Jedburgh Plains

Natural Environment Report

Project Location:
1830 Wrigley Road, Ayr, ON

Prepared for:
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Contents

Figures

Tables

Appendices

1.0 INTRODUCTION

MTE Consultants Inc. (MTE) has been retained by Wrigley Developments Ltd. (the Owner), a subsidiary of Orange Rock Developments Inc., to undertake a Natural Environment Report (NER) in support of an *Aggregate Resources Act* (*ARA*) Licence Application being prepared by the Owner and Licensee (J-AAR Materials) for the Jedburgh Plains aggregate site. The *ARA* is administered by the Ministry of Natural Resources (MNR) to control and regulate aggregate operations in Ontario, including minimizing negative impacts to the environment and rehabilitating excavated sites. Once the *ARA* application is deemed completed by MNR, a Zoning By-Law Amendment application will subsequently be submitted for approval under the *Planning Act* to permit extraction. In addition, an Environmental Impact Statement (EIS) is required where a mineral aggregate operation is proposed contiguous to a Core Environmental Feature or a Supporting Environmental Feature as per Policy 5.2.4.1d) of the Township of North Dumfries Official Plan (2018). This report is intended to fulfill the requirements of a NER and EIS.

Aggregate extraction is proposed on the land holdings located at 1830 Wrigley Road in Ayr (herein referred to as the Licence Area). In accordance with the Natural Heritage Reference Manual (NHRM; OMNR, 2010), a Study Area, including the Licence Area, Extraction Area and adjacent lands within 120 metres, has been defined for the purposes of evaluating ecological functions and determining negative impacts to natural heritage features or areas as a result of the proposed extraction (**Figure 1**). For the purposes of this report, the entire legal parcel is referred to as the Licence Area. The Licence Area consists of active and fallow agricultural fields, successional vegetation communities and core environmental features (i.e., significant woodlands and provincially significant wetlands). The previous residential home and outbuildings have been removed; however, available aerial imagery has not been updated.

1.1 Report Objective

The purpose of a NER is to determine whether any of the significant natural heritage features as identified by the *Provincial Planning Statement, 2024* (PPS) are located on and/or within 120 metres of the Licence Area. This report is intended to address the requirements under the Aggregate Resources of Ontario: Technical Reports and Information Standards, Section 2.2 (2020) as Aggregate Resource Applications are to be prepared in accordance with Provincial Standards per subsection 0.2(2) of Ontario Regulation 244/97. In addition, this report is intended to align with the requirements of an EIS, as per the Region of Waterloo (Policy 7.C.10) and Township of North Dumfries natural heritage policies. The EIS requirements per Policy 6.3 in the Township of North Dumfries Official Plan (2018) and Region of Waterloo Greenlands Network Implementation Guideline (2016) are generally consistent with the requirements of an NER. The NER will be submitted to support the *ARA* and Zoning By-law Amendment application to facilitate aggregate extraction within the Licence Area.

Where natural heritage features were identified on, or adjacent to, the Licence Area, the NER has evaluated these features for provincial significance using the criteria provided within the NHRM (OMNR, 2010) and the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015).

The NER assesses the potential for impacts to the identified features or their associated ecological functions as a result of the proposed extraction project. The NER also identifies any preventative, mitigative or remedial measures required in support of the proposed project, including protected species concerns and potential permitting requirements. This report will be circulated to both provincial and municipal review agencies and the general public as part of the *ARA* and *Planning Act* application process.

1.2 Background Documents

Natural heritage features and functions identified within the Licence Area have been evaluated through a review of the NHRM in accordance with Section 4.1 of the PPS (2024), Chapter 7 (The Greenlands Network) of the Regional Official Plan (ROP; Office Consolidation 2024) and Chapter 6 (Environmental Management) of the Township of North Dumfries Official Plan (2018).

In addition, the following documents were reviewed to provide an assessment of the quality and extent of natural heritage features and functions found within the Licence Area:

- Hydrogeological Assessment & Maximum Predicted Groundwater Report (Stonecairn Consulting, 2025); and
- Preliminary Geotechnical Investigation (MTE, 2023).

2.0 NATURAL HERITAGE LEGISLATION & POLICY CONTEXT

2.1 Planning Act

The PPS (2024) was issued under the authority of the *Planning Act, 1990* to provide direction to regional and local municipalities on matters of provincial interest related to land use planning and development in support of a comprehensive, integrated and long-term approach to planning. The consolidated policy framework of the PPS (2024) replaces both the Provincial Policy Statement (2020) and A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2019) to streamline provincial land use planning, particularly as it relates to housing-supportive and infrastructure-coordinated policies. Land use planning decisions made by planning authorities must be consistent with the PPS (2024) as per Section 3(5) of the *Planning Act*.

With respect to natural heritage features and resources, Policy 4.1 of the PPS (20024) defines eight natural heritage features or areas:

- Significant Wetlands;
- Significant Coastal Wetlands;
- Significant Woodlands;
- Significant Valleylands;
- Significant Wildlife Habitat (SWH);
- Significant Areas of Natural and Scientific Interest (ANSIs);
- Fish Habitat; and
- Habitat of Endangered and Threatened Species.

The Licence Area is located within Ecoregion 7E. Per the PPS, no development or site alteration shall be permitted in significant wetlands or significant coastal wetlands. Development and site alteration shall not be permitted in significant woodlands, significant valleylands, SWH, significant ANSIs or coastal wetlands unless it has been demonstrated, through an EIS or like study (e.g., a NER), that there will be no negative impact to natural heritage features or their ecological functions. Furthermore, development and site alteration shall not be permitted in habitats of endangered or threatened species, or fish habitat, except in accordance with provincial and federal legislation.

In addition, the PPS indicates that development and site alteration shall not be permitted on lands adjacent to natural heritage features unless it has been demonstrated that no negative impacts to these features or their ecological functions will occur.

The PPS provides area-specific land use planning policies and functions as a foundation for the development of lower-tier plans consistent with provincial policy. As such, the ROP (2024) and Township of North Dumfries Official Plan (2018) must be consistent with the PPS and are subject to the regulations of applicable provincial plans.

2.2 Region of Waterloo Official Plan

The ROP (2024) provides a long-term, strategic policy planning framework for managing land use planning in the Waterloo Region. Greenlands Network policies within the ROP have been developed under the *Planning Act* and outline opportunities to enhance the sustainability and resilience of the regional natural heritage system and water resource system. Natural heritage features and functions identified within, and adjacent to, the Licence Area shall be reviewed in accordance with the Greenlands Network policies outlined in Chapter 7 (Greenlands Network) of the ROP (2024).

The Greenlands Network includes Landscape Level Systems, Core Environmental Features, Fish Habitat, Supporting Environmental Features and linkages as well as Provincial Greenbelt Plan elements. Core Environmental Features form a component of the Environmentally Sensitive Landscapes. As per Section 7.C.9 (e) of the Official Plan, development or site alteration will not be permitted within Core Environmental Features except for mineral aggregate operations in accordance with the policies of Chapter 9.

As per Map 4 (Greenlands Network) of the ROP (2024), the northern portion of the Licence Area contains a Core Environmental Feature that occurs within the broader Dumfries Carolinian Environmentally Sensitive Landscape (refer to **Figure 2A** from the Township Official Plan). As per the County Official Plan Section 7.B.12, an EIS is required where a mineral aggregate operation is within, or contiguous to, an Environmentally Sensitive Landscape. Exemptions to permit new mineral aggregate operations, wayside pits and quarries within Core Environmental Features and the Environmentally Sensitive Landscapes designation are defined within Policy 7.C.9 and must adhere to the policies outlined within Chapter 9.

2.3 Township of North Dumfries Official Plan

The Township of North Dumfries Official Plan (the OP) was adopted by Council on December 16, 2013. Further, amendments have been made to the OP to reflect Minister-approved Official Plan amendments, with the most recent office consolidation released in November 2018. The OP has been established to provide planning direction for the long-term protection, conservation, enhancement and management of the Greenlands Network, as well as associated ecological functions, processes and linkages. Environmental policies defined within the OP (2018) is intended to protect the Greenlands Network by directing development away from significant natural or man-made hazards, and natural resources.

The Township of North Dumfries Greenlands Network is generally identified on Map 5A of the OP (**Figure 2A**). The features are consistent with the ROP. The following Map 5B and 5C in the OP identify Environmental Constraint Areas and Hazard Lands, respectively.

2.3.1 Environmental Designations

As per Map 5A (Greenlands Network) of the OP, the Dumfries Carolinian Environmentally Sensitive Landscape overlaps a portion of the Licence Area (**Figure 2A**). As per Policy 5.2.5.5, mineral aggregate extraction may be permitted within Environmentally Sensitive Landscape provided it can be demonstrated to the satisfaction of the Region of Waterloo, the Township of North Dumfries and the Grand River Conservation Authority (GRCA) that:

a) *where extraction is proposed contiguous to a Core Environmental Feature, there will be no significant adverse environmental impacts to their features or landscape level ecological functions and connectivity.*

b) *where extraction is proposed within or contiguous to the following features, which are not included within a Core Environmental Feature:*

   i. *rivers, stream valleys, floodplains, or associated hazardous lands or hazardous sites;*

   ii. *fish habitat;*

   iii. *meromictic and kettle lakes;*

   iv. *significant wildlife habitat; or*

   v. *savannas, tallgrass prairies, rare woodland types, cliffs, alvars, sand barrens, marl seeps, bogs and fens.*

there will be no significant adverse environmental impacts to their features or landscape level ecological functions and connectivity, although extraction may be considered in habitats which can be effectively replaced or restored in a short to medium time scale such as areas of crop or pasture land, young plantation, early successional woodland, small areas of non-provincially significant marsh or thicket wetland, old field meadow, hedgerows and drainage swales.

The proposed license boundary overlaps Core Environmental Features and shall be subject to an EIS to confirm that that there will be no adverse environmental impacts to features or ecological functions and linkages in accordance with Policy 5.2.5.3.

The Roseville Swamp Cedar Creek Provincially Significant Wetland (PSW) Complex overlaps the northern and northeastern portions of the Licence Area. Cedar Creek also overlaps the northwestern corner of the Licence Area. Both features extend to the west, north and east into the adjacent lands (**Figure 2B**). PSWs are designated Core Environmental Features wherein development or site alteration shall not be permitted (Policy 6.1.7.4). New mineral aggregate operations may be exempt from this provision in accordance with the policies of the ROP, as noted in Section 2.2 and outlined in detail in Chapter 9 of the ROP.

The northern and northeastern portions of the Licence Area are also designated as Environmental Constraint Areas as per Map 5B of the OP. Environmental Constraint Areas may be hazardous lands, hazardous sites and Greenlands Network features. As per Policy 2.6.12.2, permitted uses within Environmental Constraint Areas include conservation, agriculture, appropriate recreational uses, and forestry and wildlife management. The proposed extraction limit has been developed to exclude these features.

2.3.2 Land Use Designations

The Licence Area is within the Rural Area with a portion of Protected Countryside as designated on Map 7 (The Countryside) of the OP (**Figure 3**). The primary uses permitted within the Rural Area designation shall be agricultural or related uses in accordance with Policy 6.A.4. Interim aggregate operations are permitted within the Rural Area designation provided that agricultural rehabilitation is maximized as per Policy 5.2.3.4 of the OP. The Protected Countryside is regulated with the underlying policies of the Rural Areas. As such, the interim mineral aggregate operations are permitted by the OP, subject to a Zoning By-law Amendment.

2.3.3 Township of North Dumfries Zoning By-law

Under the Township of North Dumfries Zoning By-law (No. 689-83), the Licence Area is zoned Agriculture (Zone 1; **Figure 4**) while the lands bordering the Licence Area are zoned Mineral

Aggregates (Zone 14), Environmental Protection 1 (Zone12a) and Environmental Protection 2 (12b). Permitted uses and regulations within Zone 1 – Agriculture are defined under Section 7 of the Zoning By-law and include any barn or building as a part of farming operations and one residential unit. As such, the proposed extraction deviates from the permitted uses and regulations identified under the Zoning By-law, therefore, a Zoning By-law Amendment is required.

Lands to the east, within the Protected Countryside designation are zoned for extraction.

2.4 Implementation Considerations

An assessment of the quality and extent of natural heritage features and functions found within, and adjacent to, the Licence Area was undertaken to comply with the requirements of applicable legislation, plans and policies. Federal and provincial legislation that is not subject to the provisions of the *Planning Act* has been considered in the context of the implementation of the proposed extraction plan. The applicability of these documents is contingent upon the presence of natural heritage features, site-specific conditions and the availability of critical habitat. Additional policy and legislative documents considered in support of anticipated planning approval and potential implementation requirements are summarized in the following sections.

2.4.1 Conservation Authorities Act

The GRCA administers the Prohibited Activities, Exemptions and Permits regulation, under Ontario Regulation 41/24, pursuant to Section 28 of the *Conservation Authorities Act, 1990* (Revised April 1, 2024). Areas within the jurisdiction of the authority are delineated within the "Regulation Limit" and include watercourses, hazardous lands, wetlands and areas where development may interfere with the hydrologic function of a wetland, pursuant to subsection (1). The Authority may grant permission for development within the Regulation Limit where it has been demonstrated that satisfactory controls regarding flooding, erosion, dynamic beaches, pollution or the conservation of land will be implemented.

As per Ontario Regulation 596/22, which came into effect on January 1, 2023, conservation authorities no longer provide comments related to natural heritage matters under the *Planning Act*.

As per GRCA regulation mapping, all natural features within the Licence Area are within the GRCA regulation limit (**Figure 5**). Under Section 28 (2), lands licensed under the *ARA* are not required to obtain permission from Conservation Authorities. However, subject to licencing, Conservation Authorities may act in an advisory role and provide local environmental, watershed and watercourse information to the application process.

2.4.2 Fisheries Act

Fisheries and Oceans Canada (DFO) administers the federal *Fisheries Act, 1985* (amended 2019), which defines fish habitat as "*water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas*" (subsection (2)1). The *Fisheries Act* provides a framework for the management and control of fisheries resources, as well as guidance pertaining to the conservation and protection of fish and fish habitat.

The *Fisheries Act* prohibits any work, undertaking, or activity that results in the harmful alteration, disruption or destruction of fish habitat (subsection 35(1)) or the death of fish by any other means other than fishing (subsection 34.4(1)). Some projects may be eligible for exemption under the *Fisheries Act*, subject to the submission of a DFO Request for Review

application and/or authorization by the DFO in accordance with sections 34.4(2)(b) and 35(2)(b). No extraction operations or construction are proposed within, or immediately adjacent to (i.e., within 100 metres), Cedar Creek.

2.4.3 Endangered Species Act

The provincial *Endangered Species Act, 2007* (*ESA*; Consolidated 2025) protects all threatened, endangered and extirpated species listed on the Species at Risk in Ontario (SARO) list. As defined under the *ESA*, these species are protected from killing, harm, harassment or possession, and their associated habitats are protected from damage or destruction. Activities that have the potential to impact protected species, or their associated habitats, shall be reviewed in consultation with the Ministry of the Environment, Conservation and Parks (MECP) to determine if an authorization may be granted under the *ESA*, subject to applicable exemptions. Bill 5, the *Protect Ontario by Unleashing our Economy Act, 2025*, will result in phased changes to legislation with respect to Species at Risk (SAR). Schedule 2 of Bill 5 amended the *ESA* (2007) upon Royal Assent. Schedule 10 of Bill 5 will repeal the *ESA* (2007) and bring the *Species Conservation Act, 2025* into force. Schedule 10 had been adopted but had not been enacted upon the writing of this report.

2.4.4 Migratory Birds Convention Act

The federal *Migratory Birds Convention Act, 1994* (*MBCA*; 2017) aims to protect and conserve migratory birds (and their nests) as populations and individuals. No work is permitted to proceed that would result in the damage, destruction, removal or disturbance of nests, or the wounding, capture, removal or killing of bird species protected under the regulations of the *MBCA*.

3.0 PHYSICAL ENVIRONMENT

Consideration of the larger ecological matrix contributes to developing a better understanding of potential interactions between abiotic and biotic flows and exchanges. The larger local landscape setting surrounding the Licence Area is composed of a mixture of agricultural lands, environmental protection areas and existing mineral aggregate operations to the east. In terms of potential movement corridors, primary linkage features traversing the broader landscape include the PSW, significant woodlands and Cedar Creek watercourse corridor overlapping the northern portion of the Licence Area. A ridgeline traverses the Licence Area along the northern boundary of the extraction limit extending from identified core features in the northeast towards and area of extraction to the southwest.

Surrounding road networks (i.e., Wrigley Road) function as a physical barrier to wildlife movement and may limit abiotic and biotic exchanges south of the Licence Area.

3.1 Physiography

The Study Area is located within the Waterloo Sandhills physiographic region of southern Ontario (Chapman & Putnam, 1984). This area was formed as a result of glacial meltwater from glaciers that transported and deposited large amounts of sand and gravel in the northwestern portion of the Township. Subsequent advances and retreats during the period of glaciation resulted in the locally irregular features as evidenced by the dramatic ridgeline within the Licence Area associated with Cedar Creek and the undulation of the remaining landscape (MTE, 2023).

3.2 Soils & Geology

Surficial geology mapping available through the Ministry of Energy, Northern Development and Mines (2017) indicates that the Licence Area and broader study area are underlain by glaciofluvial deposits, which are predominantly composed of river deposits, delta topset facies and gravelly deposits.

MTE conducted a preliminary geotechnical investigation between April 24 and April 27, 2023. Four boreholes with monitoring wells and eleven test pits were excavated within the Licence Area. Soil conditions encountered generally included topsoil, occasional fill materials overlying silty sand, sand, sand and gravel, gravelly sand and sandy gravel deposits. Groundwater was encountered at all boreholes between 0.6 and 24.4 metres below the ground surface in the northern agricultural field (MTE, 2023).

3.3 Surface Water Features & Drainage

The Study Area is situated within the Quaternary Subwatershed, Middle Grand River Subwatershed (i.e., Mill Creek-Grand River) which forms a component of the larger Grand River Watershed. The Middle Grand River Subwatershed is characterized by 11% wetland and 19% woodland cover (GRCA, 2024). The Licence Area is bisected by Cedar Creek in the northwest corner. The Roseville Swamp Cedar Creek PSW Complex overlaps the northern and northeastern portions of the Licence Area. Cedar Creek also overlaps the northwestern corner of the Licence Area. Both features extend to the west, north and east into the adjacent lands.

3.4 Hydrogeology

As per Source Protection Information Atlas mapping (MECP, 2024), the Study Area occurs within a Significant Groundwater Recharge Area (SGRCA; score is N/A) and within a Wellhead Protection Area D (score of 2). The Licence Area is within two Wellhead Protection Areas (WHPAs; Stonecairn Consulting, 2025). WHPA-C (score of 4) overlaps the western portion of the Licence Area and WHPA-D (score of 2) overlaps the eastern area of the property.

Within the general area of the Licence Area, there are three aquifers. A shallow unconfined groundwater aquifer occurs within the proposed pit location within the Licence Area with groundwater encountered in the surficial sand and gravel soils (Stonecairn Consulting, 2025). Groundwater generally flows northwest and supports a direct connection with Cedar Creek.

In addition, the PSW is connected to the shallow groundwater table as evidenced by sustained water levels within the feature during periods of low flow and precipitation (Stonecairn Consulting, 2025).

4.0 BACKGROUND REVIEW

MTE has conducted a background review to delineate regionally designated natural heritage features and linkage corridors within, and adjacent to, the Study Area. Aerial imagery and existing natural heritage feature mapping available through the ROP (2024), the OP (2018), Geospatial Ontario (formerly Land Information Ontario; 2024) and GRCA regulation mapping (2025) have been reviewed to provide insight into the overall character of the Licence Area. Natural heritage species occurrence databases have also been reviewed to identify potential information gaps to be addressed through targeted ecological field investigations.

4.1 Information Resources

Background resources were reviewed to inform the overall character of the Licence Area and to develop baseline data concerning species and habitat with the potential to occur within the Study Area. Background documents and databases reviewed included:

- Aerial imagery;
- Natural Heritage Information Centre (NHIC) database for SAR occurrences (MNRF, 2024b);
- Geospatial Ontario database mapping (OMNRF, 2025);
- DFO Aquatic SAR Mapping (2024);
- Bird Studies Canada's Atlas of Breeding Birds of Ontario (2025);
- Ontario Butterfly Atlas (2024); and
- Ontario Nature's Reptile and Amphibian Atlas (Ontario Nature 2019).

Core Environmental Features present within the northern and northeastern areas of the Licence Area are associated with significant woodlands, a PSW (i.e., Roseville Swamp Cedar Creek Wetland Complex) and Cedar Creek as per the provincial Geospatial Ontario geographic database (OMNRF, 2025) and NHIC mapping (2024a).

Based on a review of MNR, GRCA, Region of Waterloo and Township of North Dumfries mapping, no other natural feature designations are present on, or adjacent to, the Licence Area.

4.2 Species Occurrence Data

Species listed as endangered or threatened on the SARO list are legally protected from harm or harassment and their associated habitats are protected from damage or destruction, as per the *ESA* (2007). Species of Conservation Concern (SOCC) include those species listed as Special Concern on the SARO list as well as provincially rare species (i.e., ranked S1 to S3). Provincial conservation status rankings are established by the NHIC based on the number of occurrences in Ontario and are defined as follows:

- S1: critically imperiled; often fewer than 5 occurrences;
- S2: imperiled; often fewer than 20 occurrences;
- S3: vulnerable; often fewer than 80 occurrences;
- S4: apparently secure;
- S5: secure; and
- S?: unranked, or, if following a ranking, rank uncertain (e.g., S3?).

Provincial status rankings do not provide an indication of regional abundance or rarity (i.e., species uncommon in the province may still be locally abundant in some regions).

The NHIC database (2024a and 2024b) was reviewed for records of provincially significant species and/or habitats occurring within the Study Area. Occurrence data is provided for 1 km^2 area squares, with four squares overlapping a portion of the Study Area (17NH4593, 17NH4592, 17NH4693 and 17NH4692). The Ontario Breeding Bird Atlas (2021-2025 occurrence data), Ontario Reptile and Amphibian Atlas (2019) and Ontario Butterfly Atlas (2024) contain detailed information regarding the distribution of bird, reptile and butterfly species in Ontario. Data is presented on 10 km^2 area blocks, with one data square overlapping the Study Area (17NH49).

As per background data sources, a total of 15 species protected under the *ESA* (2007) were recorded within the atlas squares that overlap the Study Area, with the following species of interest noted (**Appendix A**):

- Acadian Flycatcher (*Empidonax virescens*);
- Bank Swallow (*Riparia riparia*);
- Cerulean Warbler (*Setophaga cerulean*);
- Henslow's Sparrow (*Ammodramus henslowii*);
- Least Bittern (*Ixobrychus exilis*);
- Black Redhorse (*Moxostoma duquesnei*);
- Silver Shiner (*Notropis photogenis*);
- Blanding's Turtle (*Emydoidea blandingii*);
- Unisexual Ambystoma (Jefferson Salamander dependent population; *Ambystoma laterale-(2) jeffersonianum*); and
- American Badger (*Taxidea taxus*).

Furthermore, 13 species of provincial interest (i.e., listed as Special Concern on the SARO list or ranked S1 to S3) were identified within the atlas squares overlapping the Study Area (**Appendix A**). Of these species, the following species of interest are noted:

- Green Dragon (*Arisaema dracontium*);
- Canada Warbler (*Cardellina canadensis*);
- Eastern Wood-Pewee (*Contopus virens*);
- Wood Thrush (*Hylocichla mustelina*);
- Eastern Ribbon Snake (*Thamnophis sauritus*);
- Snapping Turtle (*Chelydra serpentina*); and
- Monarch (*Danaus plexippus*).

Additional SAR with the potential to occur within the Study Area include Eastern Red Bat (*Lasiurus borealis* – END), Hoary Bat (*Lasiurus cinereus* – END), Little Brown Myotis (*Myotis lucifugus* – END), Northern Myotis (*Myotis septentrionalis* – END), Tri-coloured Bat (*Perimyotis subflavus* – END), Silver-haired Bat (*Lasionycteris noctivagans* – END) and Butternut (*Juglans cinerea* – END). These species are not well-represented within background information sources and will therefore be considered on a site-specific basis where suitable habitat is present.

Critical habitat (and distribution data) for aquatic species was reviewed through DFO's aquatic SAR mapping (2024). Aquatic habitat for one threatened species, Black Redhorse, was identified within Cedar Creek (**Figure 6**).

5.0 NATURAL ENVIRONMENT

An EIS is required in support of a complete application under the *Planning Act* (e.g., Zoning By-law Amendment) to be consistent with provincial interests defined under the PPS (2024) and other relevant provincial plans.

Ecological field investigations were conducted within the Licence Area to inform the evaluation of significance and impact assessment. Adjacent lands were assessed from the property boundary or publicly accessible areas, as applicable. Protocol information for each of the field investigations conducted within the Licence Area is summarized below and discussed in detail in the following sections. Dates and conditions of the fieldwork are summarized in Table 1, below. Ecological field investigations conducted in support of the EIS include:

- Preliminary Ecological Site Assessment to document existing conditions and confirm the natural heritage features present;
- Three-season botanical inventory and vegetation community classification using sampling protocols outlined in the Ecological Land Classification (ELC) for Southern Ontario manual (Lee et al.,1998);
- Breeding bird surveys using guidance from the protocols set forth by the Ontario Forest Bird Monitoring Program (Cadman et al., 1998) and the Ontario Breeding Bird Atlas participant's guide (OBBA, 2001) for diurnal birds, and the Draft Survey Protocol for Eastern Meadowlark (OMNR, 2013) and Survey Methodology for Bobolink (MNR, 2011);
- Tree Inventory to document existing trees within the northern ridgeline transversing the Licence Area from east to west; and
- Bat Habitat Assessment following the Survey Protocol for Bats & Treed Habitats - Maternity Roost Survey (MECP, 2022).

Table 1: Ecological Field Investigations & Natural Area Inventories (2024)

Survey Round	Survey Type	Date	Time		Temperature (°C)	Cloud Cover (%)	MTE Surveyor(s)
			Start	End			
1	Preliminary Ecological Site Assessment, Fall Botanical Inventory and ELC	October 10, 2024	9:00am	12:00pm	15	0	Elise Roth, Will Huys
1	Tree Inventory and Bat Habitat Assessment	January 28, 2025	8:00am	5:00pm	-12	100	Elise Roth, Andrew Avsec
2	Tree Inventory and Bat Habitat Assessment	February 10, 2025	8:00am	5:00pm	-10	100	Elise Roth, Andrew Avsec
1	Spring Botanical Inventory and Grassland Bird Survey	May 30, 2025	6:30am	8:30am	13	10	Elise Roth, Bethany Kuntz
1	Breeding Bird Survey	June 12, 2025	7:30am	9:00am	15	100	Elise Roth
2	Breeding Bird Survey and Summer Botanical Inventory	June 30, 2025	7:15am	9:30am	18	5	Elise Roth

5.1 Vegetation Communities

Ecological Land Classification (ELC) was completed to the finest level of resolution (i.e., Vegetation Community Type) possible per the sampling protocols outlined in the Ecological Land Classification for Southern Ontario manual (Lee et al.,1998). Vegetation community types were sampled, verified and revised, if necessary, to determine the provincial and regional significance of features present within the Study Area based on the rankings assigned by the NHIC (2024b).

Six vegetation cover types were identified within the Study Area, as illustrated on **Figure 6** and summarized in Table 2, below. All vegetation communities are ranked secure in Ontario. Field data collection sheets are provided in **Appendix B**.

Table 2: Ecological Land Classification

Polygon	ELC Code	Description	Area (ha) within the Licence Area
1	CUM1	Mineral Cultural Meadow	3.27
2	CUW1	Mineral Cultural Woodland	1.73
3	SWM5-1	Red Maple-Conifer Mixed Swamp	4.02
3a	FOM2	Dry-Fresh White Pine Maple Mixed Forest	1.45
4	FOC1	Dry-Fresh Coniferous Forest	1.30
5	FOD5-1	Dry-Fresh Sugar Maple Deciduous Forest	0

Polygon 1

Polygon 1 is a Mineral Cultural Meadow (CUM1) located in the northern half of the Licence Area, bisecting the property from east to west. The Mineral Cultural Meadow is composed of Orchard Grass (*Dactylis glomerata*), Smooth Brome (*Bromus inermis*), Common Milkweed (*Asclepias syriaca*), Eastern White Cedar (*Thuja occidentalis*), Norway Spruce (*Picea abies*) and Gray Dogwood (*Cornus racemosa*). Scattered small shrubs and trees were also noted throughout the community.

Polygon 2

Polygon 2 is a Mineral Cultural Woodland (CUW1) located along the western extent of the Licence Area. The dominant species in the canopy are Eastern White Pine (*Pinus Strobus*), followed by Sugar Maple (*Acer saccharum*) and Black Cherry (*Prunus serotina*). The subcanopy is similar to the canopy layer, containing both Sugar Maple and Black Cherry, however, Eastern White Cedar (*Thuja occidentalis*) was also prevalent.

Polygon 3

Polygon 3 is a Red Maple-Conifer Mixed Swamp (SWM5-1) located along the northern boundary of the Licence Area extending onto the adjacent lands. The canopy is dominated by Eastern White Pine, Eastern Hemlock (*Tsuga canadensis*) and Red Maple (*Acer rubrum*). The subcanopy is composed of Eastern White Cedar, Yellow Birch (*Betula alleghaniensis*), Red Maple and Eastern Hemlock.

Inclusion 3a

There are small areas of Dry-Fresh White Pine Maple Mixed Forest (FOM2) interspersed within the vegetation communities in the northern portion of the Licence Area associated with Polygon 3.

Polygon 4

Polygon 4 is a Dry-Fresh Coniferous Forest (FOC1) located in the northeastern corner of the Licence Area. The canopy is dominated by Eastern White Pine and is located on a steep slope.

Polygon 5

Polygon 5 is a Dry-Fresh Sugar Maple Deciduous Forest (FOD5-1) located on adjacent lands east of the Licence Area. The canopy is dominated by Sugar Maple with little understory vegetation present.

5.2 Candidate Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (OMNR, 2000) and the Criteria Schedules for Ecoregion 7E (OMNRF, 2015) provide guidance with respect to the identification and protection of SWH. Candidate wildlife habitat has been assessed using the ELC Ecosite Codes (in previous section) and specific habitat criteria defined within the Criteria Schedules for Ecoregion 7E (OMNRF, 2015) to identify potentially significant habitat types/areas.

Appendix C provides an assessment of SWH types with the potential to occur within the Study Area. Based on the results of the SWH assessment, the following candidate habitat types were identified on, or adjacent to, the Licence Area:

Table 3: Candidate Significant Wildlife Habitat

Wildlife Habitat Type	Polygon Number		
	Extraction Area	Licence Area	Adjacent Lands
Raptor Wintering Area	1, 2	1, 2, 3a, 4, 5	3a, 4, 5
Bat Maternity Colonies	2	2, 3, 3a, 5	3, 3a, 5
Turtle Wintering Areas	---	Cedar Creek	Cedar Creek
Colonially-Nesting Bird Breeding Habitat (Trees/Shrubs)	---	3	3
Bald Eagle and Osprey Nesting, Foraging, Perching Habitat	---	3, 3a, 4, 5	3, 3a, 4, 5
Woodland Raptor Nesting Habitat	---	3, 3a, 4, 5	3, 3a, 4, 5
Amphibian Breeding Habitat (Woodland)	---	3, 3a, 4, 5	3, 3a, 4, 5
Woodland Area-Sensitive Bird Breeding Habitat	---	3, 3a, 4, 5	3, 3a, 4, 5
Marsh Breeding Bird Habitat	1	1, 3	3
Terrestrial Crayfish	---	Cedar Creek, PSW	Cedar Creek, PSW
Habitat for Special Concern Species	---	, 3, 3a, 4, 5	3, 3a, 4, 5

5.3 Vascular Plants

A single-season botanical inventory was completed to confirm the provincial status of vascular plant species within the Licence Area. Fall flowering periods were captured in October 2024. The status of all plant species is based on the provincial NHIC database (2024b) and the List of Vascular Plants for Ontario's Carolinian Zone (Oldham, 2017).

A total of 100 vascular plant species were identified within the Licence Area. A full species list is provided in **Appendix D**. All species observed within the Licence Area are ranked S4 or S5 (apparently secure or secure in Ontario).

No species are ranked S1 to S3 (i.e., provincially rare species). No species ranked, threatened or endangered were observed.

No other species of national (i.e., G1 to G3 and SAR), provincial (i.e., S1 to S3) or regional interest were identified within the Licence Area.

Coefficient of Conservatism (CoC) values were applied to species in each vegetation community to assist in the identification of potentially sensitive native plants. CoC values range from 0 to 10 and are assigned based on a species tolerance of disturbance and degree of fidelity to certain ecological parameters (Oldham et al., 1995; Wilhelm and Masters, 1995). Species occurring within a wide range of habitat types are assigned a low CoC value, while species occurring only within a narrow range of habitat parameters are assigned a high CoC value. No species identified within the Licence Area had a high CoC value (i.e., 9 or 10).

5.3.1 Floristic Quality Analysis

Floristic quality is generally defined by the mean CoC and the Floristic Quality Index (FQI). This evaluation system provides an assessment of the fundamental character of the site, without relying on ambiguous parameters such as frequency, dominance, physiognomy, or productivity. Floristic quality allows for an objective numerical comparison between two or more natural areas or vegetation community types by evaluating native plant species' tolerance to disturbance and their degree of fidelity to specific habitats. Each native species is assigned a numerical value (i.e., CoC) in order to calculate a mean CoC that may be used to compare the relative quality of natural areas based on species' degree of fidelity to a range of ecological parameters (Wilhelm and Ladd 1988; Wilhelm and Masters,1995).

Botanical inventories conducted within the Licence Area were used to inform associated vegetation community assessments using the Southern Ontario Floral Inventory Analysis (SOFIA; Lebedyk 2018). SOFIA assigns quantitative plant community values based on floral inventories to evaluate the ecological significance and natural quality of vegetation communities. Results of the floristic quality analysis are provided in Table 4 for each ELC unit impacted by extraction within the Licence Area.

Through SOFIA, the mean CoC of vegetation communities was calculated based on all species observed to provide a measure of floristic quality (Lebedyk, 2018). A mean CoC greater than 3.5 is indicative of a floristic quality characteristic of remnant natural habitats. A mean CoC greater than 4.5 indicates a relatively intact natural area with high floristic quality (Oldham et al., 1995; Wilhelm and Masters,1995).

The FQI defined through SOFIA is intended to quantify the overall vegetative quality of a community based on the mean CoC and the number of species present (Oldham et al.,1995). A community with a FQI less than 20 is considered to have minimal significance from a natural quality perspective, while a community with a FQI greater than 20 is of high floristic quality and a community with a FQI greater than 35 is considered to have sufficient conservatism and richness to be floristically important from a provincial perspective (Wilhelm and Ladd,1988).

Table 4: Southern Ontario Floral Inventory Analysis (SOFIA) Results

Vegetation Community	Mean CoC	FQI	Native Species	Non-Native Species	Conservative Species (CoC ≥7)
Polygon 1 Mineral Cultural Meadow	1.13	8.78	47%	53%	0
Polygon 2 Mineral Cultural Woodland	2.33	17.62	65%	35%	2

Polygons 1 and 2 do not exceed the mean CoC minimum thresholds for floristic quality (i.e., 3.5) or the minimum FQI value (i.e., 20) for floristic quality. Based on the annotated assessment of community conditions determined through SOFIA, Polygon 1 was determined to be of poor floristic quality and minimal natural quality. Given the existing plant species composition, it is expected that the ecological value of this community on the landscape is low.

5.3.2 Invasive Species

Invasive species are introduced, or exotic species characterized by high propagation rates and rapid colonization that may be harmful or cause irreparable damage to habitats and ecosystems. The *Invasive Species Act* (2015) explicitly regulates the prevention and management of invasive species in Ontario.

Category 1 species are defined as species that can dominate a site to exclude all other species and remain dominant on the site indefinitely (Urban Forest Associates, 2002). These species pose a threat to local biodiversity and the ecological functions of natural areas. Category 1 species are a top priority for invasive species management and should be addressed in accordance with the best management practices outlined by the Ontario Invasive Plant Council (2023). Of the 100 plant species documented within the Licence Area, seven are ranked as Category 1:

- Autumn Olive (*Elaeagnus umbellata*);
- Canada Thistle (*Cirsium arvense*);
- Common Buckthorn (*Rhamnus cathartica*);
- Dame's Rocket (*Hesperis matronalis*);
- Manitoba Maple (*Acer negundo*);
- Tartarian Honeysuckle (*Lonicera tatarica*); and
- White Mulberry (*Morus alba*).

5.3.3 Tree Inventory

A tree inventory was conducted for the northern ridgeline transversing the Licence Area (Polygons 1 and 2) from east to west to identify existing trees and characterize the woodland. MTE staff inventoried a total of 614 trees; 610 of which are within the Licence Area and four are possible boundary trees. The majority of trees were native species with more than half being Eastern White Cedar. Other dominant species include Black Cherry, Manitoba Maple, Sugar Maple, Hawthorn, Black Walnut and Ironwood. All trees on neighbouring lands will be protected. It is recommended that adjacent landowners be contacted prior to any tree removal activities, tree preservation fencing be installed according to the tree preservation report and no trees be removed until the *ARA* application is approved by the MNR.

5.4 Bat Habitat Assessment

A bat habitat assessment was conducted following the Survey Protocol for Species at Risk Bats within Treed Habitats (MNRF 2017) and the Bat and Bat Habitats: Guideline for Wind Power Projects (MNRF 2011) as amended through the Bats & Treed Habitats - Maternity Roost Survey (MECP 2022) protocol to identify candidate maternity roosting habitat. Both candidate bat maternity roost trees and leaf clusters were noted throughout the ridgeline. Candidate bat maternity roosts were identified based on the presence of cracks, crevices, hollows or loose or exfoliating bark.

With respect to SWH, snag density provides an indicator of high-quality potential maternity roost habitat based on the number of snags/cavity trees with a diameter at breast height (DBH) greater than or equal to 25 cm occurring within each ELC plot (MNRF 2017). In terms of SAR bats, potential habitat is characterized "*as any standing live or dead trees ≥ 10 cm [DBH] with cracks, crevices, hollows, and/or loose or naturally exfoliating bark*" in accordance with the Survey Protocol for Species at Risk Bats within Treed Habitats (MNRF 2017). As such, all trees with a DBH of 10 cm or greater were reviewed to assess candidate maternity roosting SWH and potential SAR habitat. Targeted surveys were conducted within treed ecosites identified on the Subject Lands. Surveys were conducted during the leaf-off period (i.e., spring or fall) when tree cavities would not be obscured by foliage.

Results

A cumulative total of 26 candidate bat maternity roosts (including trees with leaf clusters) were recorded within the ridgeline with snags primarily concentrated in Polygon 2 (**Figure 7**). With respect to bat maternity colony SWH, cultural woodlands are not recognized as suitable maternity colony ecosites as per the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF, 2015). Therefore, cultural woodlands occurring within the Licence Area have been considered in the context of potential SAR habitat but shall not be evaluated as candidate SWH.

Species at Risk Bats

Snag/cavity trees with a DBH ≥10 cm were documented to evaluate suitable roosting habitat for SAR bats (i.e., Little Brown Myotis, Northern Myotis, Tricolored Bat, Northern Hoary Bat, Silver-haired Bat, Eastern Small-footed Myotis and Eastern Red Bat) within treed areas (i.e., CUW1) within the Licence Area. As per the Survey Protocol for Species at Risk Bats within Treed Habitats (MNRF 2017), high quality potential maternity roost habitat for SAR bats was identified where an ELC unit contained ≥10 snags with a DBH ≥10 cm per hectare.

As 24 snags were identified within Polygon 2 (1.73 ha), snags were determined to occur at sufficient densities (i.e., 14 snags/ha) to qualify as potential high quality maternity roost habitat and are considered representative of significant habitat for these species.

Acoustic monitoring surveys to confirm species presence/absence were not conducted as proposed development is consistent with the surrounding land uses, high quality significant woodland habitat is extensive on the landscape and the proposed extraction is not expected to impact habitat availability on the landscape or species' ability to carry out life processes as cavity trees within Polygon 2 represent a small proportion of the habitat impacted.

5.5 Breeding Bird Surveys

Breeding bird surveys were conducted using guidance from the protocols set forth by the Ontario Forest Bird Monitoring Program (Cadman et al., 1998) and the Ontario Breeding Bird Atlas participant's guide (OBBA, 2001) for diurnal birds, and the Draft Survey Protocol for Eastern Meadowlark (OMNR, 2013) and Survey Methodology for Bobolink (MNR, 2011). Surveys were conducted at least ten days apart between dawn and five hours after dawn during the peak breeding season (i.e., May 24-July 10) when no high winds, heavy fog or precipitation was present. The number of individuals present, and the highest level of breeding evidence were recorded for all avian species observed.

Results

A total of 26 breeding bird species were identified within the Extraction Area. The Licence Area and adjacent lands were not surveyed in detail; however, species that could be heard from the edge of Polygon 1 were documented. All species documented within the Extraction Area are

provincially ranked secure (i.e., S5) or apparently common and secure (i.e., S4; NHIC 2024b) in Ontario.

Northeast of the Extraction Area, within the greater Licence Area (Polygons 3, 3a, 4 and 5), a single male Eastern Wood-Pewee (Special Concern) was heard calling during two survey rounds. Approximately four Barn Swallows were observed foraging over Polygon 1, Polygon 2 and the agricultural field.

A list of bird species identified within the Extraction Area is provided in **Appendix E**.

5.6 Incidental Observations

Incidental encounters with wildlife were documented during all ecological field investigations conducted within the Licence Area in 2024 and 2025 to supplement targeted wildlife surveys.

Table 5: Incidental Species Observations

Species	Date	Observation Type	# of Species Observed	ELC Ecosite
Chipmunk	May 30, 2025	Individual	1	CUW1
Chipmunk	June 12, 2025	Individual	1	CUW1
Monarch	June 30, 2025	Individual	1	Milkweed in CUW1
Gray Squirrel	June 30, 2025	Individual	2	CUW1
Northern Leopard Frog	June 30, 2025	Individual	1	CUW1
Wild Turkeys	June 30, 2025	Individual	2	CUM1

With the exception of Monarch, all species are provincially ranked secure (i.e., S5) or apparently common and secure (i.e., S4) in Ontario.

Monarch is ranked Special Concern on the SARO list and provincially ranked S2N, S4B. Per the Ontario Species at Risk Evaluation Report for Monarch (COSSARO 2020), Ontario's conservation responsibility with regards to Monarch as a Special Concern species is not considered significant (i.e., less than 5%). Non-breeding habitat is ranked provincially rare (i.e., S2N) and supports critical migratory habitat functions. Non-breeding habitat is addressed under the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015) as Migratory Butterfly Stopover Areas (**Appendix C**). Breeding habitat is provincially ranked apparently common and secure (i.e., S4B). Candidate breeding habitats should be acknowledged for incorporation into final designs to support species population recovery but are not considered critical habitat for the survival or recovery of this species in Ontario.

Monarch breeding habitat is identified where abundant concentrations of Milkweed occur in association with nectaring plants. Common Milkweed (*Asclepias syriaca*) was documented within Polygon 1, however, based on monarch specific nectaring plant species surrounding the Great Lakes, nectaring plants were limited (Monarch Butterfly Nectar Plant Lists for Conservation Plantings). Given the low to occasional abundance of Milkweed within the cultural meadow and the lack of nectaring plants, habitat within the Licence Area is not considered representative of significant breeding habitat. Given Monarchs' low fidelity rates, proposed habitat removals may be permitted outside of the active breeding season (i.e., June 1 to September 30) to avoid direct impacts to this species.

6.0 EVALUATION OF SIGNIFICANCE

In accordance with applicable federal, provincial, municipal and conservation authority regulatory policies, the significance of natural heritage features and ecological functions identified within the Study Area were reviewed to determine the appropriate level of protection to be applied to each feature. To inform subsequent planning stages, features were further reviewed to identify potential constraints and opportunities for the proposed extraction project. Coastal wetlands, valleylands and ANSIs were not identified within the Study Area.

As per the PPS (2024), the following natural heritage features and areas were further evaluated for significance and ecological importance on the landscape:

- Significant Wetlands;
- Significant Woodlands;
- Significant Wildlife Habitat;
- Fish Habitat; and
- Habitat of Endangered and Threatened Species.

6.1 Significant Wetlands

Per the PPS (2024), significant wetlands are defined as areas identified as provincially significant by the MNR or their designates, using evaluation criteria established by the province (i.e., Ontario Wetland Evaluation System; MNRF, 2022).

PSWs are considered Core Environmental Features within the OP. No development or site alteration is permitted within the listed Core Environmental Features in Policy 6.1.7.3, except in accordance with applicable exemptions defined under Policy 6.1.7.4.

As per the Geospatial Ontario database, a portion of one wetland unit, totalling 58 ha in size, occurs within the Study Area (**Figure 2B**). Development and/or site alteration shall not be permitted within significant wetlands as per Policy 4.1.4 of the PPS (2024).

MTE previously delineated the wetland and determined that the wetland is generally consistent with the MNRF mapping. For the application of recommended setbacks, the MNRF PSW boundary will be used. Per Policy 6.1.7.6 of the OP, buffers shall be applied in accordance with the approved EIS and be a minimum of 10 metres wide as measured from the outside boundary of the Core Environmental Feature. Buffers shall be established and maintained as self-sustaining vegetation.

6.2 Significant Woodlands

Significant woodlands are defined and designated by the planning authority in accordance with the evaluation criteria outlined within Section 7.0 of the NHRM (OMNR, 2010). Criteria for the designation of significant woodlands include size, shape, proximity to other woodlands or natural features, linkages, species diversity, uncommon characteristics, and economic and social value (i.e., per NHRM Table 7-2). Per the NHRM (OMNR, 2010), woodland size criteria are defined by the spatial extent of the woodland relative to the percentage of woodland coverage among the physical sub-units (e.g., watersheds, biophysical regions) within the planning area. Woodland patches with bisecting openings 20 m or less in width are considered part of the same continuous woodland. Furthermore, minimum patch widths may be applied as a size threshold at the discretion of planning authority when delineating woodlands to exclude relatively narrow linear treed areas such as hedgerows (e.g., a minimum 40 m average width where the size threshold is 4 ha or 60 m width where the size threshold is 10 ha).

Within the Middle Grand Subwatershed, woodland coverage is approximately 19% (GRCA, 2024). As per the woodland size criteria defined within the NHRM (OMNR, 2010), where woodland cover is between 15% to 30% of the land cover, woodlands 20 ha or more in size should be considered significant.

The woodlands overlapping the Licence Area are 6.77 ha in size and extend beyond the Study Area as part of a larger woodland complex exceeding 30 ha in size (**Figure 1**). As such, woodlands within the Licence Area (Polygons 3, 3a, 4 and 5) meet provincial significance criteria as defined within the NHRM (OMNR, 2010). As per Section 4.1.5 of the PPS (2024), development and site alteration shall not be permitted within significant woodlands, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Polygons 3, 3a, 4 and 5 are outside of the proposed extraction.

In addition, the woodlands in the north and northeast portions of the Licence Area (Polygons 3, 3a, 4 and 5) meet the definition of a significant woodland under Policy 7.C.6 of the ROP, which states that significant woodlands must meet the following criteria: be greater than 4 ha in size, consist of primarily native trees and meet the definition of a woodland under the Regional Woodland Conservation By-law (No. 08-026). These woodlands are recognized as Significant woodlands under the ROP (2024) and the OP (2018) which are considered a Core Environmental Features, a component of the Environmentally Sensitive Landscape under the ROP (2024).

As per Policy 5.2.5.5a) of the OP and Policy 9.C.8 of the ROP, where proposed extraction is contiguous to a Core Environmental Feature, it must be demonstrated to the satisfaction of the Township, Region, MNR and GRCA that there will be no negative impacts to the features or their ecological functions, including their connectivity.

Polygon 2 is not included in the Environmentally Sensitive Landscape mapping and is not considered significant woodland under the ROP (2024).

While the woodlands in the northernmost portion of the Licence Area are significant, the wooded area along the southwest of the ridgeline (Polygon 2) is separated from other woodlands by more than 20 m and, as a result, reviewed on its own merits. It is approximately 2 ha, and as such, it does not meet the size criteria to be considered significant. Based on the results of the tree inventory, Polygon 2 does not meet the definition of a woodland under the Regional Woodland Conservation By-Law (No. 08-26) as a woodland is defined as the following:

> *"Woodland" means land that is located within the boundaries of The Regional Municipality of Waterloo that is at least one hectare or more in area with at least:*
>
> *(i) 1,000 trees, of any size, per hectare;*
>
> *(ii) 750 trees, measuring over five centimetres in diameter, per hectare;*
>
> *(iii) 500 trees, measuring over 12 centimetres in diameter, per hectare; or*
>
> *(iv) 250 trees, measuring over 20 centimetres in diameter, per hectare.*

Polygon 2 does not support sufficient quantities of trees to meet any of the above defining woodland criteria with 402 trees greater than 20 cm in diameter within the 1.73 ha polygon equating to an overall density of 232 trees per hectare, below the required 250 tree per hectare threshold. There are not 1000 trees of any size per hectare within Polygon 2.

6.2.1 Linkages

In the OP, linkages are defined as "*areas that connect environmental features…linkages can also include areas currently performing or with the potential to perform, through restoration, linkage functions*". The ridgeline transversing the Licence Area is not considered a linkage as

the outer woodland edge (Polygon 2), located along the western Licence Area boundary, is not contiguous with other Core Environmental Features and abuts residential lands to the southwest. Movement corridors associated with the PSW, significant woodlands and Cedar Creek are of higher quality within high quality habitats and are expected to be the preferred routes for species movement (**Figure 7**).

6.3 Environmentally Sensitive Landscape

As per Map 5A (Greenlands Network) of the OP, the Dumfries Carolinian Environmentally Sensitive Landscape overlaps a portion of the northeastern Licence Area. Environmentally Sensitive Landscapes are broad geographical areas with distinct ecological characteristics and functions. As Per Policy 9.C.11 the additional objectives a)-e) should also be followed. The Environmentally Sensitive Landscape is associated with the significant woodland and PSW.

6.4 Significant Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (MNRF, 2000), Criteria Schedules for Ecoregion 7E (MNRF, 2015) and the NHRM (OMNR, 2010) provide technical guidance for the identification and evaluation of SWH in the context of the municipal planning process. Candidate SWH was evaluated at the onset of the project based on ELC Ecosite Codes and general habitat criteria defined within the Criteria Schedules for Ecoregion 7E (MNRF, 2015). Candidate SWH has subsequently been reviewed in the context of defining criteria for confirmed SWH based on the results of ecological field investigations.

Four categories of SWH are defined within the Criteria Schedules for Ecoregion 7E (MNRF, 2015): Seasonal Concentration Areas of Animals, Rare Vegetation Communities or Specialized Habitat for Wildlife, Habitat for Species of Conservation Concern and Animal Movement Corridors. A detailed screening of each SWH type with the potential to occur within the Study Area is provided in **Appendix C**. Based on the results of the SWH assessment, no confirmed SWH was documented within the Study Area; however, the following candidate habitat types were identified (**Figure 7**):

Extraction Area

- Raptor Wintering Area (Polygons 1 and 2); and
- Marsh Breeding Bird Habitat (Polygon 1).

Licence Area

- Raptor Wintering Area (Polygons 1, 2, 3a, 4 and 5);
- Bat Maternity Colonies (Polygons 3, 3a and 5);
- Turtle Wintering Areas (Cedar Creek);
- Colonially-Nesting Bird Breeding Habitat – Trees/shrubs (Polygon 3);
- Bald Eagle and Osprey Nesting, Foraging, Perching Habitat (Polygons 3, 3a, 4 and 5);
- Woodland Raptor Nesting Habitat (Polygons 3, 3a, 4 and 5);
- Amphibian Breeding Habitat- Woodland (Polygons 3, 3a, 4 and 5);
- Woodland Area-Sensitive Bird Breeding Habitat (Polygons 3, 3a, 4 and 5);
- Marsh Breeding Bird Habitat (Polygons 1 and 3); and
- Habitat for Special Concern Species (Canada Warbler, Eastern Wood-Pewee, Wood Thrush, Eastern Ribbonsnake and Snapping Turtle).

Adjacent Lands

- Raptor Wintering Area (Polygons 3a, 4 and 5);
- Bat Maternity Colonies (Polygons 3, 3a and 5);
- Turtle Wintering Areas (Cedar Creek);
- Colonially-Nesting Bird Breeding Habitat – Trees/shrubs (Polygon 3);
- Bald Eagle and Osprey Nesting, Foraging, Perching Habitat (Polygons 3, 3a, 4 and 5);
- Woodland Raptor Nesting Habitat (Polygons 3, 3a, 4 and 5);
- Amphibian Breeding Habitat- Woodland (Polygons 3, 3a, 4 and 5);
- Woodland Area-Sensitive Bird Breeding Habitat (Polygons 3, 3a, 4 and 5);
- Marsh Breeding Bird Habitat (Polygon 3);
- Terrestrial Crayfish (Cedar Creek and PSW); and
- Habitat for Special Concern Species (Canada Warbler, Eastern Wood-Pewee, Wood Thrush, Eastern Ribbonsnake and Snapping Turtle).

Candidate SWH types have been carried forward and considered for protection as a precautionary measure as detailed species data/information (e.g., out of season, access restrictions, site disturbance) was unavailable and was not collected through targeted studies. As such, these candidate SWH types as assumed to be present within the Study Area for the purpose of evaluating potential impacts of the proposed development.

6.5 Fish Habitat

Development or site alteration is not permitted within fish habitat except in accordance with provincial and federal requirements, subject to the approval of the DFO as per Policy 6.1.8.2 of the OP.

Cedar Creek supports direct fish habitat for sensitive cold water fish species, including the threatened Black Redhorse.

6.6 Habitat of Endangered or Threatened Species

Under the *ESA* (2007), the habitat of all provincially ranked threatened or endangered species shall be protected from damage or destruction.

Habitats of endangered or threatened species are considered Core Environmental Features within the OP. New mineral aggregate operations are not permitted within the habitat of endangered or threatened species except in accordance with provincial and federal requirements.

Through the background review, nine threatened (i.e., Bank Swallow, Cerulean Warbler, Least Bittern, Black Redhorse, Silver Shiner and Blanding's Turtle) and five endangered species (i.e., Butternut, Acadian Flycatcher, Henslow's Sparrow, Unisexual Ambystoma (Jefferson Salamander dependent population), and American Badger) were identified as having the potential to occur on, or adjacent to, the Licence Area (**Appendix A**). In addition, the presence of the FOD5-1, FOM2 and SWM5-1 woodland communities require that protected bat species (Eastern Red Bat, Hoary Bat, Little Brown Myotis, Northern Myotis, Silver-haired Bat and Tri-Coloured Bat) also be considered.

A comprehensive SAR assessment has been provided in **Appendix A**. Species confirmed or likely to occur within the Study Area, based on the results of the background review and the availability of suitable habitat, are discussed in detail below.

Bank Swallow

The adjacent aggregate operations to the east and west may provide suitable nesting habitat for this species. No suitable vertical slopes to support this species were documented within the Licence Area.

Cerulean Warbler

Potentially suitable mature forest habitat overlaps the Licence Area and extends onto the adjacent lands to the north and northeast.

Least Bittern

Suitable marsh habitat to support this species may be associated with the PSW located within, and adjacent to, the Licence Area.

Black Redhorse

As per the DFO aquatic species at risk mapping, habitat for Black Redhorse is present within Cedar Creek, which overlaps the Licence Area and adjacent lands.

Silver Shiner

There is potential suitable habitat for this species within Cedar Creek, which overlaps the Licence Area and adjacent lands.

Blanding's Turtle

There is potential suitable wetland habitat within the Licence Area and adjacent lands associated with the PSW and Cedar Creek.

Butternut

Potential forest habitat north and east of the Licence Area may support this species. Although no Butternut was observed within the Licence Area during the preliminary site visit, suitable habitat may occur on the adjacent lands.

Acadian Flycatcher

Potential swamp habitat to support this species is associated with the PSW within, and adjacent to, the Licence Area. The feature contains Cedar Creek with some interior habitat and extends beyond the Study Area, which would support the life processes of this species.

Unisexual Ambystoma (Jefferson Salamander dependent population)

There is potential suitable habitat in the PSW overlapping the northern and eastern portions of the Licence Area and on the adjacent lands.

Protected Bat Species

There are potential candidate bat maternity roosts within the PSW and associated significant woodlands identified within, and adjacent to, the Licence Area. Treed habitat (i.e., Polygon 2) within the ridgeline transversing the Licence Area may also support SAR bats. Twenty-six candidate bat maternity roosts (including trees with leaf clusters) were observed during the tree inventory. As acoustic surveys were not conducted, it is assumed that protected bats are present.

Activities that have the potential to impact protected species, or their associated habitats, shall be reviewed in consultation with MECP to determine if an authorization may be granted under the *ESA*, subject to applicable exemptions.

All other species occurrences detected through the background review were evaluated in the context of the Licence Area based on the availability of suitable habitat and detailed ecological field investigations. No other threatened or endangered species or associated suitable habitats for these species were detected on or adjacent to the Licence Area.

6.7 Summary of Identified Features and Functions

The PPS (2024) and the OP define key natural heritage features to be considered in terms of the impact and net effects assessment. The following ecological components within the Study Area were considered for impact avoidance, mitigation and/or potential offsets.

- Provincially Significant Wetland (Roseville Swamp Cedar Creek Wetland Complex);
- Significant Woodlands;
- Environmentally Sensitive Landscape;
- Candidate Significant Wildlife Habitat;
- Fish Habitat; and
- Potential Habitat of Endangered or Threatened Species.

Table 6: Environmental Considerations for the Study Area

Policy Category	Environmental Consideration	Natural Heritage Feature	Extraction Area	Licence Area	Adjacent Lands
Fisheries Act (Amended 2019)	Fish Habitat	• Confirmed Fish Habitat (Cedar Creek)		✓	✓
Provincial Planning Statement (2024)	Provincially Significant Wetlands	• Roseville Swamp Cedar Creek Provincially Significant Wetland Complex (**Figure 2B**)		✓	✓
	Significant Woodlands	• Contiguous woodlands overlapping the northern portion of the Licence Area (Polygons 3, 3a, 4 and 5)		✓	✓
	Candidate Significant Wildlife Habitat	• Raptor Wintering Area (Polygons 1, 2, 3a, 4 and 5) • Marsh Breeding Bird Habitat (Polygons 1 and 3) • Habitat for Special Concern Species (Polygons 3, 3a, 4 and 5)	✓	✓	✓
		• Bat Maternity Colonies (Polygons 3, 3a and 5) • Turtle Wintering Areas (Cedar Creek) • Colonially-Nesting Bird Breeding Habitat – Trees/shrubs (Polygon 3) • Bald Eagle and Osprey Nesting, Foraging, Perching Habitat (Polygons 3, 3a, 4 and 5) • Woodland Raptor Nesting Habitat (Polygons 3, 3a, 4 and 5) • Amphibian Breeding Habitat- Woodland (Polygons 3, 3a, 4 and 5) • Woodland Area-Sensitive Bird Breeding Habitat (Polygons 3, 3a, 4 and 5)		✓	✓
		• Terrestrial Crayfish (Cedar Creek and PSW)		✓	✓
Endangered Species Act (2007)	Habitat of Endangered or Threatened Species	• Candidate Habitat for SAR bats • Candidate Bat Maternity Roosts (Woodlands)	✓	✓	✓
		• Candidate Habitat for Acadian Flycatcher, Bank Swallow, Cerulean Warbler, Least Bittern, Silver Shiner, Blanding's Turtle, Unisexual Ambystoma • Confirmed Habitat for Black Redhorse (Cedar Creek)		✓	✓
		• Candidate Habitat for American Badger and Bank Swallow			✓
Township of North Dumfries (2018)	Significant Woodlands	• Contiguous woodlands overlapping the northern portion of the Licence Area (Polygons 3, 3a, 4 and 5)		✓	✓
	Environmentally Sensitive Landscape	• Overlaps the northern portion of the Licence area (Polygons 1, 2, 3a, 4 and 5)	✓	✓	✓

Figure 7 depicts all potential constraints identified within the Licence Area as well as associated recommended buffers and/or setbacks.

7.0 DESCRIPTION OF THE PROPOSED EXTRACTION

The proposed license area includes the entire legal parcel. The proposed extraction is expected to include above-water extraction. The proposed extraction will be setback 30 metres, or more, from the PSW and 10 metres from significant woodlands (**Figures 8 & 9**). It is anticipated that the extraction area will be rehabilitated to agricultural lands post-extraction with Compensation Areas along the northern and northeastern portions of the Licence Area created during the rehabilitation stage (**Figure 9**). Outside of the extraction limit, agricultural land uses are expected to continue for the duration of operations.

8.0 IMPACTS & NET EFFECTS ASSESSMENT

Following provincial standards, potential impacts, predicted effects, mitigation, and enhancement measures associated with the proposed extraction and construction should be assessed. The impact assessment and mitigation measures presented herein shall address the requirements of the PPS (2024) to ensure that the test of no negative impacts to natural heritage features and areas or their ecological functions is demonstrated. Potential impacts to the natural heritage features and environmental functions that occur within, and adjacent to, the Licence Area have been evaluated over the short and long term to ensure that proposed avoidance and/or mitigation strategies will contribute to the sustainability and resiliency of a diverse ecosystem over the long term.

The predominant natural heritage features present within, and adjacent to, the Licence Area include a PSW, significant woodlands, candidate SWH, fish habitat and potential habitat of endangered or threatened species (**Figure 7**). Potential impacts of the proposed extraction on existing ecological features and functions are reviewed in the context of:

1) Direct Impacts: Associated with the direct removal or alteration of natural heritage features that may occur in support of a proposed aggregate application;
2) Indirect Impacts: Potential secondary effects to ecological functions or pathways that could result in long-term, negative impacts to natural heritage features;
3) Induced Impacts: Associated with post-extraction impacts that may result in an increased demand on natural resources; and
4) Cumulative Impacts: Incremental effects to natural heritage features occurring as a result of adjacent land uses.

A summary of general recommended mitigation and restoration strategies is provided below. All relevant standards as per subsections 0.12 and 0.13 of Ontario Regulation 244/97 under the *ARA* should also be followed.

8.1 Direct Impacts

Direct impacts associated with the proposed limit of extraction are reviewed in the following sections. Potential effects on the viability and integrity of natural heritage features and associated ecological functions within the Study Area have been evaluated over the short and long term.

8.1.1 Significant Wildlife Habitat

As discussed in Section 6.0, candidate SWH was identified within the Licence Area within Polygon 1 and 2. No candidate SWH was identified within the agricultural fields within the extraction area.

As per policy 9.C.10 of the ROP, extraction proposed within or contiguous to features that are not included in the Core Environmental Feature, such as SWH, hazardous lands or hazardous sites, must demonstrate no negative impacts to the feature or its ecological function as a result. While Polygons 1 and 2 are not significant woodland or wetland features, they are composed of other natural vegetation that may support candidate SWH. Proposed habitat removals should be addressed through compensation plantings and suitable habitat creation, as needed, along the northern and northeastern portions of the Licence Area during rehabilitation (**Figure 9**).

Recommendation 1: Compensation plantings for the removal of Polygons 1 and 2 shall be provided at a 1:1 area ratio within the southern, western, eastern and northern portions of the Licence Area during the rehabilitation phase. Proposed Compensation Areas will be sited within the proposed infiltration area, wherein future hydrologic conditions are expected to limit the productivity of future agricultural land uses, and along the northeastern significant woodland boundary as to reestablish vegetation within areas mapped as Environmentally Sensitive Landscape. Native, non-invasive species shall be used only. Targeted species plantings shall reflect the composition of the adjacent features and Polygons 1 and 2. Tree species may include Yellow Birch (*Betula alleghaniensis*), Red Maple (*Acer rubrum*), Sugar Maple (*Acer saccharum*) and ground species may include native asters and goldenrods.

8.1.2 Environmentally Sensitive Landscape

The proposed extraction limits overlap 0.75 ha of the mapped Environmentally Sensitive Landscape along the northeastern extraction boundary (**Figure 7**). As per Section 9.C.11 of the ROP (2024), mineral aggregate operations proposed on Environmentally Sensitive Landscapes require that the natural habitat lost be replaced with equivalent habitat and "*no less than 35 percent of the licensed area remaining above the water table after extraction be rehabilitated to sustainable natural woodland habitat representative of the landscape in which it is located."*

The rehabilitated area must be maximized, disturbed areas minimized, and rehabilitation must be completed as early as possible throughout the life cycle of operations.

8.1.3 Habitat of Endangered or Threatened Species

SAR bats, protected under the provincial *ESA* (2007), were identified as having the potential to occur within the extraction area. In accordance with Policy 4.1.7 of the PPS (2024), development or site alteration shall not be permitted within the habitat of endangered species and threatened species, except in accordance with provincial and federal requirements. MECP will be consulted through the provincial *ESA* permitting process with respect to SAR, as applicable, to ensure that potential impacts will be appropriately mitigated.

Protected Bat Species

Potential candidate bat maternity roosts within the northern ridgeline (i.e., a total of 26 candidate bat maternity roosts) are proposed for removal to facilitate aggregate extraction.

Suitable habitat for these species is not limited on the landscape given the extensive network of woodlands north of the Licence Area that are expected to contain suitable roosting sites. As maternity roosting sites may be changed frequently over the duration of the maternity season, bat species are not expected to have a high fidelity to potential roosting trees within the Licence Area and may be supported by habitat available within the adjacent features. Therefore, the removal of candidate bat maternity roosts (including trees with leaf clusters) within the extraction area is not anticipated to negatively impact protected bat species' life processes.

Recommendation 2:

If required as a result of MECP consultation, five bat boxes shall be installed within proposed Compensation Areas prior to the removal of cavity and leaf cluster trees identified in Polygons 1 and 2 under the direction of a qualified ecologist.

8.1.4 Summary of Direct Impacts

Direct impacts are limited to potential habitat for endangered bat species.

8.2 Indirect Impacts & Mitigation

Indirect impacts identify potential adverse effects on the biophysical environment that may occur as a result of proposed extraction. This may include erosion from the work area and associated sedimentation into natural features, accidental spills and impacts to migratory birds. Each of these is discussed in the following sections.

8.2.1 Significant Wetlands

The proposed limit of extraction has been refined to limit the interface between the extraction area and the adjacent PSW located within the significant woodland (**Figure 2B**). A minimum 30 metres setback from the PSW has been implemented. A setback of 30 metres has been implemented as 30 metres is the area of interference where hydrologic functions of wetlands may be impacted (GRCA, 2024b).

8.2.2 Significant Woodlands

As detailed in Section 6.0, natural treed communities (Polygons 3, 3a, 4 and 5) within the Licence Area are considered significant woodlands and shall be retained in-situ, in accordance with the PPS (2024) and the OP.

Recommendation 3:

The dripline of the significant woodlands shall be formally surveyed prior to construction and operations. A minimum of 10 metres setback from the surveyed dripline shall be applied to the significant woodlands. No construction, aggregate operational works or berms shall be placed within the setback. The 10-metre setback is the minimum required setback as per policy 7.C.11 of the ROP.

No net negative impact on significant woodlands is anticipated, provided that appropriate mitigation measures are implemented.

8.2.3 Fish Habitat

Cedar Creek supports direct fish habitat for cold water fish communities. No direct impacts on fish habitat are expected as a result of the proposed extraction, as Cedar Creek is located greater than 120 metres from the proposed extraction limit.

The proposed aggregate operation is expected to excavate sand and gravel above the water table (Stonecairn Consulting, 2025). Excavation depth is expected to extend to approximately 294 meters above sea level. This level remains above the seasonal groundwater levels as documented in the four monitoring wells within the Licence Area. Direct impacts to water levels and water quality are not anticipated as extraction will remain above groundwater levels.

8.2.4 Sediment and Erosion Control Measures

The most critical time for the protection of natural heritage features is during the operational phase. For all works, an Erosion and Sediment Control Plan (ESC) will be required to contain ground disturbances on site and to protect adjacent natural heritage features identified in this report from sediment transport and potential sedimentation.

Recommendation 4:

Prior to construction, heavy-duty sediment and erosion control fencing shall be installed between the extraction limits and the natural features to protect adjacent natural areas. ESC fencing will act as a barrier to spills and disturbance that may impact the adjacent wetlands and woodlands, as well as aid in keeping existing vegetation intact. Sediment and erosion control fencing will be installed according to the Erosion and Sediment Control Guide for Urban Construction (TRCA, 2019) or approved equivalent.

Recommendation 5:

During construction and operations, the lands between the sediment and erosion control fencing and natural areas shall be maintained. The area between the ESC silt fencing and extraction limits shall be seeded to further buffer natural areas from extraction operations.

Recommendation 6:

Sediment and erosion control fencing shall be inspected prior to construction to ensure it has been installed correctly and during construction to ensure that the fencing is being maintained and is functioning properly.

Recommendation 7:

Sediment and erosion control fencing shall not be removed until extraction operations end.

8.2.5 Construction Site Management

Construction within the Licence Area should be organized, executed and controlled to ensure compliance with approved requirements, ESC monitoring and applicable legislation. Extraction operations and construction should be directed away from natural areas to minimize impacts and/or damage to adjacent properties.

Recommendation 8:

No heavy equipment, vehicles or other equipment is to enter adjacent natural areas.

Recommendation 9:

Prohibit refueling and maintenance activities within 30 metres of protected natural features.

Recommendation 10:

Creation of suitable Bank Swallow habitat (e.g., soil stockpiles) during extraction shall be avoided. Best management practices for deterring nesting during extraction activities will be implemented (MNRF, 2017). These measures shall include stockpile slope management (i.e., grading stockpiles, eliminating vertical extraction faces, reducing slopes to 70 degrees or less) beginning at the start of April until at least July 20 of any year.

Recommendation 11:

All necessary lighting for operations shall be directed downward and directed away from the adjacent PSW and significant woodland features.

8.2.6 Migratory Birds & Wildlife

Recommendation 12:

As per the *MBCA* (1994), any tree removals shall occur outside of the migratory breeding bird season (i.e., April 1 to August 31). If this window cannot be avoided, nest searches to determine the presence or absence of nesting birds or breeding habitat shall be conducted until clearing is complete, or until August 31, whichever comes first.

Recommendation 13:

Advise workers of potential encounters with wildlife during construction. If an animal enters the work site, work at that location will stop and the animal shall be permitted to leave unharassed. If there are repeat observations of wildlife in the work area, barrier fencing (e.g., silt fence) may be needed to direct wildlife away from active construction/operations and toward natural areas.

Recommendation 14:

Where tree removal is proposed, removal of trees of any size shall occur outside the bat maternity roost period, which is approximately April 1 to September 30.

8.3 Induced Impacts

Induced impacts are potential environmental effects associated with the post-extraction landscape. These impacts may include, but are not limited to, local water resources, changes to shallow groundwater and land use.

Local water resources are not anticipated to be negatively impacted by aggregate operations as the majority of drinking wells are within deep overburden deposits (Stonecairn Consulting, 2025). No dewatering efforts are proposed to facilitate extraction as such no negative impacts to surrounding wells should occur.

Overall, the Licence Area is expected to be progressively rehabilitated to agricultural lands.

The proposed extraction is expected to have minimal impacts to the existing aggregate operation to the east. The proposed extraction should consider potential future development of residential lots on the lands to the west with respect to impacts from noise, sight and rehabilitation measures. Traffic, noise, and lighting impacts are anticipated to be temporary occurring only for the duration of the proposed extraction; however, Recommendation 12 in Section 8.2.6 is encouraged.

8.4 Cumulative Impacts

Cumulative impacts are potential effects that may occur as a result of adjacent land uses. These effects may include upstream or downstream impacts, or activities that could otherwise adversely affect natural features connected to the Licence Area.

The lands to the east of the Licence Area consist of an active aggregate pit operation known as the Ayr Pit. The lands to the west of the Licence Area were previously an aggregate operation. The lands to the west are currently undergoing a zoning by-law amendment and plan of subdivision application process, with the most recent submission of materials on January 5, 2024.

9.0 REHABILITATION

Where new mineral aggregate operations are proposed within the Environmentally Sensitive Landscape, the rehabilitation policies of the OP outlined in Policy 5.2.8.3 shall be followed. In compliance with Policy 5.2.8.3, it is expected progressive rehabilitation will occur so that disturbed areas will be restored as soon as possible while extraction continues. It is anticipated that the land will be rehabilitated into agricultural lands with new natural areas created along the northern PSW and eastern woodland boundaries (**Figure 8**). Woodland compensation for the removal of treed vegetation communities (Polygon 2; 1.73 ha) and Environmentally Sensitive Landscape (0.59 ha) habitats along the ridgeline and the northeastern area of the extraction limit, will be provided within the northeastern Compensation Areas (approximately 2.82 ha) identified on **Figure 9**. Proposed woodland compensation areas overlap the Environmentally Sensitive Landscape in the northeastern portion of the Licence Area to allow for areas disturbed by aggregate operations to be revegetated with upland species assemblages. Compensation Areas have also been strategically identified overlapping the proposed infiltration area as hydraulic conditions within the infiltration site are likely to limit agricultural productivity post-extraction. The infiltration area provides an opportunity to develop vegetation communities with a near-hydric to hydric moisture regime to promote biologically diverse species assemblages across the Compensation Area that contains species reminiscent of the PSW. Meadow habitats will be rehabilitated along the eastern, southern and western graded slopes of the Licence Area (approximately 4.24 ha). A detailed landscape plan will be developed before rehabilitation of the Licence Area. Detailed rehabilitation plans outlining the final ground surface topography and groundwater levels are to be prepared by others.

Per Section 9.C.11 of the ROP (2024), compensation for encroachment (0.59 ha) into Environmentally Sensitive Landscapes must be provided in the form of sustainable natural woodland habitat representative of the landscape in which it is located. The woodland Compensation Areas along the north and northeastern portions of the Licence Area, will provide a diverse assemblage of species and include native fast-growing pioneer species. Compensation Areas will establish a dense vegetation barrier to provide natural buffering functions (e.g., attenuation functions, protection from edge effects, noise and light pollution). The Compensation Areas will provide an ecological benefit to existing communities by extending natural features and providing similar ecological functions to removed features within communities with greater connectivity to the larger natural heritage system.

The meadow areas in Polygon 1 will be compensated for along the east, west and south Licence Area' boundaries. These areas should include a native seed mix to mimic if not enhance the composition of the current Polygon 1 feature and provide similar ecological functions.

Recommendation 15:

A 30-metre setback from the PSW and a 10 metre setback from the significant woodland shall be implemented. The natural Compensation Areas shall be seeded and planted with a suitable mix comprised of native species assemblages reminiscent of the adjacent vegetation communities, including pollinator-beneficial species that are native to the area. No invasive or non-native species shall be included in the seed mix. Prior to installation, the correct seed and tree/shrub species shall be confirmed by the landscape contractor.

Recommendation 16: Complete vegetation monitoring in the Compensation Areas over three years (i.e., monitoring in Years 2 and 3), to document compliance with a prepared landscape plan. Monitoring in Year 1 by the landscape contractor shall document the success of seed germination, vegetative cover and tree/shrub installation. Monitoring in Years 2 and 3 shall

document plant establishment and growth through the completion of a floral inventory through one site visit conducted by a qualified professional during the growing season.

Recommendation 17:

Implement adaptive management strategies, such as supplemental plantings and/or control of non-native invasive species, if required. Adaptative management may be triggered by poor survival of planted material (i.e., triggered at <80% survival of seeded species or woody materials), insufficient vegetation cover (i.e., triggered at <80% if planted at 100%) and the presence of invasive species (i.e., triggered at >20% invasive groundcover; 80% non-native/native is target).

Adaptive management strategies within woodland Compensation Areas will depend on the issue encountered, but may include:

- Re-seeding with a target seed mix;
- Replanting of dead trees/shrubs or other plant materials; and
- Increased monitoring frequency or length (e.g., adding monitoring in Year 4).

Recommendation 18:

Inventory invasive plants throughout the ecological monitoring period. This shall include identification of invasive species type, location and abundance within ecological buffers and Compensation Areas as well as a record of completed management strategies.

10.0 CONCLUSIONS

This NER was developed in support of the proposed aggregate operations for the land holdings located at 1830 Wrigley Road in Ayr, Ontario. The Licence Area is designated as Rural Area with overlapping Protected Countryside and contains overlapping natural heritage features associated with the Environmentally Sensitive Landscape. As the proposed operations deviate from the permitted uses identified under the Township of North Dumfries Zoning By-law (No. 689-83) a Zoning By-law Amendment is required.

The following features were identified within, and adjacent to, the Licence Area:

- Candidate Significant Wildlife Habitat;
- Environmentally Sensitive Landscape;
- Potential habitat of endangered or threatened species;
- Provincially Significant Wetlands;
- Significant Woodlands; and
- Fish Habitat.

The PSW and significant woodlands overlap the northern and northeastern portions of the Licence Area and extend into the adjacent lands. The PSW and significant woodlands are not mapped within the proposed extraction limits. Polygon 2 occurs within the extraction limits but does not meet provincial or regional criteria for designation as a significant woodland. However, Polygon 2 does support candidate significant wildlife habitat and potential habitat for endangered bats species as 26 candidate bat maternity roosts were documented, primarily within Polygon 2. With the introduction of Bill 5, candidate bat maternity roost habitat will still be protected as it is used for breeding and rearing. Foraging habitat protection is likely to change under the new habitat definition. No changes to this application are anticipated. This report will be submitted to MECP for further comment and review as a part of the *ARA* process.

Compensation for the removal of Polygon 2 and encroachment into the Environmentally Sensitive Landscape will be provided within the recommended Compensation Areas abutting the woodland boundary within the northern and northeastern portions of the Licence Area during the rehabilitation phase. Compensation Areas have been strategically located within undulations of the existing woodland boundary to extend the natural heritage system, and increase connectivity, robustness and resiliency of the natural areas. To increase efficiencies, the northeastern proposed Compensation Area will overlap the Infiltration Area wherein hydrologic conditions are expected to limit agricultural land uses following project operations. Compensation for the removal of Polygon 1 will be provided along the eastern, southern and western graded slopes of the Licence Area.

With the implementation of the mitigation measures outlined in Sections 8.0 and 9.0, it is expected that proposed aggregate operations can meet the test of no net negative impacts to natural features or their ecological functions and may proceed as planned, subject to consultation with regulatory authorities. As the Licence Area is slated as a Rural Area, a subsequent Zoning By-law Amendment application will be required following completion of the *ARA* Licence Application.

10.1 Signatures

All of which is respectfully submitted,

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11.0 REFERENCES

Cadman, M.D., H.J. Dewar, and D.A. Welsh. 1998. The Ontario Forest Bird Monitoring Program (1987-1997): Goals, methods and species trends observed. Technical Report Series No. 325, Canadian Wildlife Service.

Chapman, L.J. and D. F. Putnam, 1984. The Physiography of Southern Ontario, 3rd Edition. Ontario Geological Survey, Special Volume. Ontario Ministry of Natural Resources. 270pp.

Conservation Authorities Act, R.S.O. 1990, c. C.27

Credit Valley Conservation and Toronto and Region Conservation Authority (CVC/TRCA). 2014. Evaluation, Classification and Management of Headwater Drainage Features Guidelines. January 2014. 26 pp.

eBird. 2021. Ontario eBird Hotspot Data Map. Retrieved from https://ebird.org/hotspots?env.minX=-95.155986&env.minY=41.708293&env.maxX=-74.345974&env.maxY=56.869721&yr=all&m=

Endangered Species Act, 2007, S.O. 2007, c. 6

Fish and Wildlife Conservation Act, 1997, S.O. 1997, c. 41

Fisheries Act, R.S.C., 1985, c. F-14

Fisheries and Oceans Canada (DFO). 2022. Fish and Fish Habitat Protection Program, August 2019. Request a Review of Your Project Near Water: Step 3. Check if Your Project Needs A Review. Retrieved from http://www.dfo-mpo.gc.ca/pnw-ppe/reviews-revues/request-review-demande-d-examen-003-eng.html

Fisheries and Oceans Canada (DFO) 2019. Fish and Fish Habitat Protection Policy Statement, August 2019. 36 pp.

Fisheries and Ocean Canada (DFO). 2024. Aquatic Species at Risk Map. Retrieved from https://www.dfompo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html

Grand River Conservation Authority (GRCA). 2024. Natural Heritage Characterization Reports. Retrieved from: https://www.grandriver.ca/our-watershed/natural-heritage/natural-heritage-systems/

Grand River Conservation Authority (GRCA). 2024b. Policies for the administration of the prohibited activities, exemptions and permits regulation. Retrieved from: https://www.grandriver.ca/media/lxfghwwe/policies-for-admin-of-ont-reg-41-24-final-1.pdf

iNaturalist. 2024. Observations Map. Retrieved from https://www.inaturalist.org/observations

Invasive Species Act, 2015, S.O. 2015, c. 22

Lebedyk, D. 2018. Southern Ontario Floral Inventory Analysis (SOFIA). Version 2.51. Essex Region Conservation Authority. Essex, ON.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. Field Guide FG.

McLaren, M. A., Konze, K., & Twiss, M. 1998. Wildlife monitoring programs and inventory techniques for Ontario. South Porcupine: Ontario Ministry of Natural Resources - Boreal Science Section.

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

Ministry of Natural Resources (MNR). 2011. Survey Methodology under the Endangered Species Act, 2007: Dolichonyx Oryzixorous (Bobolink). April 2011.

Ministry of Environment, Conservation and Parks (MECP). 2022. Bats & Treed Habitats - Maternity Roost Surveys. [Unpublished document].

Ministry of Environment, Conservation and Parks (MECP). 2022. Species at Risk Bats Survey Note. [Unpublished document].

Ministry of Energy, Northern Developments, and Mining. 2017. OGSEarth - Southern Ontario Surficial Geology. Retrieved from https://www.geologyontario.mndm.gov.on.ca/ogsearth.html#surficial-geology

Ministry of Natural Resources and Forestry (MNRF). 2022. Ontario Wetland Evaluation System (OWES) Southern Manual. Queen's Printer for Ontario. Fourth Edition.

Ministry of Environment, Conservation and Parks (MECP). 2024. Source Protection Information Atlas. Retrieved from: https://www.lioapplications.lrc.gov.on.ca/SourceWaterProtection/index.html?viewer=SourceWaterProtection.SWPViewer&locale=en-CA

Natural Heritage Information Centre (NHIC). 2024a. Make a Map: Natural Heritage Areas. Retrieved from https://www.lioapplications.lrc.gov.on.ca/Natural_Heritage/index.html?viewer=Natural_Heritage.Natural_Heritage&locale=en-CA

Natural Heritage Information Centre (NHIC). 2024b. All Species Lists. Retrieved from https://www.ontario.ca/page/get-natural-heritage-information

Oldham, M.J. 2017. List of Vascular Plants of Ontario's Carolinian Zone (Ecoregion 7E). Carolinian Canada and Ontario Ministry of Natural Resources and Forestry. Peterborough, ON. 132 pp.

Oldham, M.J., Bakowsky, W.D., and Sutherland, D.A. 1995. Floristic Quality Assessment System for Southern Ontario. Prepared for Ontario Ministry of Natural Resources, Peterborough, Ontario. December 1995. 69 pp.

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

Ontario Invasive Plant Council. 2023. Best Management Practices. Retrieved from https://www.ontarioinvasiveplants.ca/resources/best-management-practices/

Ontario Ministry of Municipal Affairs and Housing (MMAH). 2024. Provincial Planning Statement. Ontario Ministry of Municipal Affairs, Toronto, Ontario.

Ontario Ministry of Natural Resources (OMNR). 2010. Natural Heritage Reference Manual for Natural Heritage Policies the Provincial Policy Statement, 2005. April 2010. Toronto, Ontario.

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

Ontario Ministry of Natural Resources and Forestry. (OMNRF). 2015. Significant Wildlife Habitat Criteria Schedule B Ecoregion 7E. 40pp. January 2015.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2025. Geospatial Ontario. Ontario GeoHub. Retrieved from https://geohub.lio.gov.on.ca/

Ontario Ministry of Natural Resources (OMNR). 2013. DRAFT Survey Protocol for Eastern Meadowlark in Ontario. January 2013.

Ontario Nature. 2019. Ontario Reptile and Amphibian Atlas. Retrieved from https://www.ontarioinsects.org/herp/

Species at Risk Act, 2023, S.C. 2002, c. 29

Species at Risk in Ontario (SARO) List, Ontario Regulation 230/08. 2007 (Consolidated 2018). Retrieved from https://www.ontario.ca/laws/regulation/080230

Stanfield, L. Editor. 2017. Ontario Stream Assessment Protocol. Version 10 – 2017. Fisheries Policy Section. Ontario Ministry of Natural Resources. Peterborough, Ontario. 26 pp. 548 pp.

Toronto and Region Conservation Authority (TRCA). 2019. Erosion and Sediment Control Guide for Urban Construction. 236 pp.

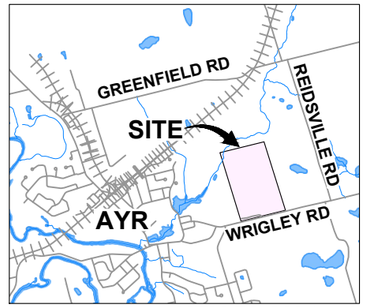
Urban Forest Association Inc. 2002. Invasive Exotic Species Ranking for Southern Ontario. 7 pp. Retrieved from http://chapter.ser.org/ontario/files/2012/08/exotics.pdf

Wilhelm, G.S. and D. Ladd. 1988. Natural Area Assessment in the Chicago Region. The Morton Arboretum. Lisle, Illinois.

Wilhelm, G.S. and L.A. Masters. 1995. Floristic Quality Assessment in the Chicago Region and Application Computer Programs. The Morton Arboretum. Lisle, Illinois 60532.

Xerces Society for Invertebrate Conservation. Monarch Butterfly Nectar Plant Lists for Conservation Plantings. Retrieved from: https://xerces.org/sites/default/files/publications/18-003_02_Monarch-Nectar-Plant-Lists-FS_web%20-%20Jessa%20Kay%20Cruz.pdf

Figures



KEY PLAN (nts)

N

LEGEND

- BOUNDARY OF PROPOSED LICENCE AREA
- STUDY AREA (120m from Boundary of Proposed Licence Area)
- EXTRACTION LIMITS

REFERENCES

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NOTES

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ALL LOCATIONS ARE APPROXIMATE.

0 50 100 150 200 250m

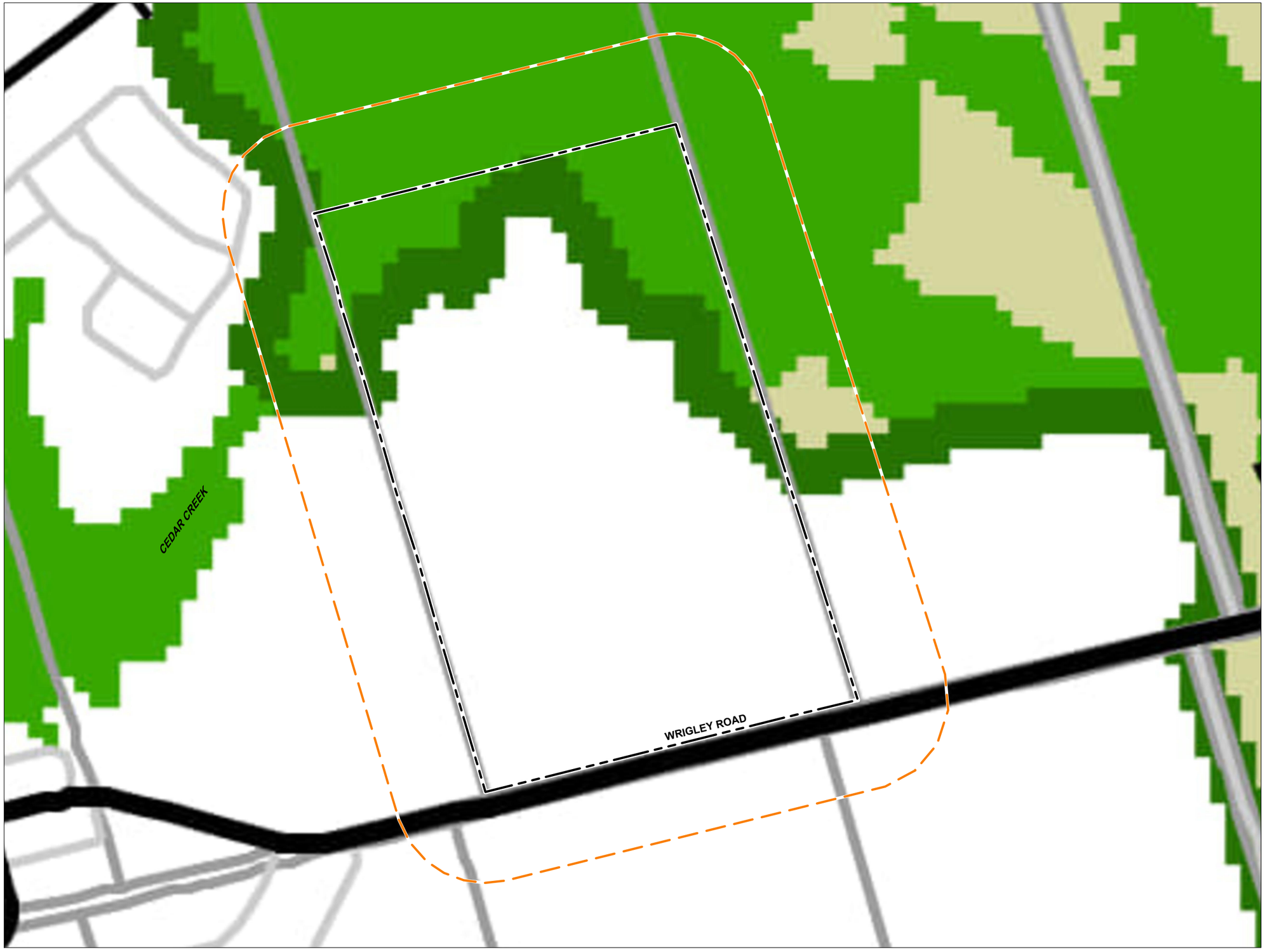
MTE
Engineers, Scientists, Surveyors

PROJECT
NATURAL ENVIRONMENT REPORT
1830 WRIGLEY ROAD
AYR, ONTARIO

TITLE
PROJECT LOCATION

Drawn: DCH	Scale: 1:5,000	Figure: 1
Checked:	Project No.: 52827-301	
Date: 2025-07-11	Rev No.: 0	

CAD: P:\P\52827\301\52827-301-NER1.1.DWG



N

LEGEND

- BOUNDARY OF PROPOSED LICENCE AREA
- STUDY AREA (120m from Boundary of Proposed Licence Area)
- ENVIRONMENTALLY SENSITIVE LANDSCAPE
- CORE ENVIRONMENTAL FEATURE
- LOCAL ROAD
- PROVINCIAL HIGHWAY

REFERENCES

TOWNSHIP OF NORTH DUMFRIES, OFFICIAL PLAN, MAP 5A GREENLANDS NETWORK; AND HARRINGTON McAVAN LTD. OPERATIONAL PLAN PHASE A, PROJECT No. 23-20.

NOTES

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ALL LOCATIONS ARE APPROXIMATE.

0 50 100 150 200 250m

MTE
Engineers, Scientists, Surveyors

PROJECT
NATURAL ENVIRONMENT REPORT
1830 WRIGLEY ROAD
AYR, ONTARIO

TITLE
NATURAL HERITAGE (Township)

Drawn	Scale	Figure
DCH	1:5,000	**2A**
Checked	Project No. 52827-301	
Date 2025-02-28	Rev No. 0	

Plot Date: February 28, 2025 - 3:13 PM

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LEGEND

- BOUNDARY OF PROPOSED LICENCE AREA
- STUDY AREA (120m from Boundary of Proposed Licence Area)
- AREA OF NATURAL AND SCIENTIFIC INTEREST (ANSI)
- WETLAND (LIO)

REFERENCES

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NOTES

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ALL LOCATIONS ARE APPROXIMATE.

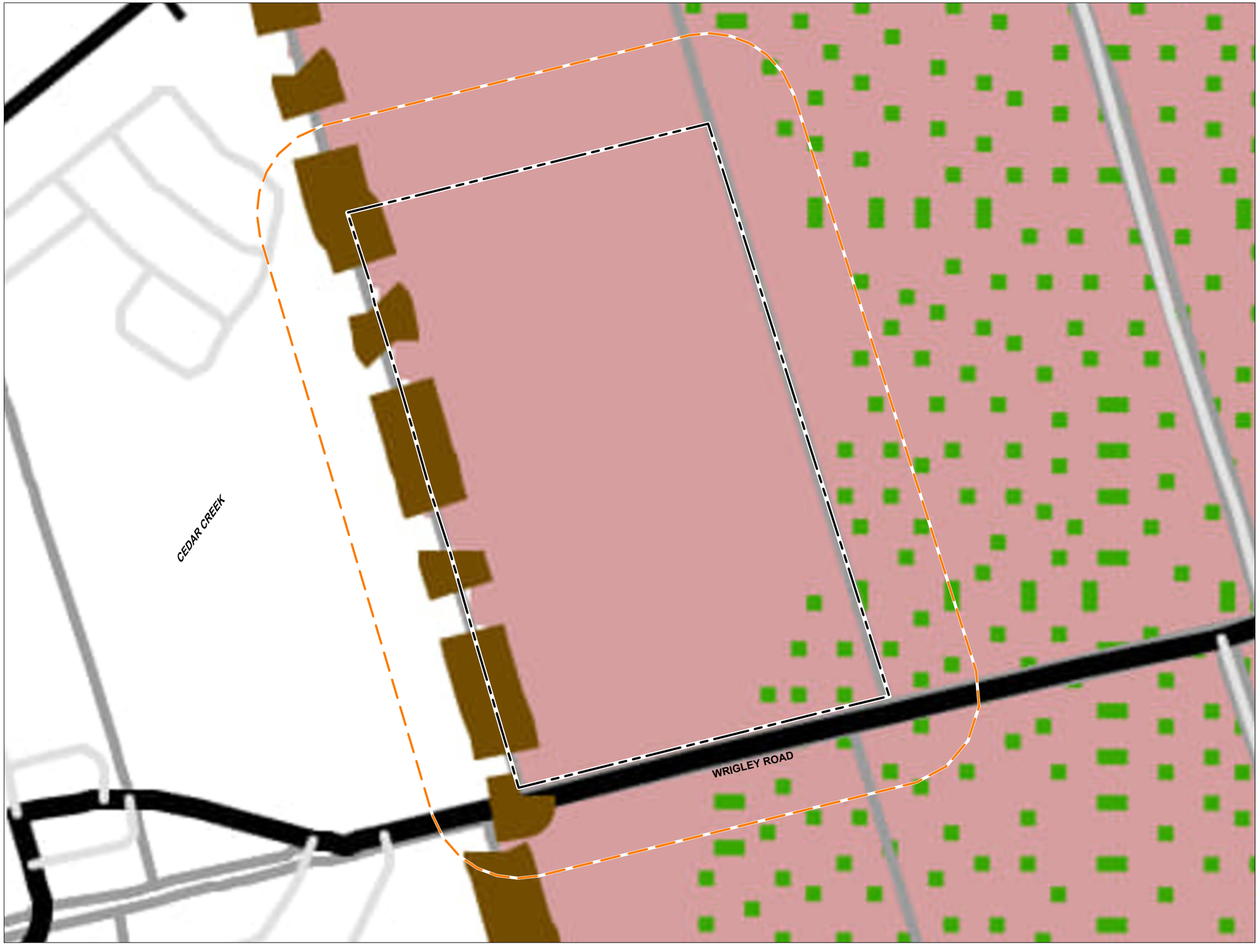
0 50 100 150 200 250m

MTE
Engineers, Scientists, Surveyors

PROJECT
NATURAL ENVIRONMENT REPORT
1830 WRIGLEY ROAD
AYR, ONTARIO

TITLE
NATURAL HERITAGE (Provincial)

Drawn: DCH	Scale: 1:5,000	Figure: **2B**
Checked:	Project No.: 52827-301	
Date: 2025-02-28	Rev No.: 0	



LEGEND

- BOUNDARY OF PROPOSED LICENCE AREA
- STUDY AREA (120m from Boundary of Proposed Licence Area)
- COUNTRYSIDE LINE
- PRIME AGRICULTURAL AREA
- PROTECTED COUNTRYSIDE
- RURAL AREAS

REFERENCES

TOWNSHIP OF NORTH DUMFRIES, OFFICIAL PLAN, MAP 7, THE COUNTRY SIDE, 2016; AND HARRINGTON McAVAN LTD. OPERATIONAL PLAN PHASE A, PROJECT No. 23-20.

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0 50 100 150 200 250m

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PROJECT
NATURAL ENVIRONMENT REPORT
1830 WRIGLEY ROAD
AYR, ONTARIO

TITLE
LAND USE

Drawn: DCH	Scale: 1:5,000	Figure: 3
Checked:	Project No.: 52827-301	
Date: 2024-11-18	Rev No.: 0	

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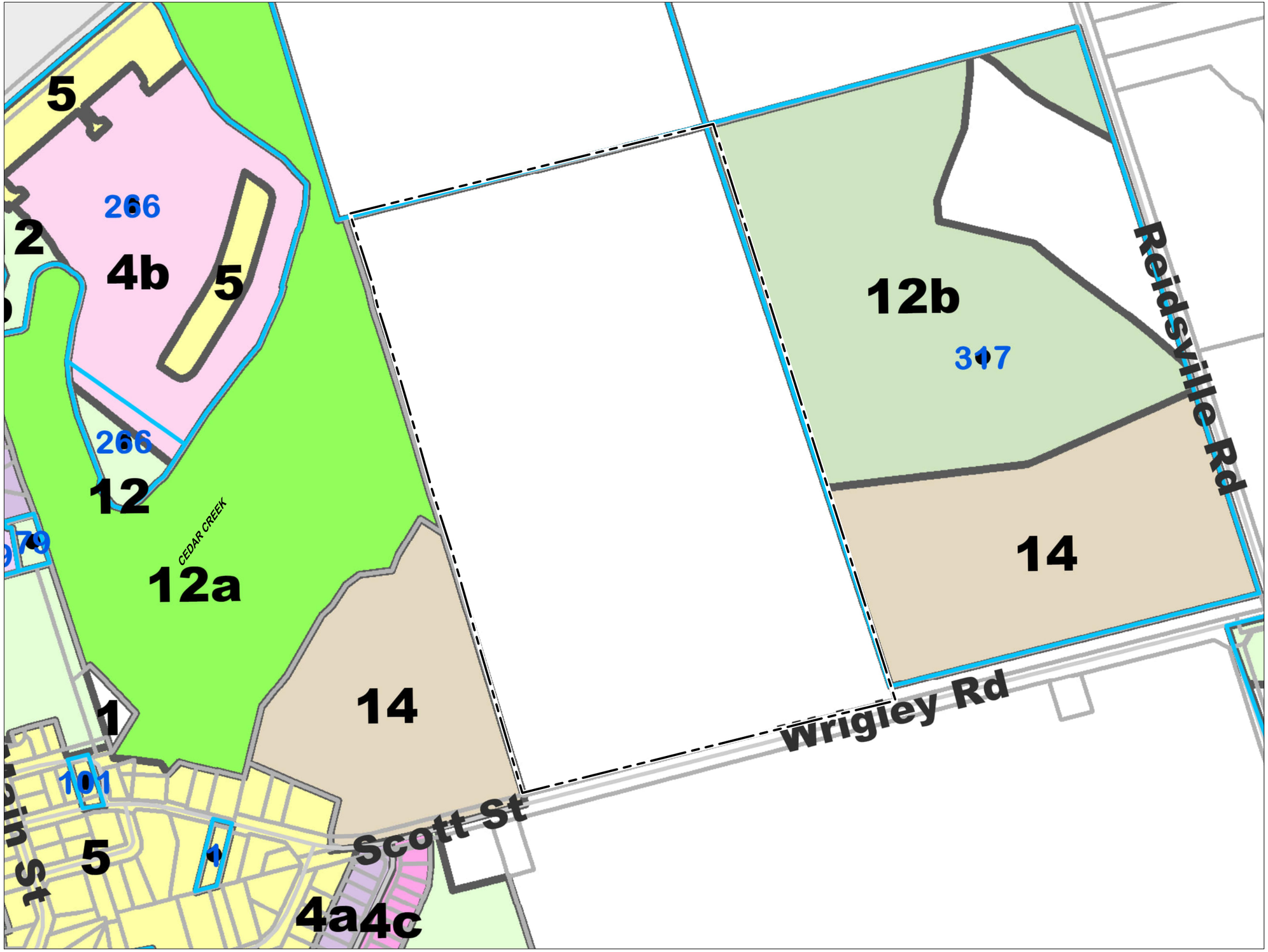

LEGEND

- BOUNDARY OF PROPOSED LICENCE AREA
- STUDY AREA (120m from Boundary of Proposed Licence Area)
- ZONE 1 - AGRICULTURAL
- ZONE 5 - URBAN RESIDENITIAL
- ZONE 12 - OPEN SPACE
- ZONE 12a - ENVIRONMENTAL PROTECTION 1
- ZONE 12b - ENVIRONMENTAL PROTECTION 2
- ZONE 14 - MINERAL AGGREGATES

REFERENCES

TOWNSHIP OF NORTH DUMFRIES, AYR ZONING MAP, JULY 2019; AND HARRINGTON McAVAN LTD. OPERATIONAL PLAN PHASE A, PROJECT No. 23-20.

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0 50 100 150 200 250m

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PROJECT
NATURAL ENVIRONMENT REPORT
1830 WRIGLEY ROAD
AYR, ONTARIO

TITLE
ZONING

Drawn	Scale	Figure
DCH	1:5,000	4
Checked	Project No. 52827-301	
Date 2025-06-24	Rev No. 0	

Plot Date: June 24, 2025 - 2:08 PM

CAD: P:\P\52827\301\52827-301-NER1.1.DWG

LEGEND

- BOUNDARY OF PROPOSED LICENCE AREA
- STUDY AREA (120m from Boundary of Proposed Licence Area)
- GRCA REGULATED LIMIT

REFERENCES

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GRAND RIVER CONSERVATION AUTHORITY (GRCA), REGULATION LIMITS, OPEN DATA SET; AND
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0 50 100 150 200 250m

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PROJECT
NATURAL ENVIRONMENT REPORT
1830 WRIGLEY ROAD
AYR, ONTARIO

TITLE
GRAND RIVER CONSERVATION AUTHORITY REGULATION LIMITS

Drawn	Scale	Figure
DCH	1:5,000	5
Checked	Project No. 52827-301	
Date 2025-02-28	Rev No. 0	

Plot Date: February 28, 2025 - 3:13 PM

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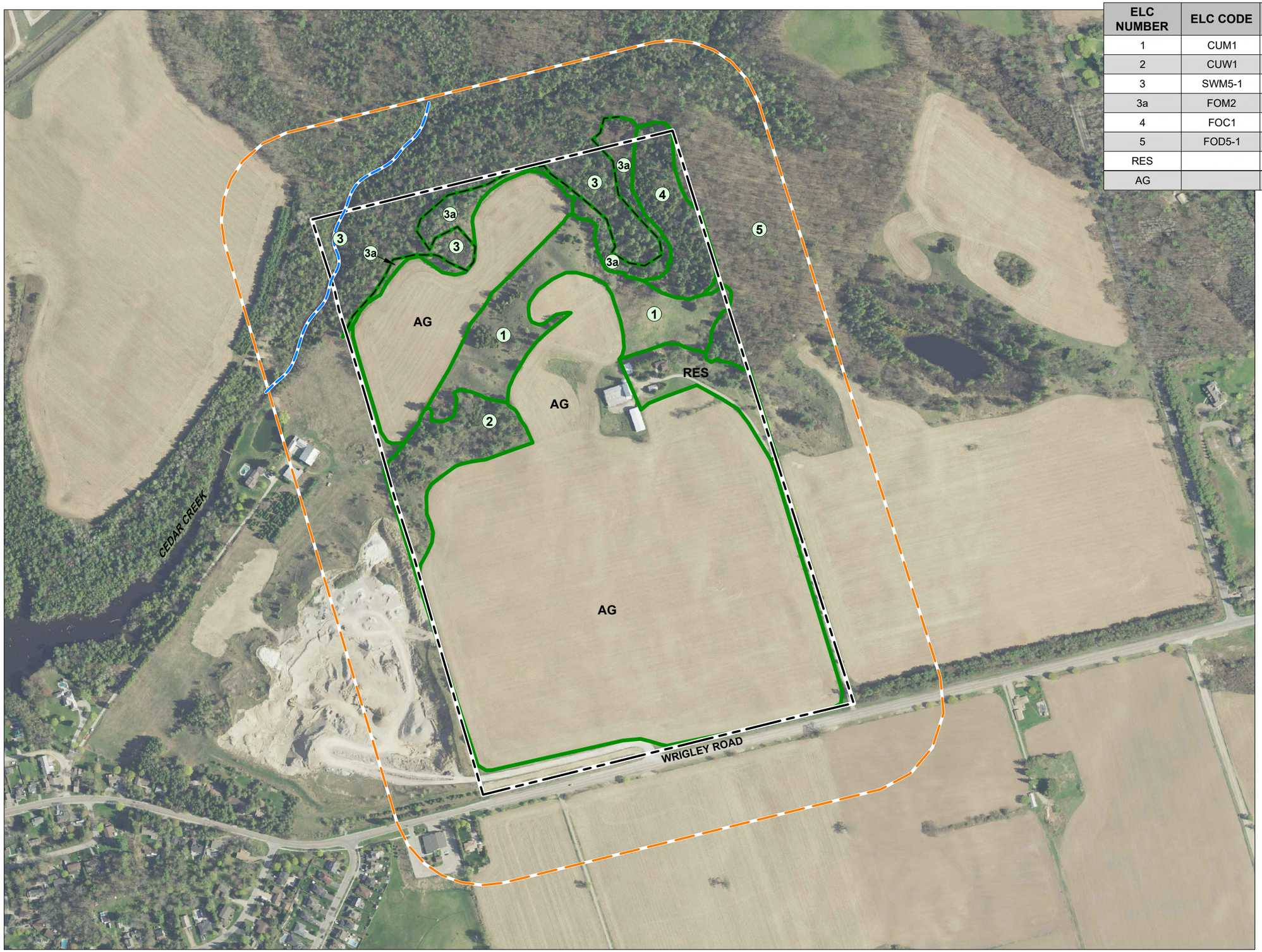

ELC NUMBER	ELC CODE	Description
1	CUM1	Mineral Cultural Meadow (3.17ha)
2	CUW1	Mineral Cultural Woodland (1.73ha)
3	SWM5-1	Red Maple-Conifer Mixed Swamp (4.02ha)
3a	FOM2	Dry-Fresh White Pine Maple Mixed Forest (1.45ha)
4	FOC1	Dry-Fresh Coniferous Forest (1.39ha)
5	FOD5-1	Dry-Fresh Sugar Maple Deciduous Forest
RES		Former Residence and Farmyard (1.11ha)
AG		Agricultural (26.91ha)

N

LEGEND

- BOUNDARY OF PROPOSED LICENCE AREA
- STUDY AREA (120m from Boundary of Proposed Licence Area)
- WETLAND (MTE South Edge Survey)
- 1 VEGETATION COMMUNITY

REFERENCES

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PROJECT
NATURAL ENVIRONMENT REPORT
1830 WRIGLEY ROAD
AYR, ONTARIO

TITLE
VEGETATION COMMUNITIES

Drawn	Scale	Figure
DCH	1:5,000	6
Checked	Project No. 52827-301	
Date 2025-03-05	Rev No. 0	

Plot Date: March 5, 2025 - 1:19 PM

CAD: P:\P\52827\301\52827-301-NER1.1.DWG

ELC NUMBER	ELC CODE	Description
1	CUM1	Mineral Cultural Meadow (3.17ha)
2	CUW1	Mineral Cultural Woodland (1.73ha)
3	SWM5-1	Red Maple-Conifer Mixed Swamp (4.02ha)
3a	FOM2	Dry-Fresh White Pine Maple Mixed Forest (1.45ha)
4	FOC1	Dry-Fresh Coniferous Forest (1.39ha)
5	FOD5-1	Dry-Fresh Sugar Maple Deciduous Forest
RES		Former Residence and Farmyard (1.11ha)
AG		Agricultural (26.91ha)

LEGEND

- BOUNDARY OF PROPOSED LICENCE AREA
- STUDY AREA (120m from Boundary of Proposed Licence Area)
- VEGETATION COMMUNITY
- PROVINCIALLY SIGNIFICANT WETLAND
- FISH HABITAT
- SIGNIFICANT WOODLAND
- CANDIDATE SIGNIFICANT WILDLIFE HABITAT
- NATURAL HERITAGE BUFFER
- EXTRACTION LIMITS
- ENVIRONMENTALLY SENSITIVE LANDSCAPE
- CANDIDATE MATERNITY BAT ROOSTS

0 50 100 150 200 250m

REFERENCES

BING IMAGERY AS OF NOVEMBER 19 (IMAGE DATE UNKNOWN); AND
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NOTES

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Engineers, Scientists, Surveyors

PROJECT
NATURAL ENVIRONMENT REPORT
1830 WRIGLEY ROAD
AYR, ONTARIO

TITLE
SIGNIFICANT NATURAL HERITAGE FEATURES AND KEY FINDINGS

Drawn: DCH	Scale: 1:5,000	Figure: 7
Checked:	Project No.: 52827-301	
Date: 2025-07-11	Rev No.: 0	

Plot Date: July 17, 2025 - 11:06 AM

CAD: P:\P\52827\301\52827-301-NER1.8.DWG

Plot Date: July 17, 2025 - 1:40 PM

ELC NUMBER	ELC CODE	Description
1	CUM1	Mineral Cultural Meadow (3.17ha)
2	CUW1	Mineral Cultural Woodland (1.73ha)
3	SWM5-1	Red Maple-Conifer Mixed Swamp (4.02ha)
3a	FOM2	Dry-Fresh White Pine Maple Mixed Forest (1.45ha)
4	FOC1	Dry-Fresh Coniferous Forest (1.39ha)
5	FOD5-1	Dry-Fresh Sugar Maple Deciduous Forest
RES		Former Residence and Farmyard (1.11ha)
AG		Agricultural (26.91ha)

LEGEND

- BOUNDARY OF PROPOSED LICENCE AREA
- STUDY AREA (120m from Boundary of Proposed Licence Area)
- VEGETATION COMMUNITY
- PROVINCIALLY SIGNIFICANT WETLAND
- FISH HABITAT
- SIGNIFICANT WOODLAND
- CANDIDATE SIGNIFICANT WILDLIFE HABITAT
- NATURAL HERITAGE BUFFER
- EXTRACTION LIMITS
- BERM
- EXTRACTION AREA

0 50 100 150 200 250m

REFERENCES

BING IMAGERY AS OF NOVEMBER 19 (IMAGE DATE UNKNOWN); AND
HARRINGTON McAVAN LTD. OPERATIONAL PLAN PHASE A, PROJECT No. 23-20; JUNE 2025.

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PROJECT
NATURAL ENVIRONMENT REPORT
1830 WRIGLEY ROAD
AYR, ONTARIO

TITLE
OPERATIONS PLAN

Drawn	Scale	Figure
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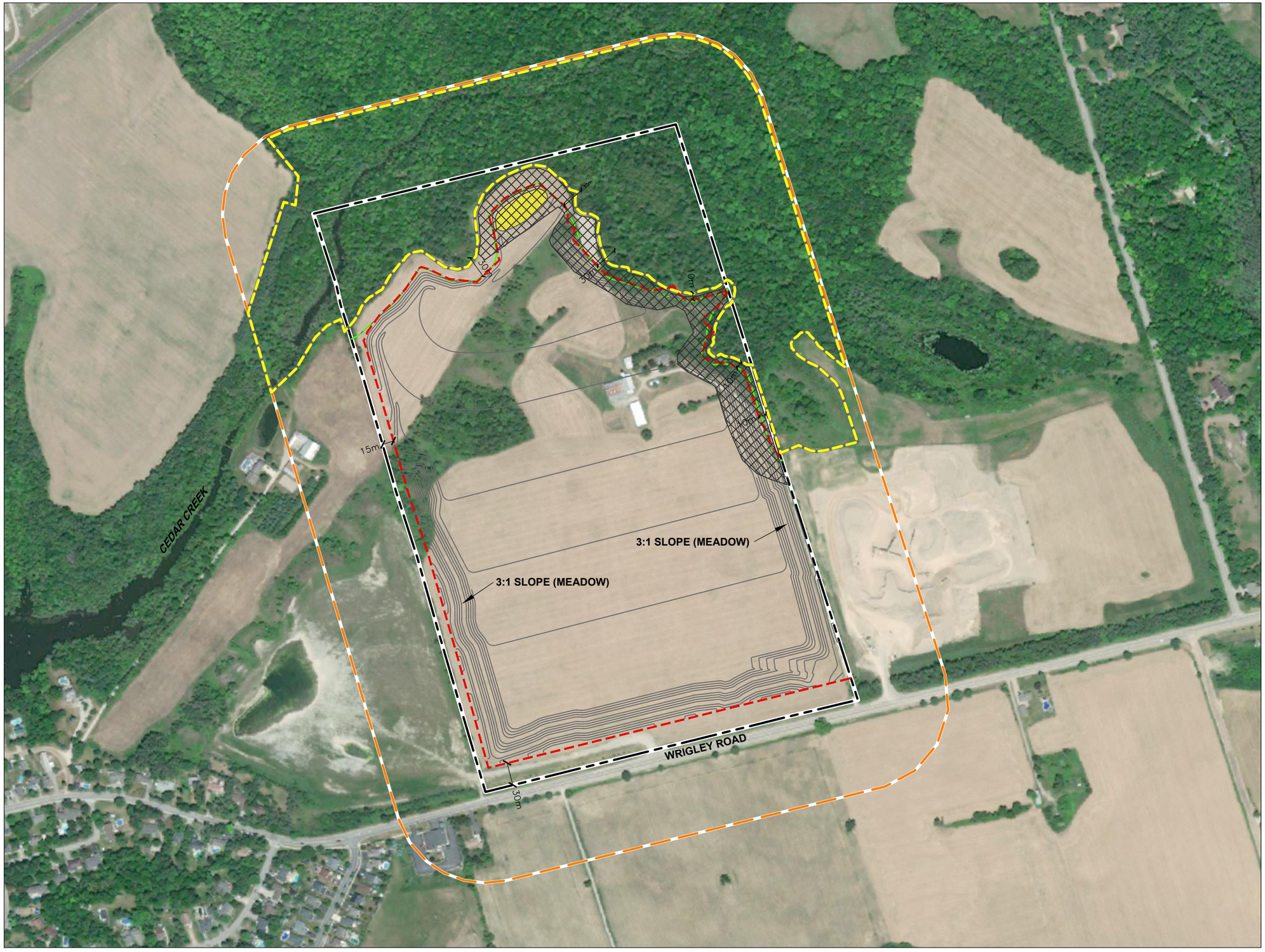
Checked	Project No. 52827-301	
Date 2025-07-11	Rev No. 0	



LEGEND

- BOUNDARY OF PROPOSED LICENCE AREA
- STUDY AREA (120m from Boundary of Proposed Licence Area)
- SIGNIFICANT WOODLAND
- NATURAL HERITAGE BUFFER
- EXTRACTION LIMITS
- INFILTRATION AREA
- GRADED MEADOW REHABILITATION
- PREFERRED COMPENSATION AREA (Particularly for Wooded Replication)

REFERENCES

BING IMAGERY AS OF NOVEMBER 19 (IMAGE DATE UNKNOWN); AND
HARRINGTON McAVAN LTD. OPERATIONAL PLAN PHASE A, PROJECT No. 23-20; JUNE 2025.

NOTES

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ALL LOCATIONS ARE APPROXIMATE.

0 50 100 150 200 250m

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PROJECT
NATURAL ENVIRONMENT REPORT
1830 WRIGLEY ROAD
AYR, ONTARIO

TITLE
MITIGATION MEASURES AND COMPENSATION

Drawn: DCH	Scale: 1:5,000	Figure: 9
Checked:	Project No.: 52827-301	
Date: 2025-07-11	Rev No.: 0	

Appendix A

Species Records Review Tables

Threatened or Endangered Species

Common Name	SARO	Source	Habitat Requirements[2] and Range	Habitat in Extraction Area	Habitat in Licence Area	Habitat on Adjacent Lands	Rationale
Plants							
Butternut *Juglans cinerea*	END	SARO	Usually found alone or in small groups in deciduous forests with moist, well-drained soils. Often occurs along streams. Butternut require sunny conditions and therefore are often found in canopy openings or near forest edges. Range: Found throughout the southwest, north to the Bruce Peninsula, and south of the Canadian Shield.	No	No	Yes	Potential forest habitat north and east of the Licence Area may support this species. Although no Butternut was observed within the Licence Area during the preliminary site visit, suitable habitat may occur on the adjacent lands.
Fern-leaved Yellow False Foxglove *Aureolaria pedicularia*	THR	NHIC	Found in open savannas and woodlands with Black Oak as its preferred host tree. Range: 6 subpopulations in Hamilton, Halton, Lambton, Norfolk, and Niagara. Large extant populations at Pinery Complex and Turkey Point.	No	No	No	There are no open savannahs within the Study Area. No Black Oak was observed within the Study Area to support this species.
Birds							
Acadian Flycatcher *Empidonax virescens*	END	OBBA	Typically found in mature, interior forest habitat within shady forest ravines with American Beech or Eastern hemlock. Nest placement near the tip of a lower limb on a tree, often over water. Nest often looks messy and scraggly. Range: Nests only in southwestern Ontario, mostly in large forest and forested ravines near the shore of Lake Erie.	No	Yes	Yes	Potential swamp habitat to support this species may be associated with the PSW, significant woodlands and Cedar Creek where interior habitat conditions are supported.
Bank Swallow *Riparia riparia*	THR	OBBA	Nests in natural and disturbed settings where there are vertical faces in silt and sand deposits. Many found along rivers and lakes, but also in active sand and gravel pits. Range: Found across southern Ontario, sparse in northern Ontario. Largest populations found along Lake Erie and Lake Ontario shorelines, and along the Saugeen River.	No	No	Yes	The adjacent aggregate operations to the east may provide suitable nesting habitat for this species.
Bobolink *Dolichonyx oryzivorus*	THR	NHIC, OBBA	Found in large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields, marshes. Grasslands size requirements have been reported to range from 5 ha to 50 ha depending on the study (MECP, 2021). Range: Widely distributed throughout most of the province south of the boreal forest. May be found in the north where suitable habitat exists.	No	No	No	Cultural meadow habitat within the Licence Area is approximately 3 ha in size and does not meet the minimum size thresholds for this species. No individuals were recorded during breeding bird surveys.

Threatened or Endangered Species

Common Name	SARO	Source	Habitat Requirements[2] and Range	Habitat in Extraction Area	Habitat in Licence Area	Habitat on Adjacent Lands	Rationale
Cerulean Warbler *Setophaga cerulean*	THR	OBBA	Breeding is associated with large tracts of mature deciduous forests with tall trees and open understory. Found in both wet bottomlands and upland areas. Range: Populations in southern Ontario are separated into two distinct bands: one from southern Lake Huron to western Lake Ontario, and further north, the other from the Bruce Peninsula and Georgian Bay area to the Ottawa River.	No	Yes	Yes	Potential suitable mature forest habitat overlaps the Licence Area and extends onto the adjacent lands to the north and northeast.
Chimney Swift *Chaetura pelagica*	THR	OBBA	Found in urban and rural areas near buildings. Nest and roosts in hollow trees, crevices of rock cliffs and, most commonly, in unlined chimneys. Suitable sites are reused annually. Range: Estimated 7500 breeding individuals in Ontario; most widely distributed in the Carolinian south and southwest.	No	No	No	There are no urban buildings with suitable chimneys within the Study Area to support the nesting habitat of this species.
Eastern Meadowlark *Sturnella magna*	THR	NHIC, OBBA	Breeds mostly in moderately tall grasslands (native prairies and savannahs), also pastures, hayfields, herbaceous fencerows, roadsides, orchards, airports, shrubby overgrown fields, or other open areas. Eastern Meadowlarks may not be strongly area-sensitive (McCracken et al., 2013), however large tracts of grasslands (5 ha or greater) are preferred over smaller fragments (Herkert, 1991; Vickery et al., 1994). Range: Primarily found south of the Canadian Shield, but also inhabits Lake Nipissing, Timiskaming, and Lake of Woods areas.	No	No	No	Cultural meadow habitat within the Licence Area is approximately 3 ha in size and does not meet the minimum size thresholds for this species. No individuals were recorded during breeding bird surveys.
Henslow's Sparrow *Ammodramus henslowii*	END	OBBA	Nests only in moist to wet multi-year fallow fields of primarily tall grasses interspersed with tall herbaceous plants or shrubs. Distribution is extremely low and unpredictable in most of southern Ontario; no confirmed breeding was documented in the second Ontario Breeding Bird Atlas (2001-2005; Cadman et al. 2008). Adults infrequently observed as they remain below thatch. Range: Breeds in southern Ontario.	No	Yes	No	Potential habitat for this species is present within the Licence Area as the cultural meadow is interspersed with shrubs and trees. The agricultural field to the west and north of the previous residential buildings has been fallow for 2 years at the writing of this report. No individuals were recorded during breeding bird surveys.
Least Bittern *Ixobrychus exilis*	THR	NHIC, OBBA	Found in large marshes (> 5ha) or marshy borders of lakes, ponds, streams, ditches with dense emergent vegetation of cattails, bulrush, and sedges. Nests in primarily in cattails, 10m from open water. Range: Majority of the 1500 Canadian pairs found south of the Canadian Shield in central, eastern, and southern Ontario.	No	Yes	Yes	Suitable marsh habitat to support this species may be associated with the PSW located within, and adjacent to, the Licence Area.

Threatened or Endangered Species

Common Name	SARO	Source	Habitat Requirements[2] and Range	Habitat in Extraction Area	Habitat in Licence Area	Habitat on Adjacent Lands	Rationale
Fishes							
Black Redhorse *Moxostoma duquesnei*	THR	DFO, NHIC	Lives in pools and riffles of medium rivers and streams (<2m deep). Moderate to fast current, sandy or gravel bottom, sparse vegetation. Range: Southwestern Ontario; Bayfield River, Maitland River, Ausable River, Grand River, Thames River, and Spencer Creek watersheds.	No	Yes	Yes	As per the DFO aquatic species at risk mapping, habitat for Black Redhorse is present within Cedar Creek.
Silver Shiner *Notropis photogenis*	THR	NHIC	Prefers moderate to large size streams with swift currents, free of weeds, clean gravel or boulder bottoms. Stream widths: 30-100m. Range: Southern Ontario; Grand and Thames River watersheds, Bronte Creek, and drainages of Great Lakes Erie, St. Clair, and Ontario.	No	Yes	Yes	Potential suitable habitat for this species may be present within Cedar Creek.
Reptiles							
Blanding's Turtle *Emydoidea blandingii*	THR	NHIC, ORAA	Lives in shallow water, usually large wetlands, and shallow lakes with lots of water vegetation – darkly coloured water with high productivity, but also observed in clear waters. Sometimes hundreds of meters from water when finding a new nesting site or mate. Nestings sites are open habitats with low vegetation cover and high sun exposure, with sand, organic soil, gravel, cobblestone substrates. Overwinters in substrate beneath standing permanent or temporary water bodies, can overwinter in relatively shallow water (7cm).Can make long-distance overland movements between wetlands. Range: Great Lakes/St. Lawrence population primarily in southern Ontario.	No	Yes	Yes	Potential suitable wetland habitat for this species may be associated with the PSW and Cedar Creek.
Amphibians							
Unisexual Ambystoma (Jefferson Salamander dependent population) *Ambystoma laterale-(2) jeffersonianum*	END	NHIC, ORAA	Live in leaf litter, under logs, and in underground cavities in deciduous and mixed forests that are in close proximity to breeding habitats (vernal pools or fish-free permanent wetlands). Range: Restricted to southern Ontario, mainly along the Niagara Escarpment.	No	Yes	Yes	Potential suitable habitat for this species may be present in the PSW and significant woodlands.

Threatened or Endangered Species

Common Name	SARO	Source	Habitat Requirements[2] and Range	Habitat in Extraction Area	Habitat in Licence Area	Habitat on Adjacent Lands	Rationale
Mammals							
American Badger *Taxidea taxus*	END	NHIC	Variety of habitats including tall grass prairies, sand barrens, open grassland, and farmland. Range: Southwestern Ontario, close to Lake Erie in the Norfolk and Middlesex area. Northwestern population in Thunder Bay and Rainy River Districts.	No	No	Yes	Potential habitat to support this species may occur in association with cultural meadow habitat and fallow agricultural fields present within the Licence Area. No burrows were observed within the Licence Area. Additional farmland is present on the adjacent lands which may provide suitable habitat.
Eastern Red Bat *Lasiurus borealis*	END	NHIC	Roosts in foliage of coniferous and deciduous trees and shrubs. Typically prefer tall trees at least the height of the canopy; however, will use shrubs and trees greater than 5 m. Foraging habitat includes both forested and unforested habitat (COSEWIC, 2023).	Yes	Yes	Yes	There are potential candidate bat maternity roosts within the PSW and associated significant woodlands identified within, and adjacent to, the Licence Area. Treed habitat (i.e., Polygon 2) within the ridgeline transversing the Licence Area may also support SAR bats. Twenty-six candidate bat maternity roosts (including trees with leaf clusters) were observed within Polygon 2 during the tree inventory.
Eastern Small-footed Myotis *Myotis leibii*	END	SARO	Roosts in caves, mine shafts, crevices, or buildings in or near a woodland. Hibernates in cold dry caves or mines. Range: From south of Georgian Bay to Lake Erie, east to Pembroke.	No	No	No	There are no caves, mine shafts or crevices within the Study Area to support this species.
Hoary Bat *Lasiurus cinereus*	END	SARO	Roosts in foliage of coniferous and deciduous trees and shrubs. Typically prefer tall trees at least the height of the canopy; however, will use shrubs and trees greater than 5 m. Foraging habitat includes open wetlands, grasslands and fields with some trees (COSEWIC, 2023).	Yes	Yes	Yes	There are potential candidate bat maternity roosts within the PSW and associated significant woodlands identified within, and adjacent to, the Licence Area. Treed habitat (i.e., Polygon 2) within the ridgeline transversing the Licence Area may also support SAR bats. Twenty-six candidate bat maternity roosts (including trees with leaf clusters) were observed within Polygon 2 during the tree inventory.

Threatened or Endangered Species

Common Name	SARO	Source	Habitat Requirements[2] and Range	Habitat in Extraction Area	Habitat in Licence Area	Habitat on Adjacent Lands	Rationale
Little Brown Myotis *Myotis lucifugus*	END	SARO	Little Brown Myotis roosts in caves, quarries, tunnels, hollow trees, or buildings. Little Brown Myotis typically prefer buildings or building-associated features for maternity roosting rather than natural features (Gerson, 1984; Humphrey & Fotherby, 2019). This species hibernates in humid caves and forages in wetlands and forest edges. Range: Widespread across southern Ontario.	Yes	Yes	Yes	There are potential candidate bat maternity roosts within the PSW and associated significant woodlands identified within, and adjacent to, the Licence Area. Treed habitat (i.e., Polygon 2) within the ridgeline transversing the Licence Area may also support SAR bats. Twenty-six candidate bat maternity roosts (including trees with leaf clusters) were observed within Polygon 2 during the tree inventory.
Northern Myotis *Myotis septentrionalis*	END	SARO	Roosts in houses, manmade structures, but prefers hollow trees or under loose bark. Hunts in forests. Range: Throughout forested areas in southern Ontario.	Yes	Yes	Yes	There are potential candidate bat maternity roosts within the PSW and associated significant woodlands identified within, and adjacent to, the Licence Area. Treed habitat (i.e., Polygon 2) within the ridgeline transversing the Licence Area may also support SAR bats. Twenty-six candidate bat maternity roosts (including trees with leaf clusters) were observed within Polygon 2during the tree inventory.
Silver-haired Bat *Lasionycteris noctivagans*	END	SARO	Roosts in coniferous and deciduous tree cavities and under bark. May occasionally roost in buildings (COSEWIC, 2023).	Yes	Yes	Yes	There are potential candidate bat maternity roosts within the PSW and associated significant woodlands identified within, and adjacent to, the Licence Area. Treed habitat (i.e., Polygon 2) within the ridgeline transversing the Licence Area may also support SAR bats. Twenty-six candidate bat maternity roosts (including trees with leaf clusters) were observed within Polygon 2 during the tree inventory.

Threatened or Endangered Species

Common Name	SARO	Source	Habitat Requirements[2] and Range	Habitat in Extraction Area	Habitat in Licence Area	Habitat on Adjacent Lands	Rationale
Tri-colored Bat *Perimyotis subflavus*	END	SARO	Roosts in older forests and occasionally barns/structures. Hibernate in damp, draft-free caves. Hunt over water and along streams in a forest.	Yes	Yes	Yes	There are potential candidate bat maternity roosts within the PSW and associated significant woodlands identified within, and adjacent to, the Licence Area. Treed habitat (i.e., Polygon 2) within the ridgeline transversing the Licence Area may also support SAR bats. Twenty-six candidate bat maternity roosts (including trees with leaf clusters) were observed within Polygon 2 during the tree inventory.

Special Concern Species

Common Name	Source	Habitat Requirements[2]	Habitat in Extraction Area	Habitat in Licence Area	Habitat on Adjacent Lands	Rationale
Plants						
Green Dragon *Arisaema dracontium*	NHIC	Grows in moderate to wet deciduous forests along streams, associated highly with maple forests and forests dominated by Red Ash and White Elm. Range: Great Lakes Region; specifically, southwestern Ontario.	No	No	No	No individuals were observed within the Extraction Area. The preferred habitat of this species is characterized by moderate to wet deciduous forests along streams, dominated by Maple, Red Ash and White Elm. Forested communities adjacent to Cedar Creek (i.e., Polygon 3, 3a and 4) are dominated by coniferous species and are not considered to represent the preferred habitat of this species. The FOD5-1 community (i.e., Polygon 5) is dominated by Sugar Maple but is far removed from Cedar Creek and would therefore not meet suitable habitat criteria.
Birds						
Bald Eagle *Haliaeetus leucocephalus*	OBBA	Nest in a variety of habitats and forests in close proximity to a major lake or river. Range: Higher density of nesting in northwest Ontario, with successful reintroductions in southern Ontario.	No	No	No	There are no major lakes or rivers present within the Study Area to support this species.
Barn Swallow *Hirundo rustica*	OBBA	Barn Swallows are typically found nesting in close association with human rural settlements, such as in old sheds, barns, and under bridges or culverts. This species forages for aerial insects in open habitats including grassy fields, pastures, agricultural fields and farms, lake and river shorelines, wetlands, and clearings. Range: Throughout southern Ontario and as far north as Hudson Bay.	No	No	Yes	There are no urban buildings within the Study Area to support nesting of this species. The barns to the west of the Licence Area may support Barn Swallow nesting. Barn Swallows were observed foraging over Polygons 1, 2 and the agricultural lands during targeted breeding bird surveys.

Special Concern Species

Common Name	Source	Habitat Requirements[2]	Habitat in Extraction Area	Habitat in Licence Area	Habitat on Adjacent Lands	Rationale
Canada Warbler *Cardellina canadensis*	OBBA	Breeds in deciduous and coniferous forests, usually wet, with developed and dense shrub layer. Range: Breeding range is the Boreal Shield, north to the Hudson Plains and south to the Mixedwood Plains. Most abundant along the Southern Shield.	No	Yes	Yes	There is potential suitable habitat for this species within the PSW and significant woodlands.
Eastern Wood-Pewee *Contopus virens*	OBBA	Lives in mid-canopy layer of forest clearings and the edges of deciduous and mixed forests. Abundant in middle-aged forests with little understory. Range: Found across most of southern and central Ontario.	No	Yes	Yes	There is potential suitable habitat for this species within the PSW and significant woodlands. The cultural woodland within the extraction area may support low quality habitat for this species but, given the proximity of significant woodlands, is not considered to be integral to supporting Eastern Wood-Pewee populations on the landscape. No individuals were recorded within Polygon 2 during breeding bird surveys. One singing male was recorded within the Licence Area and on the adjacent lands.
Grasshopper Sparrow *Ammodramus savannarum*	NHIC, OBBA	Lives in open grasslands with well-drained sandy soil. Nests in hayfields and pastures, preferring areas with sparse vegetation. Range: Southern Ontario, occasionally the Canadian Shield.	No	No	No	There is marginal habitat within the Licence Area to support this species. There is approximately 3 ha of cultural meadow that may provide habitat. No individuals were recorded during breeding bird surveys.
Wood Thrush *Hylocichla mustelina*	OBBA	Lives in mature deciduous and mixed forests, seeking moist stands with well-developed undergrowth. Prefer large forests but will use smaller. Range: Across southern Ontario, less common up north to Lake Superior.	No	Yes	Yes	There is potential suitable habitat for this species within PSW and significant woodlands. The cultural woodland within the extraction area may support low quality habitat for this species but, given the proximity of significant woodlands, is not considered to be integral to supporting Wood Thrush populations on the landscape. No individuals were recorded within Polygon 2 during targeted breeding bird surveys.

Special Concern Species

Common Name	Source	Habitat Requirements[2]	Habitat in Extraction Area	Habitat in Licence Area	Habitat on Adjacent Lands	Rationale
Reptiles						
Eastern Ribbon Snake *Thamnophis sauritus*	NHIC	Found close to water, often marshes. Range: Southern and Eastern Ontario, locally common in Bruce Peninsula, Georgian Bay, and eastern Ontario.	No	Yes	Yes	There is potential suitable wetland habitat associated with Cedar Creek on the adjacent lands and License Area.
Snapping Turtle *Chelydra serpentina*	NHIC, ORAA	Spend most of their time in water, preferring shallow waters to hide in soft mud and leaf litter. Nest in gravelly or sandy areas along streams, taking advantage of man-made structures for nesting sites, including roads, dams, and aggregate pits. Range: Limited to southern part of Ontario.	No	Yes	Yes	There is potential suitable habitat for this species associated with the PSW and Cedar Creek.
Insects						
Monarch *Danaus plexippus*	OBA	Caterpillars confined to areas with milkweed. Adults use diverse habitats with a variety of wildflowers. Range: Most abundant in southern Ontario. During migration, thousands can be seen along the north shores of Lakes Ontario and Erie.	No	No	No	Common Milkweed (*Asclepias syriaca*), a known host plant for this species, was documented within the CUM1 vegetation community and two Monarch were observed within Polygon 2. This species relies on abundant concentrations of Milkweed occurring in association with nectaring plants. As Milkweed occurred in low to occasional abundance and monarch specific nectaring plant species (based on species information available around the Great Lakes) were rare within the community, this habitat is not considered representative of significant breeding habitat.

References

COSEWIC. 2023. COSEWIC assessment and status report on the Hoary Bat *Lasiurus cinereus*, Eastern Red Bat *Lasiurus borealis* and Silver-haired Bat, *Lasionycteris noctivagans*, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxi + 100 pp.

Environment and Climate Change Canada (ECCC). 2021. *Species at risk public registry.* Government of Canada. Retrieved from https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html \

Gerson, H. 1984. Habitat Management Guidelines for Bats of Ontario. Ontario Ministry of Natural Resources. 42 pp.

Herkert, J.R. 1991. Prairie birds of Illinois: population response to two centuries of habitat change. Illinois Natural History Survey Bulletin, 34:393-399.

Humphrey, C. and Fotherby, H. 2019. Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Ontario. Ontario Recovery Strategy Series. Prepared by the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. vii + 35 pp. + Appendix. Adoption of the Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), the Northern Myotis (*Myotis septentrionalis*), and the Tricolored Bat (*Perimyotis subflavus*) in Canada (Environment and Climate Change Canada 2018).

McCracken, J.D., R.A. Reid, R.B. Renfrew, B. Frei, J.V. Jalava, A. Cowie, and A.R. Couturier. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. viii + 88 pp.

Ministry of the Environment, Conservation and Parks (MECP). 2021. Bobolink General Habitat Description. Retrieved from https://www.ontario.ca/page/bobolink-general-habitat-description

[2]Ministry of the Environment, Conservation and Parks. 2018. *Species at risk in Ontario.* Government of Ontario. Retrieved from https://www.ontario.ca/page/species-risk-ontario#section-3

Ministry of Mines, Ministry of Northern Development, and Ministry of Natural Resources and Forestry. 2020. *Appendix G: Wildlife habitat matrices and habitat descriptions for rare vascular plants.* Government of Ontario. Retrieved from https://www.ontario.ca/document/significant-wildlife-habitat-technical-guide/appendix-g-wildlife-habitat-matrices-and-habitat-descriptions-rare-vascular-plants

Ministry of Natural Resources (MNR). n.d. General Habitat Description for the Bobolink (*Dolichonyx oryzivorus*). Retrieved from https://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_ghd_bblnk_en.pdf

Vickery, P.D., Hunter Jr., M.L. and Melvin, S.M. 1994. Effects of habitat area on the distribution of grassland birds in Maine. Conservation Biology 8:1087-1097.

Appendix B

Ecological Land Classification Information

ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

SITE: 52827-301		POLYGON:	
SURVEYOR(S): WH	DATE: Oct. 10	TIME: start	
		finish	
UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☐ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
	☐ ACIDIC BEDRK.	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDRK.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDRK.	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE / CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH / BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER			☐ OPEN		
☐ SHALLOW WATER			☐ SHRUB		
☐ SURFICIAL DEP.			☐ TREED		
☐ BEDROCK					

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

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

CVR CODES 0= NONE 1= 0% < CVR 10% 2= 10 < CVR 25% 3= 25 < CVR 60% 4= CVR > 60%

STAND COMPOSITION:	BA:

SIZE CLASS ANALYSIS:		< 10		10 - 24		25 - 50		> 50
STANDING 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

COMM. AGE :		PIONEER		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES / GLEY	g =	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:	CULTURAL	CU
COMMUNITY SERIES:	MEADOW	CUM
ECOSITE:	MINERAL	CUM1
VEGETATION TYPE:		
INCLUSION		
COMPLEX		

Notes:

ELC
MANAGEMENT / DISTURBANCE

SITE:
POLYGON:
DATE:
SURVEYOR(S):

DISTURBANCE EXTENT	0	1	2	3	SCORE †
TIME SINCE LOGGING	> 30 YRS	15 - 30 YRS	5 - 15 YRS	0 - 5 YEARS	
INTENSITY OF LOGGING	NONE	FUEL WOOD	SELECTIVE	DIAMETER LIMIT	
EXTENT OF LOGGING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
SUGAR BUSH OPERATIONS	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF OPERATIONS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
GAPS IN FOREST CANOPY	NONE	SMALL	INTERMEDIATE	LARGE	
EXTENT OF GAPS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
LIVESTOCK (GRAZING)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF LIVESTOCK	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ALIEN SPECIES	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF ALIEN SPECIES	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
PLANTING (PLANTATION)	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF PLANTING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
TRACKS AND TRAILS	NONE	FAINT TRAILS	WELL MARKED	TRACKS OR	
EXTENT OF TRACKS/TRAILS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DUMPING (RUBBISH)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DUMPING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
EARTH DISPLACEMENT	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISPLACEMENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
RECREATIONAL USE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF RECR. USE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
NOISE	NONE	SLIGHT	MODERATE	INTENSE	
EXTENT OF NOISE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DISEASE/DEATH OF TREES	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISEASE / DEATH	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
WIND THROW (BLOW DOWN)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF WIND THROW	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BROWSE (e.g. DEER)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BROWSE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BEAVER ACTIVITY	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BEAVER	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FLOODING (pools & puddling)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FLOODING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FIRE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FIRE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ICE DAMAGE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF ICE DAMAGE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
OTHER	NONE	LIGHT	MODERATE	HEAVY	
EXTENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	

† INTENSITY x EXTENT = SCORE

ELC
PLANT SPECIES LIST

SITE: 52827-301
POLYGON: 1
DATE: Oct. 10, 2024
SURVEYOR(S): WL, ER

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.
MORalb					
PICEabi					
THUocc					
JUNvir					
MALpum					
ACERneg					
FRAXpen					
JUGLnig			R		
VIBLace					
ELAEumb					
CORNrac					
LONIdat					
RUBUocc					

SPECIES CODE	LAYER 1	2	3	4	COL.
SOLAdul				R	
GERArob					
FRAGvir					
VEROoff					
MUNLfro					
AGROsca					
CLINvul					
ANEMvir					
SOLInem					
ACHImil					
DIPSful					
ERIGcan					
VERSthe					
PANIdic					
ECHIvul					
SOLIalt					
SYMPeri					
ASCLsyr					
DACTglo					
SYMPnov					
EQUIra					
BROMine					
DAUCcar					
CIRSarv					
SOLIcan					
GALImol					
SYMPpir					

ELC
PLANT SPECIES LIST

SITE:
POLYGON:
DATE:
SURVEYOR(S):

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.

SPECIES CODE	LAYER 1	2	3	4	COL.

ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

SITE: 52827-301		POLYGON: 2	
SURVEYOR(S): WD, ER	DATE:	TIME: start	
		finish	
UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☐ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
	☐ ACIDIC BEDRK.	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDRK.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDRK.	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE / CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH / BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	☐ OPEN
☐ SHALLOW WATER	☐ SHRUB
☐ SURFICIAL DEP.	☐ TREED
☐ BEDROCK	

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	1		PINUstro > ACERsah = PRUNser
2	SUB-CANOPY			THUJocc = ACERsah = PRUNser
3	UNDERSTOREY			
4	GRD. LAYER			

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

CVR CODES 0= NONE 1= 0% < CVR 10% 2= 10 < CVR 25% 3= 25 < CVR 60% 4= CVR > 60%

STAND COMPOSITION:	BA:

		< 10		10 - 24		25 - 50		> 50
SIZE CLASS ANALYSIS:								
STANDING SNAGS:								
DEADFALL / LOGS:								

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE :		PIONEER		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES / GLEY	g =	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:	CULTURAL	CU
COMMUNITY SERIES:	WOODLAND	CUW
ECOSITE:	MINERAL	CUW1
VEGETATION TYPE:		
INCLUSION		
COMPLEX		

Notes:

ELC
MANAGEMENT / DISTURBANCE

SITE:
POLYGON:
DATE:
SURVEYOR(S):

DISTURBANCE EXTENT	0	1	2	3	SCORE †
TIME SINCE LOGGING	> 30 YRS	15 - 30 YRS	5 - 15 YRS	0 - 5 YEARS	
INTENSITY OF LOGGING	NONE	FUEL WOOD	SELECTIVE	DIAMETER LIMIT	
EXTENT OF LOGGING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
SUGAR BUSH OPERATIONS	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF OPERATIONS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
GAPS IN FOREST CANOPY	NONE	SMALL	INTERMEDIATE	LARGE	
EXTENT OF GAPS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
LIVESTOCK (GRAZING)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF LIVESTOCK	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ALIEN SPECIES	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF ALIEN SPECIES	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
PLANTING (PLANTATION)	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF PLANTING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
TRACKS AND TRAILS	NONE	FAINT TRAILS	WELL MARKED	TRACKS OR	
EXTENT OF TRACKS/TRAILS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DUMPING (RUBBISH)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DUMPING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
EARTH DISPLACEMENT	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISPLACEMENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
RECREATIONAL USE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF RECR. USE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
NOISE	NONE	SLIGHT	MODERATE	INTENSE	
EXTENT OF NOISE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DISEASE/DEATH OF TREES	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISEASE / DEATH	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
WIND THROW (BLOW DOWN)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF WIND THROW	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BROWSE (e.g. DEER)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BROWSE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BEAVER ACTIVITY	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BEAVER	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FLOODING (pools & puddling)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FLOODING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FIRE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FIRE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ICE DAMAGE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF ICE DAMAGE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
OTHER	NONE	LIGHT	MODERATE	HEAVY	
EXTENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	

† INTENSITY x EXTENT = SCORE

ELC
PLANT SPECIES LIST

SITE: 52827-301
POLYGON: 2
DATE: Oct. 10 2024
SURVEYOR(S): WN ER

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.
PINUstr					
THUJocc					
ACERsah					
PRUNser					
OSTRvir					
POPUtre					
ACERneg					
CELTocc					
ACERrub					
CARYova					
QUERpal					
MORUalb					
CRATpun					
RIBEcyn					
CARPcar					
RHAMcat					

SPECIES CODE	LAYER 1	2	3	4	COL.
LEONcar					
ROSSnig					
LYSIcil					
DRYOcar					
FRAGvir					
GERArob					
SOLIcan					
HESPmat					

Page ..... of .....

ELC
PLANT SPECIES LIST

SITE:
POLYGON:
DATE:
SURVEYOR(S):

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.

SPECIES CODE	LAYER 1	2	3	4	COL.

Page ..... of .....

ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

SITE: 52827-301		POLYGON: 3	
SURVEYOR(S):	DATE:	TIME: start	
		finish	
UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☐ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
	☐ ACIDIC BEDRK.	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDRK.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDRK.	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE / CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH / BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	☐ OPEN
☐ SHALLOW WATER	☐ SHRUB
☐ SURFICIAL DEP.	☐ TREED
☐ BEDROCK	

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	1	4	PINUstr > TSUGcan > ACERsub
2	SUB-CANOPY	2	3	THUocc > BETall > ACERrub = TSUGcan
3	UNDERSTOREY			
4	GRD. LAYER			

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

CVR CODES 0= NONE 1= 0% < CVR 10% 2= 10 < CVR 25% 3= 25 < CVR 60% 4= CVR > 60%

STAND COMPOSITION:	BA:

SIZE CLASS ANALYSIS:	☐	< 10	☐	10 - 24	☐	25 - 50	☐	> 50
STANDING 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

COMM. AGE :	☐	PIONEER	☐	YOUNG	☐	MID-AGE	☐	MATURE	☐	OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES / GLEY	g =	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:	SWAMP	SW
COMMUNITY SERIES:	MIXED	SWM
ECOSITE:	MAPLE ~~ORGANIC~~	SWM5
VEGETATION TYPE:	RED MAPLE-CONIFER ORG. MIXED SWAMP	SWM5-1
☐ INCLUSION		
☐ COMPLEX		

Notes:

ELC
MANAGEMENT / DISTURBANCE

SITE:
POLYGON:
DATE:
SURVEYOR(S):

DISTURBANCE EXTENT	0	1	2	3	SCORE †
TIME SINCE LOGGING	> 30 YRS	15 - 30 YRS	5 - 15 YRS	0 - 5 YEARS	
INTENSITY OF LOGGING	NONE	FUEL WOOD	SELECTIVE	DIAMETER LIMIT	
EXTENT OF LOGGING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
SUGAR BUSH OPERATIONS	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF OPERATIONS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
GAPS IN FOREST CANOPY	NONE	SMALL	INTERMEDIATE	LARGE	
EXTENT OF GAPS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
LIVESTOCK (GRAZING)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF LIVESTOCK	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ALIEN SPECIES	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF ALIEN SPECIES	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
PLANTING (PLANTATION)	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF PLANTING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
TRACKS AND TRAILS	NONE	FAINT TRAILS	WELL MARKED	TRACKS OR	
EXTENT OF TRACKS/TRAILS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DUMPING (RUBBISH)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DUMPING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
EARTH DISPLACEMENT	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISPLACEMENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
RECREATIONAL USE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF RECR. USE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
NOISE	NONE	SLIGHT	MODERATE	INTENSE	
EXTENT OF NOISE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DISEASE/DEATH OF TREES	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISEASE / DEATH	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
WIND THROW (BLOW DOWN)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF WIND THROW	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BROWSE (e.g. DEER)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BROWSE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BEAVER ACTIVITY	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BEAVER	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FLOODING (pools & puddling)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FLOODING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FIRE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FIRE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ICE DAMAGE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF ICE DAMAGE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
OTHER	NONE	LIGHT	MODERATE	HEAVY	
EXTENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	

† INTENSITY x EXTENT = SCORE

ELC
PLANT SPECIES LIST

SITE: 52827-301
POLYGON: 3
DATE: Oct 10, 2024
SURVEYOR(S): WH, ER

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.
BETUall					
THUJocc					
EQUMame					
TILame					
ACERrub					
SAMBcan					
BERBthu					
ALNUglu					
RUBUhis					

SPECIES CODE	LAYER 1	2	3	4	COL.
SYMPcor					
THELpal					
GLYCstr					
ATHYfil					
CARElupuli					
GOLDthread					
MITCrep					
SOLAdul					
MAIAcan					
SOLIrug					
BIDEfro					
CICUmac					
ARALnud					
EQUIsci					
SOLIfle					
LAPOcan					
PRUNvul					
EUPAper					
LOBEsip					
SOLIpat					
LYCOame					
IMPAcap					
EQUIarv					
SYMPfae					
TIARcor					
OSMUcin					
TUSSfar					
EPIPhel					
DRYOmar					
ONOCsen					

ELC
PLANT SPECIES LIST

SITE:
POLYGON:
DATE:
SURVEYOR(S):

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.

SPECIES CODE	LAYER 1	2	3	4	COL.

ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

SITE: 52827-301		POLYGON: 4	
SURVEYOR(S): WH	DATE: Oct. 10	TIME: start	
		finish	
UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☐ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
	☐ ACIDIC BEDRK.	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDRK.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDRK.	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE / CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH / BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	☐ OPEN
☐ SHALLOW WATER	☐ SHRUB
☐ SURFICIAL DEP.	☐ TREED
☐ BEDROCK	

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

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

CVR CODES 0= NONE 1= 0% < CVR 10% 2= 10 < CVR 25% 3= 25 < CVR 60% 4= CVR > 60%

STAND COMPOSITION:	BA:

SIZE CLASS ANALYSIS:		< 10		10 - 24		25 - 50		> 50
STANDING 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

COMM. AGE :		PIONEER		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES / GLEY	g =	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:	FOREST	FO
COMMUNITY SERIES:	CONIFEROUS	FOC
ECOSITE:	DRY-FRESH PINE	FOC1
VEGETATION TYPE:		
INCLUSION		
COMPLEX		

Notes: ON A STEEP SLOPE

ELC
MANAGEMENT / DISTURBANCE

SITE:
POLYGON:
DATE:
SURVEYOR(S):

DISTURBANCE EXTENT	0	1	2	3	SCORE †
TIME SINCE LOGGING	> 30 YRS	15 - 30 YRS	5 - 15 YRS	0 - 5 YEARS	
INTENSITY OF LOGGING	NONE	FUEL WOOD	SELECTIVE	DIAMETER LIMIT	
EXTENT OF LOGGING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
SUGAR BUSH OPERATIONS	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF OPERATIONS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
GAPS IN FOREST CANOPY	NONE	SMALL	INTERMEDIATE	LARGE	
EXTENT OF GAPS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
LIVESTOCK (GRAZING)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF LIVESTOCK	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ALIEN SPECIES	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF ALIEN SPECIES	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
PLANTING (PLANTATION)	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF PLANTING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
TRACKS AND TRAILS	NONE	FAINT TRAILS	WELL MARKED	TRACKS OR	
EXTENT OF TRACKS/TRAILS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DUMPING (RUBBISH)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DUMPING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
EARTH DISPLACEMENT	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISPLACEMENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
RECREATIONAL USE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF RECR. USE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
NOISE	NONE	SLIGHT	MODERATE	INTENSE	
EXTENT OF NOISE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DISEASE/DEATH OF TREES	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISEASE / DEATH	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
WIND THROW (BLOW DOWN)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF WIND THROW	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BROWSE (e.g. DEER)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BROWSE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BEAVER ACTIVITY	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BEAVER	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FLOODING (pools & puddling)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FLOODING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FIRE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FIRE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ICE DAMAGE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF ICE DAMAGE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
OTHER	NONE	LIGHT	MODERATE	HEAVY	
EXTENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	

† INTENSITY x EXTENT = SCORE

ELC
PLANT SPECIES LIST

SITE: 52827-301
POLYGON: 4
DATE: Oct. 10, 2024
SURVEYOR(S): WN, ER

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.
PINUstr					
PRUNser					
TIARloc					
ACERsah					
OSTRvir					
RHAMcat					

SPECIES CODE	LAYER 1	2	3	4	COL.
POLYacr					
DRYOmar					
GERArob					
DRYOcar					
NEPA					not acute
MALAcan					
MITEper					
GOBE inf					
ACTA pac					

ELC
PLANT SPECIES LIST

SITE:
POLYGON:
DATE:
SURVEYOR(S):

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.

SPECIES CODE	LAYER 1	2	3	4	COL.

ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

SITE: 52827-301		POLYGON: 5	
SURVEYOR(S):	DATE:	TIME: start	
		finish	
UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☐ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
	☐ ACIDIC BEDRK.	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDRK.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDRK.	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE / CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH / BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	☐ OPEN
☐ SHALLOW WATER	☐ SHRUB
☐ SURFICIAL DEP.	☐ TREED
☐ BEDROCK	

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

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

CVR CODES 0= NONE 1= 0% < CVR 10% 2= 10 < CVR 25% 3= 25 < CVR 60% 4= CVR > 60%

STAND COMPOSITION:	BA:

SIZE CLASS ANALYSIS:		< 10		10 - 24		25 - 50		> 50
STANDING 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

COMM. AGE :		PIONEER		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES / GLEY	g =	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:		FO
COMMUNITY SERIES:		FOD
ECOSITE:		FOD5
VEGETATION TYPE:		FOD5-1
INCLUSION		
COMPLEX		

Notes:

ELC
MANAGEMENT / DISTURBANCE

SITE:
POLYGON:
DATE:
SURVEYOR(S):

DISTURBANCE EXTENT	0	1	2	3	SCORE †
TIME SINCE LOGGING	> 30 YRS	15 - 30 YRS	5 - 15 YRS	0 - 5 YEARS	
INTENSITY OF LOGGING	NONE	FUEL WOOD	SELECTIVE	DIAMETER LIMIT	
EXTENT OF LOGGING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
SUGAR BUSH OPERATIONS	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF OPERATIONS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
GAPS IN FOREST CANOPY	NONE	SMALL	INTERMEDIATE	LARGE	
EXTENT OF GAPS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
LIVESTOCK (GRAZING)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF LIVESTOCK	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ALIEN SPECIES	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF ALIEN SPECIES	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
PLANTING (PLANTATION)	NONE	OCCASIONAL	ABUNDANT	DOMINANT	
EXTENT OF PLANTING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
TRACKS AND TRAILS	NONE	FAINT TRAILS	WELL MARKED	TRACKS OR	
EXTENT OF TRACKS/TRAILS	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DUMPING (RUBBISH)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DUMPING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
EARTH DISPLACEMENT	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISPLACEMENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
RECREATIONAL USE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF RECR. USE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
NOISE	NONE	SLIGHT	MODERATE	INTENSE	
EXTENT OF NOISE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
DISEASE/DEATH OF TREES	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF DISEASE / DEATH	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
WIND THROW (BLOW DOWN)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF WIND THROW	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BROWSE (e.g. DEER)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BROWSE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
BEAVER ACTIVITY	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF BEAVER	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FLOODING (pools & puddling)	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FLOODING	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
FIRE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF FIRE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
ICE DAMAGE	NONE	LIGHT	MODERATE	HEAVY	
EXTENT OF ICE DAMAGE	NONE	LOCAL	WIDESPREAD	EXTENSIVE	
OTHER	NONE	LIGHT	MODERATE	HEAVY	
EXTENT	NONE	LOCAL	WIDESPREAD	EXTENSIVE	

† INTENSITY x EXTENT = SCORE

ELC PLANT SPECIES LIST

SITE:	52827-301
POLYGON:	5
DATE:	Oct 10, 2024
SURVEYOR(S):	WW

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER				COL.	SPECIES CODE	LAYER				COL.
	1	2	3	4			1	2	3	4	
ACERsah											
PRUNser											
OSTRvir											
QUERrub											
PRUNvir											

ELC PLANT SPECIES LIST

SITE:	
POLYGON:	
DATE:	
SURVEYOR(S):	

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER				COL.	SPECIES CODE	LAYER				COL.
	1	2	3	4			1	2	3	4	

Appendix C

Significant Wildlife Habitat Table

ELCs Extraction Area: CUM1, CUW1, RES, AG
ELCs Licence Area: CUM1, CUW1, SWM5-1, FOM2, FOC1, RES, AG
ELCs Adjacent Lands: FOD5-1

Seasonal Concentration Areas of Animals

Wildlife Habitat	Suitable ELC Ecosite Code	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	Confirmed SWH
Waterfowl Stopover and Staging Areas (Terrestrial)	Yes – A CUM1 community are present within the Study Area.	Based on aerial imaging, no water is pooled within the Licence Area in the spring.	No	N/A	No
Waterfowl Stopover and Staging Areas (Aquatic)	No – Suitable ecosites are absent from the Study Area.	N/A	No	N/A	No
Shorebird Migratory Stopover Area	No – Suitable ecosites are absent from the Study Area.	No shorelines of lakes, rivers or wetlands, including beach areas, bars, seasonally flooded, muddy and un-vegetated shoreline habitat are present within the Study Area.	No	N/A	No
Raptor Wintering Area	Yes – FOD5-1, FOM2, FOC1, CUM1 and CUW1 communities are present within the Study Area.	Vegetation communities are greater than 20 ha in size and support a combination of upland and forest ecosites.	**Yes** (Extraction Area, Licence Area and Adjacent Lands)	No targeted studies were conducted within the Licence Area or on the adjacent lands to confirm the presence or absence of indicator species.	**Candidate** (Extraction Area, Licence Area and Adjacent Lands)
Bat Hibernacula	No – Suitable ecosites are absent from the Study Area.	No caves, mine shafts, underground foundations or Karsts were identified within the Study Area.	No	N/A	No
Bat Maternity Colonies	Yes – FOD5-1, FOM2 and SWM5-1 vegetation communities are present within the Study Area.	Mature deciduous forest stands containing large diameter snag trees (i.e., >25 cm DBH) occurring at sufficient densities (i.e., >10 snags/ha) to support maternity colonies occur within, and adjacent to, the Licence Area.	**Yes** (Licence Area and Adjacent Lands)	No targeted surveys were completed within the FOD5-1, FOM2 or SWM5-1.	**Candidate** (Licence Area and Adjacent Lands)
Turtle Wintering Areas	Yes – Cedar Creek is present within the northwest corner of the Licence Area and continues on the adjacent lands.	Cedar Creek is a deep natural watercourse feature that may support turtle over-wintering habitat.	**Yes** (Licence Area and Adjacent Lands)	No targeted studies were conducted to confirm habitat suitability and the presence or absence of indicator species.	**Candidate** (Licence Area and Adjacent Lands)

Seasonal Concentration Areas of Animals

Wildlife Habitat	Suitable ELC Ecosite Code	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	Confirmed SWH
Reptile Hibernaculum	Yes – Suitable ecosites are present on the Study Area.	No rock piles or hibernacula features were observed within the Licence Area.	No	N/A	No
Colonially-Nesting Bird Breeding Habitat (Bank/Cliff)	Yes – A CUM1 vegetation community is present within the Licence Area.	No suitable exposed soil banks, cliff faces, sandy hills, borrow pits, or other suitable habitat are present.	No	N/A	No
Colonially-Nesting Bird Breeding Habitat (Trees/Shrubs)	Yes – A SWM5-1 vegetation community is present within the Licence Area.	There may be potential suitable habitat for nesting herons or egrets as the SWM5-1 extends beyond the Study Area.	**Yes** (Licence Area and Adjacent Lands)	Two rounds of breeding bird surveys were conducted within the Licence Area. Despite survey effort, no indicator species were detected. Adjacent lands could not be studied in detail due to access restrictions; therefore, candidate habitat may be present in the PSW given the spatial extent of the feature.	**Candidate** (Licence Area and Adjacent Lands)
Colonially-Nesting Bird Breeding Habitat (Ground)	Yes –CUM1 vegetation community is present within the Licence Area.	No islands or peninsulas associated with open water or marshy areas occur within the Study Area.	No	N/A	No
Migratory Butterfly Stopover Areas	Yes – CUM1, FOC1, FOD5-1 and FOM2 vegetation communities are present within the Study Area.	No – The Licence Area is located greater than 5 km Lake Ontario and Lake Erie.	No	N/A	No
Land Bird Migratory Stopover Areas	Yes – SWM5-1, FOC1, FOD5-1 and FOM2 communities are present within the Study Area.	No – The Licence Area is located greater than 5 km Lake Ontario and Lake Erie.	No	N/A	No
Deer Winter Congregation Areas	Yes – FOC1, FOM2, FOD5-1 and SWM5-1 vegetation communities are present within the Study Area.	No – Mapping from the Geospatial Ontario database does not identify any deer wintering areas within the Study Area.	No	N/A	No

ELCs Extraction Area: CUM1, CUW1, RES, AG
ELCs Licence Area: CUM1, CUW1, SWM5-1, FOM2, FOC1, RES, AG
ELCs Adjacent Lands: FOD5-1

Rare Vegetation Communities

Rare Vegetation Community	Suitable ELC Ecosite Code	Habitat Description	Candidate SWH	SWH Defining Criteria	Confirmed SWH
Cliffs and Talus Slopes	No – Suitable ecosites are absent from the Study Area.	N/A	No	N/A	No
Sand Barren	No – Suitable ecosites are absent from the Study Area.	N/A	No	N/A	No
Alvar	No – Suitable ecosites are absent from the Study Area.	N/A	No	N/A	No
Old Growth Forest	No – Suitable ecosites are absent from the Study Area.	N/A	No	N/A	No
Savannah	No – Suitable ecosites are absent from the Study Area.	N/A	No	N/A	No
Tallgrass Prairie	No – Suitable ecosites are absent from the Study Area.	N/A	No	N/A	No
Other Rare Vegetation	No – Vegetation community types present within the Study Area are common and secure.	N/A	No	N/A	No

ELCs Extraction Area: CUM1, CUW1, RES, AG
ELCs Licence Area: CUM1, CUW1, SWM5-1, FOM2, FOC1, RES, AG
ELCs Adjacent Lands: FOD5-1

Specialized Habitats of Wildlife Considered SWH

Wildlife Habitat	Suitable ELC Ecosite Code	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	Confirmed SWH
Waterfowl Nesting Area	No – Suitable ecosites are absent from the Study Area.	No suitable aquatic habitat occurs on, or within 120 m of, the Study Area to support waterfowl nesting.	No	N/A	No
Bald Eagle and Osprey Nesting, Foraging, Perching Habitat	Yes – SWM5-1, FOC1, FOD5-1 and FOM2 communities are present within the Study Area.	Forested ecosites adjacent to Cedar Creek and the PSW may support suitable habitat.	**Yes** (Licence Area and Adjacent Lands)	Two rounds of breeding bird surveys were conducted within the Licence Area. Despite survey effort, no indicator species were detected. However, given the spatial extent of the significant woodlands and the presence of large super canopy hemlock trees within the Licence Area (i.e., in close proximity to Cedar Creek as well as in Polygon 2) these features are considered probable habitat for these species and have been carried forward as candidate.	**Candidate** (Licence Area and Adjacent Lands)
Woodland Raptor Nesting Habitat	Yes – SWM5-1, FOC1, FOD5-1 and FOM2 communities are present within the Study Area.	Yes – The forest feature overlapping the Licence Area extending onto the adjacent lands is >30 ha in size with >4 ha of interior habitat.	**Yes** (Licence Area and Adjacent Lands)	Two rounds of breeding bird surveys were conducted within the Licence Area. Despite survey effort, no raptor species were detected. Adjacent lands could not be studied in detail due to access restrictions; therefore, candidate habitat may be present in the significant woodlands given the spatial extent of the feature.	**Candidate** (Licence Area and Adjacent Lands)
Turtle Nesting Areas	No – Suitable ecosites are absent from the Study Area.	N/A	No	N/A	No
Springs and Seeps	Yes – Forested ecosites are present within the Study Area.	The water table is likely high in the PSW as wet spongey areas were observed throughout; however, this is not considered to be springs and seeps within headwater drainage areas.	No	N/A	No
Amphibian Breeding Habitat (Woodland)	Yes – SWM5-1, FOC1, FOD5-1 and FOM2 communities are present within the Study Area.	There is a swamp community which may contain vernal pools to support amphibian breeding habitat.	**Yes** (Licence Area and Adjacent Lands)	No targeted studies were conducted to confirm the presence or absence of listed species as the Extraction Area will not directly impact these features.	**Candidate** (Licence Area and Adjacent Lands)

ELCs Extraction Area: CUM1, CUW1, RES, AG
ELCs Licence Area: CUM1, CUW1, SWM5-1, FOM2, FOC1, RES, AG
ELCs Adjacent Lands: FOD5-1

Specialized Habitats of Wildlife Considered SWH

Wildlife Habitat	Suitable ELC Ecosite Code	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	Confirmed SWH
Amphibian Breeding Habitat (Wetlands)	No – Although a SWM5-1 vegetation community is present, it is not isolated from woodland ecosites and is more appropriately addressed above.	N/A	No	N/A	No
Woodland Area-Sensitive Bird Breeding Habitat	Yes – SWM5-1, FOC1, FOD5-1 and FOM2 vegetation communities are present within the Study Area.	Large sentinel trees were observed within the Licence Area, suggesting that the forest may be mature and capable of supporting suitable habitat for woodland area-sensitive breeding bird species. Based on historical images from 1945 the forest feature in the northern and northeastern portions of the Licence Area is greater than 60 years old and it is greater than 30 ha with interior forest habitat.	**Yes** (Licence Area and Adjacent Lands)	Two rounds of breeding bird surveys were conducted within the Licence Area. Despite survey effort, no indicator species were detected. Adjacent lands could not be studied in detail due to access restrictions; therefore, candidate habitat may be present in the significant woodlands given the spatial extent of the feature.	**Candidate** (Licence Area and Adjacent Lands)

Habitats of Species of Conservation Concern

Wildlife Habitat	Suitable ELC Ecosite Code	Candidate Habitat Criteria	Candidate SWH	SWH Defining Criteria	Confirmed SWH
Marsh Breeding Bird Habitat	Yes – SWM5-1 and CUM1 vegetation communities are present within the Study Area to support Green Heron.	The CUM1 community occurs along the boundary of the PSW and may support nesting habitat for Green Heron. The SWM5-1 community is sheltered by trees and shrubs adjacent to Cedar Creek and may support nesting habitat for Green Heron.	**Yes** (Extraction Area, Licence Area and Adjacent Lands)	Targeted studies were not conducted to confirm the presence or absence of listed species.	**Candidate** (Extraction Area, Licence Area and Adjacent Lands)
Open Country Bird Breeding Habitat	Yes – A CUM1 ecosite is present within the Study Area.	Suitable ecosites are not >30 ha in size.	No	N/A	No
Shrub/Early Successional Bird Breeding Habitat	Yes – A CUW1 vegetation community is present within the Licence Area.	Large fields succeeding to shrub and thicket habitats >10 ha in size are not present.	No	N/A	No
Terrestrial Crayfish	Yes – A SWM5-1 is present within the Study Area.	Suitable ecosites to support this species are associated with the PSW within the Study Area.	**Yes** (Licence Area, Adjacent Lands)	- Adjacent lands could not be studied in detail due to access restrictions; therefore, candidate habitat for terrestrial crayfish may be present in the PSW.	**Candidate** (Licence Area, Adjacent Lands)
Special Concern and Rare Wildlife Species					
Barn Swallow (SC)	N/A	Nest in old sheds, barns, and under bridges or culverts. This species forages for aerial insects in open habitats including grassy fields, pastures, agricultural fields and farms.	**Yes** (Adjacent Lands)	There are no urban buildings within the Study Area to support nesting of this species. The barns to the west of the Licence Area may support Barn Swallow nesting. Barn Swallows were observed foraging over Polygons 1, 2 and the agricultural lands during targeted breeding bird surveys.	**Candidate** (Adjacent Lands)

Habitats of Species of Conservation Concern

Wildlife Habitat	Suitable ELC Ecosite Code	Candidate Habitat Criteria	Candidate SWH	SWH Defining Criteria	Confirmed SWH
Canada Warbler (SC)	N/A	Breeds in deciduous and coniferous forests, usually wet, with developed and dense shrub layer. There is potential suitable habitat for this species within the forest/swamp feature overlapping the Licence Area extending into the adjacent lands.	**Yes** (Licence Area and Adjacent Lands)	Two rounds of breeding bird surveys were conducted within the Licence Area. Despite survey effort, this species was not detected. Adjacent lands could not be studied in detail due to access restrictions; therefore, candidate habitat may be present in the significant woodlands given the spatial extent of the feature.	**Candidate** (Licence Area and Adjacent Lands)
Eastern Wood-Pewee (SC)	N/A	Lives in mid-canopy layer of forest clearings and the edges of deciduous and mixed forests. Abundant in middle-aged forests with little understory. There is potential suitable habitat for this species within forested communities within the Study Area.	**Yes** (icence Area and Adjacent Lands)	The cultural woodland within the Extraction Area may support low quality habitat for this species but, given the proximity of significant woodlands, the cultural community is not considered to be integral to supporting Eastern Wood-Pewee populations on the landscape. No individuals were recorded within Polygon 2 during targeted breeding bird surveys. A single singing male was recorded calling from the significant woodlands (i.e., in the general vicinity of Polygons 3a, 4 and 5) during targeted breeding bird surveys. Adjacent lands could not be studied in detail due to access restrictions; therefore, candidate habitat may be present in the significant woodlands given the spatial extent of the feature.	**Candidate** (Licence Area and Adjacent Lands)
Wood Thrush (SC)	N/A	Lives in mature deciduous and mixed forests, seeking moist stands with well-developed undergrowth. Prefer large forests but will use small stands. There is potential suitable habitat for this species within the	**Yes** (Licence Area and Adjacent Lands)	Two rounds of breeding bird surveys were conducted within the Licence Area. Despite survey effort, this species was not detected. Adjacent lands could not be studied in detail due to access restrictions; therefore, candidate habitat may be present in the significant woodlands given the spatial extent of the feature.	**Candidate** (Licence Area and Adjacent Lands)

Wildlife Habitat	Suitable ELC Ecosite Code	Candidate Habitat Criteria	Candidate SWH	SWH Defining Criteria	Confirmed SWH
		forest/swamp feature in the northern and eastern portions of the Licence Area extending into the adjacent lands.			
Eastern Ribbon Snake (SC)	N/A	This species is found close to water, often in marshes. There is potential suitable wetland habitat associated with the PSW and Cedar Creek.	**Yes** (Licence Area and Adjacent Lands)	No targeted surveys were conducted within the Study Area to confirm the presence or absence of this species.	**Candidate** (Licence Area and Adjacent Lands)
Snapping Turtle (SC)	N/A	Aquatic species preferring shallow waters to hide in soft mud and leaf litter. Nest in gravelly or sandy areas along streams, taking advantage of man-made structures for nesting sites. There is potential suitable habitat for this species associated with the PSW and Cedar Creek.	**Yes** (Licence Area and Adjacent Lands)	No targeted surveys were conducted within the Study Area to confirm the presence or absence of this species.	**Candidate** (Licence Area and Adjacent Lands)

ELCs Extraction Area: CUM1, CUW1, RES, AG
ELCs Licence Area: CUM1, CUW1, SWM5-1, FOM2, FOC1, RES, AG
ELCs Adjacent Lands: FOD5-1

Animal Movement Corridors

Wildlife Habitat	Suitable ELC Ecosite Code	Additional Habitat Criteria	Candidate SWH	SWH Defining Criteria	Confirmed SWH
Amphibian Movement Corridors	No – Suitable ecosites associated with water are absent from the Study Area.	Movement corridors are identified where is confirmed amphibian breeding habitat is present within wetlands. No confirmed wetland amphibian breeding was identified within the Study Area.	No	N/A	No

Appendix D

Floral Inventory Data

		Floral Inventory							
1	2	Scientific Name	Common Name	CW	COSEWIC	SARO	SRank	Type	Invasive
X	X	*Acer negundo*	Manitoba Maple	0.0			S5	TR	Y
	X	*Acer rubrum*	Red Maple	0.0			S5	TR	
	X	*Acer saccharum*	Sugar Maple	3.0			S5	TR	
X	X	*Achillea millefolium*	Common Yarrow	3.0			SE	FO	
		Actaea pachypoda	White Baneberry	5.0			S5	FO	
X		*Agrostis scabra*	Rough Bentgrass	0.0			S5	GR	
	X	*Alliaria petiolata*	Garlic Mustard	0.0			SE5	FO	Y
		Alnus glutinosa	European Black Alder	-3.0			SE4	SH	Y
X		*Anemone virginiana*	Tall Anemone	3.0			S5	FO	
		Aralia nudicaulis	Wild Sarsaparilla	3.0			S5	FO	
X	X	*Arctium minus*	Common Burdock	3.0			SE5	FO	
	X	*Artemisia vulgaris*	Common Wormwood	5.0			SE5	FO	
X	X	*Asclepias syriaca*	Common Milkweed	5.0			S5	FO	
		Athyrium filix-femina	Common Lady Fern	0.0			S5	FE	
		Berberis thunbergii	Japanese Barberry	3.0			SE5	SH	Y
		Betula alleghaniensis	Yellow Birch	0.0			S5	TR	
		Bidens frondosa	Devil's Beggarticks	-3.0			S5	FO	
X	X	*Bromus inermis*	Smooth Brome	5.0			SE5	GR	Y
X		*Carduus nutans*	Nodding Thistle	3.0			SE5	FO	
		Carex lupulina	Hop Sedge	-5.0			S5	SE	
	X	*Carpinus caroliniana*	Blue-beech	0.0			S5	TR	
	X	*Carya ovata*	Shagbark Hickory	3.0			S5	TR	
	X	*Celtis occidentalis*	Common Hackberry	0.0			S4	TR	
	X	*Chelidonium majus*	Greater Celandine	5.0			SE5	FO	Y
		Cicuta maculata	Spotted Water-hemlock	-5.0			S5	FO	
	X	*Circaea canadensis*	Broad-leaved Enchanter's Nightshade	3.0			S5	FO	
X		*Cirsium arvense*	Canada Thistle	3.0			SE5	FO	Y
X	X	*Clinopodium vulgare*	Field Basil	5.0			S5	FO	
	X	*Convallaria majalis*	European Lily-of-the-valley	5.0			SE5	FO	Y
		Coptis trifolia	Goldthread	-3.0			S5	FO	
X		*Cornus racemosa*	Gray Dogwood	0.0			S5	SH	
	X	*Crataegus punctata*	Dotted Hawthorn	5.0			S5	SH	
X	X	*Dactylis glomerata*	Orchard Grass	3.0			SE5	GR	
X	X	*Daucus carota*	Wild Carrot	5.0			SE5	FO	
X		*Dipsacus fullonum*	Common Teasel	3.0			SE5	FO	Y
	X	*Dryopteris carthusiana*	Spinulose Wood Fern	-3.0			S5	FE	
		Dryopteris marginalis	Marginal Wood Fern	3.0			S5	FE	
X		*Echium vulgare*	Common Viper's Bugloss	5.0			SE5	FO	
X		*Elaeagnus umbellata*	Autumn Olive	3.0			SE3	SH	Y
		Epipactis helleborine	Eastern Helleborine	3.0			SE5	FO	Y
		Equisetum arvense	Field Horsetail	0.0			S5	FE	
		Equisetum variegatum	Variegated Horsetail	-3.0			S5	FE	
X		*Erigeron annuus*	Annual Fleabane	3.0			S5	FO	
X		*Erigeron canadensis*	Canada Horseweed	3.0			S5	FO	

		Floral Inventory							
1	2	Scientific Name	Common Name	CW	COSEWIC	SARO	SRank	Type	Invasive
		Eupatorium perfoliatum	Common Boneset	-3.0			S5	FO	
	X	*Fragaria vesca*	Woodland Strawberry	3.0			S5	FO	
X	X	*Fragaria virginiana*	Wild Strawberry	3.0			S5	FO	
X		*Fraxinus pennsylvanica*	Green Ash	-3.0			S4	TR	
X	X	*Galium aparine*	Cleavers	3.0			S5	FO	
X	X	*Galium mollugo*	Smooth Bedstraw	5.0			SE5	FO	Y
	X	*Geranium maculatum*	Spotted Geranium	3.0			S5	FO	
X	X	*Geranium robertianum*	Herb-Robert	3.0			S5	FO	
	X	*Geum aleppicum*	Yellow Avens	0.0			S5	FO	
	X	*Geum canadense*	White Avens	0.0			S5	FO	
		Glyceria striata	Fowl Mannagrass	-5.0			S5	GR	
	X	*Hackelia virginiana*	Virginia Stickseed	3.0			S5	FO	
		Hepatica americana	Round-lobed Hepatica	5.0			S5	FO	
	X	*Hesperis matronalis*	Dame's Rocket	3.0			SE5	FO	Y
	X	*Hydrophyllum virginianum*	Virginia Waterleaf	0.0			S5	FO	
X	X	*Hypericum perforatum*	Common St. John's-wort	5.0			SE5	FO	Y
	X	*Impatiens capensis*	Spotted Jewelweed	-3.0			S5	FO	
X		*Juglans nigra*	Black Walnut	3.0			S4?	TR	
X		*Juniperus virginiana*	Eastern Red Cedar	3.0			S5	TR	
		Laportea canadensis	Wood Nettle	-3.0			S5	FO	
	X	*Leonurus cardiaca*	Common Motherwort	5.0			SE5	FO	
X		*Leucanthemum vulgare*	Oxeye Daisy	5.0			SE5	FO	
		Lobelia inflata	Indian-tobacco	3.0			S5	FO	
		Lobelia siphilitica	Great Blue Lobelia	-3.0			S5	FO	
X		*Lolium arundinaceum*	Tall Fescue	3.0			SE5	GR	
	X	*Lonicera morrowii*	Morrow's Honeysuckle	3.0			SE3	SH	Y
X	X	*Lonicera tatarica*	Tartarian Honeysuckle	3.0			SE5	SH	Y
X		*Lotus corniculatus*	Garden Bird's-foot Trefoil	3.0			SE5	FO	Y
		Lycopus americanus	American Water-horehound	-5.0			S5	FO	
	X	*Lysimachia ciliata*	Fringed Loosestrife	-3.0			S5	FO	
		Maianthemum canadense	Wild Lily-of-the-valley	3.0			S5	FO	
	X	*Maianthemum racemosum*	Large False Solomon's Seal	3.0			S5	FO	
X		*Malus pumila*	Common Apple	5.0			SE4	SH	
X		*Medicago lupulina*	Black Medic	3.0			SE5	FO	
		Mitchella repens	Partridge-berry	3.0			S5	SH	
X	X	*Morus alba*	White Mulberry	0.0			SE5	TR	Y
X		*Muhlenbergia frondosa*	Wirestem Muhly	-3.0			S4	GR	
X		*Nepeta cataria*	Catnip	3.0			SE5	FO	
X		*Oenothera biennis*	Common Evening Primrose	3.0			S5	FO	
		Onoclea sensibilis	Sensitive Fern	-3.0			S5	FE	
		Osmundastrum cinnamomeum	Cinnamon Fern	-3.0			S5	FE	
	X	*Ostrya virginiana*	Eastern Hop-hornbeam	3.0			S5	TR	
X		*Panicum dichotomiflorum*	Fall Panicgrass	-3.0			SE5	GR	
	X	*Parthenocissus vitacea*	Thicket Creeper	3.0			S5	VW	
X		*Phleum pratense*	Common Timothy	3.0			SE5	GR	

Floral Inventory									
1	2	Scientific Name	Common Name	CW	COSEWIC	SARO	SRank	Type	Invasive
X		*Picea abies*	Norway Spruce	5.0			SE3	TR	
X	X	*Pinus strobus*	Eastern White Pine	3.0			S5	TR	
X	X	*Poa pratensis*	Kentucky Bluegrass	3.0			S5	GR	
	X	*Podophyllum peltatum*	May-apple	3.0			S5	FO	
		Polystichum acrostichoides	Christmas Fern	3.0			S5	FE	
	X	*Populus tremuloides*	Trembling Aspen	0.0			S5	TR	
	X	*Potentilla recta*	Sulphur Cinquefoil	5.0			SE5	FO	
		Prunella vulgaris	Self-heal	0.0			S5	FO	
	X	*Prunus serotina*	Black Cherry	3.0			S5	TR	
		Prunus virginiana	Choke Cherry	3.0			S5	TR	
	X	*Quercus palustris*	Pin Oak	-3.0			S4	TR	
		Quercus rubra	Northern Red Oak	3.0			S5	TR	
X	X	*Rhamnus cathartica*	Common Buckthorn	0.0			SE5	SH	Y
X		*Rhus typhina*	Staghorn Sumac	3.0			S5	SH	
	X	*Ribes cynosbati*	Prickly Gooseberry	3.0			S5	SH	
		Rubus hispidus	Bristly Dewberry	-3.0			S4	SH	
	X	*Rubus idaeus*	Common Red Raspberry	3.0			S5	SH	
X	X	*Rubus occidentalis*	Black Raspberry	5.0			S5	SH	
		Sambucus canadensis	Common Elderberry	-3.0			S5	SH	
X	X	*Securigera varia*	Common Crown-vetch	5.0			SE5	FO	Y
X		*Silene latifolia*	White Campion	5.0			SE5	FO	
X		*Solanum dulcamara*	Bittersweet Nightshade	0.0			SE5	VW	Y
X		*Solidago altissima*	Tall Goldenrod	3.0			S5	FO	
X	X	*Solidago canadensis*	Canada Goldenrod	3.0			S5	FO	
		Solidago flexicaulis	Zigzag Goldenrod	3.0			S5	FO	
X		*Solidago nemoralis*	Gray-stemmed Goldenrod	5.0			S5	FO	
		Solidago patula	Round-leaved Goldenrod	-5.0			S4	FO	
		Solidago rugosa	Rough-stemmed Goldenrod	0.0			S5	FO	
		Symphyotrichum cordifolium	Heart-leaved Aster	5.0			S5	FO	
X		*Symphyotrichum ericoides*	White Heath Aster	3.0			S5	FO	
X		*Symphyotrichum novae-angliae*	New England Aster	-3.0			S5	FO	
X		*Symphyotrichum pilosum*	White Heath Aster	3.0			S5	FO	
		Symplocarpus foetidus	Skunk Cabbage	-5.0			S5	FO	
X		*Taraxacum officinale*	Common Dandelion	3.0			SE5	FO	
		Thelypteris palustris	Marsh Fern	-3.0			S5	FE	
X		*Thlaspi arvense*	Field Penny-cress	5.0			SE5	FO	
X	X	*Thuja occidentalis*	Eastern White Cedar	-3.0			S5	TR	
		Tiarella cordifolia	Heart-leaved Foam-flower	3.0			S5	FO	
		Tilia americana	American Basswood	3.0			S5	TR	
X		*Trifolium pratense*	Red Clover	3.0			SE5	FO	
		Tussilago farfara	Colt's-foot	3.0			SE5	FO	Y
		Ulmus americana	American Elm	-3.0			S5	TR	
X		*Verbascum thapsus*	Common Mullein	5.0			SE5	FO	
X		*Veronica officinalis*	Common Speedwell	5.0			SE5	FO	
X		*Viburnum acerifolium*	Maple-leaved Viburnum	5.0			S5	SH	

		Floral Inventory							
1	2	Scientific Name	Common Name	CW	COSEWIC	SARO	SRank	Type	Invasive
	X	*Vincetoxicum nigrum*	Black Swallow-wort	5.0			SE3?	VI	Y
	X	*Vitis riparia*	Riverbank Grape	0.0			S5	VW	

Appendix E

Breeding Bird Survey Summary

AVIFAUNAL SURVEY INFORMATION SUMMARY SHEET

	Date	Start	Finish	Weather
Project Name: 1830 Wrigley Road **Visit 1**	30-May-25	6:30am	8:40am	13C, 10%CC, 15km/hr wind
MTE File No.: 52827-301 **Visit 2**	12-Jun-25	7:30am	9:00am	15C, 100%CC, 5km/hr wind
Collector(s): ER, BK **Visit 3**	30-Jun-25	7:15am	9:25am	18C, 5%CC, no wind

Species Abbr.	Species Name	Comm. 1						Comm. 2						S Rank	ESA Status	Notes
		Visit 1		Visit 2		Visit 3		Visit 1		Visit 2		Visit 3				
		Code	No.	Code	No.	Code	No.	Code	No.	Code	No.	Code	No.			
CAGO	Canada Goose							FO	2					S5		
RTHA	Red-tailed Hawk									OB	1			S5	-	flew off from tree
RBWO	Red-bellied Woodpecker											SM	1	S4	-	
GCFL	Great Crested Flycatcher			SM, V	1									S4	-	
EAKI	Eastern Kingbird							VO	1					S4		
REVI	Red-eyed Vireo	SM	2	SM	1									S5		
BLJA	Blue Jay	SM	2					VO	1	VO	3	VO	1	S5		
AMCR	American Crow	SM	2					SM	2					S5		
BARS	Barn Swallow									FO	4			S4	THR	
BCCH	Black-capped Chickadee											SM	2	S5	-	
AMRO	American Robin	SM	2			SM	1			OB, SM	2			S5		
GRCA	Gray Catbird							VO, T	2					S4		
CEDW	Cedar Waxwing			SM	1									S5		
YWAR	Yellow Warbler	SM	1											S5		
PIWA	Pine Warbler	SM	2									SM	1	S5		
MOWA	Mourning Warbler			SM	1									S4	-	
COYE	Common Yellowthroat	SM	1	SM	1									S5	-	
CHSP	Chipping Sparrow			SM	2							SM	1	S5		
FISP	Field Sparrow	SM	5	SM	5	SM	2							S4		
VESP	Vesper Sparrow					VO, OB	2							S4		
SOSP	Song Sparrow	SM	4	SM	2	SM	3	SM	2	SM	1	SM	1	S5		
NOCA	Northern Cardinal	SM	5	SM	1	SM	1	SM	1	VO, SM	2	SM	3	S5		
INBU	Indigo Bunting	SM	8	SM	1	SM	2	SM	1	SM	2			S4		
RWBL	Red-winged Blackbird	SM	1							SM, VO	2	VO	1	S4		
BHCO	Brown-headed Cowbird	SM	1	SM	2									S4		
AMGO	American Goldfinch	SM	2			P	2							S5		

Evidence Codes:

Breeding Bird - Possible

SH=Suitable Habitat SM=Singing Male

Breeding Bird - Probable

T=Territory A=Anxiety Behaviour D=Display N=Nest Building P=Pair V=Visiting Nest

Breeding Bird - Confirmed

DD=Distraction NE=Eggs AE=Nest Entry NU=Nest Used NY=Nest Young FY=Fledged Young FS=Food/Faecal Sack

Other Wildlife Evidence

OB=Observed DP=Distinctive Parts TK=Tracks VO=Vocalization HO=House/Den FE=Feeding Evidence CA=Carcass

Fy=Eggs or Young SC=Scat SI=Other Signs (specify)