
Weather:	

Community Classification

Vegetation Type:		F-M Lowland Willow Decid. Forest
	Inclusion:	
	Complex:	

FOD7-3

Polygon Description

System	Substrate	Topo Feature		Community	
X Terrestrial	Organic	Lacustrine	Talus	Lake	Barren
Wetland	X Mineral Soil	X Riverine	Crevice/Cave	Pond	Meadow
Aquatic	Parent Min.	Bottomland	Alvar	River	Prairie
	Acidic Bedrock	Terrace	Rockland	Stream	Thicket
History	Basic Bedrock	Valley Slope	Beach/Bar	Marsh	Savannah
X Natural	Carb. Bedrock	Tableland	Sand Dune	Swamp	Woodland
Cultural		Roll. Upland	Bluff	Fen	X Forest
	Site	Cliff		Bog	Plantation

Cover	Site	Plant Form		
Open	Open Water	Plankton	Forb	Coniferous
Shrub	Shallow Water	Submerged	Lichen	Mixed
X Treed	X Surficial Dep.	Floating-Lvd.	Bryophyte	
	Bedrock	Graminoid	X Deciduous	

Stand Description

	Layer	HT	Cover	Species
*	~~Super-canopy~~			
1	Canopy	1-2	3	Crack willow > Manitoba maple > weeping willow
2	Sub-canopy	3	4	Manitoba maple > Crack willow > bl. walnut
3	Understorey	4-5	4	Manitoba maple > common apple > choke cherry
4	Groundcover	6-7	4	garlic mustard > myosotis sylvatica > dame's rocket

HT Codes: 1: >25m 2: 25 - 10m 3: 10 - 2m 4: 2 - 1m 5: 1 - 0.5m 6: 0.5 - 0.2m 7: <0.2m

Cover Codes: 0:none 1: 0 - 10% 2: 10 - 25 3: 25 - 60% 4: >60%

Size Class Analysis	< 10	10 - 24	25 - 50	> 50
Snags	< 10	10 - 24	25 - 50	> 50
Deadfall/Logs	< 10	10 - 24	25 - 50	> 50

Abundance Codes: N: None R: Rare O: Occasional A: Abundant

Community Age	Pioneer	Young	X Mid-age	Mature	Old Growth

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description

Page ___ of ___

PLANT SPECIES LIST

Site:	
Polygon:	
UTM:	
Date:	Time:
Surveyor(s):	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer

Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
Rosa multi.					
Salix fuxina					
Acer neg					
Rubus idaeus					
Rubus occ.					
Cornus stolon.					
Viburnum sp. op.					
Juglans nigra					
Juglans cinerea					
Prunus virg.					
Ribes amer.					
Ribes rubrum					
Cornus alter					
Salix alba					
Malus pum					
Ribes cyno					
Rhamnus cath.					

Species	Layer 1	2	3	4	Sample
garlic mustard					
Galium aparine					
Hesperis matron					
Urtica di. di					
Circaea cana					
Viola sororia					
Geranium robert					
Myosotis sylv.					x
Dactylis glom.					
Ranunculus rep					
Impatiens cap.					
Tussilago far.					
Rumex obtus					
Arisaema tri					
yellow rocket					
Allium tric.					
Caltha pal.					

Wildlife and Other Notes

- 2 units, north + south

Polygon Photo Number(s)

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description Page __ of __

Site:	(*2561)
Polygon:	C
UTM:	
Date:	May 17/21
Time:	
Surveyor(s):	AMD
Weather:	

Community Classification

Vegetation Type:	Mineral Cultural Woodland	CUW1
Inclusion:		
Complex:		

Polygon Description

System	Substrate	Topo Feature		Community	
X Terrestrial	Organic	Lacustrine	Talus	Lake	Barren
Wetland	X Mineral Soil	Riverine	Crevice/Cave	Pond	Meadow
Aquatic	Parent Min.	Bottomland	Alvar	River	Prairie
	Acidic Bedrock	Terrace	Rockland	Stream	Thicket
History	Basic Bedrock	Valley Slope	Beach/Bar	Marsh	Savannah
Natural	Carb. Bedrock	Tableland	Sand Dune	Swamp	X Woodland
X Cultural		X Roll. Upland	Bluff	Fen	Forest
	Site	Cliff		Bog	Plantation

Cover			Plant Form		
Open	Open Water	Plankton	Forb	Coniferous	
Shrub	Shallow Water	Submerged	Lichen	Mixed	
X Treed	X Surficial Dep.	Floating-Lvd.	Bryophyte		
	Bedrock	Graminoid	X Deciduous		

Stand Description

	Layer	HT	Cover	Species
*	~~Super-canopy~~			
1	Canopy	2	3	Manitoba maple.
2	Sub-canopy	3	3	Manitoba maple > Common apple > Crataegus spp.
3	Understorey	4-5	3	Crataegus spp. > Manitoba maple > choke cherry
4	Groundcover	6-7	3	garlic mustard > Myosotis sylvatica > Fragaria virg.

HT Codes: 1: >25m 2: 25 - 10m 3: 10 - 2m 4: 2 - 1m 5: 1 - 0.5m 6: 0.5 - 0.2m 7: <0.2m

Cover Codes: 0:none 1: 0 - 10% 2: 10 - 25 3: 25 - 60% 4: >60%

Size Class Analysis	< 10	10 - 24	25 - 50	> 50
Snags	< 10	10 - 24	25 - 50	> 50
Deadfall/Logs	< 10	10 - 24	25 - 50	> 50

Abundance Codes: N: None R: Rare O: Occasional A: Abundant

Community Age	Pioneer	X Young	Mid-age	Mature	Old Growth

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description Page ___ of ___

PLANT SPECIES LIST

Site:	
Polygon:	
UTM:	
Date:	Time:
Surveyor(s):	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer

Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
Acer neg					
Ribes rub					
Malus pumila					
Rosa multi					
Juglans nigra					
Prunus virg.					
Lonicera tata.					
Rhamnus cath.					
Ulmus amer.					
Crataegus sp.					
Prunus serot.					
Acer platan.					
Crataegus punct.					
Salix alba					
E. white pine					
Ribes amer					
Rubus idaeus					
Picea abies					

Species	Layer 1	2	3	4	Sample
Myosotis sylv.					
Fragaria virg					
Alliaria pet.					
Circaea cana					
Creeping charlie					
Dactylis glom					
Viola obliqua					
Saponaria off					
Hesperis matron					
Galium aparine					
Viola sororia					
Erigeron annuus					
Geum sp.					
Geranium robert					
Leonurus card					
[illegible]					

Wildlife and Other Notes

re. west unit
- bike trails throughout (jumps, soil movement, bare areas)
- highly disturbed, very low plant diversity

Polygon Photo Number(s)

- E. cottontail, gray squirrel

Modified ELC Community Description

Page __ of __

May 17/21 AMD

Soils	1	2	3
Position:	6	6	
Aspect:	135	70	
%	0-0.5	0-0.5	
Type:	S	S	
Class:	A	A	
Strata: Texture	CL	CL	
Depth	0-38	0-35	
Strata: Texture	SiL	SiL	
Depth	39-70	36-80	
Strata: Texture			
Depth			
Strata: Texture			
Depth			
Effective Texture	SiL	SiL	
Surface Stoniness			
Surface Rockiness			
Depth to:			
Mottles	57	51	
Gley	-	-	
Bedrock	-	-	
Water table	-	-	
Carbonates	-	-	
Depth of Organics	-	-	
Pore Size Disc #1			
Pore Size Disc #2			
Pore Size Disc #3			
Moisture Regime	4	4	

Polygon: study area (#2561)

Tree Tally

Species	Tally 1	Tally 2	Tally 3
Total:			
Basal Area			
Snags			

NOTES:

- Soil sample 1: FOD7-3 (north unit)
- Soil sample 2: FOD7-3 (south unit)

Modified ELC Community Description

Page __ of __

Soils	1	2	3
Position:			
Aspect:			
%			
Type:			
Class:			
Strata: Texture			
Depth			
Strata: Texture			
Depth			
Strata: Texture			
Depth			
Strata: Texture			
Depth			
Effective Texture			
Surface Stoniness			
Surface Rockiness			
Depth to:			
Mottles			
Gley			
Bedrock			
Water table			
Carbonates			
Depth of Organics			
Pore Size Disc #1			
Pore Size Disc #2			
Pore Size Disc #3			
Moisture Regime			

Polygon:

Tree Tally

Species	Tally 1	Tally 2	Tally 3
Total:			
Basal Area			
Snags			

NOTES:

beaver dam (log jam?) - flow
↳ see photo

full veg, ELC refine, BHA (3 trees)
Oct, 23/20
AMD



Map 2

Schmidt Estate EIS

Vegetation Communities and Monitoring Stations



Legend

- Subject Property (approximate)
- Anuran Station (ANR)
- Bird Breeding Monitoring (BMB)
- Watercourse
- Water Body
- Ecological Land Classification (ELC)

(CUM1-1) Dry - Moist Old Field Meadow Type

(FOD7-3) Fresh - Moist Willow Lowland Deciduous Forest Type

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Project: 1927
Date: May 24, 2018

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

0 50 100 150 200 250 Metres

N

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description

PLANT SPECIES LIST

Page ____of____

Site: (#1927A)	
Polygon: FOD7-3	
UTM:	
Date: Oct. 23/20	Time:
Surveyor(s): AMD	
Weather: 21°C, wind 4/SW, 40% CC	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
Viburnum opulus					
Ribes americanum					
multiflora rose					
Canada goldenrod					
herb robert					
wild cucumber					
dame's rocket					
sweet cherry					
mentha x peperita					
wild red raspberry					
Persicaria lapath					
Ribes rubrum					
barnyard grass					
Circaea canadensis					
alt. leaf dogwood					

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
Epilobium color.					
woodbine					
crack willow					
bl. walnut					
* butternut (BHA for 3 trees)					
reed canary					
Sagittaria latifolia					
Potamogeton nodosus					
water speedwell					
rice cut grass					
wild strawberry					
sp. jewelweed					
calico aster					
garlic mustard					
Man. maple					
Urtica dioica gracilis					
river grape					
dame's rocket					
Geum urbanum					
watercress 526813 480531 1					
Ranunculus repens					
R.O. dogwood					
bl raspberry					
choke cherry					
reed canary					
Euro. buckthorn					
Norway maple					
lance leaf aster					
orchard grass					
yellow iris					

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description

PLANT SPECIES LIST

Page ____of____

Site:	
Polygon: CUM1	
UTM:	
Date:	Time:
Surveyor(s):	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
staghorn sumac					
bl. locust					
Erigeron annus					
Agrostis gigantea					
Euthamia gram.					
Common milkweed					
elecampane					
Urtica dioica gracilis					
Stellaria graminea					
cow vetch					
Galium album					
reed canary					
Atriplex patula					
Crack willow					
hairy aster					
teasel					
timothy					
Canada thistle					
Lolium arundinacea					
Norway spruce					
lilac					
garlic mustard					
Oxalis stricta					
R.O. dogwood					
bitter nightshade					
calico aster					
creeping charlie					

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
Poa pratensis					
lamb's quarters					
E. cottonwood					
bluewed					
Man. maple					
orchard grass					
Avena sativa					
Canada goldenrod					
tall goldenrod					
alfalfa					
Lolium perenne					
smooth brome					
Common tansy					
wild carrot					
Erigeron strigosus					
mullein					
Juncus tenuis					
Elymus repens					
Sweet wh. clover					
horseweed					
NE aster					
chickory					
lance leaf aster					
Common ragweed					
Common apple					
wh clover					
river grape					
bl. walnut					
Geum urbanum					
Euro. buckthorn					

Stream corridor restoration, pre-const. site inspection
Oct 1/20
AMD



Map 2

Schmidt Estate EIS

Vegetation Communities and Monitoring Stations



Legend

- Subject Property (approximate)
- Anuran Station (ANR)
- Bird Breeding Monitoring (BMB)
- Watercourse
- Water Body
- *Ecological Land Classification (ELC)*

(CUM1-1) Dry - Moist Old Field Meadow Type

(FOD7-3) Fresh - Moist Willow Lowland Deciduous Forest Type

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Project: 1927
Date: May 24, 2018

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

0 50 100 150 200 250 Metres

N

No.352

Schmidt Estate Els (#1927A) Oct. 1/20 AMD

Restoration (stream corridor) site inspection

- butternut (~10 cm dbh), good condition, FOD7-3
  ↳ 17T 526785 4805214
- watercress colonies w/ inflow area (GW input) - some very large colonies
- Phragmites @ southern extent, @ Gingrich Rd crossing (see map)
- portions of creek corridor appear accessible for blower truck, i.e. terraseeding
- little opportunity for on-site live stake harvest (some dogwood, no appropriate willow)
- some steeper slopes + erosional banks along southern reach, i.e. near ANR-004

veg present to use in restoration:

- R.O. dogwood
- red raspberry
- choke cherry
- lance leaf aster
- common arrowhead
- Potamogeton sp.
- blue vervain
- rice cut grass
- NE aster
- broad cattail
- white elm

- see photos on server

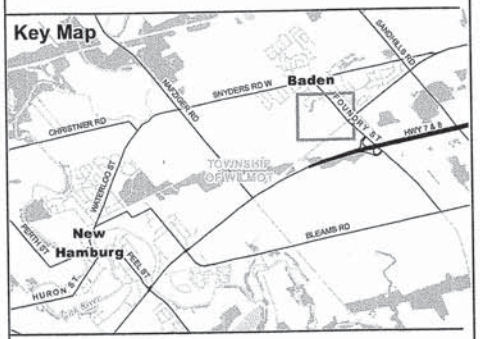
Rite in the Rain



Map 2

Schmidt Estate EIS

Vegetation Communities



Legend

- Subject Property (approximate)
- Watercourse
- Water Body
- Ecological Land Classification (ELC)
- (CUM1-1) Dry - Moist Old Field Meadow Type
- (FOD7-3) Fresh - Moist Willow Lowland Deciduous Forest Type

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Aquatic, Terrestrial and Wetland Biologists

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Project: 1827 Date: April 18, 2018	NAD83 - UTM Zone 17 Size: 11x17" 1:3,000

0 50 100 150 Metres

N

Vegetation Species by ELC Community	Project: Schmidt Estate
	Project #: 1927
Date: May 11, 2018	Cloud Cover (%): 95
Time: 10:30	Temperature (°C): 10
Observer(s): KRE G M	Wind: 2
Survey: ELC	Precipitation: none

Species	POLYGON NUMBER/ELC Community
TARA OFF	CUM off of Creek
Teasal	
Cleavers □ 7 leaves	
Reed canary	
Kentucky Blue	
SOLI CANA	
SOLI GRAM	
Red osier	
Malus domes.	
Red clover	
QUAC CORA	
ACER NEG	
Symphyotricum sp.	
Fragaria (dry)	
ROSA MULT	
Willow sp.	
ARCT MINO	
N.E Aster	
RHAM CAT	
Bull thistle	
CRATAEGUS sp.	
Wild cucumber	
ONE BIEN	
Stinging nettle	
TARA OFF	
Garlic mustard	
Sym LANCE & leaf	
Vitis Sp.	
Alnus Sp.	
Thypha Sp.	
Coltsfoot	
chickweed	Corn field
TARA OFF	
Heal-All	
Red-osier	
Vitis, prunus	

Vegetation Species by ELC Community	Project:
	Project #:
Date:	Cloud Cover (%):
Time:	Temperature (°C):
Observer(s):	Wind:
Survey:	Precipitation:

Species	POLYGON NUMBER/ELC Community
ACER NEG	"wood lot"
Willow sp.	
Garlic mustard	IMG 113207, 526863, 4804919 (4m)
Vicia odorata?	
PRUN VIRG	
ROSA MULT	
ARCT MINO	
CRATAEGUS sp.	
Red raspberry	
Ribes glandulosum	
Geum sp.	
FRAG VIRG	
RHAM CAT	
James, Pocket	
Alt. dogwood.	
equisetum sp.	
Red trillium	
GERA MACA	
Herb Robert	
Silver maple, White oak, Mag. Catkins.	
Roadway @	
Lineway	
Lonicera	
ASCL SYRIA	
Chicharry	
White cedar	
dump pile	529890 4804912


Untitled Map
Write a description for your map.
Legend
Gingerich Rd
Google Earth
© 2018 Google
200 m
N

PLANT SPECIES LIST

Page – of –

Metadata

Site: 1927 - Schmidt Estate	
Polygon: CUM1-1	
UTM: 17T 0527136 4805264	
Date: July 4, 2017	**Time:** 7:17
Surveyor(s): CEP	
Weather: 13°C, Wind 1N, CC 0%, Precip none	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
rough cinquefoil				A	
orchard grass				A	
common burdock				O	
green Ame's lace				O	
quack grass				A	
sweet white clover				A	
timothy grass				O	
Can goldenrod				A	
common dandelion				O	
Can thistle				O	
carex muehlenbergii				O	1
Kentucky bluegrass				O	
reanant grass				O	
fowl manna grass				R	
bindweed				O	
bull thistle				R	
smooth brome				O	
curled dock				R	
bittersweet night shade				O	
teasel				O	
prickly lettuce				O	
common mullein				O	
white clover				A	
lamb's quarters				O	
ragweed				O	
mayweed				O	
lady's thumb				O	
spiny-leaved sow thistle				O	
broad leaved plantain				O	
pineapple weed				O	

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
red osier dogwood			O		
staghorn sumac			R		
Manitoba maple	O				
riverbank grape				O	
cottonwood	R				
linden	O				
Norway maple	R				
English oak	O				
Acer saccharinum	R				
Eur. buckthorn	R				
woodbine				R	
Bebb's willow		R			

Source of common names:

PLANT SPECIES LIST

Page 1 of 3

Metadata

Site:	
Polygon:	
UTM:	
Date:	**Time:**
Surveyor(s):	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
Shepherd's purse				O	
Can. wild rye grass				R	
white campion				R	
tumble mustard				R	
Philadelphia fleabane				R	
red clover				O	
wild strawberry				O	
yellow avens				R	
cleavers				R	
catnip				R	
chicory				O	
English plantain				R	
sweet-scented bedstraw				R	
long-leaved stitchwort				R	
creeping bellflower				R	
phragmites				O	
ox-eye daisy				O	
purple crown vetch				R	
bird's foot trefoil				O	
yarrow				R	
colt's foot				O	
black-eyed Susan				R	
bladder campion				R	
blue vervain				R	

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample

Source of common names:

PLANT SPECIES LIST

Page ~ of ~

Metadata

Site:	1927 - Schmidt Estate
Polygon:	3 FOD7-3
UTM:	
Date:	July 4, 2017 — **Time:** 8:07
Surveyor(s):	CEP
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
Sweet-scented bedstraw				O	
Orchard grass				A	
teasel				A	
common burdock				O	
Stinging nettle				A	
Tufted vetch				O	
goldenrod				O	
Kentucky bluegrass				A	
Timothy grass				O	
Queen Anne's lace				O	
Canada goldenrod				A	
Common dandelion				O	
Canada thistle				O	
tall buttercup				O	
scotch pine/				O	
Smooth brome				O	
cattail sp.				R	
bindweed				O	
Giant ragweed				O	
Carex muehlenbergii				R	
Yellow avens				O	
creeping thistle				R	
prickly lettuce				O	
Canada thistle				A	
Field horsetail					

Species	Layer 1	2	3	4	Sample
crack willow	A	A	O		
Manitoba maple	A	A	R		
white elderberry		R			
black walnut		R	R		
basswood	R				
Riverbank Grape				O	
wild cucumber				R	
red raspberry		O			
crataegus punctata			O		
Sicker's willow			R		
grey dogwood			R		
Woodbine				O	
Eur. buckthorn	R				

PLANT SPECIES LIST

Page — of —

Metadata

Site:	1927 Schmidt Estate,
Polygon:	2 - CUM1 - 1 clay creek
UTM:	17T 0526784 4805148
Date:	July 4, 2017 **Time:** 8.34
Surveyor(s):	CEP
Weather:	17°C, Wind: 0, cc 0 Precip none

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
cinnamon dandelion				O	
Sweet-scented bedstraw				O	
timothy grass				A	
Kentucky bluegrass				A	
tall buttercup				O	
tufted vetch				O	
Carex. muehlenbergii				O	
orchard grass				A	
Canada thistle				A	
curled dock				O	
Can. thistle				O	
English plantain				O	
yellow goat's beard				O	
common yarrow				O	
stinging nettle				O	
agricultgrass				O	
common St. John's wort				O	
wild strawberry				O	
yellow avens				O	
red clover				O	
oxeye daisy				O	
common milkweed				O	
queen Anne's lace				O	
rough cinquefoil				R	
Juncus tenuis				R	
garlic mustard				O	
field horsetail				R	
dame's rocket				R	
colt's foot				O	

Species	Layer 1	2	3	4	Sample
black walnut		O			
wild cucumber				O	
crack willow	O				
common crabapple	O				
rosa multiflora			R		
red osier dogwood		R			
grey dogwood		R			
crataegus punctata	R		R		
red raspberry		O			
Manitoba maple	O				
highbush cranberry	R				

Source of common names: _____

PLANT SPECIES LIST

Page 3 of 3

Metadata

Site:	
Polygon:	
UTM:	
Date:	**Time:**
Surveyor(s):	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
creeping buttercup				R	
teasel				O	
common mullein				R	
common mallow				R	
narrow-leaved cattail				O	
Carex bebbii				R	

Species	Layer 1	2	3	4	Sample

Source of common names: _____

June 2, 2017
EG

1927



Schmidt Estate EIS

Field Map



Legend

Subject Property (approximate)

50m
100m
0.5ha

70.71m
70.71m
0.5ha

Grid squares are 0.5ha in area (70.71mx70.71m)

Survey Type:	
Investigators:	
Date:	

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Project: 1927 Date: May 17, 2017	NAD83 - UTM Zone 17 Size: 11x17" 1:3,000

0 50 100 150 Metres

N

PLANT SPECIES LIST

Page ___of___

Metadata

Site: 1927 - Schmidt Estate	
Polygon: 1 - old barn site / CUM1-1	
UTM:	
Date: May 19, 2017	**Time:** 13:00
Surveyor(s): JIM	
Weather: 80% overcast, 14°C, wind = 2-3	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
Manitoba maple	R				
☆ black spruce ?					
apple tree sp.	R				48-50
~~big toothed aspen~~ ?	~~R~~				
trembling aspen	R				
cottonwood	R				
horse-chestnut sap.					
willow sp. sealing					
big toothed aspen seedle					
red osier dogwood					

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
Common dandelion				A	
Common plantain				O	
White clover				A	
thistle sp					
☆					
common burdock				O	
red clover				O	
canada thistle				A	
Aster sp.					
Common white cress				O	
(yellow rocket)					
black medic				O	
shepard's purse				O	
creeping charlie				R	
☆ ?					
garlic mustard				O	
grass sp					
wild carrot				O	
teasel				O	
☆ wildstrawberry				A	
common mullein				R	
Solidago sp.				A	
smooth brome				O	
Can. goldenrod				O	
chicory				R	
timothy				R	
coltsfoot				O	
wh. campion				R	
rc grass				O	
orchard grass				A	

check ↓

← check later

Source of common names: _____

☆ collected

PLANT SPECIES LIST

Page ___of___

Metadata

Site:	
Polygon:	
UTM:	
Date:	**Time:**
Surveyor(s):	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample

Source of common names: _____

PLANT SPECIES LIST

Page ____of____

Metadata

Site:	1927 - Schmidt Estate
Polygon:	2 plots # 54 - Cont'd along creek
UTM:	64, 65
Date:	May 19, 2017 **Time:**
Surveyor(s):	JMM
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
hawthorn sp	R				
manitoba maple	O				
black walnut	O				51-53
willow sp.	O				
lilac	R				
pear tree? / haw?	R				61-63
common buckthorn		O			
gray dogwood		R			
redosier dogwood ~~sp.~~		O			55-57
staghorn sumac		R			
Norway maple		R			

Species	Layer 1	2	3	4	Sample
solidago sp.				O	
teasel				A	
reed canary grass?				A	
common lamb's quarters				O	
garlic mustard				R	
common dandelion				O	
jewelweed				O	
wild geranium				O	
wild cucumber				R	
Canada thistle?				R	
yellow oxalis/dive				R	
virginia creeper				R	
* bedstraw Galium sp.				A	
false nettle				O	
vetch?				O	
multiflora rose?				R	66-68
dame's rocket				O	
smooth brome				O	
redtop				O	
orchard grass				A	
Carex stipata				R	along creek
m. goatsbeard				O	

Source of common names: _____

PLANT SPECIES LIST

Page ____of____

Metadata

Site:	
Polygon:	
UTM:	
Date:	**Time:**
Surveyor(s):	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample

PLANT SPECIES LIST

Page ___ of ___

Metadata

Site:	1927 - Schmidt Estate
Polygon:	3 FOD 7 -3
UTM:	
Date:	19/05/2017 Time:
Surveyor(s):	JIM
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
manitoba maple	A	A	O		
crack willow	A	A	R		
bl. walnut		R	R		
basswood	R				
common buckthorn		O	R	R	
redosier dogwood sp.		O	R	R	some as 2
multiflorum rosa			R		(tall sucker stem)
hawthorn Crat. punctata			O		spec ✓
Rd raspberry			A		
slender willow			R		spec ✓
Eur. cherry			R		
tart. honeysuckle			R		
map. lvd viburnum			R		

Species	Layer 1	2	3	4	Sample
stinging nettle				O	
common burdock				A	
yellow mustard				A	
forget me not				A	
grass sp.				A	
jewelweed				O	
wild cucumber				R	
common dandelion				O	
rough cinquefoil				R	
yellow coltsfoot				R	
common blue violet				O	
★ ? alt. leaved					75-78
coltfoot				A	
cleavers				R	
ragwort				O	
dame's rocket				O	
tall buttercup				R	
grapevine				O	
~~tall buttercup~~					
ench. nightshade				O	
avens sp.				O	
com. blue eyed				O	
motherwort				R	

Source of common names: _____

PLANT SPECIES LIST

see CUM1-1 (polygon 2)

Page ___ of ___

Metadata

Site:	1927 - Schmidt Estate
Polygon:	4 CUM1-1
UTM:	
Date:	19/05/2017 Time:
Surveyor(s):	JIM
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
grass sp.	D				
common dandelion	O				
?	O				80-83



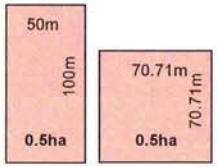
Schmidt Estate EIS

Field Map



Legend

- Subject Property (approximate)



Grid squares are 0.5ha in area (70.71mx70.71m)

Survey Type:	
Investigators:	
Date:	

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Project: 1927
Date: May 17, 2017

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000

0 50 100 150 Metres

N

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description

Page __ of __

Site:	1927 Schmidt Estate
Polygon:	1 - old barn site CUM1-1
UTM:	
Date:	19/05/2017 Time: 13:00
Surveyor(s):	JIM
Weather:	80% overcast, 14°C, wind = 2-3

Community Classification

Vegetation Type:	CUM1-1 dry-moist old field meadow type
Inclusion:	n/a
Complex:	n/a

Polygon Description

System	Substrate	Topo Feature		Community	
X Terrestrial	Organic	Lacustrine	Talus	Lake	Barren
Wetland	X Mineral Soil	Riverine	Crevice/Cave	Pond	X Meadow
Aquatic	Parent Min.	Bottomland	Alvar	River	Prairie
	Acidic Bedrock	Terrace	Rockland	Stream	Thicket
History	Basic Bedrock	Valley Slope	Beach/Bar	Marsh	Savannah
Natural	Carb. Bedrock	Tableland	Sand Dune	Swamp	Woodland
Cultural		X Roll. Upland	Bluff	Fen	Forest
	Site	Cliff		Bog	Plantation

Cover		Plant Form		
X Open	Open Water	Plankton	Forb	Coniferous
Shrub	Shallow Water	Submerged	Lichen	X Mixed
Treed	X Surficial Dep.	Floating-Lvd.	Bryophyte	
	Bedrock	Graminoid	Deciduous	

Stand Description

	Layer	HT	Cover	Species
*	Super-canopy			n/a
1	Canopy	1	1	norway spruce
2	Sub-canopy	2	1	manitoba maple > lg-toothed aspen > apple
3	Understorey	3	1	lg-toothed aspen > red-osier dogwood > willow sp. > horse chestnut
4	Groundcover	5-7	4	grass sp > garlic mustard > common plantain

HT Codes: 1: >25m 2: 25 - 10m 3: 10 - 2m 4: 2 - 1m 5: 1 - 0.5m 6: 0.5 - 0.2m 7: <0.2m

Cover Codes: 0:none 1: 0 - 10% 2: 10 - 25 3: 25 - 60% 4: >60%

Size Class Analysis	A	< 10	O	10 - 24	R	25 - 50	N	> 50
Snags	N	< 10	N	10 - 24	N	25 - 50	N	> 50
Deadfall/Logs	N	< 10	N	10 - 24	N	25 - 50	N	> 50

Abundance Codes: N: None R: Rare O: Occasional A: Abundant

Community Age	X	Pioneer		Young		Mid-age		Mature	Old Growth

↳ disturbed

Modified ELC Community Description

Page __ of __

Soils	1	2	3
Position:			
Aspect:			
% see notes			
Type:			
Class:			

Strata: Texture			
Depth			
Strata: Texture			
Depth			
Strata: Texture			
Depth			
Strata: Texture			
Depth			
Effective Texture			
Surface Stoniness			
Surface Rockiness			
Depth to:			
Mottles			
Gley			
Bedrock			
Water table			
Carbonates			
Depth of Organics			
Pore Size Disc #1			
Pore Size Disc #2			
Pore Size Disc #3			
Moisture Regime			

Polygon:

Tree Tally

Species	Tally 1	Tally 2	Tally 3
Total:			
Basal Area			
Snags			

Notes:

- disturbed soils - gravel pad where barn + laneway used to be

Polygon Photo Number(s):

PLANT SPECIES LIST

Page ____of____

Metadata

Site:	1927 - Schmidt Estate
Polygon:	1 - old barn site / CUM1-1 dry-moist old field meadow type
UTM:	
Date:	May 19, 2017 **Time:** 13:00
Surveyor(s):	JM
Weather:	80% overcast, 14°C, wind = 2-3

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
Manitoba maple		A			
Norway spruce	R				
common apple		O			45-50
large-toothed aspen		A			
horse-chestnut sap.			R		
willow sp. seedling			O		
lg. fruited hawthorn seedling			A		
red osier dogwood			O		

Species	Layer 1	2	3	4	Sample
Common dandelion				O	
Common plantain				O	
white clover				O	
thistle sp.				O	
common burdock				O	
red clover				O	
canada thistle				O	
Aster sp.				O	
common winter cress (yellow rocket)				O	
black medic				O	
shepherd's purse				R	
creeping charlie				R	
garlic mustard				O	
grass sp.				A	
wild carrot				O	
teasel				O	
wild strawberry				O	
common mullein				O	
Solidago sp.				O	

Source of common names: _____

PLANT SPECIES LIST

Page ____of____

Metadata

Site:	
Polygon:	
UTM:	
Date:	**Time:**
Surveyor(s):	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample

NATURAL RESOURCE SOLUTIONS INC

Modified ELC Community Description

Page __ of __

Site:	1927 - Schmidt Estate
Polygon:	2 photos #54, 64, 65 CUM1-1 - along creek
UTM:	
Date:	May 19 2017 Time:
Surveyor(s):	JRM
Weather:	

Community Classification

Vegetation Type:	CUM1-1 - dry-moist old field meadow type
Inclusion:	n/a
Complex:	n/a

Polygon Description

System	Substrate	Topo Feature		Community	
X Terrestrial	Organic	Lacustrine	Talus	Lake	Barren
Wetland	X Mineral Soil	Riverine	Crevice/Cave	Pond	X Meadow
Aquatic	Parent Min.	Bottomland	Alvar	River	Prairie
	Acidic Bedrock	Terrace	Rockland	Stream	Thicket
History	Basic Bedrock	Valley Slope	Beach/Bar	Marsh	Savannah
Natural	Carb. Bedrock	Tableland	Sand Dune	Swamp	Woodland
Cultural		X Roll. Upland	Bluff	Fen	Forest
	Site	Cliff		Bog	Plantation

Cover		Plant Form		
X Open	Open Water	Plankton	Forb	Coniferous
Shrub	X Surficial Dep.	Submerged	Lichen	Mixed
Treed	Bedrock	Floating-Lvd.	Bryophyte	
		Graminoid	X Deciduous	

Stand Description

	Layer	HT	Cover	Species
*	Super-canopy			n/a
1	Canopy	1	1	crack willow
2	Sub-canopy	2	2	Manitoba maple > black walnut > lilac > hawthorn
3	Understorey	3	2	common buckthorn > red osier dogwood > gray dogwood
4	Groundcover	5-7	4	reed canary grass >> teasel > common burdock > common dandelion

HT Codes: 1: >25m 2: 25 - 10m 3: 10 - 2m 4: 2 - 1m 5: 1 - 0.5m 6: 0.5 - 0.2m 7: <0.2m

Cover Codes: 0:none 1: 0 - 10% 2: 10 - 25 3: 25 - 60% 4: >60%

Size Class Analysis	R	< 10	O	10 - 24	R	25 - 50	M	> 50
Snags	N	< 10	N	10 - 24	N	25 - 50	N	> 50
Deadfall/Logs	N	< 10	N	10 - 24	N	25 - 50	N	> 50

Abundance Codes: N: None R: Rare O: Occasional A: Abundant

Community Age		Pioneer	X	Young		Mid-age		Mature		Old Growth

L> except for old willows.

Modified ELC Community Description

Page __ of __

Soils	1	2	3
Position:			
Aspect:			
%			
Type:			
Class:			
Strata: Texture			
Depth			
Strata: Texture			
Depth			
Strata: Texture			
Depth			
Strata: Texture			
Depth			
Effective Texture			
Surface Stoniness			
Surface Rockiness			
Depth to:			
Mottles			
Gley			
Bedrock			
Water table			
Carbonates			
Depth of Organics			
Pore Size Disc #1			
Pore Size Disc #2			
Pore Size Disc #3			
Moisture Regime			

Polygon:

Tree Tally

Species	Tally 1	Tally 2	Tally 3
—			
Total:			
Basal Area			
Snags			

Notes:

Polygon Photo Number(s):

PLANT SPECIES LIST

Page ____of____

Metadata

Site:	1927 Schmidt Estate
Polygon:	2 photo # 54 - cont'l dry-moist old field meadow type
UTM:	L 64, 65
Date:	May 19, 2017 **Time:**
Surveyor(s):	Jim
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample
hawthorn sp		R			
manitoban maple		O			
black walnut		O			51-53
crack willow	R				
lilac		O			
common pear		R			61-63
common buckthorn			A		
gray dogwood			O		
red osier dogwood			O		55-57

Species	Layer 1	2	3	4	Sample
Solidago sp.				O	
teasel				O	
reed canary grass				A	
common burdock				R	
garlic mustard				R	
common dandelion				R	
jewelweed				R	
wild geranium				R	
wild cucumber				R	
canada thistle?				O	
yellow celandine				O	
wood vine				R	
wild madder				O	58-59
False nettle				R	
multiflora rose or sweetbrier				R	66-68

Source of common names: _____

PLANT SPECIES LIST

Page ____of____

Metadata

Site:	
Polygon:	
UTM:	
Date:	**Time:**
Surveyor(s):	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	2	3	4	Sample

Species	Layer 1	2	3	4	Sample

Source of common names: _____

ELC Community Description (Part A)

Page __ of __

Metadata

Site:	1927 Schmidt Estate
Polygon:	3 photos #71-73
UTM:	
Date:	19/05/2017 Time:
Surveyor(s):	JIM
Weather:	

Community Classification

Vegetation Type:	FOD7-3 Moist Willow lowland
Inclusion:	deciduous forest type
Complex:	

Polygon Description

System	Substrate	Topo Feature		Community	
X Terrestrial	Organic	Lacustrine	Talus	Lake	Barren
Wetland	X Mineral Soil	X Riverine	Crevice/Cave	Pond	Meadow
Aquatic	Parent Min.	Bottomland	Alvar	River	Prairie
	Acidic Bedrock	Terrace	Rockland	Stream	Thicket
History	Basic Bedrock	Valley Slope	Beach/Bar	Marsh	Savannah
Natural	Carb. Bedrock	Tableland	Sand Dune	Swamp	Woodland
Cultural		Roll. Upland	Bluff	Fen	X Forest
	Site	Cliff		Bog	Plantation

Cover		Plant Form		
Open	Open Water	Plankton	Forb	Coniferous
Shrub	Shallow Water	Submerged	Lichen	Mixed
X Treed	X Surficial Dep.	Floating-Lvd.	Bryophyte	
	Bedrock	Graminoid	X Deciduous	

Stand Description

	Layer	HT	Cover	Species
1	Canopy	1	3	crack willow > manitoba maple
2	Sub-canopy	3	1	manitoba maple > crack willow
3	Understorey	4	1	manitoba maple > crack willow > common buckthorn
4	Groundcover	7	4	grass sp. > garlic mustard > forget me not > common buckthorn

HT Codes: 1: >25m 2: 25 - 10m 3: 10 - 2m 4: 2 - 1m 5: 1 - 0.5m 6: 0.5 - 0.2m 7: <0.2m

Cover Codes: 0:none 1: 0 - 10% 2: 10 - 25 3: 25 - 60% 4: >60%

DBH

Size Class Analysis	A	< 10	O	10 - 24	A	25 - 50	O	> 50
Snags	N	< 10	N	10 - 24	N	25 - 50	N	> 50
Deadfall/Logs	A	< 10	O	10 - 24	R	25 - 50	N	> 50

Abundance Codes: N: None R: Rare O: Occasional A: Abundant

Community Age	Pioneer	Young	Mid-age	Mature	Old Growth
			X		

ELC Community Description (Part B)

Page __ of __

Metadata

Site:	1927 Schmidt Estate	UTM:	
Polgon:	3	Surveyor(s):	JIM
Date:	19/05/2017	Weather:	
Time:			

Soils

FOD7-3

		1	2	3
Position:		6		
Aspect:				
%		1%		
Type:				
Class:				
Strata:	Texture	SiL		
	Depth	10cm		
Strata:	Texture	SiCL		
	Depth	40		
Strata:	Texture	C		
	Depth	75		
Strata:	Texture	SiCL		
	Depth	~100		
Effective Texture		SiCL		
Surface Stoniness				
Surface Rockiness				
Depth to:				
photo # 85,86	Mottles	24cm		
87	Gley	98		
	Bedrock	>120		
	Water table	~100		
	Carbonates	n/a		
Depth of Organics		9		
Pore Size Disc #1				
Pore Size Disc #2				
Pore Size Disc #3				
Moisture Regime		5 mostly		

Tree Tally

Species	Tally 1	Tally 2	Tally 3
manitoba maple	0	0	4
crack willow	6	8	7
Total:	6	8	11
Basal Area	12	16	22
Snags	0		0

NOTES: Polygon 4 : photo 79 - grass sp.

PLANT SPECIES LIST

Page ____of____

Metadata

Site: 1927 - Schmidt Estate	
Polygon: 3	FOD7-3
UTM:	fresh - moist willow lowland
Date: 19/05/2017	**Time:** deciduous forest type
Surveyor(s): JIM	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
manitoba maple	A	A	O		
crack willow	A	A	R		
common buckthorn		O	R	R	
dogwood sp		O	R	R	same as 2
multiflora rosa			R		(yellow stem)
or sweetbrier ?					66.6

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
stinging nettle				O	
common burdock				A	
garlic mustard				A	
forget me not				A	
grass sp.				A	
jewel weed				O	
wild cucumber				R	
common dandelion				O	
rough cinqfoil				R	
yellow celandine				R	
common blue violet				O	
dame's rocket				O	75-78
coltfoot				A	
cleavers				R	

Source of common names: _____

PLANT SPECIES LIST

Page ____of____

Metadata

Site: 1927 - Schmidt Estate	
Polygon: 4	CUM1-1 dry-moist old field meadow type
UTM:	
Date: 19/05/2017	**Time:**
Surveyor(s): JIM	
Weather:	

Layers: 1=canopy 2=sub-canopy 3=understorey 4=ground layer
Abundance Codes: R=rare O=occasional A=abundant D=dominant

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample
grass sp.				D	
common dandelion				O	
Wild madder				O	80-83
(Galium mollugo)					

Species	Layer 1	Layer 2	Layer 3	Layer 4	Sample

Source of common names: _____

Appendix VI
Photolog



Photograph 1: View of the Baden Creek riparian channel facing east. August 2025.



Photograph 2: View of the fallow/disturbed cultural meadow (CUM1) with FOD7-3 woodland in the background. August 2025.



Photograph 3: View of the the fallow/disturbed cultural meadow (CUM1) facing north toward Foundry Street. August 2025.



Photograph 4: View of the the fallow/disturbed cultural meadow (CUM1) and the downstream reach of Baden Creek, facing northwest. September 2025.



Photograph 5: Cultural meadow (CUM1) conveying Baden Creek west of Foundry Street, facing north. September 2025.



Photograph 6: Fallow/disturbed cultural meadow (CUM1) facing toward the southwest property corner. June 2025.



Photograph 7: A view of the fallow/disturbed cultural meadow (CUM1) facing eastwards from the west property boundary. June 2025.



Photograph 8: Silt fencing along the southern boundary of the FOD7-3 woodland following trunk sewer installation. June 2025.

Appendix VII
Vascular Flora Species Observed within the Study Area

Plant Species Reported from the Study Area - Schmidt Estate Industrial (Project #1927B)

Scientific Name	Common Name	CC	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Waterloo Region	NRSI Observed	FOD7-3	CUM1
		Oldham et al. 1995	MNRF 2024a	MECP 2024	Government of Canada 2024	Government of Canada 2024	Government of Canada 2024	Richardson & Martin 1999	NRSI Results From 2024		
Pteridophytes	**Ferns & Allies**										
Equisetaceae	**Horsetail Family**										
Equisetum arvense	Field Horsetail	0	S5						X		X
Dicotyledons	**Dicots**										
Aceraceae	**Maple Family**										
Acer negundo	Manitoba Maple	0	S5						X	X	X
Amaranthaceae	**Amaranth Family**										
Amaranthus powellii	Powell's Amaranth		SE5						X		X
Apiaceae	**Carrot or Parsley Family**										
Daucus carota	Wild Carrot		SE5						X		X
Asclepiadaceae	**Milkweed Family**										
Asclepias syriaca	Common Milkweed	0	S5						X		X
Asteraceae	**Composite or Aster Family**										
Ambrosia trifida	Great Ragweed	0	S5						X	X	X
Arctium minus	Common Burdock		SE5						X	X	
Bidens cernua	Nodding Beggarticks	2	S5						X		X
Bidens frondosa	Devil's Beggarticks	3	S5						X		X
Cichorium intybus	Chicory		SE5						X		X
Cirsium arvense	Creeping Thistle		SE5						X		X
Cirsium vulgare	Bull Thistle		SE5						X		X
Erigeron canadensis	Canada Horseweed	0	S5						X		X
Helianthus annuus	Common Sunflower		SE4						X		X
Solidago altissima	Tall Goldenrod	1	S5						X	X	X
Solidago canadensis	Canada Goldenrod	1	S5						X		X
Sonchus arvensis	Field Sow-thistle		SE5						X		X
Symphyotrichum lanceolatum	Panicled Aster	3	S5						X	X	
Symphyotrichum lateriflorum	Calico Aster	3	S5						X	X	
Symphyotrichum novae-angliae	New England Aster	2	S5						X		X
Symphyotrichum pilosum	Old Field Aster		S5						X		X
Taraxacum officinale	Common Dandelion		SE5						X		X
Balsaminaceae	**Touch-me-not Family**										
Impatiens capensis	Spotted Jewelweed	4	S5						X	X	
Brassicaceae	**Mustard Family**										
Alliaria petiolata	Garlic Mustard		SE5						X	X	
Hesperis matronalis	Dame's Rocket		SE5						X	X	
Thlaspi arvense	Field Penny-cress		SE5						X		X
Caprifoliaceae	**Honeysuckle Family**										
Viburnum opulus	Cranberry Viburnum	5	S5						X	X	
Chenopodiaceae	**Goosefoot Family**										
Chenopodium album	White Goosefoot		SE5						X		X
Cornaceae	**Dogwood Family**										
Cornus alternifolia	Alternate-leaved Dogwood	6	S5						X	X	
Cucurbitaceae	**Gourd Family**										
Echinocystis lobata	Wild Mock-cucumber	3	S5						X	X	
Fabaceae	**Pea Family**										
Trifolium pratense	Red Clover		SE5						X		X
Trifolium repens	White Clover		SE5						X		X
Geraniaceae	**Geranium Family**										
Geranium robertianum	Herb-Robert	2	S5						X	X	
Grossulariaceae	**Currant Family**										

Ribes rubrum	Northern Red Currant		SE5						X	X	
Juglandaceae	**Walnut Family**										
Juglans nigra	Black Walnut	5	S4?					R+*	X	X	
Lamiaceae	**Mint Family**										
Clinopodium vulgare	Field Basil	4	S5						X		X
Mentha spicata	Spearmint		SE4						X		X
Malvaceae	**Mallow Family**										
Abutilon theophrasti	Velvetleaf		SE5						X		X
Moraceae	**Mulberry Family**										
Morus alba	White Mulberry		SE5						X	X	
Oleaceae	**Olive Family**										
Fraxinus pennsylvanica	Green Ash	3	S4						X	X	
Onagraceae	**Evening-primrose Family**										
Circaea canadensis	Broad-leaved Enchanter's Nightshade	2	S5						X	X	
Epilobium hirsutum	Hairy Willowherb		SE5						X		X
Plantaginaceae	**Plantain Family**										
Plantago major	Common Plantain		SE5						X		X
Polygonaceae	**Smartweed Family**										
Persicaria maculosa	Spotted Lady's-thumb		SE5						X		X
Rhamnaceae	**Buckthorn Family**										
Rhamnus cathartica	Common Buckthorn		SE5						X	X	
Rosaceae	**Rose Family**										
Crataegus sp.	Hawthorn sp.								X	X	
Geum urbanum	Wood Avens		SE3						X	X	
Prunus avium	Sweet Cherry		SE4						X	X	
Prunus virginiana	Choke Cherry	2	S5						X	X	
Rubus occidentalis	Black Raspberry	2	S5						X	X	
Rubiaceae	**Madder Family**										
Galium mollugo	Smooth Bedstraw		SE5						X	X	X
Salicaceae	**Willow Family**										
Salix euxina	Crack Willow		SE						X	X	
Scrophulariaceae	**Figwort Family**										
Veronica persica	Bird's-eye Speedwell		SE4						X		X
Solanaceae	**Nightshade Family**										
Solanum emulans	Eastern Black Nightshade	1	S5						X		X
Tiliaceae	**Linden Family**										
Tilia americana	American Basswood	4	S5						X	X	
Vitaceae	**Grape Family**										
Parthenocissus vitacea	Thicket Creeper	4	S5						X	X	
Vitis riparia	Riverbank Grape	0	S5						X	X	
Monocotyledons	**Monocots**										
Araceae	**Arum Family**										
Arisaema triphyllum	Jack-in-the-pulpit	5	S5						X	X	
Cyperaceae	**Sedge Family**										
Cyperus esculentus	Perennial Yellow Flatsedge	1	S5						X		X
Poaceae	**Grass Family**										
Bromus inermis	Smooth Brome		SE5						X	X	
Dactylis glomerata	Orchard Grass		SE5						X	X	
Echinochloa crus-galli	Large Barnyard Grass		SE5						X		X
Elymus repens	Creeping Wildrye		SE5						X		X
Panicum capillare	Common Panicgrass	0	S5						X		X
Phragmites australis	Common Reed	0	SU						X		X
Setaria pumila	Yellow Foxtail		SE5						X		X
Setaria viridis	Green Foxtail		SE5						X		X
Typhaceae	**Cattail Family**										

Typha angustifolia	Narrow-leaved Cattail		SE5						X		X
Total									**68**	**32**	**40**

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Appendix VIII
Bird Species Reported from the Study Area and Vicinity

Bird Species Reported from the Study Area - Schmidt Estate Industrial (Project #1927B)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Region of Waterloo Status	OBBA*	NRSI Observed: Highest Level of Breeding Evidence	CUM1/Fallow Ag/Cleared/ Disturbed	CUM1 (Baden Creek Riparian)	FOD7-3	Other Observations
		MNRF 2023a	MECP 2024	Government of Canada 2023	Government of Canada 2023	Government of Canada 2023	Martin 1996	BSC et al. 2006	NRSI Results from 2025				
Anatidae	**Ducks, Geese & Swans**												
Anas platyrhynchos	Mallard	S5						CO					
Branta canadensis	Canada Goose	S5						CO	**OB**				OB
Phasianidae	**Partridges, Grouse & Turkeys**												
Meleagris gallopavo	Wild Turkey	S5						PR					
Phasianus colchicus	Ring-necked Pheasant	SNA						CO					
Columbidae	**Pigeons & Doves**												
Columba livia	Rock Pigeon	SNA						CO	**OB**	OB			
Zenaida macroura	Mourning Dove	S5						CO	**PO**	PO			
Cuculiformes	**Cuckoos & Anis**												
Coccyzus erythropthalmus	Black-billed Cuckoo	S4S5B					√	CO					
Trochilidae	**Hummingbirds**												
Archilochus colubris	Ruby-throated Hummingbird	S5B					√	CO					
Charadriidae	**Plovers & Lapwings**												
Charadrius vociferus	Killdeer	S4B						CO	**PR**	PR	PO		
Scolopacidae	**Sandpipers & Allies**												
Actitis macularius	Spotted Sandpiper	S5B						PO					
Ardeidae	**Herons & Bitterns**												
Ardea herodias	Great Blue Heron	S4					√	CO	**OB**				OB
Cathartidae	**Vultures**												
Cathartes aura	Turkey Vulture	S5B,S3N					√	PO					
Accipitridae	**Hawks, Kites, Eagles & Allies**												
Buteo jamaicensis	Red-tailed Hawk	S5	NAR	NAR	NS	No schedule		CO					
Strigidae	**Typical Owls**												
Bubo virginianus	Great Horned Owl	S4						PR					
Megascops asio	Eastern Screech-Owl	S4	NAR	NAR	NS	No schedule		PR					
Alcedinidae	**Kingfishers**												
Megaceryle alcyon	Belted Kingfisher	S5B,S4N					√	PO					
Picidae	**Woodpeckers**												
Colaptes auratus	Northern Flicker	S5						CO	**PO**	PO			
Dryobates pubescens	Downy Woodpecker	S5						CO					
Dryobates villosus	Hairy Woodpecker	S5						CO					
Dryocopus pileatus	Pileated Woodpecker	S5					√	PO					
Melanerpes carolinus	Red-bellied Woodpecker	S5					√	PR					
Melanerpes erythrocephalus	Red-headed Woodpecker	S3	END	E	E	Schedule 1	√	CO					
Sphyrapicus varius	Yellow-bellied Sapsucker	S5B,S3N					√	CO					
Tyrannidae	**Tyrant Flycatchers**												
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC	SC	Schedule 1		PR					
Myiarchus crinitus	Great Crested Flycatcher	S5B						PR					
Sayornis phoebe	Eastern Phoebe	S5B						CO					
Tyrannus tyrannus	Eastern Kingbird	S4B						CO					
Vireonidae	**Vireos**												
Vireo flavifrons	Yellow-throated Vireo	S4B					√	PO					
Vireo gilvus	Warbling Vireo	S5B						PR	**PO**		PO		
Vireo olivaceus	Red-eyed Vireo	S5B						PR					
Corvidae	**Crows & Jays**												
Corvus brachyrhynchos	American Crow	S5						CO	**PO**	PO			
Cyanocitta cristata	Blue Jay	S5						CO	**PO**			PO	
Alaudidae	**Larks**												
Eremophila alpestris	Horned Lark	S4						CO	**PO**	PO			
Hirundinidae	**Swallows**												
Hirundo rustica	Barn Swallow	S4B	SC	SC	T	Schedule 1		CO					
Petrochelidon pyrrhonota	Cliff Swallow	S4S5B					√*	CO					
Tachycineta bicolor	Tree Swallow	S4S5B						CO					

Paridae	**Chickadees & Titmice**												
Poecile atricapillus	Black-capped Chickadee	S5						CO					
Sittidae	**Nuthatches**												
Sitta carolinensis	White-breasted Nuthatch	S5						CO					
Certhiidae	**Creepers**												
Certhia americana	Brown Creeper	S5					√	PO					
Troglodytidae	**Wrens**												
Troglodytes aedon	House Wren	S5B						CO					
Troglodytes hiemalis	Winter Wren	S5B,S4N					√	PR					
Turdidae	**Thrushes**												
Hylocichla mustelina	Wood Thrush	S4B	SC	T	T	Schedule 1		PR					
Sialia sialis	Eastern Bluebird	S5B,S4N	NAR	NAR	NS	No schedule	√	CO					
Turdus migratorius	American Robin	S5						CO	**PO**	PO	PO		
Mimidae	**Mockingbirds, Thrashers & Allies**												
Dumetella carolinensis	Gray Catbird	S5B,S3N						CO	**PO**	PO			
Toxostoma rufum	Brown Thrasher	S4B					√	PR					
Sturnidae	**Starlings**												
Sturnus vulgaris	European Starling	SNA						CO	**PR**	PR	PO		
Bombycillidae	**Waxwings**												
Bombycilla cedrorum	Cedar Waxwing	S5						CO	**PO**	PO	PO	PO	
Passeridae	**Old World Sparrows**												
Passer domesticus	House Sparrow	SNA						CO	**PR**	PR			
Fringillidae	**Finches & Allies**												
Haemorhous mexicanus	House Finch	SNA						CO					
Spinus tristis	American Goldfinch	S5						PR	**PR**	PR			
Passerellidae	**New World Sparrows & Allies**												
Melospiza melodia	Song Sparrow	S5						CO	**PR**	PR	PO	PO	
Passerculus sandwichensis	Savannah Sparrow	S5B,S3N						CO	**PR**	PR			
Pipilo erythrophthalmus	Eastern Towhee	S4B,S3N						PR					
Pooecetes gramineus	Vesper Sparrow	S4B					√	PO					
Spizella passerina	Chipping Sparrow	S5B,S3N						PR					
Spizella pusilla	Field Sparrow	S4B,S3N						CO					
Icteridae	**Troupials & Allies**												
Agelaius phoeniceus	Red-winged Blackbird	S5						CO	**PR**	PO	PR		
Dolichonyx oryzivorus	Bobolink	S4B	THR	SC	T	Schedule 1		PR					
Icterus galbula	Baltimore Oriole	S4B						CO					
Molothrus ater	Brown-headed Cowbird	S5						PR					
Quiscalus quiscula	Common Grackle	S5						CO	**PO**	PO	PO	PO	
Sturnella magna	Eastern Meadowlark	S4B,S3N	THR	T	T	Schedule 1		CO					
Parulidae	**Wood Warblers**												
Geothlypis philadelphia	Mourning Warbler	S5B					√	PR					
Geothlypis trichas	Common Yellowthroat	S5B,S3N						PR					
Seiurus aurocapilla	Ovenbird	S5B					√	PR					
Setophaga pensylvanica	Chestnut-sided Warbler	S5B					√	PO					
Setophaga petechia	Yellow Warbler	S5B						PR					
Setophaga ruticilla	American Redstart	S5B					√	PR					
Setophaga virens	Black-throated Green Warbler	S5B					√	PO					
Cardinalidae	**Cardinals, Grosbeaks & Allies**												
Cardinalis cardinalis	Northern Cardinal	S5						CO	**PO**		PO		
Passerina cyanea	Indigo Bunting	S5B						CO	**PO**	PO		PO	
Pheucticus ludovicianus	Rose-breasted Grosbeak	S5B						PR					
Piranga olivacea	Scarlet Tanager	S5B					√	PR					
Total								**74**	**22**	**17**	**9**	**5**	**2**

*OBBA Atlas Square: 17NJ20

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Appendix IX
Herpetofauna Species Reported from the Study Area and Vicinity

Reptile and Amphibian Species Reported from the Study Area - Schmidt Estate EIS (Project #1927A)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	ORAA*	NRSI Observed
		MNRF 2023a	MECP 2024	Government of Canada 2023	Government of Canada 2023	Government of Canada 2023	Ontario Nature 2019	NRSI Results from 2017, 2018, 2020. 2021, 2024, 2025
Turtles								
Chelydra serpentina	Snapping Turtle	S4	SC	SC	SC	Schedule 1	X	
Chrysemys picta marginata	Midland Painted Turtle	S4		SC	SC	Schedule 1	X	
Snakes								
Lampropeltis triangulum	Eastern Milksnake	S4	NAR	SC	SC	Schedule 1	X	
Thamnophis sirtalis sirtalis	Eastern Gartersnake	S5					X	X
Salamanders								
Necturus maculosus	Mudpuppy	S4	NAR	N-A	NS	No schedule	X	
Notophthalmus viridescens viridescens	Red-spotted Newt	S5					X	
Plethodon cinereus	Eastern Red-backed Salamander	S5					X	
Frogs and Toads								
Anaxyrus americanus	American Toad	S5					X	
Dryophytes versicolor	Gray Treefrog	S5					X	
Pseudacris triseriata pop. 1	Western Chorus Frog (Carolinian populatio	S4	NAR	NAR	NS	No schedule	X	
Pseudacris crucifer	Spring Peeper	S5					X	
Lithobates clamitans	Green Frog	S5					X	X
Lithobates palustris	Pickerel Frog	S4	NAR	NAR	NS	No schedule	X	
Lithobates pipiens	Northern Leopard Frog	S5	NAR	NAR	NS	No schedule	X	
Lithobates sylvaticus	Wood Frog	S5					X	
Total							**15**	**2**

*ORAA Atlas Square: 17NJ20

References

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Appendix X
Mammal Species Reported from the Study Area and Vicinity

Mammal Species Reported from the Study Area - Schmidt Esate EIS (Project #1927A)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Region of Waterloo Status	Ontario Mammal Atlas	NRSI Observed
		MNRF 2023a	MECP 2024	Government of Canada 2023	Government of Canada 2023	Government of Canada 2023	RMOW 1985	Dobbyn 1994	NRSI Results from 2017, 2024, 2025
Didelphimorphia	**Opossums**								
Didelphis virginiana	Virginia Opossum	S4					R	X	X
Eulipotyphla	**Shrews, Moles, Hedgehogs, and Allies**								
Blarina brevicauda	Northern Short-tailed Shrew	S5						X	
Condylura cristata	Star-nosed Mole	S5						X	X
Parascalops breweri	Hairy-tailed Mole	S4					R	X	
Sorex cinereus	Masked Shrew	S5					G	X	
Sorex fumeus	Smoky Shrew	S5					R	X	
Sorex palustris	Water Shrew	S5					R	X	
Chiroptera	**Bats**								
Eptesicus fuscus	Big Brown Bat	S4						X	
Lasionycteris noctivagans	Silver-haired Bat	S4		E	NS	No schedule		X	
Lasiurus borealis	Eastern Red Bat	S4		E	NS	No schedule		X	
Lasiurus cinereus	Hoary Bat	S4		E	NS	No schedule		X	
Myotis leibii	Eastern Small-footed Myotis	S2S3	END					X	
Myotis lucifugus	Little Brown Myotis	S3	END	E	E	Schedule 1		X	
Myotis septentrionalis	Northern Myotis	S3	END	E	E	Schedule 1		X	
Perimyotis subflavus	Tri-colored Bat	S3?	END	E	E	Schedule 1		X	
Lagomorpha	**Rabbits and Hares**								
Lepus americanus	Snowshoe Hare	S5					S	X	
Lepus europaeus	European Hare	SNA						X	
Sylvilagus floridanus	Eastern Cottontail	S5						X	X
Rodentia	**Rodents**								
Castor canadensis	Beaver	S5					S	X	
Erethizon dorsatum	Porcupine	S5					S	X	
Glaucomys sabrinus	Northern Flying Squirrel	S5					R	X	
Marmota monax	Woodchuck	S5						X	X
Microtus pennsylvanicus	Meadow Vole	S5						X	
Microtus pinetorum	Woodland Vole	S3?	SC	SC	SC	Schedule 1		X	
Mus musculus	House Mouse	SNA						X	
Napaeozapus insignis	Woodland Jumping Mouse	S5						X	
Ondatra zibethicus	Muskrat	S5						X	
Peromyscus leucopus	White-footed Mouse	S5						X	
Peromyscus maniculatus	Deer Mouse	S5						X	
Rattus norvegicus	Norway Rat	SNA						X	
Sciurus carolinensis	Eastern Gray Squirrel	S5						X	X
Synaptomys cooperi	Southern Bog Lemming	S4					R	X	
Tamias striatus	Eastern Chipmunk	S5						X	
Tamiasciurus hudsonicus	Red Squirrel	S5						X	
Zapus hudsonius	Meadow Jumping Mouse	S5						X	
Canidae	**Canines**								
Canis latrans	Coyote	S5					S	X	X
Vulpes vulpes	Red Fox	S5						X	
Felidae	**Felines**								
Lynx rufus	Bobcat	S4					R	X	
Mephitidae	**Skunks and Stink Badgers**								
Mephitis mephitis	Striped Skunk	S5						X	X
Mustelidae	**Weasels and Allies**								

Mustela richardsonii	American Ermine	S5						X	
Neogale frenata	Long-tailed Weasel	S4					S	X	
Neogale vison	American Mink	S4					S	X	
Taxidea taxus jacksoni	American Badger (Southwestern Ontario	S1	END	E	E	Schedule 1		X	
Procyonidae	**Raccoons and Allies**								
Procyon lotor	Northern Raccoon	S5						X	X
Ursidae	**Bears**								
Ursus americanus	American Black Bear	S5	NAR	NAR	NS	No schedule		X	
Artiodactyla	**Deer and Bison**								
Odocoileus virginianus	White-tailed Deer	S5						X	X
Total								**46**	**9**

*Mammal Atlas Square Number: NU20

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Appendix XI
Butterfly Species Reported from the Study Area and Vicinity

Butterfly Species Reported from the Study Area - Schmidt Estate (Project #1927B)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Region of Waterloo Status	Ontario Butterfly Atlas*	NRSI Observed
		MNRF 2024a	MECP 2024	Government of Canada 2023	Government of Canada 2023	Government of Canada 2023	Linton 2012	Macnaughton et al. 2023	NRSI Results from 2017, 2024, 2025
Hesperiidae	**Skippers**								
Carterocephalus mandan	Arctic Skipper	S5					R	X	
Epargyreus clarus	Silver-spotted Skipper	S4					UC	X	
Erynnis baptisiae	Wild Indigo Duskywing	S4					UK	X	
Euphyes conspicua	Black Dash	S3					UC	X	
Pholisora catullus	Common Sootywing	S4					R	X	
Poanes hobomok	Hobomok Skipper	S5					C	X	
Thymelicus lineola	European Skipper	SNA					VC	X	X
Papilionidae	**Swallowtails**								
Heraclides cresphontes	Giant Swallowtail	S4					UC	X	
Papilio glaucus	Eastern Tiger Swallowtail	S5					VC	X	
Papilio polyxenes	Black Swallowtail	S5					VC	X	
Pieridae	**Whites and Sulphurs**								
Colias eurytheme	Orange Sulphur	S5					VC	X	
Colias philodice	Clouded Sulphur	S5						X	
Pieris rapae	Cabbage White	SNA					VC	X	X
Lycaenidae	**Harvesters, Coppers, Hairstreaks, Blues**								
Celastrina lucia	Northern Spring Azure	S5						X	
Celastrina neglecta	Summer Azure	S5					VC	X	
Celastrina sp.	Azure species	SNA						X	
Cupido comyntas	Eastern Tailed Blue	S5					UC	X	
Lycaena epixanthe	Bog Copper	S4S5						X	
Lycaena hyllus	Bronze Copper	S5					VC	X	
Satyrium calanus	Banded Hairstreak	S4					UC	X	
Satyrium liparops	Striped Hairstreak	S5					UC	X	
Nymphalidae	**Brush-footed Butterflies**								
Aglais milberti	Milbert's Tortoiseshell	S5					UC	X	
Asterocampa celtis	Hackberry Emperor	S3						X	
Asterocampa clyton	Tawny Emperor	S3					UC	X	
Cercyonis pegala	Common Wood-Nymph	S5					VC	X	
Coenonympha california	Common Ringlet	S5					C	X	
Danaus plexippus	Monarch	S2N,S4B	SC	END	SC	Schedule 1	VC	X	X
Lethe anthedon	Northern Pearly-Eye	S5					C	X	
Lethe appalachia	Appalachian Brown	S4					UC	X	
Libytheana carinenta	American Snout	SNA					R	X	
Limenitis archippus	Viceroy	S5					VC	X	
Limenitis arthemis arthemis	White Admiral	S5					C	X	
Limenitis arthemis astyanax	Red-spotted Purple	S5					C	X	
Megisto cymela	Little Wood-Satyr	S5					VC	X	
Nymphalis antiopa	Mourning Cloak	S5					VC	X	
Nymphalis l-album	Compton Tortoiseshell	S5					UC	X	
Phyciodes cocyta	Northern Crescent	S5					UC	X	
Phyciodes tharos	Pearl Crescent	S4					C	X	
Polygonia comma	Eastern Comma	S5					VC	X	
Polygonia interrogationis	Question Mark	S5					VC	X	
Polygonia progne	Gray Comma	S5					UC	X	
Speyeria cybele	Great Spangled Fritillary	S5					VC	X	
Vanessa atalanta	Red Admiral	S5B					VC	X	

Vanessa cardui	Painted Lady	S5B					C	X	
Vanessa virginiensis	American Lady	S5					C	X	
Total								**45**	**3**

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Appendix XII
Odonate Species Reported from the Study Area and Vicinity

Odonate Species Reported from the Study Area - Schmidt Estate EIS (Project #1927B)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Region of Waterloo Status	Odonate Atlas*	NRSI Observed
		MNRF 2023a	MECP 2024	Government of Canada 2023	Government of Canada 2023	Government of Canada 2023	Region of Waterloo 1985	OOAD 2023	NRSI 2025
Calopterygidae	**Broadwinged Damselflies**								
Calopteryx maculata	Ebony Jewelwing	S5					X	X	X
Hetaerina americana	American Rubyspot	S4					X	X	X
Lestidae	**Spreadwings**								
Lestes dryas	Emerald Spreadwing	S5					X	X	
Lestes eurinus	Amber-winged Spreadwing	S4					Expected	X	
Lestes forcipatus	Sweetflag Spreadwing	S4					X	X	
Lestes unguiculatus	Lyre-tipped Spreadwing	S5					X	X	
Coenagrionidae	**Narrow-winged Damselflies**								
Argia apicalis	Blue-fronted Dancer	S4					X	X	
Argia moesta	Powdered Dancer	S5					X	X	
Coenagrion resolutum	Taiga Bluet	S5					X	X	
Enallagma civile	Familiar Bluet	S5					X		X
Enallagma exsulans	Stream Bluet	S5					X	X	
Ischnura verticalis	Eastern Forktail	S5					X	X	
Nehalennia irene	Sedge Sprite	S5					X	X	
Aeshnidae	**Darners**								
Anax junius	Common Green Darner	S5					X	X	
Gomphidae	**Clubtails**								
Ophiogomphus rupinsulensis	Rusty Snaketail	S4					X	X	
Libellulidae	**Skimmers**								
Ladona julia	Chalk-fronted Corporal	S5					X	X	
Leucorrhinia intacta	Dot-tailed Whiteface	S5					X	X	
Libellula pulchella	Twelve-spotted Skimmer	S5					X	X	
Libellula quadrimaculata	Four-spotted Skimmer	S5					X	X	
Plathemis lydia	Common Whitetail	S5					X	X	
Total								**19**	**3**

**Odonate Atlas Square Numbers: 17NJ20*

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Ministry of Natural Resources and Forestry (MNRF). 2023a. Natural Heritage Information Centre (NHIC): Species List for Ontario. Published: 2014-07-17. All Species List Updated: 2023-09-19. Available: https://www.ontario.ca/page/get-natural-heritage-information

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Appendix XIII
Species at Risk/Species of Conservation Concern Habitat Assessment Results

Scientific Name	Common Name	S-RANK[1]	SARO[1]	COSEWIC[2]	SARA[2]	SARA Schedule[2]	Background Source	Habitat Requirements	Suitable Habitats within Study Area	NRSI Observed?	Potential to Occur	Rationale
Birds												
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC	SC	Schedule 1	BSC et al. 2008; OMNR 2025	Mid-canopy layer of forest clearings and edges of deciduous and mixed forest. Abundant in intermediate-age mature forest stands with little understory vegetation.[3,4]	Yes	No	Considered absent within the study area	Suitable deciduous woodland exists within the study area. However, not recorded across multiple breeding bird surveys and other site investigations.
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	T	Schedule 1	BSC et al. 2008	Large (>10 ha), open expansive grasslands, pastures, hayfields, meadows or fallow fields with dense ground cover. Occassionally nest in large (>50 ha) fields of winter wheat and rye in southwestern Ontario. [3,4]	Yes	No	Considered absent within the study area	Cultural meadow habitats are relatively small and of marginal habitat quality. Not recorded across multiple breeding bird surveys and other site investigations.
Hirundo rustica	**Barn Swallow**	**S4B**	**SC**	**SC**	**T**	**Schedule 1**	**BSC et al. 2008**	**Farmlands, rural areas and other open or semi-open areas near body of water. Nests almost exclusively on human-made structures such as open barns, buildings, bridges and culverts.[3,4]**	**Yes**	**Yes**	**Foraging habitat present within the study area**	**The open agricultural and cultural meadow lands provide suitable foraging habitat. Nesting habitat is absent within the study area. Foraging individuals have been obseved over the study area.**
Hylocichla mustelina	Wood Thrush	S4B	SC	T	T	Schedule 1	BSC et al. 2008	Carolinian and Great Lakes-St. Lawrence forest zones. Undisturbed moist mature deciduous or mixed forest with deciduous sapling growth. Near pond or swamp. Must have some trees higher than 12 m.[3,4]	No	No	Considered absent within the study area	Woodland in the study area is too small to support Wood Thrush. Not recorded across multiple breeding bird surveys and other site investigations.
Melanerpes erythrocephalus	Red-headed Woodpecker	S3	END	E	E	Schedule 1	BSC et al. 2008	Open, deciduous forest with little understory; fields, parks or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees. Requires cavity trees with at least 40 cm dbh.[3,4]	Yes	No	Considered absent within the study area	Suitable deciduous woodland exists within the study area. However, not recorded across multiple breeding bird surveys and other site investigations.
Riparia riparia	**Bank Swallow**	**S4B**	**THR**	**T**	**T**	**Schedule 1**	**BSC et al. 2008; OMNR 2025**	**Nests in burrows in natural and human-made settings with vertical faces in silt and sand deposits. Ususally on banks of river and lakes, but also found in sand and gravel pits.[3,4]**	**Yes**	**Yes**	**Foraging habitat present within the study area [**not ESA-protected habitat**]**	**The open agricultural and cultural meadow lands provide suitable foraging habitat. Nesting habitat is absent within the study area. An individual of the species has been observed within the study area.**
Sturnella magna	Eastern Meadowlark	S4B, S3N	THR	T	T	Schedule 1	BSC et al. 2008	Open pastures, hayfields, grasslands or grassy meadows with elevated singing perches (small trees, shrubs or fence posts). Also weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields or other open areas. Generally prefers larger tracts of habitat >10 ha, but will sometimes use smaller tracts.[3,4]	Yes	No	Considered absent within the study area	Cultural meadow habitats are relatively small and of marginal habitat quality. Not recorded across multiple breeding bird surveys and other site investigations.
Herpetofauna												
Turtles												
Chelydra serpentina	**Snapping Turtle**	**S4**	**SC**	**SC**	**SC**	**Schedule 1**	**Ontario Nature 2019; OMNR 2025**	**Slow-flowing rivers and streams, lakes, and permanent or semi-permanent wetlands with soft substrates and vegetation. Key habitat requirements: open areas with structures for basking, open sand or gravel areas for nesting, shallow areas with soft substrates to bury in, soft banks or substrates for hibernation.[3]**	**Yes**	**No**	**May potentially use the Baden Creek watercourse channel**	**The Baden Creek channel provides a potential movement corridor for the species. Although this species has not been observed on-site, its occasional presence cannot be ruled out.**
Frogs and Toads												
Pseudacris triseriata	Western Chorus Frog (Great Lakes - St. Lawrence - Canadian Shield population)	S4	NAR	T	T	Schedule 1	Ontario Nature 2019	Moist forest, prairie, meadows, cultural meadows, or marshes. Breeds in shallow, temporary, fishless wetlands, including flooded ditches, marshes, flooded fields, pastures, temporary ponds, pools, and swamps. Hibernates in terrestrial habitats under rocks, logs, leaf litter, loose soil, or in animal burrows.[21]	No	No	Considered absent within the study area	Wetland and vernal pool habitats are absent in the study area.
Mammals												
Lasionycteris noctivagans	**Silver-haired Bat**	**S4**	**END**	**E**			**COSEWIC 2023**	**Woodlands with large-diameter decaying trees**	**Yes**	**No**	**May occupy trees within the woodland**	**Suitable roosting trees occur within the study area woodland. No suitable roosting trees observed elsewhere within the subject lands.**
Lasiurus borealis	**Eastern Red Bat**	**S4**	**END**	**E**			**COSEWIC 2023**	**Deciduous and coniferous forests with open understories, containing large-diameter and some tall trees**	**Yes**	**No**	**May occur within the study area**	**Suitable roosting trees may occur within the study area woodland and isolated tree growth**
Lasiurus cinereus	**Hoary Bat**	**S4**	**END**	**E**			**COSEWIC 2023**	**Deciduous and coniferous forests with open understories, containing large-diameter and some tall trees**	**Yes**	**No**	**May occur within the study area**	**Suitable roosting trees may occur within the study area woodland and isolated tree growth**
Myotis leibii	Eastern Small-footed Myotis	S2S3	END				Humphrey 2017	Roosts in caves, mine shafts, crevices or buildings that are in or near woodland. Hibernates in cold dry caves or mines. Maternity colonies in caves or buildings. Hunts in forests.[3,4]	No	No	Considered absent within the study area	Suitable roosting habitat (anthropogenic structures, caves) is absent in the study area.

Scientific Name	Common Name	S-RANK[1]	SARO[1]	COSEWIC[2]	SARA[2]	SARA Schedule[2]	Background Source	Habitat Requirements	Suitable Habitats within Study Area	NRSI Observed?	Potential to Occur	Rationale
Myotis lucifungus	**Little Brown Myotis**	**S3**	**END**	**E**	**E**	**Schedule 1**	**ECCC 2018**	**Uses caves, quarries, tunnels, hollow trees or buildings for roosting. Winters in humid caves. Maternity sites in dark warm areas such as attics and barns. Feeds primarily in wetlands and forest edges.[3,4]**	**Yes**	**No**	**May occupy trees within the woodland**	**Suitable roosting trees occur within the study area woodland. No suitable roosting trees observed elsewhere within subject lands.**
Myotis septentrionalis	**Northern Myotis**	**S3**	**END**	**E**	**E**	**Schedule 1**	**ECCC 2018**	**Roosts in houses and man-made structures but prefers hollow trees or under loose bark. Hibernates in mines or caves. Hunts within forest, below the canopy.[3,4]**	**Yes**	**No**	**May occupy trees within the woodland**	**Suitable roosting trees occur within the study area woodland. No suitable roosting trees observed elsewhere within subject lands.**
Perimyotis subflavus	**Tri-colored Bat**	**S3?**	**END**	**E**	**E**	**Schedule 1**	**ECCC 2018**	**Roosts and maternity colonies in older forests and occassionally in barns or other sturctures. Forage over water and along streams in the forest. Hibernate in caves.[3,4]**	**Yes**	**No**	**May occupy trees within the woodland**	**Suitable roosting trees may occur within the study area woodland. Unlikely to use other tree growth on subject lands.**
Taxidea taxus jacksoni	American Badger (Southwestern Ontario population)	S2	END	E	E	Schedule 1	Dobbyn 1994	Open grasslands, oak savannahs, sand barrens and farmland.[3,4]	Yes	No	Considered absent within the study area	Agricultural field edges provide suitable habitat. However, no evidence of use or presence was confirmed.
Butterflies												
Danaus plexippus	**Monarch**	**S2N, S4B**	**SC**	**END**	**SC**	**Schedule 1**	**Macnaughton et al. 2024**	**Adults found in a diversity of habitats with a variety of wildflowers. Caterpillars are confined to meadows and open areas where milkweeds grow (larval food plants).[3]**	**Yes**	**Yes**	***Confirmed to occur on-site [*not SWH*]***	**Two individuals were observed within the subject lands.**
Euphyes conspicua	Black Dash	S3					Macnaughton et al. 2024	Marshes, wet grassland and sedge meadows; wet areas along roadsides and streams	No	No	Considered absent within the study area	Suitable habitat is not present within the study area
Asterocampa celtis	Hackberry Emperor	S3					Macnaughton et al. 2024	Rich woods or parks where Common Hackberry grows	No	No	Considered absent within the study area	Woodlands with Common Hackberry growth are not present in the study area.
Asterocampa clyton	Tawny Emperor	S3					Macnaughton et al. 2024	Rich woods or parks where Common Hackberry grows	No	No	Considered absent within the study area	Woodlands with Common Hackberry growth are not present in the study area.
Plants												
Fraxinus nigra	Black Ash	S4	END	T	NS	No Schedule	OMNR 2025	Predominantly swamps, floodplains and fens. Also moist upland forests.	No	No	Considered absent within the study area	Suitable habitat is not present within the study area
Juglans cinerea	Butternut	S2?	END	E	E	Schedule 1	NRSI observation north of study area	Stream banks and swamps, as well as upland beech-maple, oak-hickory, and mixed hardwood stands.[23]	Yes	No	Considered absent within the study area	No Butternuts were observed within the EIS study area

Appendix XIV
Significant Wildlife Habitat Assessment Results

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Terrestrial)					Not Present	Not Present
Rationale: Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	Fields with sheet water during Spring (mid March to May). • Fields flooding during 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]. Information Sources • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[cxcxi] • Any mixed species aggregations of 100 or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependent on local site conditions and adjacent land use is the significant wildlife habitat[cxlviii]. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMiST[cxlix] Index #7 provides development effects and mitigation measures.	Baden Creek flows within a well-defined channel and is not known to overflow its banks into the adjacent lands.	

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Aquatic)					Not Present	Not Present
Rationale: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked Duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). Information Sources • Environment Canada • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100[l] or more of listed species for 7 days[l], 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"[cxcvi] • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWHMiST[cxlix] Index #7 provides development effects and mitigation measures.	Suitable habitat not present within the study area.	
Wildlife Habitat: Shorebird Migratory Stopover Area					Not Present	Not Present
Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin Whimbrel	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. Information Sources • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area[cxlviii] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[cxcvi] • SWHMiST[cxlix] Index #8 provides development effects and mitigation measures.	Suitable habitat not present within the study area.	

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	**ELC Ecosite Codes**	**Habitat Criteria and Information Sources**	**Defining Criteria**	**Study Area**	**Subject Property**
Wildlife Habitat: Raptor Wintering Area					Not Present	Not Present
Rational: Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class: Forest: FOD, FOM, FOC Upland: CUM, CUT, CUS, CUW	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering 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, large trees and snags available for roosting Information Sources • OMNRF Ecologist or Biologist • Field Natural Clubs • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Reports and other information available from Conservation Authorities CAs.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two 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”[cxcvi] • SWHMiST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	The study area does not contain suitably large-sized woodlands to support this habitat function.	
Wildlife Habitat: Bat Hibernacula					Not Present	Not Present
Rationale Bat hibernacula are rare habitats in Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH • The locations of bat hibernacula are relatively poorly known. Information Sources • OMNRF for possible locations and contact for local experts • Natural Heritage Information Center (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH. • The habitat area includes a 200m radius around the entrance of the hibernaculum[cxlviii, ccvii] for most. • 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.	There are no mine shafts, caves, or Karts within the subject property or study area.	

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Bat Maternity Colonies					Candidate	Candidate

Rationale:
Known locations of forested bat maternity colonies is extremely rare in all Ontario landscapes.
	Big Brown Bat
	Silver-haired Bat
		Maternity colonies considered SWH are found in forested Ecosites.
		
		All ELC Ecosites in ELC Community Series:
		FOD
		FOM
		SWD
		SWM
			Maternity colonies can be found in tree cavities, vegetation and often in buildings[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]
			
			Information Sources
			• OMNRF for possible locations and contact for local experts
			• University Biology Departments with bat experts.
				• Maternity Colonies with confirmed use by:
				  • >10 Big Brown Bats
				  • >5 Adult Female Silver-haired Bats
				• The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies.
				• Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for wind Power Projects[ccv]
				• SWHMiST[cxlix] Index #12 provides development effects and mitigation measures.
					The study area FOD7-3 woodland meets the minimum density threshold of large-diameter trees to be considered Candidate SWH	

Wildlife Habitat: Turtle Wintering Area					Not Present	Not Present
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles - ELC Community Classes: SW, MA, OA and SA; ELC Community Series: FEO and BOO Northern Map Turtle - Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen[cix, cx, cxi, cxviii]. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. Information Sources • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF ecologist or biologist • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May)[cvii] • Congregation of turtles is more common where wintering areas are limited and therefore significant[cix, cx, cxi, cxii]. • SWHMiST[cxlix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	Suitably deep open water habitat that could support turtle overwintering is not present within the study area	

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Snake Hibernaculum					Not Present	Not Present
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake Lizard: Special Concern (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. The existence of features that go below the 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[xliv, l, li, lii, cxii]. • 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 cciii. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information from CAs. • Local Field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. clubs • Natural Heritage Information Center (NHIC) • OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population [i.e. strong hibernation site fidelity]. Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30m buffer is the SWH[l] • 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.	Features that are associated with typical snake hibernaculum features, such as sun-exposed south-facing rocky slopes, old wells, or crumbling stone walls or house foundations are not present in the study area. No snakes have been incidentally observed within the subject lands across several site investigations.	
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)					Not Present	Not Present
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 populations are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources • Reports and other information available from CAs • Ontario Breeding Bird Atlas [ccv] • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist clubs	Studies confirming: • Presence of 1 or more nesting sites with 8[cxlvix] 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[ccvii] • 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"[cccxi] • SWHMiST[cxlix] Index #4 provides development effects and mitigation measures	The study area and subject property do not contain sutiable banks or cliffs for nesting bird breeding habitat.	

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)					Not Present	Not Present
Rationale: Large Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15m from ground, near the top of the tree. Information Sources • Ontario Breeding Bird Atlas[ccv], colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNR). • NHIC Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries • Reports and other information available from CAs • MNRF District Offices • Local naturalist clubs	Studies confirming: • Presence of 5[l] or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH [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.	The study area or subject property do not contain suitable habtiat for nesting bird breeding habitat.	
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Ground)					Not Present	Not Present
Rationale: Colonies are important to local bird populations, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. Information Sources • Ontario Breeding Bird Atlas[ccv], rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs • Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of >25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern[l]. • 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 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, ccvii] • 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.	The study are and subject property do not contain islands or peninsulas in open water or marshy areas.	

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Migratory Butterfly Stopover Areas					Not Present	Not Present
Rationale: Butterfly stopovers areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral Special Concern: Monarch	Combination of ELC Community Series: Need to have present one Community Series from each landclass: Field: CUM CUS CUT Forest: FOC FOM FOD CUP Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario[cxlix]. • 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.] Information Sources • OMNRF (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)[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, xliii]. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. • SWHMiST[cxlix] Index #16 provides development effects and mitigation measures.	The study area or subject property is not within 5km of Lake Ontario.	
Wildlife Habitat: Landbird Migratory Stopover Areas					Not Present	Not Present
Rationale: Sites with a high diversity of species as well as high number are most significant	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 ha[l] in size and within 5km [iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Ontario. • If multiple woodlands 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]. Information Sources • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • Ontario Important Bird Areas (IBA) Program	Studies confirm: • 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 dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #9 provides development effects and mitigation measures.	The study area and subject property is not within 5km of Lake Ontario.	

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Deer Yarding Areas					Not Present	Not Present
Rationale: Winter habitat for deer is considered to be the main factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include: FOM, FOC, SWM and SWC. Or these ELC Ecosites: CUP2 CUP3 FOD3 CUT	• Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%[cxciv]. • OMNRF determines deer yards following methods outlined in “Selected Wildlife and Habitat Features: Inventory Manual"[cxcv] • Woodlots with high densities of deer due to artificial feeding are not significant.	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH[lvi, lvii, lviii, lix, lx, i]. • 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.	The study area does not contain suitable deer yarding habitat.	
Wildlife Habitat: Deer Winter Congregation Areas					Not Present	Not Present
Rationale: Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions[exlviii]	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50ha may also be used.	• Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Eco-region 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands[cxlviii]. • 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[ccxxiv]. • Woodlots with high densities of deer due to artificial feeding are not significant. Information Sources • MNRF District Offices • LIO/NRVIS	Studies confirm: • 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 MNR[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 of 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.	The study area does not contain suitable deer winter congregation habitat.	

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH		
	ELC Ecosite Codes	Habitat Description	Detailed Information and Sources	Defining Criteria	Study Area	Subject Property
Cliff and Talus Slopes					Not Present	Not Present
Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF District • Natural Heritage Information Center (NHIC) has location information on their website • Local naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes[lxxviii] • SWHMiST[cxlix] Index #21 provides development effects and mitigation measures.	Cliff and talus slopes are absent within the study area	
Sand Barrens					Not Present	Not Present
Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always <60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. 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%.	Any sand barren area, >0.5ha in size. Information Sources • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location information on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens[lxxviii] • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics)[i]. • SWHMiST[cxlix] Index #20 provides development effects and mitigation measures.	Sand barren type habitat is absent within the study area	

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH		
	ELC Ecosite Codes	Habitat Description	Detailed Information and Sources	Defining Criteria	Study Area	Subject Property
Alvar					Not Present	Not Present
Rationale: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregion 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Indicator Species: 1) Carex crawei 2) Panicum philadelphicum 3) Eleochairs compressa 4) Scutellaria parvula 5) Trichostema branchiatum These indicator species are very specific to Alvars within Ecoregion 6E	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoo geographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover[lxxviii].	An Alvar site > 0.5 ha in size[lxxv]. Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists[lxxvi]. • Ontario Nature – Conserving Great Lakes Alvars[ccviii]. • Natural Heritage Information Center (NHIC) has location information on their website • Field Naturalist clubs • Conservation Authorities	Field studies 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 are exotics sp.). • 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.	Alvar habitat is absent within the study area	
Old Growth Forest					Not Present	Not Present
Rationale: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland Stands areas 30ha or greater in size or with at least 10 ha interior habitat assuming 100m buffer at edge of forest Í. Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Forester, Ecologist or Biologist • Field Local naturalist clubs • Conservation Authorities • Sustainable Forestry License (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat[cxlviii] • The stand will have experienced no recognizable forestry activities[cxlviii] • The area of Forest Ecosites combined to make up the stand is the SWH. • Determine ELC Vegetation Type for forest stand[lxxviii] • SWHDSS[cxlix] Index #23 provides development effects and mitigation measures.	Old growth forest habitat is absent within the study area	

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH		
	ELC Ecosite Codes	Habitat Description	Detailed Information and Sources	Defining Criteria	Study Area	Subject Property
Savannah					Not Present	Not Present
Rationale: Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.	• No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • Natural Heritage Information Center (NHIC) has location information on their website • OMNRF Ecologists • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in[lxxv] Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used[cxlviii]. • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics sp.). • SWHMiST[cxlix] Index #18 provides development effects and mitigation measures.	Savannah habitat is absent within the study area	
Tallgrass Prairie					Not Present	Not Present
Rationale: Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.	• No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNR Districts • Natural Heritage Information Center (NHIC) has location information available on their website • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in[lxxv] Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used[cxlviii]. • 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.	Tallgrass prairie habitat is absent within the study area	

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH		
	ELC Ecosite Codes	Habitat Description	Detailed Information and Sources	Defining Criteria	Study Area	Subject Property
Other Rare Vegetation Communities					Not Present	Not Present
Rationale: Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG[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.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M[cxlviii] The OMNR/NHIC will have up to date listing for rare vegetation communities. Information Sources • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG[cxlviii]. • Area of the ELC Vegetation Type polygon is the SWH. • SWHMiST[cxlix] Index #37 provides development effects and mitigation measures.	Other rare vegeration communites are absent within the study area	

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Waterfowl Nesting Area					Not Present	Not Present
Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends 120m[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 120m of each individual wetland where waterfowl nesting is known to occur[cxlix]. • Upland areas should be at least 120m wide so that predators such as raccoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[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 120m[cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST[cxlix] Index #25 provides development effects and mitigation measures.	Wetland habitats are not present within the study area.	

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat					Not Present	Not Present
Rationale: Nest sites are fairly uncommon in Eco-region 6E are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey Special Concern: Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	• Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). Information Sources • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts • Sustainable Forestry License (SFL) companies will identify additional nesting locations through field operations. • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs. • Field naturalists clubs	Studies confirm the use of these nests by: • 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 300m radius around the nest or the contiguous woodland stand is the SWHccvii, maintaining undisturbed shorelines with large trees within this area is important[cxlviii]. • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH[cvi], ccvii. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat[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	These species are not known to occur in the study area vicinity.	

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Woodland Raptor Nesting Habitat					Not Present	Not Present
Rationale: Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat[lxxxviii, lxxxix, xc, xci, xciii, xciv, xcv, xcvi, cxxxiii]. Interior habitat determined with a 200m buffer[cxlviii]. • 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 Cooper's 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. Information Sources • OMNRF • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	Studies confirm: • 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 28ha area of habitat is the SWH[ccvii]. • 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.	Suitable habitat is absent within the study area	
Wildlife Habitat: Turtle Nesting Area					Not Present	Not Present
Rationale: These habitats are rare and when identified will often be the only breeding site for local populations of turtles	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m)[cxlviii] or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. Information Sources • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) • Field Naturalist clubs and landowners	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • 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[cxlix]. • 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[cxlix] Index #28 provides development effects and mitigation measures for turtle nesting habitat.	Wetland habitats are not present within the study area.	

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Seeps and Springs					Not Present	Not Present
Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system[cxvii, cxlix]. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species[cxlix, cxx, cxxi, cxxii, cxiii, cxiv] Information Sources • Topographical Map • Thermography • Hydrological surveys conducted by CAs and MOE • Field naturalists clubs and landowners • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat[cxlviii] • SWHMiST[cxlix] Index #30 provides development effects and mitigation measures	The study area does not occur in a headwaters area.	
Wildlife Habitat: Amphibian Breeding Habitat (Woodland)					Not Present	Not Present
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) [ccvii] within or adjacent (within 120m) to a woodland (no minimum size)[clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx] 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] Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF District • OMNRF wetland evaluations • Field naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses)[lxxi] or 2 or more of the listed frog species with Call Level Codes of 3. • 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 woodland/wetlands. • The habitat is the woodland area plus a 230m radius of woodland area[lxii,lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi] if a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is the be included in the habitat. • SWHMiST[cxlix] Index #14 provides development effects and mitigation measures.	Wetland and vernal pool habitat is not present within the study area.	

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH	Assessment Details	
	Wildlife Species	ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Amphibian Breeding Habitat (Wetland)					Not Present	Not Present
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Tree frog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands >500m2 (about 25m diameter)[ccvii] 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[clxxxiv]. • 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. Information Sources • 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 CAs.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species and with at least 20 individuals (adults or eggs masses)[lxxi, lxxiii], 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 spring March to 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.	Wetland habitat is not present within the study area.	
Woodland Area-Sensitive Bird Breeding Habitat					Not Present	Not Present
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.	Yellow-Bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha.[cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxv, cxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvii, clviii, clix] • Interior forest habitats are at least 200m from forest edge habitat. Information Sources • Local bird clubs • Canadian Wildlife Service (CWS) for the location of forest bird monitoring. • Bird studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to greatest value to interior species • Reports and other information available from CAs.	• 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.	The study area woodland is too small to support this habitat function.	

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH		
	Wildlife Species	ELC Ecosites	Detailed Information and Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Marsh Bird Breeding Habitat					Not Present	Not Present
Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present[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. Information Sources • Contact OMNRF, wetland evaluations are a good source of information. • Field naturalist clubs • Natural Heritage Information Center (NHIC) Records • Reports and other information available from CAs. • Ontario Breeding Bird Atlas[ccv]	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species[l]. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH[l]. • 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"[ccxi]. • SWHMiST[cxlix] Index #35 provides development effects and mitigation measures	Suitable wetland habitat is not present within the study area.	
Wildlife Habitat: Open Country Bird Breeding Habitat					Not Present	Not Present
Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern: Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha [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. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Ask local birders • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owl 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.	Suitably large open habitat areas are not present within the study area.	

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH		
	Wildlife Species	ELC Ecosites	Detailed Information and Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Shrub/Early Successional Bird Breeding Habitat					Not Present	Not Present
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 cxcix.	Indicator spp.: Brown Thrasher Clay-coloured Sparrow Common spp.: Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	Large field areas succeeding to shrub and thicket habitats>10ha[clxiv] in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years)[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. Information Sources • Agricultural land classification maps Ministry of Agriculture Local bird clubs • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species[l]. • A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #33 provides development effects and mitigation measures.	Suitable habitat is not present within the study area.	
Wildlife Habitat: Terrestrial Crayfish					Not Present	Not Present
Rationale: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.[ccii]	Chimney or Digger Crayfish: (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish: (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM	Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow 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 during in temporary or permanent water Note the presence of burrows or chemistry are often the only indicator of presence, observance or collection of individuals is very difficult[cci] • SWHMiST[cxlix] Index #36 provides development effects and mitigation measures.	Wetland habitats are not present within the study area.	

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH		
	Wildlife Species	ELC Ecosites	Detailed Information and Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Special Concern and Rare Wildlife Species					Confirmed	Confirmed
Rationale: These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites[lxxviii]. Information Sources • Natural Heritage Information Centre (NHIC) will have the 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[ccv] • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs 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.	Foraging habitat for the SCC Barn Swallow was confirmed in the study area through previous NRSI field surveys.	

Significant Wildlife Habitat Assessment Tables

Table 5. Characteristics of Animal Movement Corridors for Ecoregion 6E.

Rationale	Candidate SWH			Confirmed SWH		
	Wildlife Species	Habitat Description	Detailed Information and Sources	Defining Criteria	Study Area	Subject Property
Wildlife Habitat: Amphibian Movement Corridors					Not Present	Not Present
Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	Movement corridors between breeding habitat and summer habitat [clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi]. 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[I]. Information Sources • MNRF District Office • Natural Heritage Information Center NHIC • Reports and other information available from CAs • Field Naturalist Clubs	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Cooridors 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.	Candidate SWH for Amphibian Breeding Habitat (Wetlands) is not present in the study area.	
Wildlife Habitat: Deer Movement Corridors					Not Present	Not Present
Rationale: Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule[I]. • 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, cxciv]. • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). Information Sources • MNRF District Office • Natural Heritage Information Center (NHIC) • Reports and other information available from CAs • Field Naturalist Clubs	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. • Corridors that lead to a deer wintering yard 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.	Deer Winter Congregation Area or Deer Yarding Area SWH is not present in the study area.	