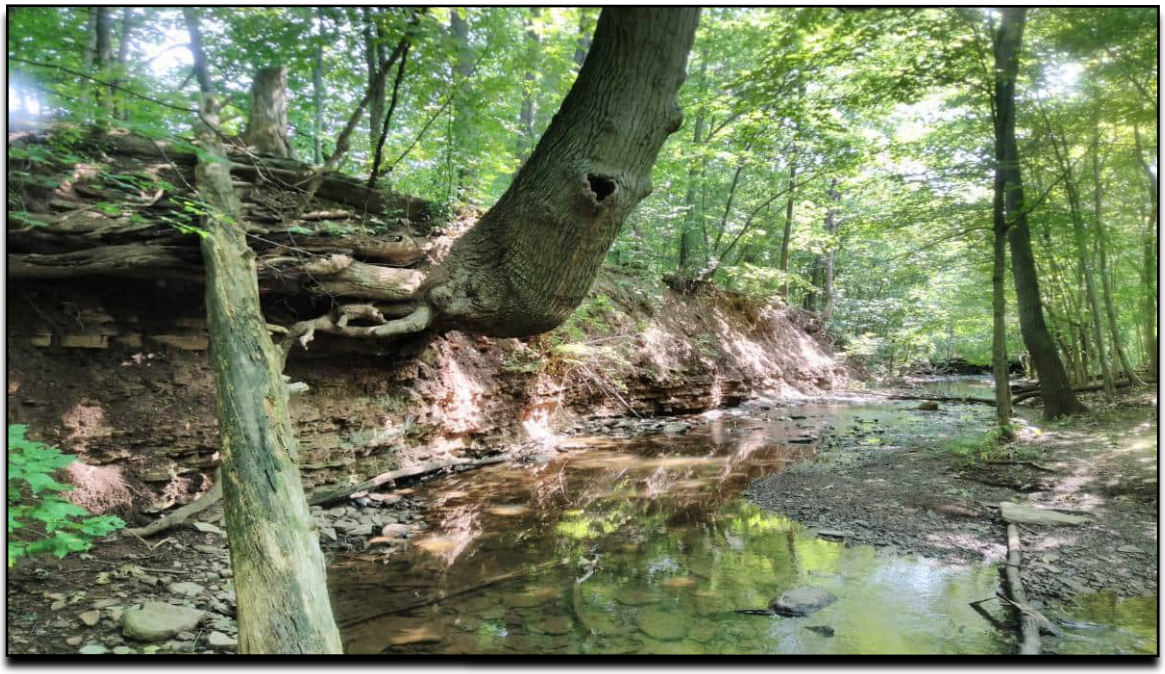








EXISTING CONDITIONS REPORT

Zoning Bylaw Amendment and
Draft Plan of Subdivision Applications

Bronte Meadows, City of Burlington

5 February 2026

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Cover photos: Shale bedrock exposure adjacent to the main branch of Sheldon Creek with large overhanging Red Oak (*Quercus rubra*) keeping record of the receding bank (top); centenarian Red Oak along the eastern edge of the Sheldon Creek Woodland, with backpack for scale (bottom left); wetland SCW-1 within the Sheldon Creek Woodland in late summer 2023 (bottom middle); Virginia Opossum (*Didelphis virginiana*) (bottom right).

EXISTING CONDITIONS REPORT

Zoning Bylaw Amendment and
Draft Plan of Subdivision Applications

Bronte Meadows, City of Burlington

Prepared for:

Penta Properties Inc.

Prepared by:

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Senior Aquatic Ecologist
Hutchinson Environmental Services Ltd.

Project No.: 22195
5 February 2026

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1 INTRODUCTION

1.1 Study Background

The Bronte Creek Meadows lands (hereinafter "Subject Property") is a 132.4-hectare (327 acres) undeveloped (aside from a cellular tower) piece of land that primarily consists of active agricultural land, and contains natural features such as woodlands, wetlands, valleylands, and watercourses. The Subject Property, addressed as 5164 – 5900 Upper Middle Road and 5201 Mainway in Burlington, is bounded by Upper Middle Road (north), Burloak Drive (east), Mainway (south) and residential development west of the Sheldon Creek valley. A parcel roughly corresponding with most of the Sheldon Creek Woodland owned by the City of Burlington is surrounded by lands owned by the Alinea Group (hereinafter "the Applicant"). Owing to its proximity and relationship with lands owned by the Applicant, for the purposes of this report this City-owned parcel is included in the Subject Property. The location of the Subject Property and Adjacent Lands (i.e., those within 120 m of the Subject Property), collectively referred to herein as the "Study Area", within its broader landscape setting is shown in **Figure 1**.

The Applicant is submitting zoning bylaw amendment (ZBA) and Draft Plan of Subdivision applications for low, medium, and high-rise residential, commercial, industrial/employment, and health care development as well as open space on undeveloped lands. Terrastory Environmental Consulting Inc. (hereinafter "Terrastory") and Hutchinson Environmental Services Ltd. (HESL) were retained by the Applicant to prepare this Existing Conditions Report (ECR) in support of the applications for the Subject Property.

1.2 Study Purpose

The purpose of this ECR is as follows:

- To characterize exiting natural heritage features and functions using available background information and site-specific investigations;
- To evaluate the significance of natural heritage features and functions; and
- To identify preliminary natural heritage and natural hazard constraints to development.

Assessment of impacts to natural heritage features and functions and natural hazards; recommendation of applicable impact mitigation measures (including but not limited to identification of buffers and setbacks); and evaluation of whether the proposed development conforms to applicable environmental protection legislation, policies, and regulations and the federal, provincial, regional, and local levels will be detailed in the Environmental Impact Assessment (EIA) prepared by Colucent Environmental Consulting.

1.3 Project Study Team

The ECR has been prepared using an integrated approach to allow for characterization of the relationships between ecological features and the physical environment (as applicable and to the extent feasible given the materials available at the time of writing). The ECR is reliant on the identification of (non-wetland) hazard lands by Water's Edge Environmental Solutions Team Ltd. and MTE Consultants. The members of the Project Study Team and their respective roles are listed below:

- Bousfields Inc. – planning[1];
- NAK Design Strategies – conceptual development plan[1];
- Terrastory Environmental Consulting Inc. and Hutchison Environmental Services Ltd. (HESL) – ECR;
- Terrastory Environmental Consulting Inc. – Arborist Report[1];
- Water's Edge Environmental Solutions Team Ltd. (hereinafter "Water's Edge") – geomorphic assessment and flood plain analyses;
- MTE Consultants (hereinafter "MTE") – geotechnical and slope stability, hydrogeology, and stormwater management;
- Colucent Environmental Consulting – EIA[1];
- Paradigm Transportation Solutions Ltd. – traffic study[1]; and
- Trinity Consultants (formerly Valcoustics) – acoustic study[1].

2 APPROACH AND METHODS

This study is composed of three (3) discrete components which are bulleted below and further described in the following sections.

1. **Acquire background biophysical information and mapping** available for the local landscape surrounding the Subject Property (see **Section 2.1**).
2. **Conduct a site assessment and ecological surveys** to field-verify the accuracy of the acquired background biophysical information and collect additional biophysical information as necessary (see **Section 2.2**).
3. **Assess the significance** of the biophysical information collected and natural features identified within the context of applicable natural heritage and environmental policies (see **Section 2.3**).

2.1 Background Biophysical Information Assessment

This study is supported by background biophysical information and mapping acquired and reviewed from a variety of sources which are listed below in **Table 1**.

Table 1. Background Biophysical Information Acquired and Reviewed.

Type of Information Acquired	Description
Ortho-rectified Aerial Photographs	• 1954, 1985, 2004 - 2007, 2009, 2013 - 2022, 2024.
Natural Feature Mapping	• Land Information Ontario (LIO) accessed via the "Make a Map: Natural Heritage Areas" web-based platform (accessed multiple times between 05 November 2022 and 29 November 2023). • Halton Region Conservation Authority regulation mapping (accessed multiple times between November 2022 and March 2024). • Halton Region Official Plan (OP) Map 1G: Key Features within the Greenbelt and Regional Natural Heritage Systems, and Map 1: Regional Structure (Nov. 2022). • 1997 City of Burlington OP (in-force), Schedule B: Comprehensive Land Use Plan – Urban Area (Dec. 2019).

[1] Indicates a Project Team member whose area of expertise/report is not relied upon for the completion of the ECR.

Type of Information Acquired	Description
	• 2020 City of Burlington OP (under appeal and not currently in-force), Schedule M: Natural Heritage System (Nov. 2020).
Physiographic Resource Mapping and Datasets	• Conservation Halton (CH) 1 m contour data and subwatershed boundary mapping data. • Ontario Base Mapping produced by MNR (1:10,000) with 5 m contours. • Provincial Digital Elevation Model (imagery-derived). • Provincial Digital Terrain Model (LiDAR-derived). • Surficial Geology of Southern Ontario (Ontario Geological Survey 2010). • Physiography of Southern Ontario (Chapman and Putnam 1984).
Ecological Resource Mapping and Datasets	● Natural Heritage Information Centre (NHIC) database accessed via the "Make a Map: Natural Heritage Areas" web-based platform (squares: 17NJ9807, 17NJ9806, 17NJ9805, 17NJ9907, 17NJ9906, 17NJ9905, 17PJ0007, 17PJ0006, 17PJ0005 accessed 20 March 2023). ● Land Information Ontario (LIO) Aquatic Resource Area Line Segment (accessed multiple times between December 2022 and March 2024). ● iNaturalist "(NHIC) Rare species of Ontario" project (accessed 13 Dec 2022). ● Ontario Breeding Bird Atlas (OBBA) database and the Atlas of the Breeding Birds of Ontario, 2001–2005 (Cadman et al. 2007) (square: 17NH99). ● Ontario Reptile & Amphibian Atlas (square: 17NH99; accessed 13 Dec 2022). ● Ontario Butterfly Atlas database (square: 17NH99; accessed 13 Dec 2022). ● iNaturalist "Ontario Odonata" project (accessed 13 Dec 2022). ● Aquatic Species at Risk Maps by Fisheries and Oceans Canada (accessed 13 Dec 2022). ● Halton Natural Areas Inventory (NAI), Vols. 1 & 2 (2006) ● Atlas of the Mammals of Ontario (Dobbyn 2005). ● Land Information Ontario (LIO) Aquatic Resource Area Line Segment (accessed multiple times between December 2022 and March 2024).

2.2 Site Assessments and Surveys

The acquired background information per **Table 1** helped direct site assessments and surveys carried out by Terrastory and HESL staff between 29 November 2022 and 20 November 2025.

Table 2 below indicates the primary assessments and surveys performed during each site visit, weather conditions (wildlife surveys only), and time on-site.

Table 2. Site Assessments and Ecological Surveys performed on the Subject Property and Adjacent Lands.

Date of Site Assessment	Assessments/Surveys Performed	Staff	Weather Conditions (as relevant)	Time On-site
29 November 2022	Boundary survey of woodland dripline and all wetlands except SCW-1, SCW-3 and BCW-2 using hand-held GPS unit.	A. Baron	Snow-free ground; No Precipitation	10:00 – 17:30
28 March 2023	Headwater Drainage Feature Assessment – 1st Round	S. Aitken (HESL)	Air Temperature 6°C; No Precipitation.	10:00 – 15:00
31 March 2023	Salamander Survey 1 (trap set)	A. Baron; R. Aitken	Air Temperature 6°C; Water Temperature 4°C; Beaufort Wind: 1; Beaufort Sky: 5; No Precipitation.	21:15 – 21:55
01 April 2023	Salamander Survey 1 (trap check)	A. Baron	Air Temperature 6°C; Water Temperature 5°C; Beaufort Wind: 4; Beaufort Sky: 0; No precipitation at time of survey, but precipitation occurred overnight.	8:07 – 8:51
05 April 2023	Salamander Survey 2 (trap set)	A. Baron; C.Wegenschimmel	Air Temperature 6°C; Water Temperature: 5-6°C; Beaufort Wind: 1; Beaufort Sky: 1; No Precipitation.	20:22 – 20:43
06 April 2023	Salamander Survey 2 (trap check)	A. Baron	Air Temperature: 5-6°C; Water Temperature: 5-6°C; Beaufort Wind: 1; Beaufort Sky: 2; No precipitation at time of survey, but precipitation occurred overnight.	8:04 – 8:40
13 April 2023	Calling Anuran Survey 1	C.Wegenschimmel	Air Temperature 24-20°C; Water Temperature 15-16°C; Beaufort Wind 0; Cloud Cover 0%; No Precipitation.	8:00-9:00
10 May 2023	Headwater Drainage Feature Assessment – 2nd Round	S. Aitken (HESL)	Air Temperature 21°C; No Precipitation.	9:15-4:30
15 May 2023	Calling Anuran Survey 2	C.Wegenschimmel	Air Temperature 15-12°C; Water Temperature 14-15°C; Beaufort Wind 0; Cloud Cover 0%; No Precipitation.	9:07-10:00
16 May 2023	Spring Botanical Survey	A. Baron	n/a	9:30-16:30

Date of Site Assessment	Assessments/Surveys Performed	Staff	Weather Conditions (as relevant)	Time On-site
24 May 2023	Breeding Bird Survey 1	C.Wegenschimmel	Air Temperature 14-16°C; Beaufort Wind 0-1; Cloud Cover 25-50%; No Precipitation.	5:45-8:30
16 June 2023	Breeding Bird Survey 2	C.Wegenschimmel	Air Temperature 15-16°C; Beaufort Wind 0-1; Cloud Cover 100%; No Precipitation.	6:45-9:10
28 June 2023	Calling Anuran Survey 3	J. Consiglio	Air Temperature 18-20°C; Beaufort Wind 0-1; Cloud Cover 0-25%; No Precipitation	9:33-10:20
06 August 2023	Headwater Drainage Feature Assessment – 3rd Round	S. Aitken (HESL)	Air Temperature 21°C; No Precipitation.	10:00-11:00-
01 September 2023	Summer Botanical Survey and Vegetation Community Assessment	A. Baron	n/a	9:00-17:30
06 October 2023	Autumn Botanical Survey	A. Baron	n/a	9:00-16:30
19 October 2023	Hydrologic Investigation	A. Baron: S. Aitken (HESL)	n/a	9:30-16:00
15 November 2023	Aquatic Habitat Assessment	S. Aitken (HESL)	Air Temperature 14°C; No Precipitation.	10:30-13:00
27 February 2024	Salamander Survey 1 (trap set)	J. Consiglio, A. Baron	Air Temperature 6°C; Water Temperature: n/a (thermometer broke); Beaufort Wind: 1; Beaufort Sky: 1/2; No precipitation at time of survey, but precipitation occurred overnight.	20:10 – 21:40
28 February 2024	Salamander Survey 1 (trap check)	R. Aitken, A. Baron	Air Temperature 12°C; Water Temperature: 4-7°C; Beaufort Wind: 1; Beaufort Sky: 2; No precipitation at time of survey, but precipitation occurred previous night.	8:10-9:02
28 February 2024	Watercourse Connectivity Assessment	S. Aitken (HESL), A. Baron	Air Temperature 14°C; No Precipitation.	9:30 – 10:30

Date of Site Assessment	Assessments/Surveys Performed	Staff	Weather Conditions (as relevant)	Time On-site
05 March 2024	Salamander Survey 2 (trap set)	J. Consiglio, A. Baron	Air Temperature: 7°C; Water Temperature: 10°C; Beaufort Wind: 0; Beaufort Sky: 6; Rain at time of survey and overnight.	20:00-21:15
06 March 2024	Salamander Survey 2 (trap check)	C.Wegenschimmel; A. Baron	Air Temperature: 5°C; Water Temperature: 8°C; Beaufort Wind: 2; Beaufort Sky: 5; Rain at time of survey and previous night.	7:45-9:20
14 March 2024	Salamander Survey 3 (trap set)	C.Wegenschimmel; A. Baron	Air Temperature: 5°C; Water Temperature: 5°C; Beaufort Wind: 1; Beaufort Sky: 8; No precipitation at time of survey, but precipitation expected overnight.	20:21-21:13
15 March 2024	Salamander Survey 3 (trap check)	A. Baron	Air Temperature: 6°C; Water Temperature: 5°C; Beaufort Wind: 1; Beaufort Sky: 2; Rain at time of survey and previous night.	8:00-9:08
03 April 2024	Salamander Survey 4 (trap set)	C.Wegenschimmel; A. Baron	Air Temperature: 4°C; Water Temperature: 5-6°C; Beaufort Wind: 1; Beaufort Sky: 8; Rain at time of survey and expected overnight.	18:46 – 19:32
04 April 2024	Salamander Survey 4 (trap check)	C.Wegenschimmel; A. Baron	Air Temperature: 2-3°C; Water Temperature: 4°C; Beaufort Wind: 1; Beaufort Sky: 1; No precipitation at time of survey, but occurred overnight.	8:00 – 9:10
06 April 2024	Salamander Survey 5 (trap set)	C.Wegenschimmel; A. Baron	Air Temperature: 4-5°C; Water Temperature: 5°C; Beaufort Wind: 2; Beaufort Sky: 2; No precipitation at time of survey, but precipitation expected overnight.	20:03-21:20
07 April 2024	Salamander Survey 5 (trap check)	A. Baron	Air Temperature: 3°C; Water Temperature: 4-5°C; Beaufort Wind: 1; Beaufort Sky: 1-2; No precipitation at time of survey, but occurred overnight.	20:20-21:46

Date of Site Assessment	Assessments/Surveys Performed	Staff	Weather Conditions (as relevant)	Time On-site
11 April 2024	Salamander Survey 6 (trap set)	C.Wegenschimmel; A. Baron	Air Temperature: 2-3°C; Water Temperature: 4-5°C; Beaufort Wind: 1; Beaufort Sky: 1-2; No precipitation at time of survey, but precipitation occurred overnight.	8:00 – 9:08
12 April 2024	Salamander Survey 6 (trap check)	A. Baron	Air Temperature: 8-9°C; Water Temperature: 9°C; Beaufort Wind: 2-5; Beaufort Sky: 6; No precipitation at time of survey, but occurred overnight.	8:07 – 10:27
08 May 2024	Stick Nest & Snag Survey	C.Wegenschimmel	No precipitation at time of survey. Other conditions not recorded.	11:00-16:45
10 May 2024	Stick Nest & Snag Survey	C.Wegenschimmel	Air Temperature: 12°C; Beaufort Wind: 1; Beaufort Sky: 1; No precipitation at time of survey.	09:33-15:16
31 May 2024	Insect Survey	C.Wegenschimmel	Air Temperature: 20°C; Beaufort Wind: 0; Beaufort Sky: 1; No precipitation at time of survey.	12:11-15:24
21 June 2024	Bat Acoustic Monitoring (unit deployment)	J. Consiglio	Air Temperature 30°C. No precipitation at time of unit deployments.	09:00-15:00
01 August 2024	Insect Survey	C.Wegenschimmel; A. Baron	Air Temperature: 30°C; Beaufort Wind: 0; Beaufort Sky: 1; No precipitation at time of survey.	09:09-15:00
20 August 2024	Bat Acoustic Monitoring (unit retrieval)	J. Consiglio	Air Temperature 24°C. No precipitation at time of unit retrievals.	09:00-15:00
08 October 2024	Lichen Survey	C.Wegenschimmel; A. Baron	No precipitation at time of survey.	9:30 – 16:30
08 November 2024	Lichen Survey	C.Wegenschimmel; A. Baron	No precipitation at time of survey.	8:00 – 15:30
19 March 2025	Fish Community Assessment (Electrofishing)	S. Aitken	Air Temperature 15°C. No precipitation at time of survey.	9:30-2:00

Date of Site Assessment	Assessments/Surveys Performed	Staff	Weather Conditions (as relevant)	Time On-site
11 June 2025	Pileated Woodpecker Survey	R. Aitken	Air Temperature 15°C; Beaufort Wind 0-1; Cloud Cover 75-100%; No Precipitation	6:45 – 8:00
20 June 2025	Fish Community Assessment (Electrofishing)	S. Aitken	Air Temperature 20°C. No precipitation at time of survey.	8:30-11:00
24 June 2025	Pileated Woodpecker Survey	A. Baron	Air Temperature 28-32°C; Beaufort Wind 0-1; Cloud Cover 100%; No Precipitation.	8:15 – 9:45
25 June 2025	Wetland boundary and physical top of bank staking with Conservation Halton and City of Burlington (represented by LGL)	A. Baron (wetlands); R. Aitken (TOB)	Air Temperature 22-28°C; Beaufort Wind 0-1; Cloud Cover 0-25%; No Precipitation.	8:15 – 9:45
20 Nov. 2025	Woodland dripline staking with City of Burlington (includes pre-staking)	A. Baron	No precipitation at time of survey. Other conditions not recorded.	9:15 – 4:45

The site assessments and surveys centred on characterizing the land use (e.g., historical development patterns, existing built features, land maintenance, etc.), physiographic (e.g., topography, drainage, surface water features, etc.), and ecological (e.g., vegetation, wildlife, habitats, etc.) conditions and features of the Subject Property and (where appropriate) Adjacent Lands. All land-use, physiographic, and ecological information described for Adjacent Lands and those in private ownership was collected from either current aerial photographs or observations from inside the Subject Property and/or publicly accessible areas (e.g., rights-of-way, public trails, etc.). The locations and boundaries of significant natural features and/or habitats were recorded on-site with a high-accuracy GPS (Cedar CT8X2) supported by representative photographs. Survey station locations are presented in **Figure 2**.

While CH has provided direction to MTE regarding the stable slope analysis (January 2026), note that at the time of writing the Authority had not signed off on the top of bank assessment for the Sheldon Creek valley.

In addition to collecting general biophysical information, the following targeted assessments (i.e., feature- or species-specific surveys) were undertaken:

Vegetation Mapping according to Ecological Land Classification (ELC): Vegetation communities on the Subject Property were characterized and mapped according to Ecological Land Classification (Lee et al. 1998) and the 2008 update to the Vegetation Type List (Lee 2008). Vegetation communities were initially identified based on current aerial photographs and CH's vegetation community mapping and then verified and refined (as necessary) on-site. Vegetation community mapping was scaled to the finest level of resolution deemed appropriate (i.e., either Ecosite or Vegetation Type). Vegetation communities occurring on Adjacent Lands outside the Subject Property were characterized and mapped based on observations from within the

Subject Property and/or road allowance, in combination with aerial photograph interpretation and open-source data available from CH.

- **Wetland Boundaries:** Where wetlands were identified via ELC, their boundaries were delineated consistent with the "50% wetland vegetation rule" and presence of hydric soils per the procedures of the Ontario Wetland Evaluation System (OWES) (OMNRF 2022). Wetlands mapped on Adjacent Lands were delineated via aerial photograph interpretation or presented in accordance with agency boundaries where background information/mapping exists as is deemed reasonable based on interpretation of aerial photography.

Three-season Vascular Plant Survey: Vascular plants were recorded based on a comprehensive area search ("wandering transects") within naturally occurring (i.e., non-planted) and naturalizing areas of vegetation during spring, summer, and autumn. Particular effort was paid to areas with the greatest potential to support significant vascular plants (i.e., designated Species at Risk, provincially rare, etc.) and areas with the greatest potential for impact based on the proposed development plan. Nomenclature and common names for the recorded vascular plant species are generally consistent with the Southern Ontario Vascular Plant Species List (Bradley 2013) except where a name change has more recently been adopted by NHIC.

Lichen Surveys: Lichens were recorded based on a comprehensive area search ("wandering transects") within naturally occurring (i.e., non-planted) and naturalizing areas of vegetation as well as the edges of agricultural areas adjacent to natural/naturalizing land during summer and autumn. Particular effort was paid to areas with the greatest potential to support significant lichens (i.e., designated Species at Risk, provincially rare, etc.) and areas with the greatest potential for impact based on the proposed development plan. In many cases, identification of samples collected in the field were confirmed through further investigation using a microscope, or were confirmed through correspondence with experts at the Canadian Museum of Nature.

Bat Acoustic Monitoring: Targeted stationary acoustic surveys within the Study Area focused on characterizing bat species assemblages and identifying habitat use. Acoustic recording unit deployment locations were identified following the protocols outlined in Step 3 of the MECP Maternity Roost Surveys Protocol for Treed Habitats based on the identification of areas with most suitable snags and/or cavity trees (MECP 2021). Acoustic data collection occurred at each sampling location for a minimum of ten consecutive nights, beginning 30 minutes before sunset and continuing until 30 minutes after sunrise, with temperatures consistently above 10°C with low winds and no precipitation. Acoustic recording unit deployments employed SM4BAT full spectrum digital song meter units (Wildlife Acoustics Inc.) and an ultrasonic omnidirectional microphone (SMM-U2). Detailed information regarding methodology is presented below in **Section 2.2.1**.

Stick Nest Survey: Stick nests were recorded based on a targeted area search within woodlands on and adjacent to the Subject Property during snag surveys (the methodology for which is detailed in **Section 2.2.1.1**. The primary purpose of the stick nest survey is to identify the presence of raptor nests. Particular effort was paid to areas containing mature and "supercanopy" trees. Cavity nests were recorded incidentally.

Breeding Bird Surveys according to the Ontario Breeding Bird Atlas Protocol: Two rounds of breeding bird surveys were conducted in accordance with the Ontario Breeding Bird Atlas (OBBA) protocol (Bird Studies Canada et al. 2001). Surveys occurred within the appropriate season (May 24–July 10), time of day (between dawn and approximately 5 hours after dawn), and weather conditions (no rain, wind speed ≤3 on the Beaufort Wind Scale). While the OBBA protocol recommends that stations be situated at least 300 m apart (to avoid double counting), the stations established herein were often closer together to ensure more comprehensive survey coverage. Surveys occurred for a minimum duration of 10 minutes at each station.

Pileated Woodpecker Survey: As there is no standard survey protocol for Pileated Woodpecker (*Dryocopus pileatus*) in Ontario, Terrastory adapted the Wisconsin Department of Natural Resources Redheaded Woodpecker Species Guidance survey protocol (Wisconsin DNR, 2013), with adaptations informed by Terrastory's own experience and recommendations for Pileated Woodpecker survey methods from the United States Department of Agriculture (USDA, 2008). Terrastory staff used playback calls and tapping using point count and wandering transect methods. Ten-minute point counts were broken into two five-minute survey periods. Surveyors would play a mixture of Pileated Woodpecker calls and taps for 4.5 mintues, listen for 30 seconds, play calls and taps for 4.5 minutes, then listen again for 30 seconds. This would be repeated throughout each area surveyed. Surveyors would then follow the same timing of playback during wandering transects. Surveys focused on areas within the Sheldon Creek Woodland and Mainway Woodland proposed for removal, and included wandering transects in forested areas between the areas proposed to be impacted. As the first two surveys did not yield results, a third survey was not completed.

Anuran Calling Surveys according to the Marsh Monitoring Protocol: Three rounds of Anuran calling surveys were conducted in accordance with the Marsh Monitoring Protocol (Bird Studies Canada et al. 2008). Surveys occurred within the appropriate season (April to June), time of day (between 30 minutes after sunset and 12:00 am), and weather conditions (minimal to no rain, wind speed **≤3 on the Beaufort Wind Scale)**. A total of six (6) stations were selected based upon the presence of potential anuran breeding habitat. Note that Station AN-6, in the eastern portion of the Mainway Woodland, was added prior to the second anuran calling survey, following discovery of a previously unmapped wetland that was not adequately covered by existing survey stations.

Salamander Surveys: Following interpretation of the Province's wetland layer and CH's vegetation community mapping, aerial photo interpretation and site visits in November 2022, Terrastory identified potential ambystomatid salamander breeding sites (i.e., vernal pools, shallow marshes, fishless ponds). Potential breeding sites were subject to observations throughout the summer to ascertain hydroperiod/suitability of habitat. Due to a lack of suitable survey days in 2023 to complete the survey per MNRF protocols, additional salamander surveys were completed in 2024. Note that in 2023 wetlands SCW-2 (survey station S-2) and SCW-4 (survey station S-3) were surveyed, as these were the only wetlands visible on available mapping and thus the only sites included on the wildlife collection permits. Subsequent investigations in 2023 revealed the presence of additional wetlands that were previously unmapped. Of these, SWC-1 (survey station S-1) and BCW-2 (survey station S-4) were added to the salamander survey field program in 2024.

Insect Surveys: Terrestrial insect surveys were undertaken using a wandering transect/area search methodology within areas of suitable habitat for target taxa (i.e., odonates and lepidopterans) twice in late May through August. The survey period is intended to capture early, mid-, and late-season species. Non-target taxa were recorded incidentally when observed. Survey transects included those along riparian areas, wetlands, meadows, and the stormwater pond west of the Sheldon Creek Valley.

Headwater Drainage Feature Assessments (HDFA): Headwater drainage features (HDF) on the Subject Property were assessed using the Evaluation, Classification and Management of Headwater Drainage Features Guidelines prepared by Credit Valley Conservation and Toronto Region and Conservation Authority (2014), herein referred to as the HDFA Guidelines. These guidelines provide a standardized means of identifying and assessing the feature and function of headwater drainage features and identifying management recommendations to protect or maintain the important ecological or biophysical functions provided by HDFs in a developing landscape.

Prior to the HDFA, a desktop analysis of aerial imagery of the Subject Property was completed to identify potential HDFs. The round 1 assessment was initiated following the spring freshet. Rounds 2 and 3 were

completed following at least 48 hours of no precipitation to document baseflow conditions. The data collected was then used to classify each HDF based on the HDFA Guidelines.

Modified Ontario Stream Assessment Protocol (OSAP): Aquatic habitat conditions and channel morphology data was collected for the Sheldon Creek Tributary and the Bronte Creek Tributary using a modified version of the Ontario Stream Assessment Protocol (OSAP) (Stanfield 2017). A total of ten (10) transects were established on the Sheldon Creek Tributary and eight (8) on the Bronte Creek Tributary. These transects were selected based on changes in habitat conditions along the watercourse. At each transect, biophysical information collected included (where appropriate) bankfull and wetted widths, channel structure, evidence of bank erosion, instream cover, substrate type, aquatic and riparian vegetation, and other relevant biophysical characteristics.

Fish Community Assessment: Resident fish assemblages within the study area were characterized through a review of existing fish records provided by Land Information Ontario (LIO) and field sampling conducted by HESL using a backpack electrofisher on March 19 and June 20, 2025. A Licence to Collect Fish for Scientific Purposes (Authorization #AMOS-2025-FWCA-00046) was issued by the Ministry of Natural Resources to support this work.

Fish community surveys were carried out in the Sheldon Creek and Bronte Creek tributaries, where water was present and channel conditions allowed access (i.e., not obstructed by dense vegetation). As surveys were opportunistic, locations are not shown in **Figure 2** (Survey Stations). In the Sheldon Creek tributary, sampling was conducted from the culvert at Mainway upstream to Upper Middle Road. In the Bronte Creek tributary, fish were sampled from the edge of the Mainway Woodland to Upper Middle Road, where possible. All captured fish were identified to species, photographed, and examined for any visible deformities or lesions. Following processing, all fish were returned to the tributary from which they were captured.

The following assessments/surveys were not included in this study for reasons outlined below.

- Migratory bird surveys were not included in this study. A habitat-based approach was used to determine potential for migratory bird stopover areas.
- Snake emergence surveys were not completed due to limited evidence of hibernacula.

2.2.1 Details Regarding Bat Survey Methodologies

The subsections below describe the methodologies used to assess usage of the Subject Property by bats. As noted below, these surveys focused on areas that could potentially be impacted by proposed development at the time of the survey. Locations of surveyed snags, bat acoustic monitoring stations, and areas of detection are shown on **Figure A-1** in **Appendix 4**.

2.2.1.1 Snag Surveys

Terrastory conducted snag surveys across two days in May 2024 with suitable weather conditions (i.e., clear days with no recent precipitation or snowfall).

Snags were recorded based on a targeted area search within woodlands on and adjacent to the Subject Property focused on identifying candidate maternity roost sites (e.g., snags, cavity trees, etc.) consistent with protocols outlined in the MECP Treed Habitats – Maternity Roost Surveys

(Forests/Woodlands) Protocol (2022) during leaf-off conditions (i.e., prior to bud break and leaf out). Particular effort was paid to areas with the greatest potential to support bats (i.e., woodlands having a high density of mature trees, woodland areas having or adjacent to foraging areas, etc.) and areas with the greatest potential for impact based on the proposed development plan. Information collected on each snag included location; snag identification number; tree species; tree diameter at breast height (DBH); number, size and location of cavities (where present); tree height class; presence of loose bark; tree decay class; canopy structure (e.g., open grown); and other observations the surveyor deemed applicable. The location of all snags/cavity trees ≥25 cm DBH were recorded with a GPS, along with the above noted characteristics.

The snag survey results also informed selection of acoustic monitoring locations, with clustered areas of high-quality snags (i.e., tallest snags/cavity trees with the largest DBH, extensive cavities and/or peeling bark, exhibiting early stages of decay, etc.) being prioritized for recording unit deployment within areas with the highest potential to be impacted by the proposed development plan available at the time of survey.

2.2.1.2 Acoustic Monitoring and Analysis Methodology

Seventeen (17) ultrasonic acoustic recording units (ARUs) were deployed between 21 June (pm) and 20 August 2024 (am)to characterize the assemblage of bat species that may be occupying areas of potentially suitable habitat identified within the Subject Property. The selection of deployment locations was informed by the results of the snag survey and encompassed many of the largest diameter at breast height (DBH) trees and tallest trees within the Subject Property. The units were typically deployed in canopy openings or at edges of treed habitat (offering suitable foraging habitat) bordering large high-quality cavity trees and/or snags (offering potentially suitable roosting habitat for multiple species).

The acoustic survey utilized SM4BAT full spectrum digital song meter units (Wildlife Acoustics Inc.) and ultrasonic directional microphones (SMM-U2). The ARUs were programmed to record continuously for thirty (30) minutes before sunset until thirty (30) minutes after sunrise each day. Unit settings presented below were selected to produce optimal recordings based on the recording conditions (i.e., to capture echolocation pulses in a treed environment):

- A gain setting of 12 dB (default recommended by the manufacturer to capture general foraging activity).
- 16 kHz analog high-pass filter turned on with a corresponding minimum trigger frequency of 16 kHz to minimize non-bat recordings and noise (suitable as no bat species in Ontario typically produce vocalizations with an average minimum frequency below 16 kHz).
- A 256 kHz sample rate was utilized (given that the sample rate must be double the highest expected frequency to be recorded and Ontario bat species are not known to produce calls with an average maximum frequency over 120 kHz).

Additionally, ultrasonic microphones were deployed strategically within canopy openings in locations with relatively low amounts of clutter (i.e., obstacles such as dense vegetation or built structures which may decrease recording quality by producing echoes) to achieve high quality echolocation call recordings and maximize the likelihood of bat detections.

Acoustic Data Analysis
Successful identification of bat vocalizations requires extensive knowledge of species biology, including how bats may alter call characteristics (i.e., frequency and duration) when navigating a particular environment (e.g., treed versus open habitats) or during specific behaviour (e.g., search phase calls while moving through an area versus terminal phase calls when approaching prey). It also requires that the identifier possess an understanding of how sound itself moves through the environment, so that recording artifacts such as specular and diffuse echoes, wind noise, and atmospheric attenuation of high frequencies may be accurately interpreted.

Many characteristics of sound can be recorded and analyzed with appropriate hardware and software. Full spectrum (FS) recordings (such as those created by the SM4BAT FS units) generate spectrograms which produce high resolution renderings of the duration, frequency, and amplitude of a recorded signal (i.e., bat echolocation pulse) enabling accurate measurement and analysis of the signals of interest when viewed in analysis software. Recordings were analyzed manually by Terrastory staff with the assistance of Kaleidoscope Pro Analysis Software Version 5.4.8 (Wildlife Acoustics Inc.), a program which enables the user to identify and enhance faint or overlapping signals of interest within a soundscape using band-pass filters, as well as reduce the effects of noise and scattered echoes through background noise scrubbing. Kaleidoscope software also utilizes an automated species identification ("Auto ID") call classifier based on statistical comparisons of unknown calls compared to models trained from a known call library. Auto ID allows the user to rapidly identify recorded bat echolocation calls.

A *Balanced (Neutral)* setting was selected for the software program's classifier, which balances the potential for false positive identifications and false negative identifications. This setting is strongly recommended by Wildlife Acoustics. After data has been initially sorted by the classifier and assigned a species-level identification, all files are manually reviewed by Terrastory staff to verify the identification. Occasionally, the software program's pulse-by-pulse identification will not agree with the aggregated call sequence level identification, so a species identification is not assigned. This often occurs due to multiple bats vocalizing at the same time. In these instances, a NoID classification is assigned by the software. In addition to manually verifying species-level identifications assigned by the software, Terrastory staff also manually review all files classified as NoID, to ensure that all such bat vocalizations have been manually reviewed and identified.

2.2.2 Additional Surveys to be Completed

A woodland dripline staking with the agencies has not yet occurred. The results of the staking exercise may necessitate updates to this ECR and reliant reports.

2.3 **Significance Assessment**

2.3.1 Definitions and Criteria

"Significant natural features" as described herein represent natural features and habitats that have recognized status (and therefore policy significance) within the planning jurisdiction in which an application or applications is/are proposed. Significant natural features are defined herein to include those referenced in section 2.1 of the 2020 Provincial Policy Statement (PPS), namely:

- Significant Wetlands;
- Significant Woodlands;

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

Defining "significant natural features" pursuant to the PPS is considered warranted herein as such features form part of the Region's and City's Natural Heritage Systems.

The 2021 Halton Region Official Plan (ROP) includes PPS-derived features as key features of the Regional Natural Heritage System (RNHS) as well as:

- Enhancements to Key Features including Centres for Biodiversity;
- Linkages;
- Buffers;
- Watercourses that are within a Conservation Authority Regulation Limit or that provide a linkage to a wetland or a significant woodland; and
- Wetlands other than significant wetlands.

The 2020 City of Burlington Official Plan describes the City's Natural Heritage System (NHS) as being made up of natural heritage features and areas such as woodlands, wetlands, shorelines, enhancements and buffers, and linkages. All components of the RNHS are included in the City's NHS. The City also includes hazardous lands and hazardous sites regulated by CH in their NHS.

Criteria used to determine the presence or absence of the above significant natural features within the Study Area were considered from a variety of sources including the Natural Heritage Reference Manual (NHRM, MNR 2010a), and (for SWH) the Ecoregion 7E Criteria Schedule (MNRF 2015).

Apart from PPS-derived significant natural features, this study also seeks to determine whether any natural features or hazards regulated by CH occur within the Study Area. CH regulated features and hazard lands include:

- Wetlands (significant, evaluated, or identified);
- Watercourses and their associated meander belts and floodplains;
- Valleylands;
- Steep slopes and other hazard lands; and
- Shorelines.

Like significant natural features, "significant species" represent individuals of wild species which have recognized status (and therefore policy significance) within the planning jurisdiction in which an application or applications is/are proposed. Significant species are defined herein to include:

- Species designated Endangered, Threatened, or Special Concern under O. Reg. 230/08 pursuant to the provincial *Endangered Species Act, 2007*.

- Species designated Provincially Rare (i.e., S1, S2, or S3) by the NHIC.

2.3.2 Determination

After collecting the background biophysical information and conducting the site assessments and surveys, the data was interpreted to determine whether any significant natural features, natural features/hazards regulated by CH, and/or significant species occur on the Subject Property and/or Adjacent Lands. If a natural feature or species met the significance criteria, it is considered "confirmed". If a natural feature or species may be present on the Subject Property and/or Adjacent Lands given the prevailing biophysical or habitat conditions but was not confirmed based on either background or site-specific biophysical data, it is considered potential or "candidate". Candidate significant natural features and species are treated as confirmed where no additional information is available.

2.4 Natural Heritage Policy Context

There is an overlapping municipal, provincial, and federal policy framework respecting the protection of natural heritage features and areas across southern Ontario. These requirements include objectives, policies, and directives which are principally contained in federal and provincial statutes, regulations, policy statements, Official Plans, and guidance documents. The overarching natural heritage policy framework directing identification of significant natural heritage features and natural hazards and directing development activities within the Subject Property is outlined below in **Table 3**. As noted above, a policy compliance exercise is not included in this ECR but is expected to be contained in the EIA prepared by Colucent Environmental Consulting. Rather, the ECR relies upon definitions of significant natural heritage features and natural hazards contained in relevant policy documents.

Table 3. Applicable Natural Heritage Policies.

Level of Government	Natural Heritage or Environmental Policy Requirements
Municipal	City of Burlington Official Plan (1997). Region of Halton Official Plan (2021), hereinafter referred to as the "ROP".
Provincial	Provincial Policy Statement 2020, pursuant to the *Planning Act*, R.S.O. 1990, c. P.13, including: • Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (MNR 2010a). • Significant Wildlife Habitat Technical Guide (MNR 2010b). • Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015). *Conservation Authorities Act*, R.S.O. 1990, c. C.27,. *Endangered Species Act* (ESA), S.O. 2007, c. 6, including: • Ontario Regulation 230/08 – Species at Risk in Ontario List. • Ontario Regulation 242/08 – General. • Ontario Regulation 830/21 – Exemptions – Species Subject to Species Conservation Charges *Fish and Wildlife Conservation Act,* S.O. 1997, c. 41.

Level of Government	Natural Heritage or Environmental Policy Requirements
Federal	*Fisheries Act*, R.S.C. 1985, c. F-14, including: • Fish and Fish Habitat Protection Policy Statement (DFO 2019). *Migratory Birds Convention Act*, S.C. 1994, c. 22, including: • Migratory Birds Regulations, C.R.C., c. 1035.

3 EXISTING BIOPHYSICAL CONDITIONS

The following is a description of the biophysical features and conditions of the Subject Property and Adjacent Lands (again, collectively referred to as the "Study Area"), which are shown spatially on **Figure 2**. Representative photographs are provided in **Appendix 1**.

3.1 Land-use and Landscape Setting

The Subject Property is situated in the City of Burlington, and currently contains active agricultural lands as well as forested valleylands and uplands, wetlands, Sheldon Creek main branch and two tributaries. Lands to the south consists of industrial lands, and those to the north and west consist of residential and educational land uses. Bronte Creek Provincial Park is located east of the Subject Property.

3.1.1 Bedrock Geology

As detailed in the geotechnical report (MTE 2024[1]), shale bedrock on the Subject Property is of the Queenston formation. Per Martini et al. (2011), "in Ontario, the Queenston Formation consists of a mixed terrigenous-carbonate succession composed primarily of red silty shales, which are locally gypsiferous, alternating, in the middle and lower parts of the formation, with thin grey shales, calcareous siltstone and sandstone, and bioclastic limestone. Brachiopods, some ostracodes, and, in the lower beds, bryozoans constitute the body fossil assemblage."

Bedrock was encountered at depths ranging from 1.1 to 4.6 metres below ground surface (mbgs). Above the bedrock, native soils consisted primarily of glacial till.

Per MTE 2024[1], shale bedrock typically consisted of weathered shale, though two limestone bedrock deposits were encountered at one borehole, and soil and limestone layers were also documented. Notably, saturated seams were encountered periodically throughout the shale bedrock, with minor groundwater seepage expected.

3.1.2 Topography and Surficial Geology

The ground surface elevation slopes from northwest to southwest across the Subject Property.

Topsoils are glacial tills primarily consisting of silts and sands (MTE 2024[1]). Within agricultural areas, fill materials were encountered beneath the surficial topsoil layers and are the result of agricultural tilling. In some areas, sand, silt, clay and glacial till (cohesive and non-cohesive) deposits were encountered (MTE 2024[1]). Within wetlands, soils consisted of silty clay loam.

3.1.3 Groundwater Conditions

When encountered, groundwater depths at the time of geotechnical borehole drilling completed as part of the geotechnical program ranged from 1.5 to 6.1 mbgs, and 1.3 mbgs to 4.7 mbgs at installed monitoring wells on 11 September 2023 (MTE 2024[1]). The geotechnical boreholes and monitoring wells, shown in Figure 1 of the geotechnical report, are not located within natural features.

Groundwater monitoring data from September 2023 – March 2024 is compiled in the hydrogeological report (MTE, 2024[2]). The results of the investigation suggest that local groundwater flows to the southeast towards Lake Ontario, with site infiltration being low due to the low permeability of native till soils. Notably, data collected from within wetlands indicate that the primary source of water to these features is surface water; little to no groundwater contribution to wetlands was recorded during the monitoring period.

3.1.4 Drainage and Surface Water Features

Surface water drainage features transport water, sediment, nutrients, and organic materials downgradient through the landscape. Such flows can be confined within a discrete channel (i.e., with banks and a bed), or may be conveyed via ill-defined swales or diffusely through shallow depressions which are often referred to as Headwater Drainage Features (HDFs). The characteristics and morphology (i.e., form, pattern) of such drainage features are governed by a variety of factors, chiefly flow regime (e.g., longitudinal profile/ gradient, discharge) and sediment characteristics (e.g., quantity, size, type). Such factors themselves are derived from broader landscape patterning imparted by physiography, or more specifically terrain, landforms, and geology. It follows that the types and variety of fish and aquatic habitats, along with their significance and sensitivity to adverse effects, reflects the hydraulic and geofluvial processes which created them.

The Study Area is primarily drained by three (3) tributaries forming part of two watersheds; the Sheldon Creek watershed and Bronte Creek watershed. The Sheldon Creek watershed is comprised of a watercourse (channel-dominant), swale (ill-defined channel-dominant), and HDF (no evident channel definition) segments, while the Bronte Creek watershed is comprised of a tributary and HDF segments. The watershed divide runs through the middle of the Subject Property between the Sheldon Creek tributary and Bronte Creek tributary. As indicated on **Figure 3a**, **Figure 3b** and **Figure 3c**, the Study Area tributaries include:

- **Main Sheldon Creek** – westernmost surface water feature within the Study Area comprised of a permanent watercourse flowing through a valleyland feature. Sheldon Creek originates approximately 5 km northwest of the Subject Property in the South Slope Physiography Region of the Niagara Escarpment and empties into Lake Ontario approximately 5.6 km downstream.
- **Sheldon Creek Tributary** – central surface water drainage feature that originates northwest of the Subject Property from a stormwater management pond (SWMP). This feature flows through an agricultural field and forested area on the Subject Property, eventually draining to a catchbasin in a ditch along Mainway. Water from this catchbasin is piped and released to the Main Sheldon Creek at Sutton Drive approximately 700 m south of the Subject Property (**Photo 68**, **Appendix 1**).
- **Bronte Creek Tributary** – easternmost surface water drainage feature that originates from a stormwater management pond northwest of the Subject Property and flows primarily

through agricultural fields and a small wetland prior to emptying into a catchbasin at Mainway (**Photo 46**, **Appendix 1**). Water during low-flow conditions is collected in the catchbasin is directed to Sheldon Creek and does not convey flows to Bronte Creek provincial park. Under high flows, water that cannot be accommodated by the aforementioned catchbasin follows an overland flow path and is directed to the Bronte Creek tributary downstream of Mainway, which then outlets to Bronte Creek Provincial Park Tributary 2 (**Photos 64** and **67**, **Appendix 1**).

Detailed photos of HDFs and each tributary are contained in **Appendix 8** and **Appendix 10**, respectively.

The tributaries collectively drain a complex terrain consisting of mostly farmed and forested tablelands containing wetland features and dissected valleylands. Historic redirection of surface water is evident in multiple locations. Flows are conveyed in a predominantly southward direction, eventually discharging into Lake Ontario approximately 5 km southeast of the Subject Property.

Notably, according to the City of Burlington's infrastructure drawings all catchbasins along Mainway, including those within the Bronte Creek subwatershed, are directed to the main branch of Sheldon Creek. Only water within MTE's water budget catchment area 9 (which contain HDFs BCT-1 through 3) and a portion of the water from Bronte Creek Tributary during high flows are directed to Bronte Creek (MTE 2024[3]).

Fish habitat conditions are detailed in **Section 3.2.13**.

3.2 Ecological Setting

The following sections details the results of various biophysical surveys completed in 2022 through 2024 (to the time of writing). Where relevant, annotated species lists / survey results are referenced in each section.

3.2.1 Vegetation Communities

As illustrated in **Figure 4**, thirty-eight (38) natural and semi-natural vegetation communities (i.e., excludes agriculture, built features, and hedgerows) consisting of seventy-four (74) distinct units were identified within the Subject Property. Of these, the Dry – Fresh Oak – Hickory Deciduous Forest (FODM2-3)[2], located in the western portion of the Mainway Woodland, and the Bur Oak Mineral Deciduous Swamp (SWDM1-2)[3] that constitutes a portion of the Sheldon Creek Woodland, are provincially significant having provincial ranks of S3S4 and S3, respectively.

Vegetation communities are listed in **Table 11**, which is found after **Figure 4 - Vegetation Communities**.

The most extensive vegetation community by area overall is agriculture – row crops which, at the time of the assessments up to June 2025, consisted of either Corn (*Zea mays*) or Soya Bean (*Glycine max*), or was recently ploughed (to accommodate archaeological investigations). The most extensive

[2] Dry – Fresh Oak – Hickory Deciduous Forest (FODM2-3) is considered analogous to the Dry – Fresh Hickory Deciduous Forest (FOD2-3) described in Lee et al. 1998.
[3] Bur Oak Mineral Deciduous Swamp (SWDM1-2) is considered analogous to the Bur Oak Mineral Deciduous Swamp (SWD1-2) described in Lee et al. 1998.

natural vegetation community by area overall is Dry – Fresh Sugar Maple – Oak Deciduous Forest (FODM5-3), which accounts for 15.14 ha (37.41 acres). Forest and woodland communities (all types) represent the dominant natural vegetation community on the Subject Property and Adjacent Lands. These forests and woodlands, represented by the Mainway Woodland, Sheldon Creek Woodland, and Sheldon Creek Valley Woodland; are mid-aged to mature and exhibit evidence of varying levels of disturbance, including historic logging and grazing, which is to be expected given the history of land use. For example, aerial photographs from 1954 show a portion of the Mainway Woodland east of the Bronte Creek Tributary as having been partially cleared. Presently, trees in this area are younger than the mid-aged to mature forest elsewhere in the Woodland. Notably, several trees in all three woodlands (most of which are Oaks [*Quercus* spp.]) are estimated to be over 100 years of age. Centenarian trees are especially evident in the area near where the Sheldon Creek Valley Woodland and Sheldon Creek Woodland meet.

Vegetation communities in riparian areas outside of woodlands (i.e., adjacent to agricultural lands) along the Sheldon Creek and Bronte Creek tributaries consist of various shallow and meadow marshes dominated by exotic species. Owing to historic and ongoing agricultural practices, these vegetation communities are anthropogenically derived and experience ongoing anthropogenic influence, the latter of which is especially evident when comparing aerial photographs of dry years, where the edges of the vegetation communities are farmed, to wet years, where the edges are not farmed.

3.2.2 Vascular Plants

A total of 186 vascular plant species were recorded within the Subject Property and Adjacent Lands. Of these, 69% are considered native to Ontario and 31% are considered non-native or introduced. Of the species recorded, the following is significant:

- Bristly Buttercup (*Ranunculus hispidus*) – S3

Bristly Buttercup is also considered Regionally rare according to the Halton Natural Areas Inventory (Crins et al., 2006). One stem was recorded on the east-facing slope of the Sheldon Creek valley and given this, it is not likely that the population is viable.

One of the species recorded, Bebb's Oak (*Quercus x bebbiana*), has not previously been recorded in Halton Region according to Crins et al. A single Bebb's Oak was recorded on the southern edge of the Sheldon Creek Woodland, east of wetland SCW-3. Generally, hybrids are not candidates for conservation efforts.

The Floristic Quality Index (FQI) value for native species inventoried is 42.51. When non-native species are included in this calculation, the FQI value is 35.27. FQI values between 35 and 50 are considered to possess sufficient conservatism and richness to be floristically important from a provincial perspective. The FQI values calculated for this project are influenced by species diversity, disturbed habitats within the Subject Property, and history of land management (e.g., selective logging, livestock grazing within woodlands and other areas, and agriculture).

The mean coefficient of conservatism (CC) for native species and all species is 3.76 and 2.59, respectively. Mean native CC values above 3.50 indicate the area inventoried is of sufficient floristic quality to be of remnant natural quality. The mean native coefficient of wetness (CW) for native

species is 0.82, and for all species is 1.34, indicating in both cases a slight predominance of upland species within the area surveyed.

An annotated list of species recorded during vascular plant inventories is provided in **Appendix 2**.

3.2.3 Lichens

As provided in **Appendix 3**, a total of fifty-five (53) lichen species and one (1) lichen complex were identified during lichen surveys. Of these, the following four (4) species are considered significant and are included in the Significant Wildlife Habitat assessment in **Appendix 12**:

- A Lichen (*Arthonia lapidicola*), previously unrecorded in Ontario
- A Lichen (*Lithothelium septemseptatum*), S1S3
- Bachman's Jelly Lichen (*Enchylium bachmanianum*), S3
- Speckled Blister Lichen (*Viridiothelium virens*), S3

All but the Bachman's Jelly Lichen were recorded within woodlands on and adjacent to the Subject Property. Bachman's Jelly Lichen was recorded on the edge of an agricultural field near a meadow adjacent to the Sheldon Creek Woodland. See **Figure 6** for record locations; representative photographs of rare lichens recorded on the Subject Property are included as **Photos 57** - **61** in **Appendix 1**.

Arthonia lapidicola occurs on many different rock types but is most often found on siliceous rock.

Lithothelium septemseptatum and Speckled Blister Lichen are corticolous (i.e., occurring on bark) on woody plants, most often mature trees. The latter species most often occurs on smooth-barked trees such as Beech (*Fagus grandifolia*), which is where it was found during lichen surveys.

Bachman's Jelly Lichen is terricolous on periodically wet soil in areas with limited competition from terrestrial plants. It is therefore sensitive to changes in hydrology as well as trampling and succession.

While literature on the abovementioned species is limited, various studies have demonstrated that air pollution, sunlight, precipitation, temperature, wind, and slope are major environmental factors that influence the distribution of lichen communities (Chowaniec et al. 2023; Cung et al., 2021; Morillas et al. 2021; Trest et al. 2015; Shrestha et al. 2012; Anstett 2010). Moreover, research has shown that, with some exceptions, corticolous lichens are sensitive to increased sunlight, temperatures, and exposure to precipitation following tree and tree canopy dieback (Borge and Ellis 2024; Chowaniec et al. 2023; Morillas et al. 2021; Trest et al. 2015).

3.2.4 Bats

Recent guidance provided by the MECP (i.e., Preliminary Technical Habitat Summary for Bats, August 2025) is used in this report for the purpose of defining and delineating bat habitat under the amended *Endangered Species Act* and for the purpose of defining the preliminary RNHS. The guidance document defines several types of "dwelling places" and complementary habitat areas in proximal distance to a dwelling place. The MECP (pers. comm. October 2025) has confirmed that the August 2025 guidelines are used internally during the interim period while formal guidance to support the

forthcoming *Species Conservation Act* is being developed. As such, the habitat description may be subject to change. Per the August 2025 interim guidelines, bat habitat is described as follows:

> *Hibernating and swarming habitat (for Resident Bats) generally includes:*
> - *as a dwelling place, the entire natural feature or anthropogenic structure (e.g., cave, crevice, mine, tunnel), including all entry points and extent of underground chambers, occupied for wintering (hibernation) and breeding (swarming) (hereafter, "hibernaculum")*
> - *all areas immediately within a 200 m radius of the hibernaculum*
> - *the portion of the area required by the species for the purposes of breeding in the fall and staging in the spring, up to a 1000 m radius from the hibernaculum*
>
> *Maternity Roosting Habitat (for resident and migratory species), which generally includes:*
> - *a dwelling place, the natural roost feature (e.g., tree, snag, rock) or entire anthropogenic structure (e.g., entire bridge, barn, or rock pile) occupied for breeding (gestation, birth) and rearing pups (hereafter, "maternity roost")*
> - *the portion of the area required by the species for breeding and rearing pups, up to a 1000 m radius from the maternity roost*
> - *Habitat for breeding, staging and rearing includes forests, meadows, wetlands, ponds, riparian corridors, rock barrens and rock outcrops.*
>
> *Migratory stopover habitat (for migratory species), which generally includes:*
> - *a dwelling place, the natural roost feature (e.g., tree) or anthropogenic structure (e.g., building) occupied for staging during migration*
> - *the portion of the area required by the species for staging during migration, up to a 1000 m radius from the occupied feature or structure*
>
> *Overwintering habitat (for Migratory Bats) generally includes:*
> - *as a dwelling place, any habitat feature or structure (e.g., tree, leaf litter, natural cavity or building) occupied by a migratory bat for wintering*
> - *all area* [sic] *immediately within a 25 m radius of the occupied feature or structure*

As noted in the guideline document, "this information is general in nature. Delineation of protected habitat will generally need to be undertaken on a case-by-case basis, taking into account context specific factors such as species-specific biology and habitat needs and local conditions".

Furthermore, for the purpose of characterizing habitat use and assessing impacts to bats and their habitat (the latter of which will be included in the EIA), bat habitat has been categorized as follows:

1. Potential Maternity Roost
   - Means an area where bats were recorded within 30 minutes of sundown, indicating reasonable potential for the presence of a maternity roost nearby.
   - Most sensitive to adjacent development.

2. Area of High Bat Activity
   - Means an area with above average records for bats overall and/or for a species (e.g., Hoary Bat) and/or species group (e.g., Myotis and Perimyotis species, Big Brown Bat/Silver-haired Bat), relative to other areas surveyed.

- Conservatively, areas of high bat activity could also indicate the presence of a nearby maternity roost, however for surveyed sites in this category (apart from ARU-C) there were no records of bats within 30 minutes of sundown.
- Typically corresponds to areas supporting a relatively high amount of feeding activity and/or a corridor.

3. Bat Habitat, General
   - Means an area where bats were recorded or are expected to occur based on available habitat(s) that is not a potential maternity roost or an area of high bat activity.
   - Potentially suitable habitat within a 1000 m radius of a "dwelling place" as described in the MECP's Preliminary Technical Habitat Summary for Bats guideline document.

The assessment of bat habitat for the purposes of identifying Endangered species habitat under the ESA considers of the guidance provided by the MECP and Terrastory's knowledge of bat biology, behaviour, and habitat requirements, and is detailed below. The assessment of bat habitat contained in this report is subject to confirmation by the MECP.

Survey Results

Evidence of potential day roost activity was recorded at all acoustic monitoring deployment areas. Potential maternity roosts, as evidenced by a relatively high number of passes recorded and call type(s) recorded coupled with calls recorded near sundown (when bats would be exiting a maternity roost), are present in the Sheldon Creek Woodland. As the recording capability of the ARUs cover a radius of approx. 30 m, potential maternity roosts could include one or multiple trees within that radius. Similarly, areas of relatively high bat activity (either overall or per species/species group) are also limited to the 30 m recording radius, however the area of high usage by bats may be larger than the 30 m radius from the ARU however the exact boundaries of the usage area is not known. As such, the limitations of the data collection should be considered when interpreting the survey results herein. For the purpose of this report, locations of both potential maternity roosts and areas of high bat activity are shown as areas of natural cover 30 m from an ARU (**Figure 6**). Snags and the locations of ARUs for each deployment area are illustrated in **Appendix 4**, **Figure A-1**.

One potential maternity roost area in the Sheldon Creek Woodland for Big Brown Bat/Silver-Haired Bat (i.e., in and/or around Snags Sn-13 and Sn-14) and ten (10) areas of high bat activity were identified through this study. Bat habitat types categorized in accordance with the MECP's guidelines are described below. A summary of the results of the bat surveys is presented in **Table 4**, with details provided in **Section 3.2.4.1** and **Section 3.2.4.2**.

Roosting Habitat

It is important to note that identification of maternity roosts is extremely difficult, requiring exit surveys and/or radio telemetry surveys. To further complicate identification of maternity roosts, bats often move roosts throughout the season (i.e., utilizing a network of roost trees and/or buildings) and species may exhibit various degrees of roost fidelity from year to year. Bats use multiple roost sites to account for optimal temperature and proximity to feeding areas in response to changing conditions and, in some cases, bat population dispersion. The acoustic monitoring data is able to tell surveyors that a roost likely exists in the area, based on the timing of recorded bat calls. The **two (2) potential maternity roosts** (i.e., Snags Sn-13 and Sn-14) within the maternity roost area identified in the Sheldon Creek Woodland are estimates based on the information available. It is

possible that the potential maternity roosts identified in this report do not function as roosts, and that other maternity roosts are present. In addition, the acoustic monitoring data coupled with availability of habitat suggests that day roosts may exist in all areas surveyed.

Potential Migratory Stopover and Overwintering Habitat

Eastern Red Bat, Hoary Bat, and Silver-haired Bat migrate seasonally from northern summer ranges within Ontario to southern wintering areas where hibernation occurs. Migration is a poorly understood aspect of bat biology, with few publications describing stopover sites. Southern wintering areas for these three species are generally outside of Ontario, with Eastern Red Bat and Hoary Bats overwintering in the southern United States and Mexico. Records exist of Silver-haired Bat overwintering as far north as Point Pelee National Park in Ontario (Fraser et al. 2017; Kurta et al. 2018).

Little is known about migration of these species; however, existing data suggests that all three species will cross open habitats during migration but may select for roosts close to forested habitats, such as those along forested riparian corridors or along shorelines (Baerwald and Barclay 2009; McGuire et al. 2012). Silver-haired Bat may preferentially select migratory stopover areas based on the presence of roost availability and foraging habitat (McGuire et al. 2012). Silver-haired Bats have been documented utilizing stopover sites at Long Point, Ontario (McGuire et al. 2012).

Migrating bats typically stop over to escape inclement weather or for short-term rest, as opposed to extended rest and refuelling as songbirds are known to do (McGuire et al. 2012). It is hypothesized that the annual fall migration of these species may concentrate their numbers in stopover areas, although additional studies are needed.

Hibernation and swarming habitat for resident bats is not present within the Study Area as suitable hibernation habitat (e.g., caves, mines, karst, underground tunnels) is not present within the Study Area and the adjacent landscape. In addition, **overwintering habitat for migratory bats is not present within the Study Area**, as the Study Area is well north of migratory bats' overwintering range.

General Habitat

Bats were recorded in all areas surveyed, and based on available habitats present it is the opinion of Terrastory that all woodlands within and adjacent to the Study Area provide habitat for bats, as do wetlands within the Sheldon Creek and Mainway Woodlands. Areas of high bat activity are indicative of preferred foraging areas. Riparian wetlands outside of woodlands and adjacent meadowlands, most of which are within 1,000 m of the potential maternity roost area identified in the Sheldon Creek Woodland, could provide foraging opportunities for bats (which supports the rearing of pups). However, due to the density of non-native vegetation such as Phragmites and Narrow-leaved Cattail, insect prey associated with these riparian wetlands may be limited compared to more structurally diverse wetlands (e.g., those with open water, diversity of plant species and forms, etc.). However, portions of the riparian corridor that contain a matrix of different habitat types, such as the portion of the Sheldon Creek Tributary corridor north of the Mainway Woodlands, may offer better foraging opportunities owing to the structural diversity of habitat types/form. Small pockets of Phragmites between the Sheldon Creek and Mainway Woodlands are not expected to provide meaningful habitat opportunities for bats. Furthermore, meadows and thickets within 1,000 m of the identified maternity roost area are relatively small but owing to some features' adjacency to woodlands and riparian areas, may offer bats opportunities for foraging.

Table 4. Bat Survey Data Summary

ARU Deployment Area	Potential Maternity Roost	Area of High Activity	General Habitat, incl. Potential Day Roosts	Location, Species, and Relevant Snags (for Potential Maternity Roosts and Areas of High Activity Only)
A	-	x	x	• Sheldon Creek Valley Woodland • High activity overall and for all species
B	-	x	x	• Sheldon Creek Valley Woodland • High activity overall and for all species except Myotis spp. and Perimyotis
C	x	x	x	• SW portion of Sheldon Creek Woodland • High activity overall and for all species except Myotis spp. and Perimyotis • Potential maternity roost(s) for Big Brown Bat/Silver-Haired Bat in and/or around Snags Sn-13 and Sn-14 (large dia. Red Oaks) based on timing and amount of calls recorded
D	-	-	x	-
E	-	-	x	-
F	-	-	x	-
G	-	-	x	-
H	-	x	x	• SE portion of Sheldon Creek Woodland • High activity for Myotis and Perimyotis species
I	-	-	x	-
J	-	-	x	-
K	-	-	x	-

ARU Deployment Area	Potential Maternity Roost	Area of High Activity	General Habitat, incl. Potential Day Roosts	Location, Species, and Relevant Snags (for Potential Maternity Roosts and Areas of High Activity Only)
L	-	x	x	• NE portion of Sheldon Creek Woodland • High activity overall and for all species except Red Bat
M	-	x	x	• Western edge of Mainway Woodland • High activity overall and for Myotis spp. and Perimyotis
N	-	x	x	• Mainway Woodland, west of the Sheldon Creek Tributary • High activity overall and for Myotis spp. and Perimyotis
O	-	x	x	• Mainway Woodland • High activity overall and for all species recorded except Myotis spp. and Perimyotis
P	-	x	x	• Mainway Woodland • High activity for Myotis and Perimyotis species
Q	-	x	x	• Mainway Woodland • High activity overall and for Big Brown Bat/Silver-haired Bat, and Hoary Bat.

3.2.4.1 Snag Surveys

A summary of the snag survey results is presented below; with detailed results presented in **Appendix 4**. It is important to note that confirmation of individual maternity roost trees is extremely challenging, particularly as many SAR bats are known to switch roost trees throughout the summer, with species exhibiting various degrees of roost fidelity from year to year. Bats use multiple roost sites to account for optimal temperature and proximity to feeding areas in response to changing conditions and, in some cases, bat population dispersion.

Deployment Area A

Snags/cavity trees were scattered throughout the forest community, with five (5) cavity trees identified within 30 m of the recording unit. Two (2) large diameter trees (i.e., >50 cm DBH) with

loose bark were recorded (i.e., Snags #05-06), alongside several (3) smaller snags with small cavities and loose bark (i.e., Snags #02-04).

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively high amount of bat activity in proportion to average activity recorded within the Study Area), it is possible that these snags/cavity trees within Deployment Area A act as day roots and/or, based on the high numbers of passes recorded (over 5,700; see **Section 3.2.4.2**), maternity roosts for Big Brown Bat/Silver-Haired Bat and SAR bats; however, it is equally likely that Sheldon Creek and the immediate creek corridor are providing foraging opportunities for bats, as supported by the numerous feeding buzzes recorded throughout the duration of the unit deployment.

Deployment Area B

Snag/cavity tree distribution was patchy throughout the forest community, with three (3) cavity trees identified within 30 m of the recording unit. All three (3) were large diameter trees (i.e., >50 cm DBH) (i.e., Snags #83-85), exhibiting large cavities, cracks, and hollows.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively high amount of bat activity in proportion to average activity recorded within the Study Area), it is possible that these snags/cavity trees within Deployment Area B act as day roots and/or, based on the high numbers of passes recorded (over 6,600; see **Section 3.2.4.2**), maternity roosts for Big Brown Bat/Silver-Haired Bat and SAR bats; however, it is equally likely that Sheldon Creek and the immediate creek corridor are providing foraging opportunities for bats, as supported by the numerous feeding buzzes recorded throughout the duration of the unit deployment.

Deployment Area C

Snag/cavity tree distribution was patchy throughout the forest community, with two (2) trees identified within 30 m of the recording unit. Both trees were large diameter Red Oak (i.e., >50 cm DBH) (i.e., Snags #13-14) with loose bark; however, neither tree was found to exhibit cavities, cracks, crevices, hollows, or retained dead leaf clusters.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively high amount of bat activity in proportion to average activity recorded within the Study Area), it is possible that these snags/cavity trees within Deployment Area C act as day roots and/or, based on the high number of passes recorded (over 4,400; see **Section 3.2.4.2**), maternity roosts for Big Brown Bat/Silver-Haired Bat and SAR bats; however, it is equally likely that Sheldon Creek and the immediate creek corridor are providing foraging opportunities for bats, and detections represent bats moving towards the creek corridor.

Deployment Area D

Snag/cavity tree distribution was patchy throughout the forest community, with three (3) trees identified within 30 m of the recording unit. None were large diameter snags/cavity trees; however, all three (3) trees exhibited cavities, hollows, and/or loose bark.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively low amount of bat activity in proportion to average activity recorded within the Study Area), it is unlikely

that snags/cavity trees within Deployment Area D support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area E

Snag/cavity tree distribution was patchy throughout the forest community, with three (3) trees identified within 30 m of the recording unit. One of these trees is a large diameter snag/cavity tree (i.e., >50 cm DBH) (i.e., Snag #16), exhibiting large cavities, and a hollow trunk.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively low amount of bat activity in proportion to average activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area E support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area F

Snag/cavity tree distribution is generally sparse throughout the forest community, with one (1) snag/cavity tree identified within 30 m of the recording unit. This tree is a small diameter, standing dead tree exhibiting two moderately-sized cavities.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively low amount of bat activity in proportion to average activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area F support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area G

Snag/cavity tree distribution is generally sparse throughout the forest community, with three (3) snag/cavity trees identified within 30 m of the recording unit. Two (2) trees (i.e., Snags #44, 48) were of a large diameter (i.e., >50 cm DBH) and possessed shallow cavities, knot holes, and a large hollow.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively low amount of bat activity in proportion to average activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area G support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area H

Snag/cavity tree distribution is generally dense throughout the forest community, with six (6) snag/cavity trees identified within 30 m of the recording unit. One (1) tree (i.e., Snag #39) was of a large diameter (i.e., >50 cm DBH) with loose bark.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively low amount of bat activity in proportion to average activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area H support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area I

Snag/cavity tree distribution is generally dense throughout the forest community, with six (6) snag/cavity trees identified within 30 m of the recording unit. One (1) tree (i.e., Snag #26) was of a large diameter (i.e., >50 cm DBH) with loose bark.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively low amount of bat activity in proportion to average activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area I support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area J

Snag/cavity tree distribution is generally dense throughout the forest community, with four (4) snag/cavity trees identified within 30 m of the recording unit. One (1) tree (i.e., Snag #54) was of a large diameter (i.e., >50 cm DBH) with loose bark.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively low amount of bat activity in proportion to average activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area J support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area K

Snag/cavity tree distribution is generally dense throughout the forest community, with two (2) snag/cavity trees identified within 30 m of the recording unit. Neither tree (Snag # 58-59) is of a large diameter, but both exhibit multiple moderately-sized cavities.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively low amount of bat activity in proportion to average activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area K support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area L

Snag/cavity tree distribution is generally dense throughout the forest community, with three (3) snag/cavity trees identified within 30 m of the recording unit. None of these trees (Snags # 61-63) are of a large diameter, but some exhibit small defects or knot holes.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively high amount of bat activity in proportion to average activity recorded within the Study Area), it is possible that these snags/cavity trees within Deployment Area L act as day roots and/or, based on the high numbers of passes recorded (over 2,282; see **Section 3.2.4.2**), possible that they act as maternity roosts for Big Brown Bat/Silver-Haired Bat and SAR bats.

Deployment Area M

Snag/cavity tree distribution is generally sparse throughout the forest community, with one (1) snag/cavity tree identified within 30 m of the recording unit. The tree (i.e., Snag #54) was of a large diameter (i.e., >50 cm DBH) with one cavity forming in an old knot hole.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively low amount of bat activity in proportion to average activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area M support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area N

Snag/cavity tree distribution is generally sparse throughout the forest community, with one (1) snag/cavity tree identified within 30 m of the recording unit. The tree (i.e., Snag #92) was of a large diameter (i.e., >50 cm DBH) with two cavities forming in old knot holes.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively low amount of bat activity in proportion to average activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area N support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area 3 (O)

Snag/cavity tree distribution is generally patchy throughout the woodland community, with one (1) snag/cavity tree identified within 30 m of the recording unit. The tree (i.e., Snag #78) was of a large diameter (i.e., >50 cm DBH) with a large crack and moderate-sized cavities.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively average amount of bat activity in proportion to activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area 3 (O) support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area 4 (P)

Snag/cavity tree distribution is generally patchy throughout the forest community, with three (3) trees identified within 30 m of the recording unit. The trees (i.e., Snags #97-99) generally exhibited large cavities and knot holes, and one was of a large (i.e., >50 cm DBH) diameter.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively average amount of bat activity in proportion to activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area 4 (P) support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

Deployment Area 5 (Q)

Snag/cavity tree distribution is generally patchy throughout the forest community, with five (5) snag/cavity trees identified within 30 m of the recording unit. The trees (i.e., Snags #73-77) generally exhibited small cavities and loose bark.

In conjunction with results of the acoustic monitoring data analysis (which suggests a relatively average amount of bat activity in proportion to activity recorded within the Study Area), it is unlikely that snags/cavity trees within Deployment Area 5 (Q) support maternity roosting, although they may function as day roosts for Big Brown Bat/Silver-Haired Bat.

3.2.4.2 Acoustic Monitoring

Acoustic detections of bats via recorded ultrasonic calls can be used to ascertain species presence and relative activity at a specific locality. Notwithstanding this, the number of detections (or "passes") does not necessarily equate with the total number of individuals present at a particular station since the same individual may be recorded by the ARU several times while flying/foraging in the local area. Further, it is often not possible to infer whether a recorded bat was interacting with the immediate habitat (i.e., foraging, roosting nearby, etc.) or simply making a short- or long-distance foray through the local landscape. Additionally, acoustic survey data is often considered a screening tool meant to inform more logistically challenging and intensive surveys such as mist-netting and radio telemetry work (Ford et al., 2023); however, acoustic surveys may occasionally prove more effective at detecting certain species (e.g., Little Brown Bat) than more invasive surveys such as mist-netting (Hohoff and Deppe, 2024). In recognition of the above, the results presented herein should not be interpreted as definitive.

The acoustic monitoring results are summarized in **Appendix 4** and discussed in greater detail below. A total of 39,392 detections were made over the two-month survey period. Five (5) Endangered bats were recorded and are discussed further in **Section 4.6**:

Resident Species

- Little Brown Myotis (*Myotis lucifugus*);
- Tri-colored Bat (*Perimyotis subflavus*);

Migratory Species

- Northern Hoary Bat (*Lasiurus cinereus)*;
- Eastern Red Bat (*Lasiurus borealis*); and
- Silver-haired Bat (*Lasionycteris noctivagans*).

All species above are designated as Endangered provincially. Aside from the five (5) Species at Risk mentioned above, all other bat species recorded within the Subject Property have been assigned a S-Rank (Sub-national Rank) of S4 by the Natural Heritage Information Centre (NHIC) indicating that their population in Ontario is "Apparently Secure" (NHIC 2022). Big Brown Bat and Silver-haired Bat generated the greatest number of recordings across the Study Area with 28,692 detections collectively (representing 72.8% of total detections). Silver-haired Bat, Red Bat, and Hoary Bat were recently listed as Endangered in Ontario (i.e., February 2025).

There is overlap in the amplitude and peak frequencies of Big Brown Bat and Silver-haired Bat calls such that many recordings cannot be reliably attributed to one species or the other. Only recordings with an amplitude ≥65 kHz can be attributed to Big Brown Bat, while mostly flat recordings with a peak frequency around 26-30 kHz are diagnostic for Silver-haired Bat (Humboldt State University Bat Lab 2011; Western University Bat Lab 2012; Thorne 2017). Some of the Big Brown Bat recordings were high quality (i.e., clear high frequency element, ≥65 kHz high amplitude, presence of harmonics) which likely indicates such individuals were recorded in close proximity to the ARU microphone and allowed for reliable identification to species. Note that per the SWH) criteria for

Ecoregion 7E, both Big Brown Bat and Silver-haired Bat are considered representative species for Bat Maternity Colonies.

Although the calls of *Myotis* species are typically distinct from those of other Ontario bat species, identification of *Myotis* calls to species is often challenging due to overlapping call characteristics, requiring a combination of high-quality recordings, extensive call analysis experience, and local knowledge (Western University Bat Lab 2012; Thorne 2017). Given the challenges associated with recording moving wildlife within complex soundscapes, not all calls recorded by the ARU's microphone may be of high enough quality to identify to species. Where this has occurred, calls have been identified as an unknown *Myotis* species.

The calls of Little Brown Myotis may be reliably distinguished from other Ontario *Myotis* species based on their relatively longer durations and lower minimum frequencies (Western University Bat Lab 2012; Thorne 2017). High-quality Eastern Small-footed Bat calls may be identified based on a higher minimum frequency and shorter duration than calls of Little Brown Myotis (Mukhida et al. 2004; Western University Bat Lab 2012), and a lower FME than Northern Myotis (*M. septentrionalis*) (Western University Bat Lab 2012). Additionally, calls of Northern Myotis are typically shorter in duration than calls of other Ontario *Myotis* species, with higher maximum frequencies. No Northern Myotis calls or Eastern Small-footed Bat calls were identified during acoustic data analysis; however, it is possible that either species may be present within the Subject Property but not represented by high-quality acoustic recordings.

Deployment Area A:

The number of total bat detections over the survey period is considered relatively high in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (73.6%) within Deployment Area A, with evidence of foraging activity (i.e., approach phase calls and feeding buzzes) frequently recorded.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests possible absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period; however, roosting cannot be confirmed through acoustic surveys alone. Furthermore, numerous detections of feeding buzzes within Myotis recordings suggests that the Sheldon Creek valley may provide suitable foraging habitat.

Tri-colored Bat was also recorded within Deployment Area A; however, the relatively low number of passes recorded (4) suggests that these individuals were likely travelling through the area.

Deployment Area B:

The number of total bat detections over the survey period is considered relatively high in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (85.1%) within Deployment Area B with evidence of foraging activity (i.e., approach phase calls and feeding buzzes) being frequently recorded.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests possible absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period; however, roosting cannot be confirmed through acoustic surveys alone. Furthermore, numerous detections of feeding buzzes within Myotis recordings suggests that the Sheldon Creek valley may provide suitable foraging habitat.

Tri-colored Bat was also recorded within Deployment Area B; however, the relatively low number of passes recorded (1) suggests that this individual was likely travelling through the area.

Deployment Area C:

The number of total bat detections over the survey period is considered relatively high in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (77.9%) within Deployment Area C with evidence of foraging activity (i.e., approach phase calls and feeding buzzes) being frequently recorded.

It is possible that the high bat activity recorded represents foraging behaviour and dispersals toward foraging areas adjacent Sheldon Creek. Big Brown Bat and Silver-haired Bat are known to forage in open spaces and along the edge of treed features (i.e., along woodland edges and hedgerows) (Western University Bat Lab 2012; Thorne 2017); therefore, these results are not surprising given Deployment Area C's proximity to available edge habitat. It is also possible that bats are utilizing areas of loose bark (or another defect which was not visible from the ground) in Snags #13-14 (or alternatively, a nearby tree, such as Snag #15).

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that several periods of recording activity (i.e., ten instances) were triggered by an individual flying in the vicinity of the unit microphone within 30 minutes before sunrise during the month of June. This suggests that Myotis may be roosting under loose bark in Snags #13-14 (or in a defect which was not visible from the ground), or roosting activity may be occurring nearby within the forest (such as in Snag #15).

Deployment Area D:

The number of total bat detections over the survey period is considered relatively low in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (72.6%) within Deployment Area D.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area E:

The number of total bat detections over the survey period is considered relatively low in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (73.7%) within Deployment Area E.

"Unknown Myotis" were also recorded within Deployment Area E; however, the relatively low number of passes recorded (3) suggests that individuals were likely travelling through the area.

Deployment Area F:

The number of total bat detections over the survey period is considered relatively low in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (38.6%) within Deployment Area F.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area G:

The number of total bat detections over the survey period is considered relatively low in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (37.3%) within Deployment Area G.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area H:

The number of total bat detections over the survey period is considered relatively low in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (52.8%) within Deployment Area H.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area I:

The number of total bat detections over the survey period is considered relatively low in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (60.0%) within Deployment Area I.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area J:

The number of total bat detections over the survey period is considered relatively low in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (65.2%) within Deployment Area J.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area K:

The number of total bat detections over the survey period is considered relatively low in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (65.7%) within Deployment Area K.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area L:

The number of total bat detections over the survey period is considered moderate-to-high in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (60.1%) within Deployment Area L.

Given Deployment Area L's proximity to edge habitat, it is possible that the moderate-to-high bat activity recorded represents foraging behaviour. Big Brown Bat and Silver-haired Bat are known to forage in open spaces and along the edge of treed features (i.e., along woodland edges and hedgerows) (Western University Bat Lab 2012; Thorne 2017). This is further supported by the presence of multiple feeding buzz recordings throughout the data.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests possible absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period; however, roosting cannot be confirmed through acoustic surveys alone..

Deployment Area M:

The number of total bat detections over the survey period is considered relatively low in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (52.3%) within Deployment Area M.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area N:

The number of total bat detections over the survey period is considered relatively low in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (67.9%) within Deployment Area N.

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area 3 (O):

The number of total bat detections over the survey period is considered average in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (63.4%) within Deployment Area 3 (O).

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area 4 (P):

The number of total bat detections over the survey period is considered average in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (63.4%) within Deployment Area 4 (P).

Time-stamps of the Myotis recordings (i.e., Little Brown Myotis or an "Unknown Myotis") reveal that recording activity was not triggered by an individual flying in the vicinity of the unit microphone within 30 minutes (before or after) of sunset or 30 minutes (before or after) sunrise during the month of June. This suggests probable absence of roosting activity by a *Myotis* species within the trigger distance of the device microphone within the survey period.

Deployment Area 5 (Q):

The number of total bat detections over the survey period is considered average in relation to the Study Area as a whole. Big Brown Bat / Silver-haired Bat calls represented the majority of recorded calls (75.7%) within Deployment Area 5 (Q).

No evidence of Myotis (i.e., Little Brown Myotis or an "Unknown Myotis") was recorded within Deployment Area 5 (Q).

3.2.5 Stick and Cavity Nests

A total of six (6) stick nests were recorded during stick nest surveys and incidentally during other surveys. Most nests belonged to Bluejay (*Cyanocitta cristata*), a common urban-adapted species. One possible Red-tailed Hawk (*Buteo jamaicensis*) nest was found in a supercanopy White Pine (*Pinus strobus*) tree in the northeastern portion of the Sheldon Creek Woodland (location shown in **Figure 6**).

While no nest was found, Terrastory did observe an agitated Cooper's Hawk (*Astur cooperii*) repeatedly returning to what is presumed to be a nest north of anuran calling station AN-6, in the eastern portion of the Mainway Woodland between Wetlands BCW-1 and BCW-2. This general location is not included in **Figure 6**.

A Downy Woodpecker (*Dryobates pubescens*) cavity nest was recorded in a large diameter Beech near snag no. Sn-102 in the Sheldon Creek Woodland. A Hairy Woodpecker (*Dryobates villosus*) cavity nest was recorded in the woodland south of the Sheldon Creek Valley Woodland, approx. 160 m south of Mainway. Neither of these species are of conservation concern.

3.2.6 Breeding Birds

Breeding bird surveys were conducted at seven (7) stations (stations B-1 to B-7). The first survey was conducted on 24 May 2023 and the second survey took place on 16 June 2023. A total of forty-three (43) bird species were detected. Two (2) of the species recorded, European Starling (*Sturnus vulgaris*) and House Sparrow (*Passer domesticus*) are non-native. See **Appendix 5** for breeding bird survey results.

Of the forty-one (41) native species recorded, thirty-five (35) are considered at least possibly breeding within the study area. Three (3) species were determined to be flyovers (Fl) with no suitable breeding habitat within the Study Area, and three (3) were migrants and recorded as Observed (O) with no evidence of breeding.

The highest level of breeding documented was "Confirmed" breeding, evidenced by the code adults leaving or entering nest site in circumstances indicating occupied nest (AE). Confirmed breeding was documented for two (2) species.

The next highest level documented was "Probable" breeding, either by the observation of agitated birds (code A), pairs of birds (code P), or territorial males (code T), which is defined as a singing male being present at the same location at least seven days apart. This evidence was the highest level obtained for thirteen (13) species.

Of the thirty-five (35) breeding species of birds recorded, twenty (20) were determined to be "Possible" breeders within the study area, evidenced by codes singing male (S) and observed in suitable habitat during the breeding season (H). These species include birds that were only observed during one of the two breeding bird surveys conducted.

Two (2) species at risk were detected which were Barn Swallow (*Hirundo rustica*) and Eastern Wood-pewee (*Contopus virens*):

Barn Swallow

- Observed flying near the cellular communications tower and Bronte Creek Tributary at Station B-7. No suitable breeding habitat is present on the Subject Property.

Eastern Wood-pewee

- Mainway Woodland east of the Bronte Creek tributary at Station B-6. Suitable foraging and nesting habitat is present in natural areas throughout the Study Area, including within the Mainway Woodland.

Barn Swallow and Eastern Wood-pewee are designated as Special Concern at both the Federal and Provincial level.

At a provincial/subnational level, all of the native breeding species recorded have been assigned subnational ranks of either S4 or S5 by the Natural Heritage Information Centre (NHIC, 2023), which indicates that their provincial populations are "apparently secure" or "secure", respectively (NHIC, 2023).

The Ontario Ministry of Natural Resources and Forestry (OMNR, 2000) considers American Redstart (*Setophaga ruticilla*), Hairy Woodpecker (*Dryobates villosus*), Savannah Sparrow (*Passerculus sandwichensis*) and White-breasted Nuthatch (*Sitta carolinensis*); all of which were recorded during surveys, to be Area Sensitive species. A pair of Brown Creeper (*Certhia americana*), also an area sensitive species, were observed incidentally several times within the Sheldon Creek Woodland. Area Sensitive species require large areas of suitable habitat to carry out their life processes. There is no policy that protects Area Sensitive species. See below for locations within the Study Area and, where relevant, breeding bird stations.

American Redstart

- Sheldon Creek Valley near Station B-1.

Hairy Woodpecker

- Sheldon Creek Valley near Station B-1.

Savannah Sparrow

- Agricultural field east of Station B-2 and north of Station B-5.

White-breasted Nuthatch

- Sheldon Creek Valley at Stations B-1 and B-2.
- Sheldon Creek Woodland at Stations B-3 and B-4.

Brown Creeper (incidental observation)

- Sheldon Creek Woodland south of SCW-1 and west of the northern portion of SCW-3.

3.2.7 Pileated Woodpecker

Pileated Woodpecker playback surveys did not elicit a response from the target species. One Hairy Woodpecker responded to the playback surveys during the first survey. Several feeding holes were observed on trees in the western portion of the Mainway Woodland. No woodpeckers were observed.

3.2.8 Reptiles

Incidental observations of snakes consist of one observation of Eastern Garter Snake (*Thamnophis sirtalis sirtalis*) in the Sheldon Creek Valley Woodland. Other snakes would likely be found within the Sheldon Creek valley and other forested habitats on the Subject Property.

Potential dispersion and foraging habitat for turtles is present in the Sheldon Creek valley. Wetlands SCW-1 and SCW-2, in the Sheldon Creek Woodland, could provide limited seasonal foraging habitat for turtles, but are too shallow to provide overwintering habitat. Wetlands SCW-4 and BCW-2 in the Mainway Woodland could potentially provide overwintering habitat for turtles in years where water levels are high, as evidenced by observations of overwintered Green Frog (*Lithobates clamitans*) tadpoles captured in 2024 during salamander surveys.

3.2.9 Anuran Calling Surveys

Anuran (i.e., frogs and toads) calling surveys were undertaken at six (6) stations throughout the Subject Property. The locations of each survey station are shown on **Figure 2** while the full survey results are provided in **Appendix 6**. A total of four (4) anuran species were documented during the calling surveys. A general description of anuran communities recorded within the Subject Property is provided below. Note that for the purpose of determining the number of individual anurans, Terrastory has received instruction from the MNRF to assume that there is one female for every (calling) male recorded, and to count a full chorus as ten (10) individuals. In accordance with the ecoregional SWH criteria, amphibian woodland breeding ponds with ≥20 individuals are considered significant. See **Section 4.4** for a discussion of significant wildlife habitat.

Stations AN-1 and AN-2 are intended to capture anurans within the upstream ends of Sheldon Creek Tributary and Bronte Creek Tributary, respectively. Station AN-1 had no frogs calling during the first survey and low numbers of Green Frog calling during the second and third surveys. These low numbers indicate that the creek and wetland at AN-1 do not constitute significant anuran breeding habitat. No anuran calls were recorded at Station AN-2.

Station AN-3 is intended to capture anurans within wetland SCW-4. A full chorus of Spring Peeper (*Pseudacris crucifer*) was recorded during the first survey with one (1) Spring Peeper being detected during the second survey. One (1) Gray Treefrog (*Hyla versicolor*) was detected during the second

survey with four (4) being detected during the third survey. The total number of individuals recorded is twenty-two (22).

Station AN-4 is located at wetland SCW-2. A full chorus of Spring Peeper was present during the first survey with two (2) Spring Peeper being detected during the second survey. Four (4) American Toad (*Anaxyrus americanus*) were recorded during the first survey. Two (2) Gray Treefrogs were recorded during the third survey, bringing the total number of individuals recorded to twenty-six (26).

Station AN-5 is located 100 m west of station AN-4 and is intended to capture anurans within wetland SCW-1. In 2023, six (6) Spring Peeper were recorded during the first survey. No frogs were recorded during the second survey, while one (2) Gray Treefrog was recorded during the third survey, bringing the total number of individuals to sixteen (16). The number of individuals recorded in wetland SCW-1 is below the SWH ecoregional criteria threshold for confirmed significant anuran breeding habitat. However, given that the downstream wetland SCW-2 is hydrologically reliant on wetland SCW-1, SCW-1 is within a 230 m radius of SCW-2, and there is a natural corridor between the two, in the opinion of Terrastory wetland SCW-1 provides significant ecological function for anurans.

Station AN-6 is located 330 m east of station AN-3 and is intended to capture anurans within wetland BCW-2. Only two surveys were conducted at AN-6 since it was not initially identified as a wetland community. Two (2) Spring Peeper were recorded during the second survey and five (5) Gray Treefrog were recorded during the third survey. Three (3) Spring Peeper were heard calling during salamander surveys conducted in March 2024 under conditions suitable for recording anuran calls, bringing the total number of individuals recorded to twenty (20), which is the minimum number required for confirmed SWH.

3.2.10 Salamander Surveys

Potentially suitable breeding habitat for ambystomatid salamanders (i.e., fishless vernal pools and wetlands holding water until at least mid-July) was subject to extensive area searches in 2023. Of the wetlands in the Subject Property, wetlands SCW-1, SCW-2, SCW-4 and BCW-2, all of which are within woodlands, could potentially provide breeding habitat for salamanders.

Salamander capture surveys were completed in 2023 in wetlands SCW-2 and SCW-4. As noted in the Methodology section above (**Section 2.2**), at the time of the wildlife capture permit application, only these two wetlands were known to the study team as they were the only ones mapped by the Province and CH. Subsequent to the issuance of the permits, additional wetlands were recorded on the Subject Property.

Two (2) of the five (5) survey events required per the survey protocol were completed in 2023 due to insufficient evenings with suitable weather conditions. No salamanders were captured nor were egg masses observed.

In 2024 salamander survey permits were renewed and revised to include surveys in wetlands SCW-1, SCW-2, SCW-4 and BCW-2. Six (6) survey events were completed in 2024, with no salamanders being captured. In addition, no salamander eggs were observed.

In 2024, multiple Fathead Minnow (P*imephales promelas*) were captured incidentally in wetland SCW-4. No fish were captured in this wetland in 2023, potentially indicating that high water levels during the unseasonably wet summer of 2023 may have resulted in the banks of the Sheldon Creek tributary overflowing into wetland SCW-4 and/or its outlet channel, allowing the minnows to colonize the wetland. In general, the presence of predatory fish would significantly impact salamander breeding success.

Given the turbidity and fish observed in SCW-4, it's not likely that the wetland provides habitat for ambystomatid salamanders. Wetland BCW-2 exhibited chocolate milk-like turbidity during all surveys and as such is also likely unsuitable for salamander breeding.

While potentially suitable habitat for ambystomatid salamanders exists within wetlands SCW-1, SCW-2 (both located within the Sheldon Creek Woodland), SCW-4 and BCW-2 and the surrounding forests; the data collected in 2023 and 2024 indicate otherwise. In the opinion of Terrastory, due to the lack of salamanders captured, conditions observed, presence of fish and water quality issues in some wetlands, and disconnection from larger habitat areas (e.g., Bronte Creek provincial park); it is highly unlikely that the Subject Property supports ambystomatid salamanders.

3.2.11 Insects

As provided in **Appendix 7**, a total of 55 insect species were identified during surveys. Of these, three (3) are considered significant and are included in the SWH assessment in **Appendix 12**. Significant records are shown in **Figure 6** and include Monarch (*Danaus plexippus*, Special Concern), Spring Beauty Miner Bee (*Andrena erigeniae,* S2S3), and Unicorn Clubtail (*Arigomphus villosipes*, S3).

Nectaring habitat for Monarch is generally limited the edges of the agricultural field within the Subject Property where its host plant Common Milkweed (*Asclepias syriaca*) is present. In total, four (4) Monarchs were observed, two (2) along the southern boundary of the Subject Property and two (2) along the Sheldon Creek Tributary. Overall, there is not a substantial amount of habitat present for this species within the Subject Property.

One (1) Spring Beauty Miner Bee (**Photo 62**, **Appendix 1**) was observed within the Sheldon Creek Woodland. This species is a specialist that collects pollen from Narrow-leaved Spring Beauty (*Claytonia virginica*) and closely related species (*Claytonia* spp.*)*. This bee is typically observed during the spring (April-May) when its host plants are in flower. Females nest in underground aggregations in woodlands and produce one generation per year. Literature of the habitat sensitivity Spring Beauty Miner Bee is lacking but this species likely requires undisturbed woodlands with an abundance of host plants.

One (1) Unicorn Clubtail was observed on the shoreline of the storm water management pond south of Thornburn Drive southwest of the Subject Property. In Ontario, this species is present from late May to late July. Unicorn Clubtail inhabits slow creeks, lakes and ponds (including storm water management ponds) with muddy bottoms and where shoreline vegetation is sparse. This species is tolerant of degraded habitats but is generally not very abundant. Literature on the habitat sensitivity for Unicorn Clubtail is lacking, however, this species is generally tolerant of disturbance and appears to persist in areas of urban development.

3.2.12 Headwater Drainage Feature Assessment

Twenty-one (21) headwater drainage features were observed over the course of three HDF surveys on the Subject Property, resulting in a total of forty-four (44) HDF reaches. For ease of reference, each HDF is identified by an alphanumeric code in accordance with the creek to which they drain. HDFs that drain to the main branch of Sheldon Creek are denoted by SC-series codes, those associated with the Sheldon Creek tributary are denoted by SCT-series codes, and those associated with the Bronte Creek tributary are denoted by BCT-series codes. A photo log is provided in **Appendix 8**.

The majority of the HDFs flow in a southerly direction towards Mainway, except for the Sheldon Creek main branch HDFs (i.e., SC-series HDFs) which convey water into the Sheldon Creek valley.

Within the Sheldon Creek watershed, both the Sheldon Creek Woodland and Mainway Woodland receive water from HDF's flowing south from Upper Middle Road through the agricultural field. These drainage features enter the Sheldon Creek Woodland in two main locations (SCT-6 and SCT-9) around the woodland, while one drainage feature (SCT-13) directs water into the Mainway Woodland. (**Figures 3a, 3b, and 3c**). Water from the HDFs flow through several wetland features scattered throughout the woodlands. The water drains from the southeast edge of the Sheldon Creek Woodland and into the agricultural field. Water is conveyed through the field through a series of HDFs down to Mainway and into one of several catch basins in the roadside ditch (Figure 3). Water is likely directed to either main branch Sheldon Creek or the tributary via storm infrastructure. Water from SCT-13 is conveyed through wetland SCW-4 which drains into the Sheldon Creek Tributary. Several smaller features (SCT-3 and SCT-2) convey flow directly into the Sheldon Creek Tributary or it's side channel, respectively.

Similarly, Bronte Creek watershed HDFs (i.e., BCT-series HDFs) along the eastern portion of the subject property convey water in a south easterly direction towards the Mainway Woodland. Water from this portion of the property is directed to one of the following features:

- Sheldon Creek Tributary;
- Mainway catch basin (located east of the Bronte Creek Tributary);
- Bronte Creek Tributary at Mainway; and
- Bronte Creek Tributary at Burloak Drive.

Flow from HDF BCT-1 is captured by a ditch on the south west side of Burloak Drive. Water is conveyed for approximately 500 m through the ditch where it converges with flow from HDF's BCT-2 and BCT-3. Water from the three HDFs is conveyed under Burloak Drive via a culvert where it outlets to a roadside ditch on the north east side of Burloak Drive. Again, water flows south for approximately 370 m where it is conveyed through a box culvert (**Photo 64**, **Appendix 1**) under the park's main access road and outlets into a small tributary that conveys the flow into Bronte Creek Provincial Park (BCPP) Tributary 2.

All of the HDFs on the Subject Property convey water into a watercourse or wetland feature and flows need to be directed to these features to maintain their ecological characteristics and functions.

The results of the HDF assessments are provided below based on the watershed boundary available from the CH Planning and Permits Map. A summary of the HDFA classifications and management recommendations is provided in **Appendix 9**.

Sheldon Creek Watershed

1. **Drainage Feature SC-1**: This feature, located on the western edge of the tablelands, originates in an agricultural field adjacent to the Sheldon Creek valley. Runoff from the field is conveyed over this undulating area where the water collects in a low-lying area along the edge of the Sheldon Creek Valley Woodland, and then is directed into the Sheldon Creek valley. This HDF is plowed and planted through with agricultural crops. Water was observed during the first round of surveys with moist soils noted during the second round.

2. **Drainage Features SC-2 and SC-2b**: Similar to SC-1, this HDF is a poorly defined Y-shaped feature located in a low point in the agricultural field and conveys water into the Sheldon Creek valley. Water was observed during the first round of surveys with moist soils noted during the second round. The majority of this HDF is plowed and planted through.

3. **Drainage Feature SCT-1**: SCT-1 is a small feature located near the eastern boundary of the Sheldon Creek watershed. It originates in the agricultural field and is plowed and planted through. This feature conveys surface water runoff to the Common Reed patch (ELC code MAMM1-12) adjacent to the northern edge of the Mainway Woodland .

4. **Drainage Feature SCT-2**: SCT-2 originates in the agricultural field (approximately equidistant between the Sheldon Creek and Bronte Creek tributaries) and, like SCT-1, conveys water in a southerly direction towards the Common Reed patch (ELC code MAMM1-12) adjacent to the northern edge of the Mainway Woodland. This HDF is plowed and planted through.

5. **Drainage Feature SCT-3**: This feature originates in the middle of the agricultural field adjacent to the Sheldon Creek tributary. This is a short feature that is plowed and planted through with agricultural crops. This feature contained standing water during the first HDFA and had moist soils during the second round.

6. **Drainage Feature SCT-4**: This feature originates in the agricultural field and is plowed and planted through for its entire length. The feature conveys water south towards the Mainway Woodland. During the first round of assessments, water was pooled along the woodland, with some overland flow west along the northern edge of the woodland and then south along the western edge of the woodland towards the Mainway roadside ditch.

7. **Drainage Feature SCT-5:** SCT-5 is a small feature located in the agricultural field adjacent to the western edge of the Mainway woodland. This feature receives overland flow from SCT-4 and SCT-6e. Flow is conveyed through a meadow towards a ditch along Mainway that flows in a westerly direction towards a catchbasin.

8. **Drainage Feature SCT-6**: The upper reach of SCT-6 and SCT-6a (a small branch of SCT-6) originates in the agricultural field north of the Sheldon Creek Woodland. Both features are plowed and planted through and merge at a low-lying area along the southern edge of the

Sheldon Creek Woodland. Minimal flow was noted in SCT-6 during the first HDFA and had moist soils during the second round. Only moist soils were noted in SCT-6a during the first round of surveys.

Flow from the agricultural field is conveyed into the Sheldon Creek Woodland through SCT-6b. This feature flows through wetland SCW-3 which is further described in **Section 4.1**. A dug channel conveys water to the southeast side of the Sheldon Woodland into the agricultural field. SCT-6c and SCT-6d are two small features in the woodland (and Wetland SCW-3) that receive flow from SCT-6b.

Water from SCT-6b disperses into the agricultural field into two features: SCT-6e and SCT-6f. SCT-6e conveys water in a southeasterly direction towards a catchbasin in a roadside ditch along Mainway. There was water observed during the first site visit, but only moist soils during the second site visit. Majority of the flow from SCT-6b is conveyed to a ditch along Mainway through SCT-6f. This feature was a defined swale in the agricultural field and was flowing during the first, second and third site visit. This feature was plowed and planted through.

9. **Drainage Feature SCT-7**: This HDF originates near the high school fronting on Upper Middle Road. It flows in a southeasterly direction towards the Sheldon Creek Woodland, where it merges with SCT-7a. Both features are plowed and planted through. No flowing water was observed in either SCT-7 or SCT-7a, however there was pooled water in the field at the woodland edge. It appears that water is then conveyed through a dug channel (SCT-7b) along the eastern boundary of the Sheldon Creek Woodland. Isolated pools of water were noted during the second site visit. At the southeast corner of the Sheldon Creek Woodland, water is conveyed westward along the southern edge of the woodland to SCT-6b and eventually to the ditch along Mainway via SCT-6f.

10. **Drainage Feature SCT-8**: This feature originates in the Sheldon Creek Woodland and contributes a small amount of flow to the bottom/downstream end of wetland SCW-1.

11. **Drainage Feature SCT-9**: Originates in an agricultural field where it collects water into a low point. This area is plowed and planted through, however this area appears to collect water during rain events and the planted crop was not thriving. Water is conveyed through the woodland via (SCT-9a) an undefined braided channel to wetland SCW-1.

12. **Drainage Feature SCT-10**: This feature outlets from wetland SCW-1 through a meadow that conveys water for approximately 70 m to wetland SCW-2. This feature contained standing pockets of water during the second site visit. SCT-10 is the conveyance of water through SCW-2. SCT-10b conveys water through the Sheldon Creek Woodland in a south easterly direction towards the agricultural field. Along the edge of the woodland a dug channel was created running parallel to the woodland edge. It appears that majority of the water from SCT-10b is directed into the agricultural field into a low-lying area where standing water was observed during the first and second survey.

13. **Drainage Feature SCT-11**: Topographic and drainage evidence shows that SCT-11 originates from the upper (western) end wetland SCW-1. During the second site visit there were isolated pockets of water in the Sheldon Creek Woodland leading from the wetland to

the agricultural field. SCT-11a conveys the flow from SCT-11 through the agricultural field down to the Mainway roadside ditch and westernmost catchbasin. SCT-11a is plowed and planted through.

14. **Drainage Feature SCT-12:** Water from SCT-10b is conveyed to Mainway through SCT-12. This feature was a defined swale in the agricultural field and was flowing during the first, second and third site visit. This feature was plowed and planted through.

15. **Drainage Feature SCT-13:** Originates in the agricultural field where it collects water into a low point along the edge of the Mainway Woodland. . Water is conveyed through the Mainway Woodland to wetland SCW-4. SCT 13-a is not connected to the wetland and directs some flow directly towards Sheldon Creek Tributary. SCT-13-b conveys the majority of the flow through wetland SCW-4 which then outlets to Sheldon Creek Tributary.

Bronte Creek Watershed

1. **Drainage Feature BCT-1**: This feature originates in the northern corner of the site near Upper Middle Road. This feature is plowed and planted through, however flow was observed during the first and second site visit with isolated ponded water and moist soils during the third site visit. Water is conveyed to the ditch (BCT-1b) along Burloak Drive where it flows for approximately 450 m where it enters a catchbasin. BCT-1a is a small branch of BCT-1 and contained moist soils during the surveys. This feature was also plowed and planted through.

2. **Drainage Feature BCT-2**: BCT-2 originates in the agricultural field and flows in a south easterly direction towards the Mainway Woodland. During the first survey, only moist soils were observed with standing water at the agricultural field and woodland interface. Water dispersed into wetland BDW-3 via BCT-2a. Water is then conveyed through a straightened channel (BCT-2b) towards Burloak Drive and the same box culvert as BCT-1.

3. **Drainage Feature BCT-3:** This feature originates in the agricultural field and conveys water in a south easterly direction towards the Mainway Woodland. This feature was plowed and planted through. Very minimal flow was observed near the woodland otherwise pockets of standing water were observed the length of the feature during the first survey. The feature was dry during the second survey with moist soils noted in the low-lying area near the woodlot. Features BCT-3a and BCT-3b were both plowed and planted through with moist soils in some areas during the first survey. Water from the agricultural field is conveyed through BCT-3c which is a mixed woodland (ELC code FOMM2-1) feature which conveys water into BCT-2a and ultimately the catch basin under Burloak Road.

4. **Drainage Feature BCT-4:** BCT-4 is a small feature located on the northern side of the Bronte Creek Tributary in the agricultural field. This feature was plowed and planted through and conveys runoff to the Tributary. This feature contained moist soils and isolated pockets of standing water.

5. **Drainage Feature BCT-5:** Is located on the south side of the Bronte Creek Tributary in the agricultural field. It is plowed and planted through. It appears that this feature may

convey overflow water from the Bronte Creek Tributary back into the tributary approximately 175 m downstream during high flow events.

6. **Drainage Feature BCT-6:** This is a small feature identified during the second round surveys that conveys water from a sloped area in the agricultural field down to a low lying spot near Mainway Woodland. During the survey soils were moist indicating the flow path, with standing water in the low-lying area near Mainway Woodland. As evidenced by surface erosion and deposition of debris on the woodland floor, it appears that the flow disperses into the woodland in a southeasterly direction (towards wetland BCW-2) however no discernible pathway is present within the woodland.

The primary function of these HDFs is conveyance of surface water in a south easterly direction from Upper Middle Road to Mainway. All of the HDFs (with the exception of BCT-1) convey water into terrestrial features on the property including woodlands and wetlands. These terrestrial features are dependent on the seasonal water inputs (in terms of volume and seasonality). It is evident throughout the property that water on the site has been historically managed, altered and controlled via dug ponds, dug channels and re-direction of flow between watersheds; and that the natural features have adapted over time to the present hydrologic regimes.

Given the ephemeral nature and poor definition of the HDFs in the agricultural field, these features do not provide direct fish habitat. No amphibian breeding habitat is present within the HDF features located within the agricultural field and they do not provide a terrestrial linkage function.

3.2.13 Fish and Aquatic Habitat

Based on a review of available background information and the fieldwork completed in 2023, no direct observations of fish were made in the Sheldon Creek Tributary or Bronte Creek Tributary. The tributary reaches within the Subject Property are expected to provide indirect, contributing fish habitat, and would therefore offer a supporting function to fish habitat downstream. Notably, fish barriers are present along Mainway for both the Sheldon Creek Tributary and Bronte Creek Tributary. To confirm fish presence or absence in the Sheldon Creek and Bronte Creek tributaries, fish community surveys were completed in spring 2025, with locations where fish (i.e., Fathead Minnow) were found presented in **Figure 5**. A description of the fish community and aquatic habitat relevant to each of the watercourses within the Subject Property is contained below in **Tables 5** and **6**. Fish community records obtained from NHIC, Land Information Ontario and DFO are detailed below in **Table 7**. A photographic record of watercourses assessed is provided in **Appendix 10**.

Main Sheldon Creek
Main Sheldon Creek where it flows through the Study Area is mapped as exhibiting a warmwater thermal regime pursuant to the provincial Aquatic Resource Area (ARA) geospatial dataset (ARA identifier: AU-0004-SHL). A total of fifteen (15) fish species were identified through background review (Table 6). Fish species included a mix of minnow species, salmonid, suckers and sunfish. Majority of the fish were described as coolwater, common in Ontario and are considered relatively tolerant to intermediately tolerant to environmental or anthropogenic stressors. No SAR are documented in the main branch of Sheldon Creek.

Sheldon Creek was assessed in the general location of the proposed crossing of Corporate Drive. In this area, Sheldon Creek is contained within a well vegetated, forested valley. The average wetted

width is 2.60 m with a wetted depth of 0.15 m. The channel is mostly straight with small meanders throughout and stream morphology was riffle/run with some pools. Substrates include cobble, gravel, sand with areas of exposed shale. Watercress (*Nasturtium officinale*) was observed throughout the channel and may be an indicator of groundwater contributions. Attached algae (sp.) was observed on the substrates, however no other macrophytes were present. Stream banks appeared stable and are well vegetated with some areas of exposed banks indicating erosion and high flows. Canopy cover is open, and shade provided by mature trees and shrubs. Riparian vegetation was mostly grasses and herbaceous plants. Instream cover for fish is moderate and provided by woody debris, undercut banks and detritus.

Sheldon Creek Tributary

The Sheldon Creek Tributary is described as a warmwater feature. Historical fish community sampling was completed in this tributary approximately 1 km downstream of the Subject Property near the North Service Road. Creek Chub (*Semotilus atromaculatus*) was the only fish species identified though the background review. There is a cablecrete structure located upstream of Mainway that likely acts as a fish barrier to downstream reaches. In addition, a non-native fish species (i.e., Goldfish [*Carassius auratus*]) was observed in the ponded area immediately downstream of Upper Middle Road. Based on a lack of fish habitat observed downstream, it is likely that this species originated in the upstream stormwater pond (SWMP). During the March 2025 fish community survey, a single fish species, Fathead Minnow was captured (see **Figure 5** for capture locations). A total of eleven individuals were caught in the Sheldon Creek tributary: ten immediately upstream of the weir, and one near the edge of the Mainway Woodland, upstream. The pool directly downstream of Upper Middle Road was also surveyed, where approximately five Fathead Minnows were observed. However, due to silt conditions in the pool, the fish could not be captured. No fish were captured or observed during the June 2025 survey.

The Sheldon Creek Tributary originates northwest of the Subject Property where it has been historically modified to accommodate land development. These modifications include channelization and inputs from two (2) SWMPs. A SWMP discharges into the tributary immediately upstream of Upper Middle Road. The SWMP outlet flows through a box culvert under Upper Middle Road into a ponded area. The tributary appears to be controlled both upstream and downstream of Upper Middle Road by weir structures. A small dug wetland (Wetland SCW-4) is located on the east side of the tributary and discharges and accepts water to/from the Sheldon Creek Tributary during spring freshet or after large rain events.

The ponded area immediately downstream of Upper Middle Road empties into a narrow channel that conveys water through the agricultural field transitioning to a natural channel in the Mainway Woodland. The upstream reach of the tributary in the Mainway Woodland was a natural meandering channel with cobble, silt, sand substrates, and erosion along the stream banks. The Sheldon Creek Tributary receives water from wetland SCW-4 and seasonal flow from the Sheldon Creek side channel from the north. Spanning approximately 40 m upstream of Mainway, the channel has been modified and stabilized with cable concrete. The cable concrete extends up the banks on either side of the watercourse for approximately 0.5 m (based on the water level at the time of the assessment). Approximately 20 m upstream of the box culvert, the gradient drops approximately 0.30 over a concrete ledge creating a fish barrier. The tributary gradient is steep and gradually declines towards the Mainway box culvert. Detailed information was collected from several transects (**Figure 2**) established along the length of the tributary and selected based on changes in riparian habitat are provided in **Table 5**.

Table 5. Sheldon Creek Tributary Aquatic Habitat Assessment

Transect #	Wetted Width (m)	Wetted Depth (m)	Substrates (Dominant)	Riparian Cover	Aquatic Habitat Description
Transect 1	0.3	0.07	Sand, silt	5 m riparian corridor	Channel choked with Cattails, restricting flow.
Transect 2	0.20	0.09	Sand, silt	5 m riparian corridor	Channel choked with Cattails, restricting flow.
Transect 3	0.20	0.5	Silt		Channel is choked with grasses. Well vegetated, steep banks. Evidence of seasonal high flows with exposed soils.
Transect 4	0.98	0.18	Hard bottom with silt and sand		More defined channel, however no flow observed.
Farm Crossing	--	--		--	Aging concrete culvert used for farm crossings, has holes along the top and is blocked on the downstream side with sediment and vegetation. Appears that during high rain events or melts water may overtop crossing.
Transect 5	--	--	--	--	Tributary not accessible due to Common Reed patch, no measurements.
Transect 6	0.45	0.05	Hard bottom		Deep incised channel
Transect 7	0.80	0.13	Hard bottom with silt		Deep incised channel. Pooled water no flow observed.
Transect 8	0.76	0.05	Sand, silt, cobble, over hard bottom		Minimal flow observed. High flow channels braided through riparian wetland.
Transect 9	1.30	0.16	Shale bottom, flat cobble, and scattered boulders.		Landscape transitions from agriculture to the Mainway woodland. Defined natural channel.
Transect 10	1.0	0.20	Cable concrete	Mainway Woodland	Channel is lined with cable concrete

The tributary through the agricultural field provides low quality fish habitat due to poor connectivity, low flow barriers throughout the length of the channel and impassable stands of Cattails and Common Reed. This was supported during the 2025 fish community surveys as no fish were captured within this reach of the tributary. The downstream reach in the Mainway Woodland provides suitable fish habitat which was confirmed during the 2025 fish community survey. The cable concrete and weir do appear to act as a fish barrier at Mainway. It is also possible that the

ponded area on the southeast side of Upper Middle Road may provide fish habitat due to the permanent pool feature.

Bronte Creek Tributary

The thermal regime for the Bronte Creek Tributary is described as unknown and scant background information is available for this feature. Background records show that fish community sampling for Bronte Creek Provincial Park Tributary 2 was completed approximately 1 km downstream of the Subject Property near the South Service Road. Fish community records identified, four fish species based on a review of LIO data and the Department of Fisheries and Oceans – Aquatic Species at Risk Mapping. This includes Blacknose Dace (*Rhinichthys atratulus*), Creek Chub, Fathead Minnow, and Silver Shiner (*Notropis photogenis*) were identified (Table 7). Silver Shiner is a species at risk, listed as threatened under the *Endangered Species Act*. No fish were captured or observed during the March and June 2025 fish community surveys. Water and flow was present during the March 2025 survey, however the channel was completely dry during the June 2025 survey.

The Bronte Creek Tributary originates northwest of the Subject property where it has been historically modified to accommodate land development. The tributary originates from a SWMP located immediately north of Upper Middle Road. The watercourse flows through a box culvert under Upper Middle Road into a pooled area overgrown with vegetation. Detailed information was collected from several transects (**Figure 2**) established along the length of the tributary and selected based on changes in riparian habitat are provided in **Table 6**.

The pooled area empties into a narrow channel that conveys water through the agricultural field towards the Mainway Woodland. Approximately 100 m upstream of the Mainway Woodland, the tributary channel within the riparian corridor appears to split into two conveyance features described below and presented in **Figures 3a** - **3c**.

The main flow from the Bronte Creek tributary diverges from the riparian corridor through an avulsion into the agricultural field . The overland flow continues into the Mainway Woodland through a series of overland flow, braided channels and poorly defined features. It pools along Mainway where it flows into a large catchbasin that, as detailed in **Section 3.1.4**, directs flow to Sheldon Creek.

A series of dug channels are present on the west side of the tributary, and were likely constructed to convey seasonal high flows from the Bronte Creek Tributary to the Sheldon Creek Tributary. One channel (Dug Channel 1) was identified near the point of the channel avulsion and a second channel (Dug Channel 2) was noted approximately 100 m south. Both dug channels follow the northern edge of the Mainway Woodland, with Dug Channel 1 conveying flow into the Common Reed patch, which then turns into a defined channel (Sheldon Creek side channel) as it enters the Mainway Woodland. Dug Channel 2 follows the edge of the woodland and transitions to a less defined feature (Bronte Creek Flow Path) which then enters the Mainway Woodland and conveys water to the Sheldon Creek side channel (**Table 6**).

Table 6. Bronte Creek Tributary Aquatic Habitat Assessment

Transect #	Wetted Width (m)	Wetted Depth (m)	Substrates (Dominant)	Riparian Cover	Aquatic Habitat Description
Transect 1	Unknown	Unknown	Unknown	10 m riparian corridor	Channel choked with Common Reed from Upper Middle Road.
Transect 2	No defined channel.	0	Sand, silt	5 m riparian corridor	Channel choked with Cattails, restricting flow. Dry channel
Transect 3	No defined channel.	Standing water.	Silt, sand	No riparian cover.	No defined channel in agricultural field, low lying depression with pockets of standing water. Evidence of vehicles driving through feature.
Transect 4	No defined channel.	Standing water.	Silt, sand		No defined channel, no aquatic habitat present.
Transect 5	No defined channel, however flow path along east side of riparian corridor.	Dry.	--	No riparian cover.	Channel avulsion where main flow leaves riparian corridor and flows in agricultural field towards Mainway Woodland.
Transect 6	No defined channel.	Dry	--	20 m	No defined channel in riparian corridor, water is redirected through avulsion in agricultural field and dug channels on west side of tributary.
Transect 7	0.3	0.10	Silt, organics	Mainway Woodland	Braided, dispersed channels through the Mainway Woodland.
Transect 8	--	--	--	--	Large catchbasin at Mainway that receives from the Bronte Creek Tributary.

The portion of the Bronte Creek Tributary within the agricultural field does not provide fish habitat due to the ephemeral nature of the channel, poor connectivity, low flow barriers and impassable stands of Cattails (*Typha* spp.) and Common Reed. Fish movement from downstream reaches is also not possible because the tributary discharges to a catchbasin at Mainway and is piped underground whereafter it outlets to Sheldon Creek and/or Bronte Creek downstream of Mainway, depending on the volume of flow (see **Section 3.1.4** for an explanation of flow regime).

Table 7. Fish Community Records for the Subject Property

Fish Species	Scientific Name	Data Source	Thermal Regime	Provincial Rank[1]	SARO Status[2]	General Abundance[3]	Tolerance[4]	Location of Records		
								Main Sheldon Creek	Sheldon Creek Tributary	Bronte Creek PP Tributary at S. Service Road
American Eel	*Anguilla rostrata*	NHIC (17NJ9806)	Coolwater	S1S2	Endangered	Rare	Intermediate	Record Location to be Confirmed – record likely from Lake Ontario		
Blacknose Dace	*Rhinichthys obtusus*	LIO	Coolwater	S5	None	Common	Intermediate	Yes	--	**Yes**
Bluegill	*Lepomis macrochirus*	LIO	Warmwater	S5	None	Common	Intermediate	Yes	--	--
Bluntnose Minnow	*Pimephales notatus*	LIO	Warmwater	S5	Not at Risk	Common	Intermediate	Yes	--	--
Brook Stickleback	*Culaea inconstans*	LIO	Coolwater	S5	None	Common	Intermediate	Yes	--	--
Common Shiner	*Luxilus cornutus*	LIO	Coolwater	S5	None	Common	Intermediate	Yes	--	--
Creek Chub	*Semotilus atromaculatus*	LIO	Coolwater	S5	None	Common	Intermediate	Yes	Yes	Yes
Fantail Darter	*Etheostoma flabellare*	LIO	Coolwater	S4	None	Common	Intolerant	Yes	--	--
Fathead Minnow	*Pimephales promelas*	LIO	Warmwater	S5	None	Common	Tolerant	Yes	--	Yes
Golden Shiner	*Notemigonus crysoleucas*	LIO	Coolwater	S5	None	Common	Intermediate	Yes	--	--
Longnose Dace	*Rhinichthys cataractae*	LIO	Coolwater	S5	None	Common	Intermediate	Yes	--	--
Northern Redbelly Dace	*Chrosomus eos*	LIO	Coolwater	S5	None	Common	Intermediate	Yes	--	--
Pumpkinseed	*Lepomis gibbosus*	LIO	Warmwater	S5	None	Common	Intermediate	Yes	--	--
Rainbow Darter	*Etheostoma caeruleum*	LIO	Coolwater	S4	None	Common	Intolerant	Yes	--	--
Rainbow Trout	*Oncorhynchus mykiss*	LIO	Coldwater	SNA	None	Common	Intolerant	Yes	--	--
Silver Shiner	*Notropis photogenis*	NHIC; DFO	Warmwater	S2S3	Threatened	Uncommon	Intolerant	--	--	Yes
White Sucker	*Catostomus commersonii*	LIO	Coolwater	S5	None	Common	Tolerant	Yes	--	--

Notes:

[1]Srank – Subnational conservation status ranks are assigned for Ontario by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species.

- ***S4:*** Apparently Secure; uncommon but not rare; some cause for long-term concern due to declines or other factors.
- ***S5:*** Secure; common, widespread and abundant in the province.
- ***S#S#:*** Range Rank; a numeric rank is used to indicate the range of uncertainty about the status of the species.
- ***SNA:*** Not Applicable; a conservation status rank is not applicable because the species is not a suitable target for conservation activities (i.e., exotic or hybrid).

[2]SARO Status provided by Ontario Freshwater Fishes Life History Database

- Threatened – A species lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
- Endangered – A species lives in the wild in Ontario but is facing imminent extinction or extirpation.

[3]Abundance provided by Ontario Freshwater Fishes Life History Database

- Uncommon – Species occasionally encountered, may have a somewhat restricted range.
- Common – Species frequently encountered, usually with a widespread range.

[4]Tolerance provided by Ontario Freshwater Fishes Life History Database

- Tolerant – Species that is insensitive or adaptive to environmental or anthropogenic stresses.
- Intermediate – Species that is neither particularly sensitive nor insensitive to environmental or anthropogenic stresses.
- Intolerant – Species that is sensitive to environmental or anthropogenic stresses.

3.2.13.1 Silver Shiner Habitat

A review of the DFO Aquatic Species at Risk (SAR) mapping identified Silver Shiner (*Notropis photogenis*) habitat in the main branch of Bronte Creek and two tributaries (Bronte Creek PP Tributaries 1 and 2) located in Bronte Creek Provincial Park (illustrated in **Figures 3a – 3c**). The Bronte Creek tributary within the Subject Property as well as HDFs BCT-1, BCT-2 and BCT-3 are connected via culverts to Bronte Creek PP Tributary 2 downstream of the Subject Property.

Flow from HDF BCT-1 is captured by a ditch on the southwest side of Burloak Drive. Water is conveyed for approximately 500 m through the ditch where it converges with flow from HDFs BCT-2 and BCT-3. Water from the three HDFs is conveyed under Burloak Drive via a culvert where it outlets to a roadside ditch on the north east side of Burloak Drive. Again, water flows for approximately 370 m where it is conveyed through a box culvert under the park's main access road and outlets into a small tributary that conveys the flow into BCPP Tributary 2.

The Bronte Creek Tributary flows south from the Subject Property to a catchbasin on Mainway. Under low flows, water from Bronte Creek is captured by this catchbasin and directed west under Mainway via sub surface infrastructure whereafter the Tributary outlets to Sheldon Creek. Under high slow conditions, the undersized pipe associated with the catchbasin is unable to convey all flows, and some flow is directed east across a flowpath and eventually to the Bronte Creek Tributary south of Mainway, that is eventually conveyed into BCPP Tributary 2.

HDFs BCT-1, BCT-2, and BCT-3-series (all of which are within MTE's water balance catchment area 9) provide indirect fish habitat to BCPP Tributary 2 through flow and allochthonous inputs to downstream fish habitat. Fish movement upstream from BCPP Tributary 2 is not possible due to buried watercourses, intermittent flow and long culvert lengths preventing passage for small-bodied fish.

Based on site investigations conducted by HESL, the Subject Property is not hydrologically connected to Bronte Creek PP Tributary 1 (above its confluence with Bronte Creek PP Tributary 2).

Additional information about Silver Shiner is found in **Section 4.6.2**.

3.2.14 Incidental Wildlife Observations

Efforts to incidentally document wildlife and non-vascular plants were made during all site visits by Terrastory. Of the species recorded incidentally, Eastern Wood-pewee (Special Concern), Wood Thrush (*Hylocichla mustelina*, Special Concern), Fringed Heartwort (S3), Floating Crystalwort (S3), Monarch (Special Concern), and Spined Micrathena (S3S4) are of conservation concern. All were recorded in areas of suitable habitat and thus are considered in the SWH assessment herein. Incidentally recorded species are included in **Appendix 11** and summarized by taxon below.

- Four (4) amphibians;
- Twenty-two (22) birds;
- Two (2) fish;
- Eight (8) mammals;
- Six (6) insects;
- Five (5) bryophytes;
- One (1) crustacean.

- One (1) reptile; and
- One (1) spider.

Eastern Wood-pewee was observed on 08 August 2023 which is outside of the species safe breeding dates (May 31-July 31). However, Eastern Wood-pewee was recorded during the breeding bird survey 24 May 2023 which indicates that the species may be possibly breeding within the Subject Property and thus is considered in the SWH assessment herein.

Wood Thrush was recorded vocalizing in the western portion of the Mainway Woodland and the Sheldon Creek valley south of Mainway on 08 and 10 May 2024, respectively. This species typically occupies large mature woodlands with a well-developed understory, often having moist areas, but will also occupy smaller woodlands. This species was not recorded during breeding bird surveys.

Two significant bryophytes were recorded in wetland SCW-2, Floating Crystalwort and Fringed Heartwort. These two species are typically found in slow-moving waters. Floating Crystalwort was also observed at the base of a tree in wetland SCW-4 during low-water conditions in November 2024. Floating Crystalwort and Fringed Heartwort are considered rare in Ontario, with each ascribed a subnational rank of S3. Species with a subnational rank of S3 are considered rare to uncommon, with usually between 20 and 100 occurrences in the province. In some instances, the species may have fewer occurrences, but with some extensive examples remaining.

Four (4) Monarch were recorded foraging in several edge habitats within the Subject Property. This species forages on a wide variety of flowers, mostly those of forbs, and oviposits on Milkweed (*Asclepias* spp.) from spring- fall in Ontario. Each fall, this butterfly migrates south to Mexico, returning to Ontario the following spring. Meadow habitats are limited on the Subject Property, and substantial patches of Milkweed are not present.

Spined Micrathena (*Micrathena gracilis*), sometimes referred to as the Spined Orbweaver, is ascribed a subnational rank of S3S4 and was observed in all woodlands on the Subject Property, with the highest concentration being recorded in the Sheldon Creek valley. This species is typically found in wooded riparian areas, moist woods, and swamps; seemingly favoring moist habitats with Oaks (*Quercus* spp.) and Hickories (*Carya* spp.) (Virginia Museum of Natural History, 2020). Most of the observations consisted of female spiders, as the males are much smaller than the females and do not tend to stay in webs, whereas the females do. It is assumed that there is one male for every female observed thus a total of eighty (80) spiders were recorded[4]. This is likely an underestimate of the local population due to species' size, seasonality, and limited survey effort.

4 SIGNIFICANCE ASSESSMENT

Based on the biophysical information collected during background information gathering (per **Table 1**) and the results of Terrastory's and HESL's site assessments (per **Section 3**), **Table 8** below provides a determination of the presence (or potential presence) of each significant natural feature considered herein. Shaded rows denote features which were confirmed or may be present within the Subject Property or Adjacent Lands and is thus expected to be considered further as part of the policy compliance and effects assessment being completed by Colucent Environmental Inc. as part

[4] Note that observation locations shown on **Figure 6** may indicate the presence of more than one spider within a small area.

of their EIA. Significant natural feature mapping is provided in **Figure 6** and **Figure 8**. Natural Hazards are shown in **Figure 7** and **Figure 8**.

Table 8. Summary of the Assessment of Significant Natural Features on the Subject Property and Adjacent Lands.

Significant Natural Feature	Status on the Subject Property	Status on Adjacent Lands (i.e., < 120 m from the Subject Property)
PPS Significant Natural Features		
Significant Wetlands	**Absent**. See **Section 4.1.**	**Absent.** See **Section 4.1.**
Significant Woodlands	**Confirmed**. See **Section 4.2.**	**Confirmed**. See **Section 4.2.**
Significant Valleylands	**Absent**. See **Section 4.3.**	**Absent**. See **Section 4.3.**
Significant Wildlife Habitat	**Confirmed/Candidate**. See **Section 4.4.**	**Confirmed/Candidate**. See **Section 4.4.**
Areas of Natural and Scientific Interest	**Absent**. See **Section 4.5.**	**Absent**. See **Section 4.5.**
Habitat of Endangered and Threatened Species (per ESA)	**Likely**. See **Section 4.6.**	**Confirmed**. See **Section 4.6.**
Fish Habitat (per *Fisheries Act*)	**Confirmed.** See **Section 4.8**	**Confirmed.** See **Section 4.8**
Sand Barrens, Savannahs, and Tallgrass Prairies	**Absent**.	**Absent**.
Alvars	**Absent**.	**Absent**.
Permanent or Intermittent Streams	**Confirmed**. See **Section 4.6.2.**	**Confirmed**. See **Section 4.6.2.**
Lakes and their littoral zones	**Absent**.	**Absent**.
Seepage Areas and Springs	**Absent**.	**Absent**.
Other Regional Natural Heritage Features (per ROP and City of Burlington OP)		
Other wetlands	**Confirmed**. See **Section 4.1.**	**Absent.** See **Section 4.1.**
Linkages	**Confirmed.** See **Section 4.10.**	**Confirmed.** See **Section 4.10.**
Enhancements to Key Features incl. Centres for Biodiversity	To be determined as part of the EIA.	
Buffers		
Hazard Lands		
Wetlands, valleylands, meander belts, flood plains, steep slopes, and shorelines.	**Confirmed.** See **Section 4.9.**	**Confirmed.** See **Section 4.9.**

4.1 Wetlands

Provincially significant wetlands (PSWs) are not present within the Subject Property or Adjacent Lands. None of the wetlands on the Subject Property have been subject to an evaluation per the Ontario Wetland Evaluation System (OWES). Nevertheless, the hydrology and ecology of wetlands has been assessed by relevant members of the Project Study Team.

For ease of reference, important wetlands referred to throughout this and other reports have been ascribed an alphanumeric name in accordance with the Subwatershed in which they are located, with numbers in ascending order from west to east. For example, wetland SCW-1 is Sheldon Creek Wetland 1; BCW-2 is Bronte Creek Wetland 2, etc. Wetlands outside of natural features (e.g., the pocket wetlands in the agricultural field between the Mainway and Sheldon Creek Woodlands) were not ascribed alphanumeric names but nonetheless are described below.

As illustrated **Figure 3a**, wetlands on the Subject Property are located within the tablelands, with six (6) being within woodlands. The largest wetlands are those associated with the riparian zones of the Sheldon Creek and Bronte Creek tributaries and dug side channels. These wetlands are strongly influenced by human disturbance, and it is expected that the boundaries of these features vary from year to year according to agricultural practices. As detailed below, the primary function of these wetlands consists of water quality contributions and allochthonous inputs. In contrast, most wetlands within the Sheldon Creek and Mainway Woodlands have additional significant ecological functions including and not limited to provision of habitat for amphibians and provincially significant species, and contribution to the ecological function of significant woodlands. Wetlands dominated by exotic highly invasive species (e.g., Common Reed) represent potential pathways of spread, which is undesirable from (existing and future) ecological and (future) SWM facility maintenance perspectives.

The hydrology of wetlands on the Subject Property are primarily regulated by surface water inputs and outputs. As stated in **Section 3.1.3**, according to MTE (2024[2]) little to no groundwater contribution to wetlands were observed during the groundwater monitoring period and, furthermore, no evidence of seepage was observed by Terrastory. Additional observations regarding wetland hydrology detailed below are based on field observations made by Terrastory and HESL, unless specifically noted otherwise. It is expected that additional information regarding volume and seasonality of surface flows will be provided by MTE at a later date.

Wetland boundaries shown in this report represent a hybrid between wetland limits as staked and surveyed in the field with CH (i.e., consisting of the portions of wetlands SCW-1 and SCW-3 that are within 30 m of proposed development) and, for areas not staked with CH, Terrastory's wetland limits as approved by CH. Wetland boundaries were provided to CH in September 2025.

Detailed descriptions of wetlands within the Subject Property are provided below.

Sheldon Creek Wetland 1 (SCW-1) and Sheldon Creek Wetland 2 (SCW-2)
SCW-1 is primarily a Freeman's Maple (*Acer* x *freemanii*) (also known as Swamp Maple) dominated swamp, with a smaller Reed Canary Grass Graminoid Mineral Meadow Marsh component. SWC-1 is a Rice-cutgrass (*Leersia oryzoides*) Mineral Shallow Marsh/Freeman's Maple Swamp. The two wetlands are discussed here together as they are hydrologically connected, with SWC-2 being significantly dependent on hydrologic inputs from SCW-1.

SCW-1 receives hydrologic inputs from overland drainage internal to the Sheldon Creek Woodland and from HDF's SCT-9, SCT-9a, and SCT-8. Water within this wetland outlets at two locations: SCT-11, which flows southward through the woodland and then through the adjacent agricultural field via HDF SCT-11a; and SCT-10, a grassy swale in which water flows eastward to SCW-2. Based on observations of standing water in SCW-1 from spring through fall, it appears that the easternmost end of the treed portion this wetland is the lowest, as standing water of an approximate

depth of 10 cm was observed there as late as September 2023. In March and April 2024, the estimated depth of water observed in the same area was 60 cm. Soil samples taken by Terrastory in September 2023 in the approximate centre of the wetland and completed to a depth of 90 cm below ground surface (bgs) reveal mottling at 5 cm bgs, gley at 15 cm bgs, and the water table at 80 cm bgs; indicating that water moves up and down through the soil column and soils at a depth of ≥15 cm bgs are saturated likely for a significant portion of the year. It is noted that from the spring freshet to about mid-summer, the area where the soil sample was taken contains standing water. The effective soil texture is clay.

Approx. 40-60 cm of standing water was observed in SCW-2 in September 2023. While standing water present along the edges of the wetland in the spring months had receded by fall, the majority of this wetland contained standing water. In spring 2024, water of an approx. depth of 60 – 80 cm was observed. Standing water was not observed during the field reconnaissance visit on 29 November 2022. Hydrologic inputs consist of water from SCW-1 via HDF SCT-10 and drainage internal to the woodland. Water exits the wetland via HDF SCT-10b, which flows diffusely in a southeasterly direction before meeting a dug ditch along the southern edge of the Sheldon Creek Woodland. A berm in the approximate centre of the ditch directs water from SCT-10b westward towards HDF SCT-12, which flows southward through an agricultural field to a ditch that feeds a catchbasin near Mainway. Water entering this catchbasin is directed southward via a buried pipe to the main branch of Sheldon Creek at the Sutton Drive crossing approximately 700 m south of the Subject Property (**Photo 68**, **Appendix 1**).

Two provincially significant bryophytes dependent on the presence of water were recorded in SCW-2, and both SCW-1 and SCW-2 provide significant amphibian breeding habitat. Further information on SWH is presented in **Section 4.4**.

Wetland SCW-1 is 0.196 ha and Wetland SCW-2 is 0.032 ha.

Representative photos of Wetlands SCW-1 and SCW-2 are found in **Appendix 1**, **Photos 16-19** and **Photos 21-23**, respectively.

Sheldon Creek Wetland 3 (SCW-3)
SCW-3 is an Oak Mineral Deciduous Swamp that spans the length of the Sheldon Creek Woodland from north to south. Its primary hydrologic input is from HDFs SCT-6 and SCT-6a, with some drainage internal to the woodland is collected by the wetland. Significant overland flow was observed in this feature in the spring of 2024, with water averaging 20 cm in depth flowing quickly southward to the dug ditch at the southern end of the Sheldon Creek Woodland before flowing through the agricultural field to the catchbasin on Mainway via HDFs SCT-6e, SCT-6f and SCT-5. The intensity of flow is further evidenced by the debris piled against fallen trees and other materials throughout wetland areas near HDF SCT-6b, and the general lack of understory vegetation, aside from in low, wide spots along HDF SCT-6b. These low spots do not contain standing water outside of the aftermath of the spring freshet or rain events, and conditions in the wetland are not conducive to support amphibian breeding.

A soil sample taken in September 2023 in the approximate centre of the wetland and completed to a depth of 80 cm bgs reveals mottling at 5 cm bgs, indicating that water moves through the soil column. The effective soil texture is silty clay.

Aside from sustaining the swamp and contributing to suitable habitat conditions for Spined Micrathena (a provincially significant spider), in a hydrologic sense wetland SCW-3 serves a conveyance function. This wetland does not contain standing water aside from a few small fast-draining low areas with <5 cm standing water and thus is not suitable to support amphibian breeding. No amphibians were heard calling from this wetland during amphibian surveys, nor were any observed incidentally.

Wetland SCW-3 is 0.931 ha.

Representative photos of Wetland SCW-3 are found in **Appendix 1**, **Photos 25-30**.

Sheldon Creek Wetland 4 (SCW-4)
SCW-4 is a former agricultural pond (likely for livestock) within the Mainway Woodland that has succeeded into a Mineral Shallow Marsh. The primary hydrologic input is from HDF SCT-13, and during flood events the wetland receives input from the Sheldon Creek Tributary. The wetland outlets directly to the Sheldon Creek Tributary via HDF SCT-13b. Evidence suggests that water is present in this wetland year-round in most years. Depth of water is controlled by HDF SCT-13b, and when the wetland is full is estimated to be at least 1.5 m in the middle of the wetland.

Notably, during the spring of 2023 water in this pond was red with silt, likely due to runoff from the agricultural field to the north of HDF SCT-13. In June, tadpoles were observed attempting to breathe atmospheric air, indicating anoxic conditions in the pond. Lack of oxygen in the pond is likely mitigated through rainfall events.

This wetland represents significant amphibian breeding habitat and provides habitat for a provincially rare bryophyte (Floating Crystalwort). Further information on SWH is presented in **Section 4.4**.

Wetland SCW-4 is 0.022 ha.

Representative photos of Wetland SCW-4 are found in **Appendix 1**, **Photos 36-38**.

Wetlands in Agricultural Field between the Sheldon Creek Woodland and Mainway Woodland
These small wetlands resulted from construction activities associated with a gas pipeline that traverses the Subject Property in a southwest – northeast alignment between the Sheldon Creek Woodland and Mainway Woodland. All four (4) are classified as Common Reed (*Phragmites australis*) Graminoid Mineral Meadow Marsh. Due to the dominance of aggressive invasive species and lack of standing water, the positive ecological function of these features is extremely limited. These wetlands may act as a pathway of spread for Common Reed to other wetlands (e.g., SCW-1), watercourses, and future SWM facilities; which is undesirable. For the above reasons, these wetlands are not considered development constraints in the Colucent EIA (2026) and it is assumed that compensation will be discussed with review agencies.

Notably, observations of these wetlands made in spring of 2024 and autumn of 2025 indicate that the Common Reed is spreading to adjacent upland areas.

Bronte Creek Wetland 1 (BCW-1)
BCW-1 is a Reed Canary Grass Graminoid Mineral Meadow Marsh directly adjacent to the Bronte Creek Tributary that is rimmed with Dogwood Mineral Deciduous Thicket Swamp. The primary hydrologic input to this wetland appears to be the Bronte Creek Tributary. No outlet was observed during field surveys, though thick shrubbery along the wetland perimeter hindered the investigation.

No amphibians were recorded in this wetland and given the lack of standing water the wetland does not support amphibian breeding. It likely supports water quality in the adjacent tributary.

Wetland BCW-1 is 0.103 ha.

Representative photos of Wetland BCW-1 are found in **Appendix 1**, **Photos 42-44**.

Bronte Creek Wetland 2 (BCW-2)
BCW-2 is a dug pond located in the eastern end of the Mainway Woodland and is classified as a Mineral Shallow Marsh. The wetland is devoid of vegetation though the canopy of the adjacent woodland overhangs the feature. As the banks are very steep, it was not possible to ascertain depth of water however if the pond were to be full the water depth would likely approach 2 m. The primary hydrologic input is overland flow from the west and northwest, some of which collects in a (dug) low spot filled with concrete rubble and containing a small culvert. The wetland outlets via a culvert on its southern end; water flows directly south through the woodland before entering a catchbasin on Mainway, which as mentioned in **Section 3.1.4** directs flow to Sheldon Creek. Based on the presence of overwintered Green Frog tadpoles, it is likely that this wetland contains water year-round.

This wetland represents significant amphibian breeding habitat. Further information on SWH is presented in **Section 4.4**.

Wetland BCW-2 is 0.014 ha.

Representative photos of Wetland BCW-2 are found in **Appendix 1**, **Photos 47-48**.

Bronte Creek Wetland 3 (BCW-3)
BCW-3 is a Reed-canary Grass Graminoid Mineral Meadow Marsh located at the northeast corner of the Mainway Woodland. Hydrologic inputs include HDF's BCT-3C and SCT-2a, both of which drain into a culvert under Burloak Drive via HDF BCT-2b. The wetland is highly disturbed and based on the presence of (vegetated) soil piles, may have been a dumping spot at one time.

As there is no standing water in this wetland, it is not suitable for amphibian breeding. The dominance of invasive species also limits the wetland's ecological function, though it does contribute to downstream water quality and allochthonous inputs. Flow from HDFs BCT-2 through BCT-3-series enter this wetland and eventually end up in the Bronte Creek PP Tributary 2, which is habitat for Silver Shiner.

Wetland BCW-3 is 0.094 ha.

Representative photos of Wetland BCW-3 are found in **Appendix 1**, **Photos 49-50**.

Sheldon Creek Tributary Riparian Wetlands
The linear riparian wetland along the portion of the Sheldon Creek Tributary that traverses the agricultural field are disturbed in nature and consist of a matrix of Mixed Mineral Meadow Marsh, Cattail Mineral Shallow Marsh, Cattail Graminoid Meadow Marsh, Willow Mineral Thicket Swamp, Willow Mineral Deciduous Thicket Swamp, and Common Reed Graminoid Mineral Meadow Marsh. Hydrologic inputs consist of the Sheldon Creek Tributary and HDF SCT-3.

Two small wetlands adjacent the tributary, a small former oxbow (southeast) and a former agricultural pond (northeast), are classified as Reed-canary Grass Graminoid Mineral Meadow Marsh and Cattail Mineral Shallow Marsh, respectively.

These wetlands do not represent significant habitat for amphibians, though Green Frog (*Lithobates clamitans*) was recorded in the area of open water immediately downstream of Stormwater Outlet B during amphibian calling surveys. The wetlands' primary ecological function consists of contributions to water quality and allochthonous inputs into the Sheldon Creek Tributary.

During a site visit in June 2025, CH confirmed that these wetlands are not subject to regulation.

Riparian wetlands associated with the Sheldon Creek Tributary outside of woodlands measure 0.809 ha. This area statistic is exclusive of the Common Reed Graminoid Mineral Meadow Marsh associated with the dug channels between the Sheldon Creek and Bronte Creek tributaries.

Bronte Creek Tributary Riparian Wetlands
Riparian wetlands along the portion of the Bronte Creek Tributary that traverses the agricultural field are, like those along the Sheldon Creek Tributary, disturbed in nature. Riparian wetlands consist of Cattail Mineral Shallow Marsh, Cattail Graminoid Mineral Meadow Marsh, and Reed-canary Grass Graminoid Mineral Meadow Marsh. Hydrologic inputs consist of the Bronte Creek Tributary and HDFs BCT-4 and BCT-5.

Dug channels 1 and 2 direct flow from the Bronte Creek to the Sheldon Creek Subwatershed through a Common Reed Graminoid Mineral Meadow Marsh (**Appendix 1**, **Photo 52**), eventually outletting to the Sheldon Creek Tributary Side Channel. This wetland also receives hydrologic input from HDFs SCT-1 and SCT-2.

These wetlands do not represent significant habitat for amphibians and no amphibians were recorded during surveys. The wetlands' primary ecological function consists of contributions to water quality and allochthonous inputs into the Bronte Creek Tributary and, because of the hydrologic split, the Sheldon Creek Tributary. In the case of the Common Reed Mineral Meadow Marsh directly adjacent to the Mainway Woodland, this wetland may act as a pathway of spread for Common Reed to other wetlands, watercourses and future SWM facilities, which is undesirable.

During a site visit in June 2025, CH confirmed that these wetlands are not subject to regulation.

Riparian wetlands associated with the Bronte Creek Tributary outside of woodlands measure 2.077 ha. This area statistic is inclusive of the Common Reed Graminoid Mineral Meadow Marsh associated with the dug channels between the Sheldon Creek and Bronte Creek tributaries.

4.2 Woodlands

There are three distinct woodlands within the Subject Property. From west to east, these include the Sheldon Creek Valley Woodland, Sheldon Creek Woodland, and Mainway Woodland. A brief summary of each is provided below, with an assessment of significance provided in **Section 4.2.1**.

Sheldon Creek Valley Woodland
The Sheldon Creek Valley Woodland is located within the valley associated with the main branch Sheldon Creek and extends past Upper Middle Road and Mainway to the north and south, respectively. The woodland is comprised of multiple forest vegetation communities, some of which are young and likely resulted from disturbance, particularly in areas complexed with thicket communities. The most mature and intact forest community is at the northern end of the valley. Several exceptionally large Red Oak (*Quercus rubra*) trees are located along the eastern edge of the valley near the area where the tree canopy overlaps with that of the Sheldon Creek Woodland.

Several provincially significant features/species are present within the woodland, including:

- Sheldon Creek;
- Endangered bats;
- One provincially rare spider species (Spined Micrathena); and
- One lichen species (*Arhtonia lapadicola*) previously unrecorded in Ontario.

Most of the provincially rare Spined Micrathena spiders recorded within the Subject Property are located within this woodland. Hispid Buttercup, a provincially rare plant, was also recorded. The woodland likely contributes positively to water quality and fish habitat within Sheldon Creek.

Readers are directed to **Photos 5 - 15** in **Appendix 1** for representative photos of the Sheldon Creek Valley Woodland.

Sheldon Creek Woodland
The Sheldon Creek Woodland is in the tablelands between the Sheldon Creek Valley Woodland and Mainway Woodland, and consists of mature forest and wetland (e.g., treed swamp) communities. Several substantial HDFs run to, through, and/or from this woodland; all wetlands within the woodland receive varying levels of hydrologic input from HDFs and are reliant on surface water. The woodland contains some interior woodland habitat, as measured 200 m from the woodland edge. However, this interior habitat represents a linear strip 0.19 ha in size that is unlikely to support interior forest functions.

Several provincially significant features/species are present within the woodland, including:

- Endangered bat habitat, including potential maternity roost(s);
- Wetland SCW-3 (Oak Mineral Deciduous Swamp), which is a provincially rare vegetation community;
- Significant habitat for anurans in Wetlands SCW-1 and SCW-2;
- Two provincially rare bryophytes (Floating Crystalwort and Fringed Heartwort) in Wetland SCW-2; and
- One provincially rare spider species (Spined Micrathena) in Wetland SCW-3.
- One provincially rare bee (Spring Beauty Miner Bee).

- One provincially rare lichen (Speckled Blister Lichen).

The majority of the Sheldon Creek Woodland is owned by the City of Burlington.

Readers are directed to **Photos 16 - 32** in **Appendix 1** for representative photos of the Sheldon Creek Woodland.

Mainway Woodland
The Mainway Woodland runs parallel to Mainway and consists primarily of mature deciduous forest, though some wetlands are present. Seasonal ponding is present, primarily within vegetation communities FODM2-3 and FODM4-9, with drainage from those communities being captured in catchbasins along Mainway, both of which direct flow to Sheldon Creek.

Based on a review of historic aerial photos, it appears that a portion of the woodland now represented by vegetation community WODMM4-4, was at one time cleared or at least significantly logged. This vegetation community is the youngest in comparison to other relatively large vegetation communities within the Mainway Woodland and contains a significantly higher proportion of invasive European Buckthorn (*Rhamnus cathartica*) compared to other areas in the woodland. Within vegetation communities FODM4-9 and FOMM2-1 in the eastern end of the woodland, rear yard encroachment consisting of mowing, vegetation removal, and dumping are evident and may represent future stewardship and/or enhancement planting opportunities. Management of European Buckthorn is another enhancement opportunity.

Several significant features/species are present within the woodland, including:

- Portions of the Sheldon Creek and Bronte Creek tributaries;
- Endangered bat habitat;
- Dry-Fresh Oak-Maple-Hickory Deciduous Forest (FODM2-3), a provincially rare vegetation community located in the western portion of the woodland;
- Significant habitat for anurans in Wetlands SCW-4 and BCW-2;
- Two Special Concern bird species (Eastern Wood-pewee and Wood Thrush) in the eastern portion of the woodland;
- One provincially rare spider species (Spined Micrathena); and
- One provincially rare lichen (*Lithothelium septemseptatum*).

Readers are directed to **Photos 33 - 51** in **Appendix 1** for representative photos of the Mainway Woodland.

4.2.1 Significant Woodland Assessment

The 2020 PPS (referenced in the NHRM) defines significant woodlands as "an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history."

The Region defines significant woodlands as those 0.5 ha and larger that meet one or more of the criteria provided in **Table 9**. Owing to the size of the woodlands on the Subject Property and

Adjacent Lands and the ecological functions they support, all woodlands identified in this study are considered significant pursuant to the definitions provided in the ROP. Significant woodlands are illustrated in **Figure 6**.

Table 9. Assessment of Woodland Significance

Evaluation Criteria (per the ROP)		Woodlands within and Adjacent to the Study Area	Criterion Met?
Age	The woodland contains forest patches over 99 years old.	While individual trees within the Mainway Woodland, Sheldon Creek Woodland and Sheldon Creek valley (e.g., near HDFs SCT-2 and SCT-9a) are estimated to be over 99 years old (e.g., **photo 9**), distinct old-growth woodland patches were not observed within areas surveyed.	No
Size	The patch size of the woodland is 2 ha or larger if it is located in the Urban Area, or 4 ha or larger if it is located outside the Urban Area but below the Escarpment Brow, or 10 ha or larger if it is located outside the Urban Area but above the Escarpment Brow.	The woodland in the Sheldon Creek valley, including contiguous (i.e., less than 20 m breaks in the canopy) woodland areas outside of the Subject Property, is approx. 35.4 ha. This size estimate assumes a split between this woodland and the Sheldon Creek Woodland on the tablelands, described below, roughly in the location of an existing farm equipment access area. Note that the woodlands associated with Sheldon Creek and located north of Upper Middle Road south of Mainway are approximately 11.5 ha and 10.2 ha, respectively. The Sheldon Creek Woodland is approx. 11.1 ha. For the purpose of this report, while the tree canopy in the southwest corner of the Sheldon Creek Woodland meets that of the woodland in the Sheldon Creek valley, the narrow (i.e. <20 m width) canopy overlap is not considered contiguous for the purpose of calculating woodland size *only*[5]. For the purpose of determining size, the woodlands were split at the farm lane that bisects the two. The Mainway Woodland is approx. 12.0 ha. The small woodland adjacent to the northeast corner of the Mainway Woodland is 0.1 ha and does not meet the size criteria for significance on its own. However, it is less than 20 m from the Mainway Woodland and thus is considered contiguous.	Yes – all woodlands
Ecological Functions	A woodland has an interior core area of 4 ha or larger, as measured 100 m from the edge.	Woodland interior areas of 4 ha or more are not present. The eastern portion of the Sheldon Creek Woodland has 0.19 ha of interior core area as measured 100 m from the woodland edge.	No
	Woodlands within 50 m of a major creek or certain headwater creek or within 150 m of the Escarpment Brow.	All woodlands on the Subject Property are within 50 m of a watercourse.	Yes – all woodlands

[5] Note that all woodland driplines were staked with the City of Burlington in 2025, and the narrow wooded area between the Sheldon Creek Valley Woodland and the Sheldon Creek Woodland was included in the staked dripline limit.

4.3 Significant Valleylands

In the absence of a specific definition provided in the ROP or City of Burlington 1997 and (currently appealed) 2020 Official Plans, identification of significant valleylands relies on direction provided in the Natural Heritage Reference Manual (NHRM) and the results of this study. Criteria and related standards recommended in Table 8-1 of the NHRM include surface and groundwater functions, landform prominence, distinctive geomorphic landforms, degree of naturalness, community and species diversity, unique communities and species, habitat value, linkage function, and restoration potential and value.

In applying the criteria and related standards for significance per the NHRM, the Sheldon Creek valley meets, at least in part, those related to landform prominence, distinctive geomorphic landform, degree of naturalness (i.e., having greater than 25% natural vegetation cover), unique communities and species (i.e., habitat of Endangered bats, the provincially rare Spined Micrathena, and a lichen [*Arthonia lapidicola*]), and linkage function. Significant valleylands in southern Ontario typically include those of major rivers having large expanses of natural areas, complex habitats, and a high degree of functional and species diversity; for example, the Rouge River valley in Toronto and Bronte Creek, Grindstone Creek, and Sixteen Mile Creek valleys in Halton Region. While the Sheldon Creek valley meets some of the criteria listed for consideration in the NHRM, in the opinion of Terrastory the features and functions are locally significant and not extensive, complex, or functionally significant to warrant significance on provincial or regional levels.

In accordance with the NHRM, the physical boundary of the valleyland is defined by the stable top of slope (TOS) or predicted/physical TOS. The stable TOS illustrated in this report is defined by MTE (January 2026).

4.4 Significant Wildlife Habitat

An assessment of the likelihood that any confirmed SWH types occur within the Subject Property or Adjacent Lands is provided in **Appendix 12**. Candidate SWH types that do not have a minimum likelihood of "possible" confirmed SWH status are not included in the list below. Based on the results of this assessment, four (4) SWH types are considered further through this study:

- Seasonal Concentration Areas of Animals
    1. Bat Maternity Colonies
- Rare Vegetation Communities or Specialized Habitats for Wildlife
    2. Amphibian Breeding Habitat (Woodland)
- Habitat of Species of Conservation Concern
    3. Special Concern and Rare Wildlife Species (listed below)
- Animal Movement Corridors
    4. Amphibian Movement Corridors

Also based on this assessment, a total of 21 Special Concern or provincially rare species are considered to have at least a possible likelihood of occurrence on the Subject Property and/or Adjacent Lands given their habitat associations and current distribution in southern Ontario (or, where indicated by an asterisk, were confirmed based on the site assessment):

1) A lichen (*Anisomeridium biforme*)
2) A lichen (*Arthonia lapidicola*)*

3) A lichen (*Lithothelium septemseptatum*)*
4) American Bumble Bee (*Bombus pensylvanicus*)
5) Azure Bluet (*Enallagma asperum*)
6) Barn Swallow (*Hirundo rustica*)*
7) Double-striped Bluet (*Enallagma basidens*)
8) Eastern Wood-pewee (*Contopus virens*)*
9) Floating Crystalwort (*Riccia fluitans*)*
10) Floating Heartwort (*Ricciocarpus natans*)*
11) Fraternal Potter Wasp (*Eumenes fraternus*)
12) Four-toothed Mason Wasp (*Monobia quadridens*)
13) Giant Leopard Moth (*Hypercompe scribonia*)
14) Monarch (*Danaus plexippus*)*
15) Snapping Turtle (*Chelydra serpentina*)
16) Speckled Blister Lichen (*Viridothelium virens*)*
17) Spined Micrathena Spider (*Micrathena gracilis*)*
18) Spring Beauty Mining Bee (*Andrena erigeniae*)*
19) Unicorn Clubtail (*Arigomphus villosipes*)*
20) Yellow-banded Bumble Bee (*Bombus terricola*)
21) Wood Thrush (*Hylocichla mustelina*)*

It is likely that many of these species records originate from the varied and extensive habitats within Bronte Creek Provincial Park.

Aside from Barn Swallow (which was recorded as a flyover), Eastern Wood-pewee, Monarch, Unicorn Clubtail, and Wood Thrush; all of which are easily surveyed and were recorded in low numbers below what Terrastory would consider an acceptable threshold for significance, the habitats of the above listed species that were confirmed on site are included as SWH. Most species in the above list which were not recorded during field surveys but have at least a possible likelihood of occurrence and, if present, would likely be within natural areas that are protected in accordance with municipal policies (e.g., significant woodlands and wetlands).

A lichen species (*Arthonia lapidicola*) listed above and included in **Appendix 12** has not been assigned a relevant conservation rank because it is not previously known from Ontario. Given its rarity in nearby provinces and states, in the opinion of Terrastory there is a technical basis for considering this species to be provincially rare and thus including it in the SWH assessment.

Citrine Forktail (subnational rank: SNA), while rare in Ontario, was not considered in the assessment of SWH, as the NHIC indicates that it is an immigrant migrant. The Halton Natural Areas Inventory (Rothfels 2006) indicates that this damselfly is "somewhat likely" to occur in the region. A photo of the individual captured is included as **Photo 63** in **Appendix 1**.

SWH and the locations of the above-mentioned significant species are provided in **Figure 6**.

4.5 Areas of Natural and Scientific Interest

Significant Areas of Natural and Scientific Interest (ANSIs) are defined by the province (PPS, 2020) as "areas of lands and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education".

The Bronte Creek Provincial Park Natural Reserve Zone Provincially Significant Life Science ANSI is located in Bronte Creek Provincial Park primarily along the forested valley, and is greater than 120 m from the Subject Property. This ANSI is represented by a forested valley complex containing a variety of earth science features such as exposures of Queenston shale, a post-glacial cave, and river-cut terraces; as well as life science features including a variety of vegetation communities known to provide habitat for several provincially significant species, including prairie and Carolinian species.

4.6 Habitat of Endangered and Threatened Species

An assessment of the likelihood that any Endangered and Threatened species or their habitats occur within the Subject Property or Adjacent Lands is provided in **Appendix 13**. Of the 24 species assessed, a total of seven (7) Endangered or Threatened species are considered to have at least a possible likelihood of occurrence on the Subject Property and/or Adjacent Lands (or were confirmed) given their habitat associations and current distribution in southern Ontario:

1) Little Brown Myotis (*Myotis lucifugus*)
2) Northern Myotis (*Myotis septentrionalis*)
3) Silver Shiner (*Notropis photogenis*)
4) Tri-colored Bat (*Perimyotis subflavus*)
5) Silver-haired Bat (*Lasionycteris noctivagans*)
6) Hoary Bat (*Lasiurus cinereus*)
7) Red Bat (*Lasiurus borealis*)

A general description of each Endangered/Threatened species and their habitat is offered below. Readers are referred to **Figure 6** for the locations of Silver Shiner habitat.

4.6.1 Bats

Per the assessment in **Appendix 13** and **Section 3.2.4**, Little Brown Bat and/or other Myotis species, Tri-coloured Bat, Silver-haired Bat, Hoary Bat, and Red Bat are known to roost and/or forage on the Subject Property and Adjacent Lands. Each of these bat species are designated Endangered in Ontario per O. Reg. 230/08 pursuant to the ESA. Little Brown Myotis forms maternity colonies that roost in large-diameter trees with cracks, crevices, and/or exfoliating bark; Little Brown Myotis will also frequently roost in buildings (e.g., attics, barns, etc.). Roosting sites for Tri-colored Bat maternity colonies are less understood but have been documented in dead or dying leaf clusters of oaks (*Quercus* spp.) and maples (*Acer* spp.), along with live foliage and buildings (Humphrey and Fotherby 2019). Maternity roosts are often re-used year after year. Individuals (i.e., non-reproductive females and males) of all three bat species may roost in smaller diameter trees and other spaces (e.g., beneath house siding, etc.) which are not occupied by maternity colonies. Overwintering habitat includes caves and mines that maintain temperatures above 0°C. White Nose Syndrome (a fungal disease caused by an introduced pathogen) has devastated populations of each species across their ranges. The fungus causes hibernating individuals to become dehydrated, leading to excessive arousal, depleted fat reserves, and ultimately emaciation and/or death.

As detailed above in **Section 3.2.4**, habitat for bats on the Subject Property has been confirmed through acoustic monitoring studies and consists of the Sheldon Creek Valley Woodland, Sheldon Creek Woodland, Mainway Woodland. Potentially suitable habitat is also present in adjacent woodlands along the Sheldon Creek corridor north and south of the Subject Property. A likely maternity roost area was identified within the southwestern portion of the Sheldon Creek Woodland.

Evidence of potential day roosts and foraging habitat for Silver-haired Bat, Hoary Bat, Red Bat, Little Brown Bat, other Myotis species and Tri-coloured Bat was recorded in all areas surveyed. Furthermore, evidence of potential maternity roosts for Silver-Haired Bat and/or Big Brown Bat was recorded in the Sheldon Creek Woodland (see **Figure 6**). Little Brown Bat and other Myotis species, Tri-coloured Bat, Silver-haired Bat, Hoary Bat, and Red Bat are currently listed as Endangered in Ontario. The Preliminary Technical Habitat Summary for Bats recently drafted by the MECP (August 2025) provides guidance for the identification of habitat for migratory and resident bats. Based on recent direction received from MECP (C. Whitelaw, pers. comm., 06 October 2025), the August 2025 guidelines are used internally by MECP staff to assist clients during the interim period while formal guidance to support the forthcoming Species Conservation Act is being developed. For the purposes of this report, woodlands are considered bat habitat. Riparian meadows associated with the tributaries were not identified as bat habitat because of their distance from woodlands, narrow shape and small size, and influence of the surrounding managed landscape. There is potential for the identification of endangered bat habitat to be refined following updated guidelines and correspondence with the MECP.

4.6.2 Silver Shiner

Silver Shiner is a large, primarily insectivorous minnow whose northern range extent includes Halton Region (i.e., Bronte Creek and Sixteen Mile Creek). The species typically is found in medium to large sand and/or gravel-bottomed streams and rivers having a riffle and pool morphology and moderate to fast flows, with areas of slower water providing refuge for young fish. Spawning occurs in late May to mid-June within deep riffle habitat. The species shows a strong affinity for waters near or over 1.0 m in depth; areas of shallow (<0.4 m) depths and high velocity are generally avoided (COSEWIC 2022).

Threats to the Bronte Creek population referenced in the Silver Shiner Recovery Strategy (COSEWIC 2022) include:

- High Threat Level: turbidity and sediment loading, contaminants and toxic substances, and nutrient loading.
- Medium Threat Level: flow modification and invasive species.
- Low Threat Level: barriers to movement and incidental harvest.

Silver Shiner is designated Threatened in Ontario per O. Reg. 230/08 pursuant to the ESA and designated Special Concern per Schedule 3 of the Species at Risk Act (SARA).

Per the assessment in **Appendix 13**, Silver Shiner is found or potentially found in the main Bronte Creek channel and two tributaries in Bronte Creek Provincial Park. Several HDFs and the Bronte Creek Tributary within the Subject Property are hydrologically connected to Bronte Creek Provincial Park Tributary 2. Due to fish barriers along roadways and potentially within the industrial area south

of Mainway, it is not likely that Silver Shiner is present within the Subject Property. However, the potentially occupied habitats within Bronte Creek Provincial Park are affected by water originating from the Subject Property.

4.7 Headwater Drainage Feature Management Recommendations

Following completion of the HDF field work, the HDFA guidelines (CVC/TRCA 2014) provide a classification system that considers all of the characteristics and functions of the HDFs, including hydrology, riparian vegetation, terrestrial linkages and fish habitat. The results of this assessment are provided in **Appendix 9**. Each of the HDFs were assigned a management recommendation based on the characteristics and functions of the HDFs as per Figure 2: Flow chart providing direction on management options (CVC/TRCA 2014). The management recommendations in the guideline are as follows:

1. **Protection – Important Functions: e.g. swamps with amphibian breeding habitat; perennial headwater drainage features; seeps and springs; SAR habitat; permanent fish habitat with woody riparian cover.**
    - Protect and/or enhance the existing feature and its riparian zone corridor, and groundwater discharge or wetland in-situ;
    - Maintain hydroperiod;
    - Incorporate shallow groundwater and base flow protection techniques such as infiltration treatment;
    - Use natural channel design techniques or wetland design to restore and enhance existing habitat features, if necessary; realignment not generally permitted;
    - Design and locate the stormwater management system (e.g. extended detention outfalls) are to be designed and located to avoid impacts (i.e., sediment, temperature) to the feature.

2. **Conservation – Valued Functions: e.g. seasonal fish habitat with woody riparian cover; marshes with amphibian breeding habitat; or general amphibian habitat with woody riparian cover.**
    - Maintain, relocate, and/or enhance drainage feature and its riparian zone corridor;
    - If catchment drainage has been previously removed or will be removed due to diversion of stormwater flows, restore lost functions through enhanced lot level controls (i.e. restore original catchment using clean roof drainage), as feasible;
    - Maintain or replace on-site flows using mitigation measures and/or wetland creation, if necessary;
    - Maintain or replace external flows,
    - Use natural channel design techniques to maintain or enhance overall productivity of the reach;
    - Drainage feature must connect to downstream.

3. **Mitigation – Contributing Functions: e.g. contributing fish habitat with meadow vegetation or limited cover.**
    - Replicate or enhance functions through enhanced lot level conveyance measures, such as well-vegetated swales (herbaceous, shrub and tree material) to mimic online wet vegetation pockets, or replicate through constructed wetland features connected to downstream;

- Replicate on-site flow and outlet flows at the top end of system to maintain feature functions with vegetated swales, bioswales, etc. If catchment drainage has been previously removed due to diversion of stormwater flows, restore lost functions through enhanced lot level controls (i.e. restore original catchment using clean roof drainage);
- Replicate functions by lot level conveyance measures (e.g. vegetated swales) connected to the natural heritage system, as feasible and/or Low Impact Development (LID) stormwater options (refer to Conservation Authority Water Management Guidelines for details);

4. **Recharge Protection – Recharge Functions: e.g. features with no flow with sandy or gravelly soils.**
   - Maintain overall water balance by providing mitigation measures to infiltrate clean stormwater, unless the area qualifies as an Area of High Aquifer Vulnerability under the Oak Ridges Moraine Conservation Plan (ORMCP) or Significant Recharge Areas under the Source Water Protection Act. These areas will be subject to specific policies under their respective legislation.
   - Terrestrial features may need to be assessed separately through an Environmental Impact Study to determine whether there are other terrestrial functions associated with them.

5. **Maintain or Replicate Terrestrial Linkage – Terrestrial Functions: e.g. features with no flow with woody riparian vegetation and connects two other natural features identified for protection**.
   - Maintain the corridor between the other features through in-situ protection or if the other features require protection, replicate and enhance the corridor elsewhere
   - If the feature is wider than 20 m, it may need to be assessed separately through an Environmental Impact Study to determine whether there are other terrestrial functions associated with it.

6. **No Management Required – Limited Functions: e.g. features with no or minimal flow; cropped land or no riparian vegetation; no fish or fish habitat; and no amphibian habitat.**
   - The feature that was identified during desktop pre-screening has been field verified to confirm that no feature and/or functions associated with headwater drainage features are present on the ground and/or there is no connection downstream. These features are generally characterized by lack of flow, evidence of cultivation, furrowing, presence of a seasonal crop, and lack of natural vegetation. No management recommendations required.

The management recommendations were assigned to each of the HDFs on the Subject Property following the flow chart provided in the HDFA Guidelines (TRCA/CVC 2014). Management recommendations are detailed in **Appendix 9** and summarized in **Table 10** below. Of the twenty-one HDFs identified a total of forty-four reaches were delineated in the field. A Management recommendation has been provided for each of these reaches.

Table 10. HDFA Management Recommendations

Management Recommendation	HDFA	Rationale
Protection / Conservation	SCT-6b, SCT-6C and SCT-6d	Wetland/drainage features located in Sheldon Creek Woodland.
	SCT-8	Wetland/drainage features located in Sheldon Creek Woodland.
	SCT-9a and SCT-9b	Wetland/drainage features located in Sheldon Woodland.
	SCT-10, SCT-10a and SCT-10b	Wetland/drainage features located in Sheldon Woodland.
	SCT-11	Drainage feature in Sheldon Creek Woodland.
	SCT-13, SCT-13a and SCT-13b	Wetland/drainage features located in Mainway Woodland.
	BCT-2a and BCT-2b	Wetland/drainage features located in Mainway Woodland. Maintain flow conveyance to downstream Silver Shiner habitat.
	BCT-3c	Drainage feature in Mainway Woodland. Maintain flow conveyance to downstream Silver Shiner habitat.
	BCT-6a	Drainage feature in Mainway Woodland.
Mitigation	SCT-2	Conveys flow to Common Reed patch and ultimately Sheldon Creek Tributary.
	SCT-4	Drains a large portion of the agricultural field – maintain flow conveyance to downstream reach of Sheldon Creek.
	SCT-5	Conveys large volume of water, flow conveyance to downstream reaches.

Management Recommendation	HDFA	Rationale
	SCT-6, SCT-6e and SCT-6f	• SCT-6 – maintain flow to SCW-3 • SCT-6e and SCT-6f – maintain flow conveyance from SCW-3 and downstream contribution to Sheldon Creek.
	SCT-7, SCT-7a and SCT-7b	Maintain contribution to Sheldon Creek.
	SCT-9	Maintain flow to SCW-1.
	SCT-11a	Maintain flow conveyance from SCW-1 and SCT-11 and downstream contribution to Sheldon Creek.
	SCT-12	Maintain flow conveyance from Sheldon Creek Woodland and downstream contribution to Sheldon Creek.
	BCT-1 and BCT-1b	Maintain flow conveyance to downstream Silver Shiner habitat.
	BCT-2	Maintain flow conveyance to downstream Silver Shiner habitat.
	BCT-3, BCT-3a and BCT-3b	Maintain flow conveyance to downstream Silver Shiner habitat.
	BCT-6	Maintain flow conveyance to Mainway Woodland
No Management Required	SC-1	Small ephemeral feature.
	SC-2	Small ephemeral feature.
	SCT-1	Small ephemeral feature.
	SCT-3	Small ephemeral feature.

Management Recommendation	HDFA	Rationale
	SCT-6a	Small ephemeral feature.
	BCT-1a	Small ephemeral feature.
	BCT-4	Small ephemeral feature.
	BCT-5	Small ephemeral feature.

Management Recommendations for the HDFs that convey water to the Sheldon Creek and Mainway Woodland do not follow the typical HDFA guideline that states,

> *In the event that a lower level of protection is identified for a segment downstream of a segment with a higher level of protection, the more conservative approach shall be adopted for both segments and the downstream segment should be reclassified to match the upstream segment.*

Many of the HDFs on the Subject Property provide an important function in maintaining wetland features located within the Sheldon Creek Woodland and Mainway Woodland, however the water flowing out of the Woodlands (aside from HDFs BCT-3c, which flows under Burloak Drive to BCPP Tributary 2) then enter catchbasins along Mainway and are discharged downstream to Sheldon Creek. So, where HDFs have been provided a protection or conservation recommendation in the woodlands, that management recommendation has not been applied to downstream features. The intent of the Management Recommendations is to maintain flow and contributions to the two woodlands and the wetlands found within.

Given the poorly defined nature of the drainage features in the agricultural field and their tenuous hydrological connections, they do not appear to provide direct fish habitat, amphibian breeding habitat or a terrestrial linkage function.

4.8 Watercourses and Fish Habitat

As detailed in **Section 3.1.4** and **Section 3.2.13**, watercourses within the Subject Property consist of Sheldon Creek, Sheldon Creek Tributary and Bronte Creek Tributary. Of these, Sheldon Creek provides direct fish habitat.

The Sheldon Creek Tributary, where it flows through the agricultural field, provides low-quality fish habitat due to limited connectivity, low-flow conditions, and dense stands of cattails and common reed that render sections of the channel impassable. Nonetheless, the March 2025 fish community survey confirmed the presence of Fathead Minnows in the downstream reach within the Mainway Woodland, indicating that this section provides suitable fish habitat.

Interestingly, during the 2024 salamander surveys, a Fathead Minnow was also captured in a trap set at SCW-4, a wetland adjacent to the Sheldon Creek Tributary. This finding suggests that fish may occasionally access SCW-4 during high-flow events, either by overtopping the tributary banks or through a temporary connection between the SCW-4 discharge channel and the tributary.

The presence of fish upstream of the weir suggests that small-bodied species may be able to navigate the cable concrete structure under specific hydrologic conditions. However, during periods of low flow, the cable concrete and weir at Mainway likely act as barriers to upstream movement. As a result, fish found upstream are likely resident individuals that entered the area during higher flows but are now isolated due to impassable conditions.

Additionally, a non-native species (Goldfish, *Carassius auratus*) was observed in a ponded section of the Sheldon Creek Tributary near Upper Middle Road. This species was likely introduced through artificial means and does not indicate a naturally sustaining fish population.

The Bronte Creek Tributary, which also flows through agricultural land, does not provide fish habitat due to its ephemeral nature, limited connectivity, low-flow barriers, and similarly dense vegetation. This assessment was confirmed during the Spring 2025 fish community survey, in which no fish were captured or observed. Fish passage into this tributary from downstream reaches is further impeded by a catchbasin at Mainway, which acts as a barrier.

As noted in Section 3.1.4, the catchbasin in the Bronte Creek Tributary acts as a fish barrier. Under low-flow conditions, water from this tributary is diverted to Sheldon Creek, while under high-flow conditions, it is directed to both Sheldon Creek and BCPP Tributary 2. In this way, the Bronte Creek Tributary indirectly supports fish habitat in these downstream watercourses.

Headwater drainage features on the Subject Lands do not provide direct fish habitat given that features ultimately flow into catchbasins or tributaries with fish barriers, are largely supplied by overland flow, have tenuous hydrological connectivity and/or contain barriers to upstream movement (i.e., culverts, storm sewer pipes).

4.9 Natural Hazards

Natural hazards generally consist of lands that could pose a risk to human life and property. These lands consist of flood plains, riverine erosion hazards, unstable slopes, wetlands, and areas of unstable soil (e.g., karst). Relevant natural hazards are discussed briefly below and illustrated in **Figure 7**.

Within the Subject Property, the Bronte Creek Tributary floodplain and riverine erosion hazards associated with all watercourses were confirmed by Water's Edge. The valley erosion hazard/stable top of slope associated with the Sheldon Creek Valley and the Sheldon Creek and Sheldon Creek Tributary floodplains were confirmed by MTE (January and February 2026, respectively). The readers are referred to those reports for details regarding assessment methodology and results.

Multiple wetlands are present within the tablelands of the Subject Property as identified by Terrastory (see **Section 4.1** for details).

4.10 Linkages

Linkages represent fundamental components of the RNHS as they provide connectivity between Key Features and enable the Key Features to function as a system.

Linkages are a component of the RNHS (s. 115.3(3)) and are defined in the ROP (s. 255) as an area that provides connectivity between Key Features for plants and animals,

> *… enabling plants and animals to move between Key Features over multiple areas intended to provide connectivity supporting a range of community and ecosystem generations. Linkages are preferably associated with the presence of existing natural areas and functions and they are to be established where they will provide an important contribution to the long-term sustainability of the Regional Natural Heritage System. They are not meant to interfere with normal farm practice. The extent and location of the linkages can be assessed in the context of both the scale of the proposed development or site alteration, and the ecological functions they contribute to the Regional Natural Heritage System.*

Linkages provide avenues for species to move among natural areas and assist in maintaining viable populations. They are generally linear in form and comprised of continuous or semi-continuous natural habitats. They may or may not overlap with Key Features, and in fragmented landscapes are typically associated with drainage features, valley systems and hedgerows.

While much of Sheldon Creek as a whole is urbanized, it does provide some level of linkage function by connecting the Escarpment to Lake Ontario. Sheldon Creek supports fish habitat and thus serves an aquatic linkage function. Wildlife and plants may also use vegetated portions of the riparian corridors. Within the Study Area, linkage functions of the Sheldon Creek valley consist of aquatic and terrestrial linkage functions. Beyond the Study Area, linkage functions are limited by Appleby Ln. and Highway 403.

Furthermore, within the Study Area, the aquatic linkage function of the Sheldon Creek Tributary and Bronte Creek Tributary is limited by fish barriers at Upper Middle Road and Mainway. Fish in the Sheldon Creek tributary likely originate from the upstream stormwater pond and are likely able to travel downstream over the barrier at Mainway during high-water conditions, travelling over 900 m through a buried pipe that outlets to the main Sheldon Creek via a perched outlet. This is, at most, a one-way connection between the two watercourses and has limited linkage function. The Bronte Creek Tributary originates from a stormwater pond and enters buried infrastructure at Mainway (under most flow conditions). The Bronte Creek Tributary is similarly not considered to function as a significant aquatic linkage.

Per the Region's Natural Heritage System Definition & Implementation guidelines (North-South Environmental 2009), ecological linkages are considered at two scales in the environment: Regional linkage corridors ensure continuous linkage across the landscape, and as such they are wider to facilitate the long-term movement of all plant and animals, in the very long term. Local linkage corridors connect isolated natural heritage features to the larger RNHS. While they are narrower they are intended to accommodate the short- and long-term movement requirements of plant and animals over shorter distances. Linkage corridors in the Sustainable Halton NHS meet the following guidelines:

- Regional Linkage: 300 to 400 m width; and
- Local Linkage: 60 to 100 m width.

Accordingly, it is the opinion of Terrastory that linkages within the Study Area, as defined by the Region, are represented by the Sheldon Creek Valley Woodland corridor. This aquatic and terrestrial linkage measures between 60 and 100 m in width and qualifies as a local linkage. Other terrestrial linkages in the Study Area are presently limited and do not satisfy the Region's criteria (outlined

below). Opportunities to enhance terrestrial linkage functions within the Subject Property are explored in the EIA (Colucent 2026) prepared for the Phase 1 lands.

5 DATA GAPS AND RECOMMENDATIONS FOR FURTHER STUDY

The development concept and agency consultation have evolved since the initiation of the biophysical assessments in support of this ECR. Thus, it is recommended that data gaps be addressed through completion of the following studies.

Corporate Drive Crossing over the Sheldon Creek Valley

- Once the location is determined for the Corporate Drive crossing a more detailed assessment of the aquatic habitat both upstream and downstream of the crossing will be required.
- A tree inventory and protection plan that includes the construction footprint and access areas, as well as immediately adjacent lands, will be required.
- Should the detailed design phase occur greater than five (5) years from the date of the ecological studies completed in this report, the municipality may, at their discretion, require that studies be updated.

6 PRELIMINARY CONSTRAINTS AND OPPORTUNITIES TO DEVELOPMENT

The biophysical assessments completed in support of this ECR support the identification of a preliminary RNHS and other constraints to development (**Figure 8**). Preliminary constraints to development identified in this report consist of the preliminary RNHS and natural hazards. Refined constraints to development, which builds upon the results of this ECR and includes identification of applicable natural heritage buffers and natural hazard setbacks, are provided in the Colucent EIA (2026). Opportunities to development consist of lands outside of constraints.

The preliminary RNHS within the Subject Property consists of the following:

- Floodplains;
- Fish habitat/watercourses;
- Significant woodlands;
- "Other" wetlands;
- Significant Wildlife Habitat (contained within other natural heritage features);
- Habitat of Endangered and Threatened Species (i.e., Endangered bats); and
- Linkages (i.e., the Sheldon Creek Valley).

Natural hazards on the Subject Property consist of:

- Wetlands;
- Floodplains of Sheldon Creek, the Sheldon Creek tributary, and the Bronte Creek tributary;
- Riverine erosion hazards (i.e., meander belt) associated with Sheldon Creek, the Sheldon Creek tributary, and the Bronte Creek tributary; and

- Valley erosion hazard (i.e., stable top of slope) associated with the Sheldon Creek valley.

Erosion hazards (i.e., stable top of slope and meander belt) represent constraints to development but are not included in the preliminary RNHS.

7 CONCLUSIONS

The preceding Existing Conditions Report (ECR) provides a detailed characterization of the natural environment occurring within and adjacent to the Bronte Meadows lands and identifies a preliminary RNHS. Recommendations for future study presented in **Section 4.10** will address natural heritage data gaps and thus updates to this report and other reports reliant reports are warranted. This ECR has been prepared to inform the Environmental Impact Assessment (EIA) prepared by Colucent Environmental Inc., Scoped Subwatershed Study prepared by MTE, engineering reports by MTE and Water's Edge, and in support of the Zoning By-law Amendment and Draft Plan of Subdivision applications.

Based on the findings presented in this report, the following natural features with ecological and/or policy significance have been identified:

- **Identified wetlands** within the Subject Property.
- **Significant Woodlands** within the Subject Property and Adjacent Lands.
- **Candidate and Confirmed Significant Wildlife Habitat** within and adjacent to the Subject Property including rare vegetation communities, amphibian breeding habitat (woodland), amphibian movement corridors, potential bat maternity colonies, and habitat for special concern and rare wildlife species.
- Confirmed habitat for the **Threatened Silver Shiner** on Adjacent Lands, and habitat for **Endangered bats** (Hoary Bat, Red Bat, Silver-haired Bat, Little Brown Myotis, Northern Myotis, and Tri-colored bats) on the Subject Property (confirmed) and Adjacent Lands (potential).
- **Direct fish habitat** in Sheldon Creek and (at least portions of) the Sheldon Creek Tributary, and **indirect/contributing fish habitat** in the Bronte Creek Tributary.
- A **local linkage**, consisting of the Sheldon Creek Valley.

Potential negative impacts to the identified significant natural features, related impact avoidance and mitigation measures, identification of a refined Regional Natural Heritage System, permitting requirements, and technical recommendations related to the Phase 1 lands are provided in the Colucent Environmental Inc. EIA (2026).

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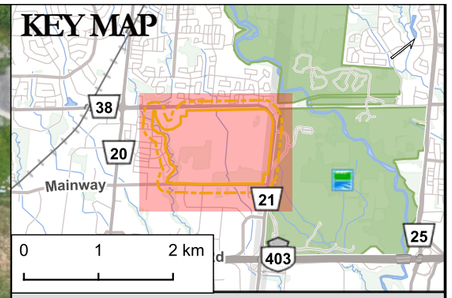
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Legend

Area of Assessment
- Subject Property
- Lands Owned by the City of Burlington
- Adjacent Lands (120 m)

Significant Natural Features - Terrastory
- Watercourse

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

TERRASTORY
environmental consulting inc.
info@terrastoryenviro.com 905.745.5398

1:6,250 | 0 50 100 150 m

Location:
Bronte Creek Meadows
City of Burlington

Project No.: 22195
Date: 2025-01-14
By: AB **Checked:** SA
Orthophotograph Date: Google 2018

Figure 1:
Location of the Subject Property

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Legend

Area of Assessment
- Subject Property
- Adjacent Lands (120 m)

Survey Stations
- Aquatic Habitat Transect
- Anuran Calling Stations
- Bat Acoustic Monitoring Stations
- Breeding Bird Survey Stations
- Salamander Survey Station
- Woodpecker Survey Station

Surface Water Features
- Watercourse
- Unevaluated / Other Wetland

GENERAL NOTES:
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-Numeric scale is for a 11x17 inch print.

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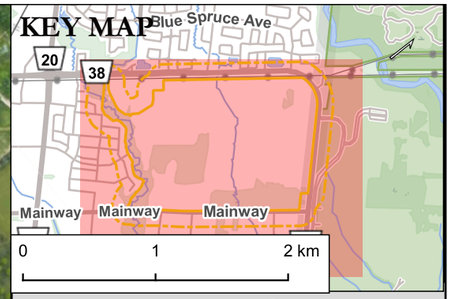
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Location:
Bronte Creek Meadows
City of Burlington

Project No.: 22195
Figure 2:
Survey Stations
Date: 2026-02-05
By: AB **Checked:** SA
Orthophotograph Date: Google, 2018.

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Legend

Area of Assessment
- Subject Property
- Adjacent Lands (120 m)

Built Structures and Infrastructure
- Catchbasin
- Culvert

Subwatershed Boundaries
- Subwatersheds (CH)

Surface Water Features - Terrastory & HESL
- Watercourse
- SWM Outlet
- Bronte Creek Trib Side Channel
- Tributary Avulsion
- Sheldon Creek - dug channels
- Ditch
- HDFA - Survey 1 - Pooled Water
- HDFA - Survey 2 Pooled Water

Wetlands
- Unevaluated / Other Wetland

GENERAL NOTES:
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-Numeric scale is for a 11x17 inch print.

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0 50 100 150 200 m

Location:
Bronte Meadows, Burlington

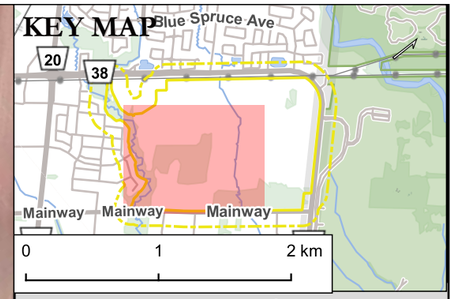
Project No.: 22195
Date: 2026-02-06
By: AB **Checked:** SA
Orthophotograph Date: 2018, Google.

Figure 3b:
Surface Water Features - Overview

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KEY MAP



Legend

Area of Assessment
- Subject Property
- Adjacent Lands (120 m)

Built Structures and Infrastructure
- Catchbasin
- Culvert

Subwatershed Boundaries
- Subwatersheds (CH)

Surface Water Features - Terrastory & HESL
- Watercourse
- SWM Outlet
- Bronte Creek Trib Side Channel
- Tributary Avulsion
- Sheldon Creek - dug channels
- Ditch
- HDFA - Survey 1 - Pooled Water
- HDFA - Survey 2 Pooled Water

Wetlands
- Unevaluated / Other Wetland

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

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0 25 50 75 100 m

Location:
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Project No.: 22195

Date: 2026-02-06

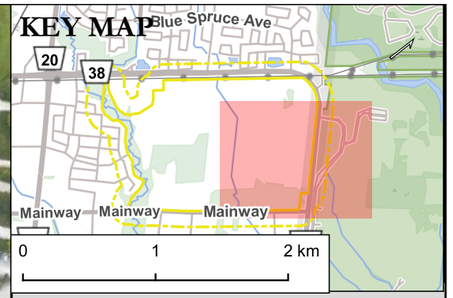
By: AB **Checked:** SA

Orthophotograph Date: 2018, Google.

Figure 3b:
Surface Water Features - Sheldon Creek Subwatershed

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Legend

Area of Assessment
- Subject Property
- Adjacent Lands (120 m)

Built Structures and Infrastructure
- Catchbasin
- Culvert

Subwatershed Boundaries
- Subwatersheds (CH)

Surface Water Features - Terrastory & HESL
- Watercourse
- SWM Outlet
- Bronte Creek Trib Side Channel
- Tributary Avulsion
- Sheldon Creek - dug channels
- Ditch
- HDFA - Survey 1 - Pooled Water
- HDFA - Survey 2 Pooled Water

Wetlands
- Unevaluated / Other Wetland

HDFA Management Reccomendations
- Mitigation
- Mitigation-Flow Maintained
- No Management Required
- Protection

GENERAL NOTES:
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-Numeric scale is for a 11x17 inch print.

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Location:
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Date: 2024-02-14

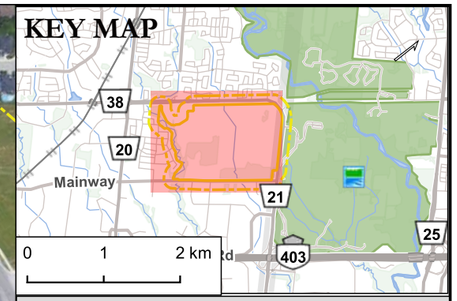
By: AB **Checked:** SA

Orthophotograph Date: 2018, Google.

Figure 3c:
Surface Water Features - Bronte Creek Subwatershed

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Legend

Area of Assessment
- Subject Property
- Adjacent Lands (120 m)

Biophysical Features and Conditions
- Vegetation Communities

Significant Natural Features - Terrastory & HESL
- Watercourse
- SWM Outlet
- Bronte Creek Trib Side Channel

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

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Location:
Bronte Meadows,
City of Burlington

Project No.: 22195
Date: 2026-02-05
By: AB **Checked:** --
Orthophotograph Date: Google, 2018.

Figure 4:
Vegetation Communities

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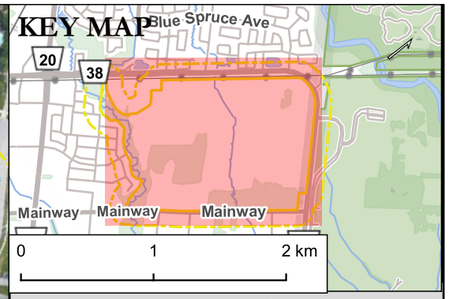
Table 11. Vegetation Communities

Vegetation Community	Class	Series
CV - Constructed	Constructed	-
CVI_3 - Sewage and Water Treatment	Constructed	Transportation and Utilities
CVR_1 - Low Density Residential	Constructed	Residential
CVS_1 - Education	Constructed	Commercial and Institutional
FOD - Deciduous Forest	Forest	Deciduous Forest
FODM2 - Dry - Fresh Oak - Maple - Hickory Deciduous Forest	Forest	Deciduous Forest
FODM2-3 - Dry - Fresh Hickory Deciduous Forest	Forest	Deciduous Forest
FODM3-1 - Dry - Fresh Poplar Deciduous Forest	Forest	Deciduous Forest
FODM4 - Dry - Fresh Upland Deciduous Forest	Forest	Deciduous Forest
FODM4-9 - Dry - Fresh Basswood Deciduous Forest	Forest	Deciduous Forest
FODM5-2 - Dry - Fresh Sugar Maple- Beech Deciduous Forest	Forest	Deciduous Forest
FOD5-3 - Dry - Fresh Sugar Maple - Oak Deciduous Forest	Forest	Deciduous Forest
FODM5-3 - Dry- Fresh Sugar Maple - Oak Deciduous Forest	Forest	Deciduous Forest
FODM5-5 - Dry - Fresh Sugar Maple - Hickory Deciduous Forest	Forest	Deciduous Forest
FODM5-8 - Dry - Fresh Sugar Maple- White Ash Deciduous Forest	Forest	Deciduous Forest
FODM7-2 - Fresh - Moist Green Ash - Hardwood Lowland Deciduous Forest	Forest	Deciduous Forest
FOMM2-1 - Dry - Fresh White Pine - Oak Mixed Forest	Forest	Mixed Forest
FOMM2-2 - Dry - Fresh White Pine - Sugar Maple Mixed Forest	Forest	Mixed Forest
HE - Hedgerow	Hedgerow	-
MAMM1-12 - Common Reed Graminoid Mineral Meadow Marsh	Marsh	Meadow Marsh
MAMM1-2 - Cattail Graminoid Mineral Meadow Marsh	Marsh	Meadow Marsh
MAMM1-3 - Reed-canary Grass Graminoid Mineral Meadow Marsh	Marsh	Meadow Marsh
MAMM3 - Mixed Mineral Meadow Marsh	Marsh	Meadow Marsh
MAMM3-1 - Mixed Mineral Meadow Marsh	Marsh	Meadow Marsh
MAS2 - Mineral Shallow Marsh	Wetland	Shallow Marsh
MAS2-1 - Cattail Mineral Shallow Marsh	Marsh	Shallow Marsh
MAS2-8 - Rice Cut-grass Mineral Shallow Marsh	Marsh	Shallow Marsh

Vegetation Community	Class	Series
MASM1-1 - Cattail Mineral Shallow Marsh	Marsh	Shallow Marsh
MEG - Graminoid Meadow	Meadow	Graminoid Meadow
MEGM3 - Dry - Fresh Graminoid Meadow	Meadow	Graminoid Meadow
MEM - Mixed Meadow	Meadow	Mixed Meadow
MEMM2 - Fresh - Moist Mixed Tallgrass Prairie	Meadow	Mixed Meadow
OAW - Open water	Open Water	Open Water
SWDM1 - Oak Mineral Deciduous Swamp	Swamp	Deciduous Swamp
SWDM3-3 - Swamp Maple Mineral Deciduous Swamp	Swamp	Deciduous Swamp
SWT2-2 - Willow Mineral Thicket Swamp	Swamp	Thicket Swamp
SWTM3 - Willow Mineral Deciduous Thicket Swamp	Swamp	Thicket Swamp
THD - Deciduous Thicket	Thicket	Deciduous Thicket
THDM2 - Dry - Fresh Deciduous Shrub Thicket	Thicket	Deciduous Thicket
THDM2-1 - Sumac Deciduous Shrub Thicket	Thicket	Deciduous Thicket
THDM2-11 - Hawthorn Deciduous Shrub Thicket	Thicket	Deciduous Thicket
THDM3 - Dry - Fresh Deciduous Hedgerow Thicket	Thicket	Deciduous Thicket
WODM4-4 - Dry - Fresh Black Walnut Deciduous Woodland	Woodland	Deciduous Woodland
WODM5-1 – Fresh-Moist Poplar Deciduous Woodland	Woodland	Deciduous Woodland
WODM5 - Fresh - Moist Deciduous Woodland	Woodland	Deciduous Woodland



KEY MAP



Legend

Area of Assessment
- Subject Property
- Adjacent Lands (120 m)

Built Structures and Infrastructure
- Catchbasin
- Culvert

Biophysical Features and Conditions
- Fish Observation
- Watercourse
- SWM Outlet
- Unevaluated / Other Wetland

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

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Location:
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Project No.: 22195
Date: 2026-02-05
By: AB **Checked:** SA
Orthophotograph Date: 2018, Google.

Figure 5:
Fish Survey Results

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Legend

Area of Assessment
- Subject Property
- Adjacent Lands (120 m)

Significant Natural Features - Terrastory
- Watercourse
- Unevaluated / Other Wetland
- Significant Woodland
- Significant Wildlife Habitat
- Potential Bat Maternity Roost Area
- Area of High Bat Activity
- Potential Bat Maternity Roost
- Stick Nest

Species of Conservation Interest *
- Myotis Bat Species - Endangered
- Migratory Bat Species - Endangered
- Silver Shiner - Threatened
- Eastern Wood-pewee - Special Concern
- Wood Thrush - Special Concern
- Monarch - Special Concern
- A Lichen (Lithothelium septemseptatum) - S1S3
- Spined Micranthena - S2S3
- Spring Beauty Miner Bee - S2S3
- Bachman's Jelly Lichen - S3
- Hispid Buttercup - S3
- Floating Crystalwort - S3
- Floating Heartwort - S3
- Speckled Blister Lichen- S3
- Unicorn Clubtail - S3
- A lichen (Arthonia lapidicola) - SNA

GENERAL NOTES:
* All woodlands within and adjacent to the Subject Property represent known or potential habitat for Endangered bats.
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

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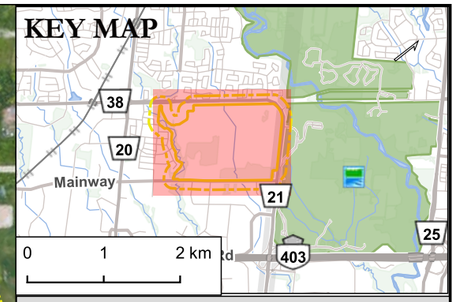
Location:
Bronte Meadows, Burlington

Project No.: 22195
Date: 2026-02-05
By: AB **Checked:**CW
Orthophotograph Date: 2018, Google.

Figure 6:
Significant Natural Heritage Features

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Legend

Area of Assessment
- Subject Property
- Adjacent Lands (120 m)

Significant Natural Features - Terrastory

Significant Natural Feature Boundaries
- Watercourse
- Physical Top of Bank (TOB), surveyed with CH 2025
- Wetland Boundary (2025)
- Surveyed Wetland Limit (CH, 2025)
- Unevaluated / Other Wetland
- Bronte Creek Trib. Side Channel

Natural Hazards
- Stable Top of Slope (MTE, Jan. 2026)
- Sheldon Creeks Flood Plain (MTE Feb. 2026)
- Bronte Creek Flood Plain (Water's Edge 2023)
- Meander Belt (Water's Edge Dec. 2023)

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

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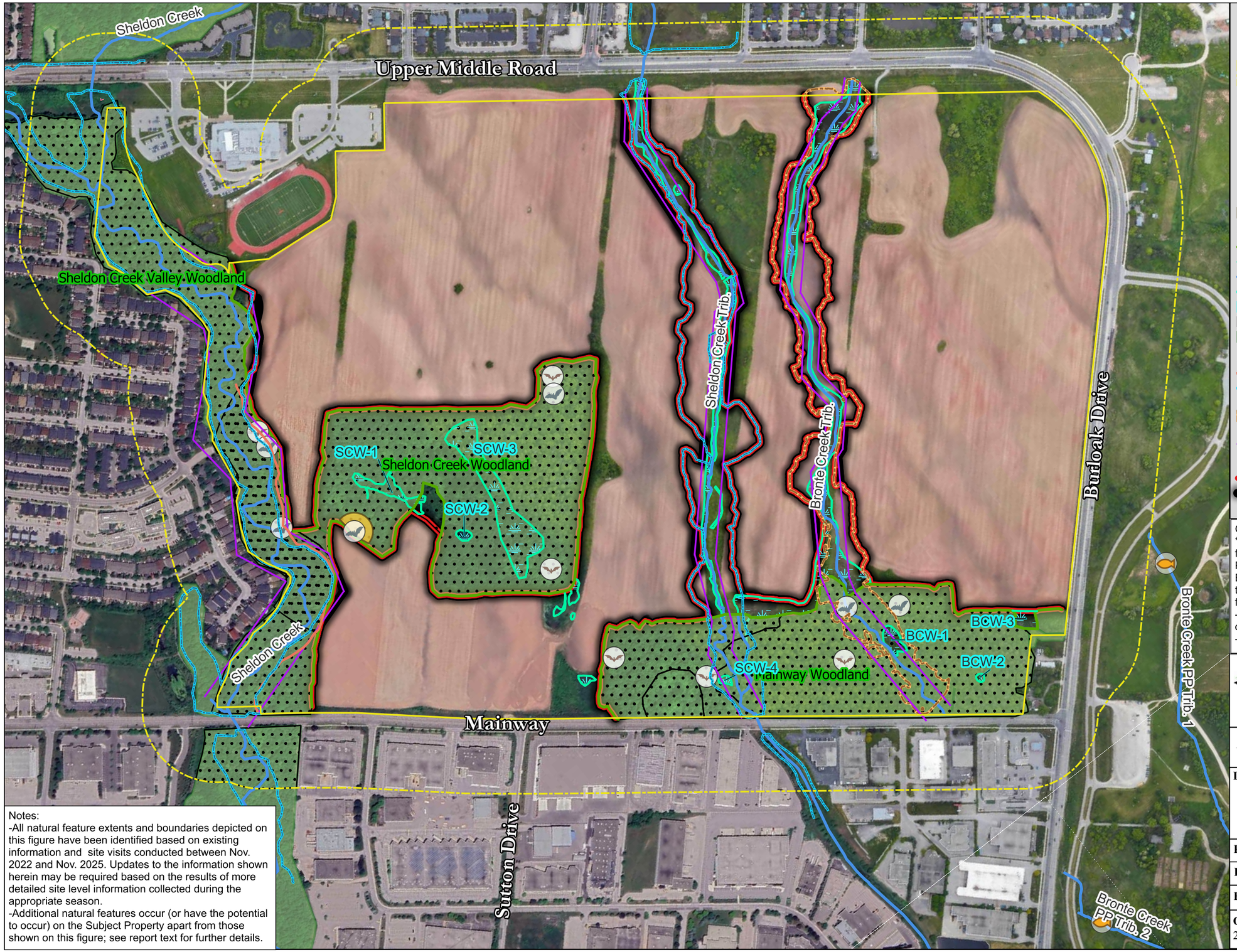
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Location:
Bronte Meadows,
City of Burlington

Project No.: 22195
Date: 2026-02-05
By: AB **Checked:** --
Orthophotograph Date: Google, 2018.

Figure 6:
Natural Hazards

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Legend

Area of Assessment
- Subject Property
- Adjacent Lands (120 m)

Significant Natural Features - Terrastory

Endangered and Threatened Species
- Myotis Bat Species - Endangered*
- Migratory Bat Species - Endangered
- Silver Shiner - Threatened
- Potential Bat Maternity Roost Area

Significant Natural Feature Boundaries
- Sig. Woodland Dripline (2025)
- Wetland Boundary (2025)
- Watercourse
- Bronte Creek Trib Side Channel
- Unevaluated / Other Wetland
- Significant Wildlife Habitat
- Significant Woodland

Natural Hazards
- Stable Top of Slope (MTE Jan. 2026)
- Sheldon Creeks Regulatory Flood Plain (MTE Feb. 2026)
- Bronte Creek Regulatory Flood Plain (Water's Edge 2023)
- Meander Belt (Water's Edge Dec. 2023)

Preliminary Constraints to Development
- Preliminary RNHS
- Preliminary Constraint Limit

GENERAL NOTES:
* While it may not be specifically indicated on this figure, all woodlands within and adjacent to the Subject Property and wetlands therin constitute habitat for Endangered bats. Additional meadows, wetlands, and thickets may also provide habtiat for bats. See report for details.
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

Notes:
-All natural feature extents and boundaries depicted on this figure have been identified based on existing information and site visits conducted between Nov. 2022 and Nov. 2025. Updates to the information shown herein may be required based on the results of more detailed site level information collected during the appropriate season.
-Additional natural features occur (or have the potential to occur) on the Subject Property apart from those shown on this figure; see report text for further details.

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Location:
Bronte Meadows, Burlington

Project No.: 22195
Date: 2026-02-05
By: AB **Checked:** --
Orthophotograph Date: 2018, Google.

Figure 8:
Preliminary Regional Natural Heritage System & Development Constraints

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Appendix 1. Representative Photographs



Photo 1. View of agricultural fields in the Bronte Creek Subwatershed; photo taken from NE edge of Subject Property, facing south towards the Mainway Woodland (29 Nov. 2022).



Photo 2. View of agricultural fields in the Sheldon Creek Subwatershed; photo taken from NNE edge of Subject Property, facing S towards the Sheldon Creek Woodland (01 Sept. 2023).



Photo 3. Agricultural field south of Sheldon Creek Woodland (left foreground) and west of Mainway Woodland (middle foreground) (01 Sept. 2023).



Photo 4. View of the agricultural field east of the Sheldon Creek Valley Woodland (foreground) (09 Sept. 2023).



Photo 5. Sheldon Creek Valley Woodland, southern end; photo taken facing east (01 Sept. 2023).



Photo 6. Sheldon Creek Valley Woodland, southern end; photo taken facing north (01 Sept. 2023).



Photo 7. Sheldon Creek, southern portion (01 Sept. 2023).



Photo 8. Sheldon Creek valley approx. 315 m north of Mainway; photo taken facing south (01 Sept. 2023).



Photo 9. Centenarian Red Oak in the east portion of the Sheldon Creek Valley Woodland approx. 300 m north of Mainway (with soil auger with 38 cm wide handle for scale) (01 Sept. 2023).



Photo 10. Large Red Oak growing on a west-facing exposed shale bedrock adjacent Sheldon Creek approx. 385 m north of Mainway; this tree is also featured on the report cover (01 Sept. 2023).



Photo 11. Ash-dominated woodland in the Sheldon Creek Valley (01 Sept. 2023).



Photo 12. Young disturbed woodland in the Sheldon Creek Valley approx. 585 m north of Mainway (01 Sept. 2023).



Photo 13. Sheldon Creek approx. 240 m north of Mainway, photo taken facing south (16 May 2023).



Photo 14. Sheldon Creek Valley Woodland, mature forest at northern end (01 Sept. 2023).



Photo 15. Sheldon Creek, northern end (01 Sept. 2023).



Photo 16. Inlet (i.e., HDF SCT-9) to wetland SCW-1; photo taken facing south (01 Sept. 2023).



Photo 17. Wetland SCW-1 in late summer; photo taken at eastern end of wetland, facing west (01 Sept. 2023).



Photo 18. Wetland SCW-1 in spring; photo taken at eastern end of wetland, facing west (15 April 2024).



Photo 19. Eastern end of Wetland SCW-1 with HDF SCT-9a in the background; photo taken facing east (16 May 2023).



Photo 20. Eastern portion of Sheldon Creek Woodland (16 May 2023).



Photo 21. Wetland SCW-2 in spring; photo taken facing south (15 April 2023).



Photo 22. Wetland SCW-2 in spring during dry year; photo taken facing west (16 May 2023).



Photo 23. Wetland SCW-2 in later summer; photo taken facing east (01 Sept. 2023).



Photo 24. Sheldon Creek Woodland, SW portion (16 May 2023).



Photo 25. Flowing water at far downstream/south end of Wetland SCW-3 (06 April 2023).



Photo 26. Wetland SCW-3 in spring (06 April 2023).



Photo 27. Wetland SCW-3 in late summer, approx. middle of feature (01 Sept. 2023).



Photo 28. Wetland SCW-3 in late summer (01 Sept. 2023).



Photo 29. Upstream/northern end of Wetland SCW-3 in spring (06 April 2023).



Photo 30. Ponding at confluence of HDFs SCT-6 and SCT-6a in agricultural field north of Wetland SCW-3 (06 April 2023).



Photo 31. Sheldon Creek Woodland, east portion (16 May 2023).



Photo 32. Sheldon Creek Woodland, NE corner (16 May 2023).

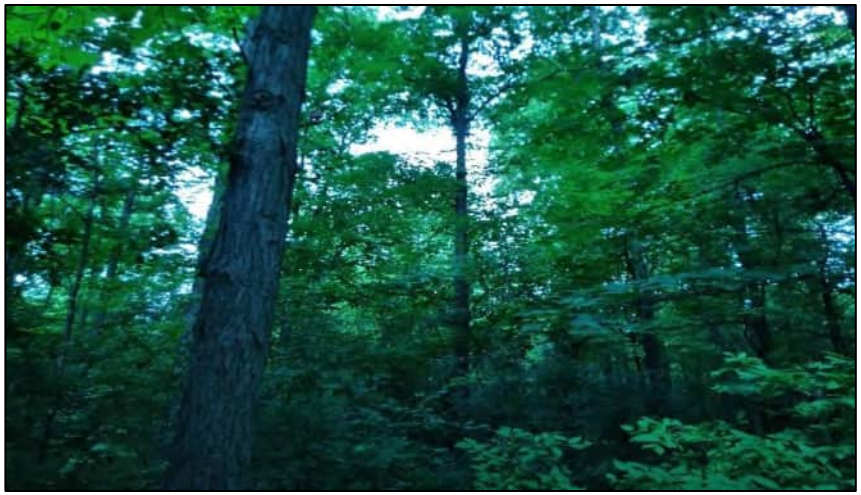


Photo 33. Mainway Woodland, east end (09 Sept. 2023).



Photo 34. Sheldon Creek tributary side channel (16 May 2023).



Photo 35. Sheldon Creek Tributary at confluence with HDF SCT-13 (left); photo taken facing north (01 April 2023).



Photo 36. Outlet of Wetland SCW-4, left foreground; photo taken facing east (01 April 2023).



Photo 37. Wetland SWC-4, photo taken at south end facing NE (29 Nov. 2022).



Photo 38. Wetland SWC-4, photo taken at west end facing east (08 Sept. 2023).



Photo 39. Sheldon Creek Tributary, just downstream of confluence with side channel (08 Sept. 2023).



Photo 40. Sheldon Creek Tributary flowing over cablecrete structure at downstream end (01 April 2023).



Photo 41. Sugar Maple dominated forest, Mainway Woodland (16 May 2023).



Photo 42. Bronte Creek Tributary adjacent to Wetland BCW-1 (left foreground) (16 May 2023).



Photo 43. Wetland BCW-1 with woodland in background; photo taken facing east (08 Sept. 2023).



Photo 44. Wetland BCW-1 (centre) and Bronte Creek Tributary (right); photo taken facing south (16 May 2023).



Photo 45. Bronte Creek Tributary approx. mid-way between Wetland BCW-1 and Mainway; photo taken facing north (16 May 2023).



Photo 46. Downstream end of the Bronte Creek Tributary at Mainway (15 March 2024).



Photo 47. Salamander monitoring at Wetland BCW-2 (15 March 2024)



Photo 48. Wetland BCW-2 in late summer (08 Sept. 2023).



Photo 49. Wetland BCW-3; photo taken facing NE (08 Sept. 2023).



Photo 50. Wetland BCW-3; photo taken facing south (08 Sept 2023).



Photo 51. Mainway Woodland, east portion (08 Sept. 2023).



Photo 52. Common Reed dominated wetland north of Mainway Woodland; photo taken facing SE (08 Sept. 2023).



Photo 53. Bronte Creek Tributary north of the Mainway Woodland; photo taken facing north (08 Sept. 2023).



Photo 54. Sheldon Creek Tributary north of the Mainway Woodland; photo taken facing north (08 Sept. 2023).



Photo 54. Upstream end of the Sheldon Creek Tributary; photo taken facing south (29 Nov. 2022).



Photo 56. Sheldon Creek Tributary (29 Nov. 2022).

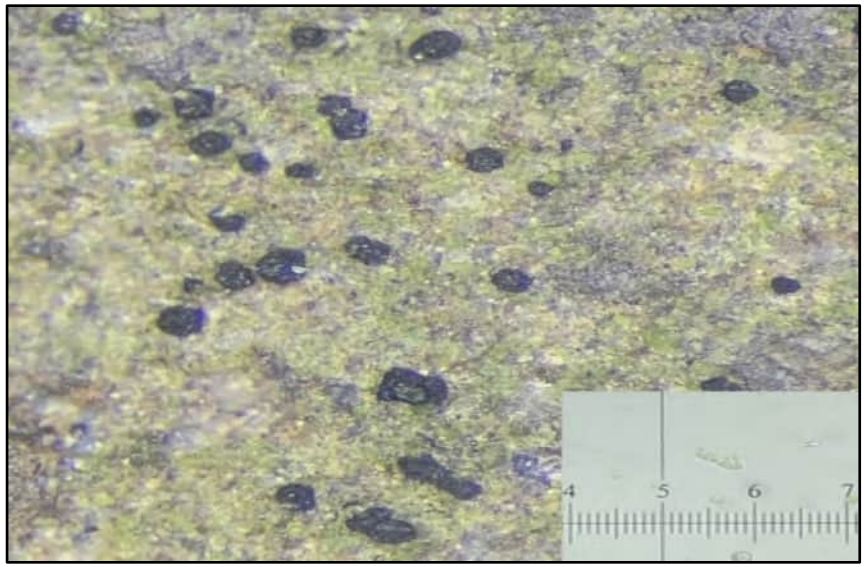


Photo 57. *Anthonia lapidicola* (08 Oct. 2024).

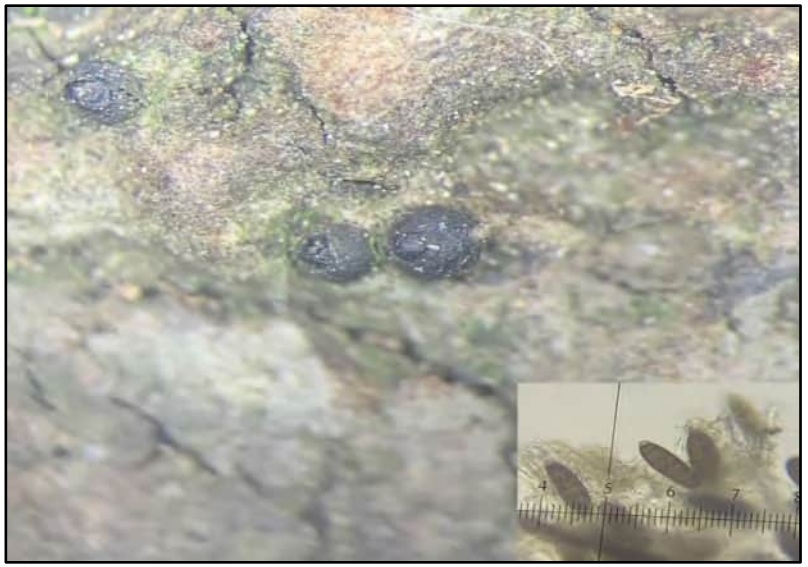


Photo 58. *Lithothelium septemseptatum* (08 Nov. 2024).

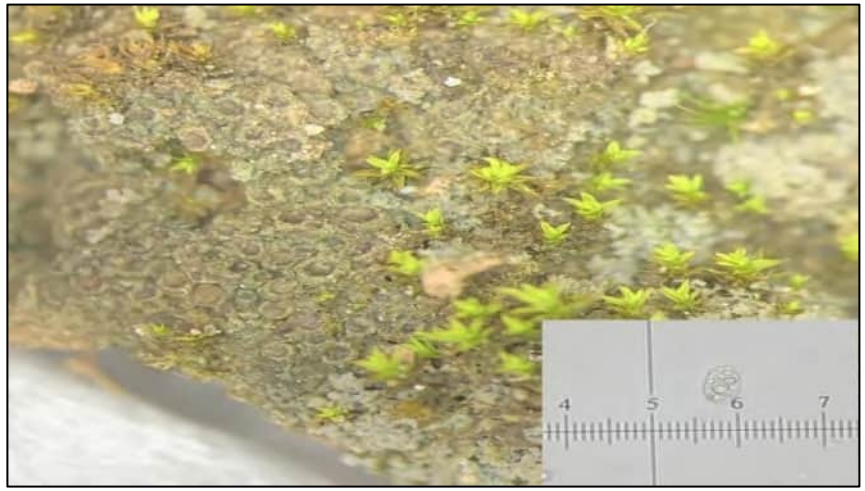


Photo 59. Bachman's Jelly Lichen (*Enchylium bachmanianum*), left, with moss (08 Oct. 2024).



Photo 60. Speckled Blister Lichen (*Viridothelium virens*) on Beech (*Fagus grandifolia*) (08 Oct. 2024).



Photo 61. Speckled Blister Lichen (*Viridothelium virens*) on Beech (*Fagus grandifolia*) (08 Nov. 2024).

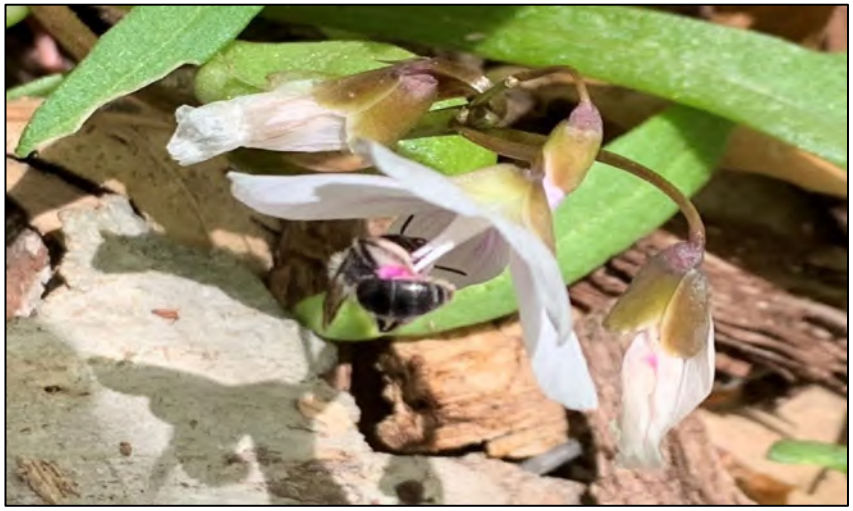


Photo 62. Spring Beauty Miner Bee, a provincially rare bee, on Narrow-leaved Spring Beauty (10 May 2024).



Photo 63. Citrine Forktail (01 August 2024).



Photo 64. Bronte PP. Trib. 2, facing downstream; photo taken in Bronte Creek Provincial Park (28 Feb. 2024). Culvert in Photo 65 is south of this box culvert.



Photo 65. Input from roadside ditch into Bronte PP. Trib. 2, photo taken facing upstream (28 Feb. 2024).



Photo 66. Input from roadside ditch (foreground) into Bronte PP. Trib. 2 (background), photo taken facing downstream (28 Feb. 2024).



Photo 67. Bronte PP. Trib. 2, photo taken facing downstream (28 Feb. 2024).



Photo 68. Outlet to Sheldon Creek at Sutton Drive, south of Subject Property (28 Feb. 2024).

Appendix 2. Vascular Plant List

Scientific Name	Common Name	Family	Coefficient of Conservatism	Coefficient of Wetness	S-Rank (per NHIC)	Local Status (per Crins et al., 2006)
Abutilon theophrasti	Velvetleaf	Malvaceae	0	3	SE5	
Acer x freemanii	Freemans' Maple		6	0	SE5	
Acer negundo	Manitoba Maple	Aceraceae	0	0	S5	
Acer rubrum	Red Maple	Aceraceae	4	0	S5	
Acer saccharum	Sugar Maple	Aceraceae	4	3	S5	
Ailanthus altissima	Tree-of-heaven	Simaroubaceae	0	5	SE5	
Alisma triviale	Northern Water-plantain	Alismataceae	1	-5	S5	
Alliaria petiolata	Garlic Mustard	Brassicaceae	0	0	SE5	
Allium tricoccum	Wild Leek	Liliaceae	7	3	S4	
Allium vineale	Wild Garlic	Liliaceae	0	3	SE2	
Alnus glutinosa	European Black Alder	Betulaceae	0	-3	SE4	
Amaranthus blitum	Purple Amaranth	Amaranthaceae	0	3	SE1	
Ambrosia artemisiifolia	Common Ragweed	Asteraceae	0	3	S5	
Amelanchier laevis	Smooth Serviceberry	Rosaceae	5	5	S5	
Andropogon gerardi	Big Bluestem	Poaceae	7	3	S4	Uncommon
Anemone quinquefolia	Wood Anemone	Ranunculaceae	7	0	S5	
Apocynum cannabinum	Hemp Dogbane	Apocynaceae	3	0	S5	
Arctium minus	Common Burdock	Asteraceae	0	3	SE5	
Arisaema triphyllum	Jack-in-the-pulpit	Araceae	5	-3	S5	
Asclepias syriaca	Common Milkweed	Apocynaceae	0	5	S5	
Asparagus officinalis	Garden Asparagus	Liliaceae	0	3	SE5	
Bidens frondosa	Devil's Beggarticks	Asteraceae	3	-3	S5	
Bromus inermis	Smooth Brome	Poaceae	0	5	SE5	
Capsella bursa-pastoris	Common Shepherd's Purse	Brassicaceae	0	3	SE5	
Carex arctata	Drooping Woodland Sedge	Cyperaceae	5	5	S5	
Carex cephalophora	Oval-leaved Sedge	Cyperaceae	5	3	S5	
Carex crinita	Fringed Sedge	Cyperaceae	6	-5	S5	Uncommon
Carex deweyana	Dewey's Sedge	Cyperaceae	6	3	S5	
Carex gracillima	Graceful Sedge	Cyperaceae	4	3	S5	
Carex lupulina	Hop Sedge	Cyperaceae	6	-5	S5	
Carex pedunculata	Long-stalked Sedge	Cyperaceae	5	3	S5	

Scientific Name	Common Name	Family	Coefficient of Conservatism	Coefficient of Wetness	S-Rank (per NHIC)	Local Status (per Crins et al., 2006)
Carex pensylvanica	Pennsylvania Sedge	Cyperaceae	5	5	S5	
Carex radiata	Eastern Star Sedge	Cyperaceae	4	0	S5	
Carex stipata	Awl-fruited Sedge	Cyperaceae	3	-5	S5	
Carex vulpinoidea	Fox Sedge	Cyperaceae	3	-5	S5	
Carya ovata	Shagbark Hickory	Juglandaceae	6	3	S5	
Cerastium fontanum	Common Mouse-ear Chickweed	Caryophyllaceae	0	3	SE5	
Circaea canadensis	Broad-leaved Enchanter's Nightshade	Onagraceae	2	3	S5	
Cirsium arvense	Canada Thistle	Asteraceae	0	3	SE5	
Cirsium vulgare	Bull Thistle	Asteraceae	0	3	SE5	
Claytonia virginica	Eastern Spring Beauty	Portulacaceae	5	3	S5	Uncommon
Convolvulus arvensis	Field Bindweed	Convolvulaceae	0	5	SE5	
Cornus racemosa	Grey Dogwood	Cornaceae	2	0	S5	
Crataegus coccinea	Scarlet Hawthorn	Rosaceae	4	5	S5	
Crataegus holmesiana	Holmes' Hawthorn	Rosaceae	4	5	S4S5	Uncommon
Crataegus monogyna	English Hawthorn	Rosaceae	0	3	SE4	
Crataegus pruinosa	Frosted Hawthorn	Rosaceae	4	5	S5	
Crataegus punctata	Dotted Hawthorn	Rosaceae	4	5	S5	
Crataegus schuettei	Schuette's Hawthorn	Rosaceae	4	5	S4	Uncommon
Crataegus submollis	Quebec Hawthorn	Rosaceae	4	5	S5	
Cynoglossum officinale	Common Hound's-tongue	Boraginaceae	0	5	SE5	
Dactylis glomerata	Orchard Grass	Poaceae	0	3	SE5	
Danthonia spicata	Poverty Oatgrass	Poaceae	5	5	S5	
Daucus carota	Wild Carrot	Apiaceae	0	5	SE5	
Dianthus armeria	Deptford Pink	Caryophyllaceae	0	5	SE5	
Digitaria sanguinalis	Hairy Crabgrass	Poaceae	0	3	SE5	
Dipsacus fullonum	Common Teasel	Dipsacaceae	0	3	SE5	
Dryopteris carthusiana	Spinulose Wood Fern	Dryopteridaceae	5	-3	S5	
Dulichium arundinaceum	Three-way Sedge	Cyperaceae	7	-5	S5	
Echinochloa crus-galli	Large Barnyard Grass	Poaceae	0	-3	SE5	
Echinocystis lobata	Wild Cucumber	Cucurbitaceae	3	-3	S5	

Scientific Name	Common Name	Family	Coefficient of Conservatism	Coefficient of Wetness	S-Rank (per NHIC)	Local Status (per Crins et al., 2006)
Eleocharis obtusa	Blunt Spikerush	Cyperaceae	5	-5	S5	
Elymus hystrix	Bottlebrush Grass	Poaceae	5	5	S5	
Elymus repens	Quackgrass	Poaceae	0	3	SE5	
Epipactis helleborine	Broad-leaved Helleborine	Orchidaceae	0	3	SE5	
Equisetum arvense	Field Horsetail	Equisetaceae	0	0	S5	
Erigeron annuus	Annual Fleabane	Asteraceae	0	3	S5	
Erythronium americanum	Yellow Trout-lily	Liliaceae	5	5	S5	
Euonymus obovatus	Running Strawberry-bush	Celastraceae	6	3	S4	
Eurybia macrophylla	Large-leaved Aster	Asteraceae	5	5	S5	
Euthamia graminifolia	Grass-leaved Goldenrod	Asteraceae	2	0	S5	
Fagus grandifolia	American Beech	Fagaceae	6	3	S4	
Fragaria virginiana	Wild Strawberry	Rosaceae	2	3	S5	
Fraxinus americana	White Ash	Oleaceae	4	3	S4	
Fraxinus pennsylvanica	Red Ash	Oleaceae	3	-3	S4	
Galium mollugo	Smooth Bedstraw	Rubiaceae	0	5	SE5	
Geranium maculatum	Spotted Geranium	Geraniaceae	6	3	S5	
Geum fragarioides	Barren Strawberry	Rosaceae	5	5	S5	
Geum urbanum	Wood Avens	Rosaceae	0	5	SE3	
Glyceria striata	Fowl Mannagrass	Poaceae	3	-5	S5	
Glycine max	Soybean	Fabaceae	0	5	SE2	
Hydrophyllum virginianum	Virginia Waterleaf	Hydrophyllaceae	6	0	S5	
Hypericum perforatum	Common St. John's-wort	Clusiaceae	0	5	SE5	
Ilex verticillata	Common Winterberry	Aquifoliaceae	5	-3	S5	
Impatiens capensis	Spotted Jewelweed	Balsaminaceae	4	-3	S5	
Juglans nigra	Black Walnut	Juglandaceae	5	3	S4?	
Juncus tenuis	Path Rush	Juncaceae	0	0	S5	
Juniperus virginiana	Eastern Red Cedar	Cupressaceae	4	3	S5	
Lapsana communis	Common Nipplewort	Asteraceae	0	3	SE5	
Leersia oryzoides	Rice Cutgrass	Poaceae	3	-5	S5	
Lepidium campestre	Field Peppergrass	Brassicaceae	0	5	SE5	

Scientific Name	Common Name	Family	Coefficient of Conservatism	Coefficient of Wetness	S-Rank (per NHIC)	Local Status (per Crins et al., 2006)
Lilium michiganense	Michigan Lily	Liliaceae	7	-3	S4	
Linaria vulgaris	Butter-and-eggs	Scrophulariaceae	0	5	SE5	
Lindernia dubia	Yellow-seed False Pimpernel	Scrophulariaceae	7	-5	S4	
Lobelia inflata	Indian-tobacco	Campanulaceae	3	3	S5	
Lonicera tatarica	Tatarian Honeysuckle	Caprifoliaceae	0	3	SE5	
Lysimachia arvensis	Scarlet Pimpernel	Primulaceae	0	3	SE4	
Lysimachia ciliata	Fringed Yellow Loosestrife	Primulaceae	4	-3	S5	
Lythrum salicaria	Purple Loosestrife	Lythraceae	0	-5	SE5	
Maianthemum racemosum	Large False Solomon's Seal	Liliaceae	4	3	S5	
Matteuccia struthiopteris	Ostrich Fern	Dryopteridaceae	5	0	S5	
Mentha canadensis	Canada Mint	Lamiaceae	3	-3	S5	
Morus alba	White Mulberry	Moraceae	0	0	SE5	
Nabalus albus	White Rattlesnakeroot	Asteraceae	6	3	S5	
Nepeta cataria	Catnip	Lamiaceae	0	3	SE5	
Onoclea sensibilis	Sensitive Fern	Dryopteridaceae	4	-3	S5	
Osmorhiza longistylis	Smooth Sweet Cicely	Apiaceae	6	3	S5	
Ostrya virginiana	Eastern Hop-hornbeam	Betulaceae	4	3	S5	
Oxalis stricta	Upright Yellow Wood-sorrel	Oxalidaceae	0	3	S5	
Panicum capillare	Common Panicgrass	Poaceae	0	0	S5	
Parthenocissus vitacea	Thicket Creeper	Vitaceae	4	3	S5	
Penthorum sedoides	Ditch Stonecrop	Crassulaceae	4	-5	S5	Uncommon
Persicaria hydropiper	Marshpepper Smartweed	Polygonaceae	0	-5	SE5	Uncommon
Persicaria lapathifolia	Pale Smartweed	Polygonaceae	2	-3	S5	Uncommon
Persicaria virginiana	Virginia Smartweed	Polygonaceae	6	0	S4	Uncommon
Phalaris arundinacea	Reed Canarygrass	Poaceae	0	-3	S5	
Phragmites australis ssp. australis	European Reed	Poaceae	0	-3	SE5	
Pilea pumila	Dwarf Clearweed	Urticaceae	5	-3	S5	
Pinus strobus	Eastern White Pine	Pinaceae	4	3	S5	
Plantago major	Common Plantain	Plantaginaceae	0	3	SE5	
Poa annua	Annual Bluegrass	Poaceae	0	3	SE5	

Scientific Name	Common Name	Family	Coefficient of Conservatism	Coefficient of Wetness	S-Rank (per NHIC)	Local Status (per Crins et al., 2006)
Poa pratensis	Kentucky Bluegrass	Poaceae	0	3	S5	
Podophyllum peltatum	May-apple	Berberidaceae	5	3	S5	
Polygonatum pubescens	Hairy Solomon's Seal	Liliaceae	5	5	S5	
Polystichum acrostichoides	Christmas Fern	Dryopteridaceae	5	3	S5	
Populus deltoides	Eastern Cottonwood	Salicaceae	4	0	S5	
Populus grandidentata	Large-toothed Aspen	Salicaceae	5	3	S5	
Populus tremuloides	Trembling Aspen	Salicaceae	2	0	S5	
Portulaca oleracea	Common Purslane	Portulacaceae	0	3	SE5	
Potentilla norvegica	Rough Cinquefoil	Rosaceae	0	0	S5	
Prunella vulgaris	Common Self-heal	Lamiaceae	0	0	S5	
Prunus avium	Sweet Cherry	Rosaceae	0	5	SE4	
Prunus pensylvanica	Pin Cherry	Rosaceae	3	3	S5	
Prunus serotina	Black Cherry	Rosaceae	3	3	S5	
Prunus virginiana	Chokecherry	Rosaceae	2	3	S5	
Pyrus communis	Common Pear	Rosaceae	0	5	SE4	
Quercus alba	White Oak	Fagaceae	6	3	S5	
Quercus macrocarpa	Bur Oak	Fagaceae	5	3	S5	
Quercus rubra	Northern Red Oak	Fagaceae	6	3	S5	
Quercus × bebbiana	(Quercus alba X Quercus macrocarpa)	Fagaceae	-	-	SNA	Previously unrecorded
Ranunculus abortivus	Kidney-leaved Buttercup	Ranunculaceae	2	0	S5	
Ranunculus acris	Common Buttercup	Ranunculaceae	0	0	SE5	
Ranunculus hispidus	Bristly Buttercup	Ranunculaceae	8	0	S3	Rare
Ranunculus sceleratus	Cursed Buttercup	Ranunculaceae	2	-5	S5	
Rhamnus cathartica	European Buckthorn	Rhamnaceae	0	0	SE5	
Rhus typhina	Staghorn Sumac	Anacardiaceae	1	3	S5	
Ribes americanum	American Black Currant	Grossulariaceae	4	-3	S5	
Ribes cynosbati	Eastern Prickly Gooseberry	Grossulariaceae	4	3	S5	
Ribes triste	Swamp Red Currant	Grossulariaceae	6	-5	S5	
Robinia pseudoacacia	Black Locust	Fabaceae	0	3	SE5	
Rosa multiflora	Multiflora Rose	Rosaceae	0	3	SE5	

Scientific Name	Common Name	Family	Coefficient of Conservatism	Coefficient of Wetness	S-Rank (per NHIC)	Local Status (per Crins et al., 2006)
Rubus idaeus	Red Raspberry	Rosaceae	2	3	S5	
Rumex crispus	Curled Dock	Polygonaceae	0	0	SE5	
Salix amygdaloides	Peach-leaved Willow	Salicaceae	6	-3	S5	
Salix discolor	Pussy Willow	Salicaceae	3	-3	S5	
Salix euxina	Crack Willow	Salicaceae	0	0	SE	
Salix interior	Sandbar Willow	Salicaceae	1	-3	S5	
Sanguinaria canadensis	Bloodroot	Papaveraceae	5	3	S5	
Setaria pumila	Yellow Foxtail	Poaceae	0	0	SE5	
Sinapis alba	White Mustard	Brassicaceae	0	5	SE2	
Solanum dulcamara	Bittersweet Nightshade	Solanaceae	0	0	SE5	
Solanum nigrum	Black Nightshade	Solanaceae	0	0	SE1	
Solidago altissima	Tall Goldenrod	Asteraceae	1	3	S5	
Solidago caesia	Blue-stemmed Goldenrod	Asteraceae	5	3	S5	
Solidago canadensis	Canada Goldenrod	Asteraceae	1	3	S5	
Solidago flexicaulis	Zigzag Goldenrod	Asteraceae	6	3	S5	
Sonchus arvensis	Field Sow-thistle	Asteraceae	0	3	SE5	
Symphyotrichum ericoides	White Heath Aster	Asteraceae	4	3	S5	
Symphyotrichum lanceolatum	Panicled Aster	Asteraceae	3	-3	S5	
Symphyotrichum pilosum	Old Field Aster	Asteraceae	0	3	S5	
Taraxacum officinale	Common Dandelion	Asteraceae	0	3	SE5	
Thalictrum dioicum	Early Meadow-rue	Ranunculaceae	6	3	S5	
Tilia americana	Basswood	Tiliaceae	4	3	S5	
Toxicodendron radicans var. radicans	Eastern Poison Ivy	Anacardiaceae	2	0	S5	
Toxicodendron radicans var. rydbergii	Western Poison Ivy	Anacardiaceae	2	0	S5	
Trifolium pratense	Red Clover	Fabaceae	0	3	SE5	
Trillium grandiflorum	White Trillium	Liliaceae	5	3	S5	
Typha latifolia	Broad-leaved Cattail	Typhaceae	1	-5	S5	
Ulmus americana	White Elm	Ulmaceae	3	-3	S5	
Ulmus pumila	Siberian Elm	Ulmaceae	0	3	SE3	
Uvularia grandiflora	Large-flowered Bellwort	Liliaceae	6	5	S5	

Scientific Name	Common Name	Family	Coefficient of Conservatism	Coefficient of Wetness	S-Rank (per NHIC)	Local Status (per Crins et al., 2006)
Verbena urticifolia	White Vervain	Verbenaceae	4	0	S5	
Viburnum lentago	Nannyberry	Caprifoliaceae	4	0	S5	
Vicia cracca	Tufted Vetch	Fabaceae	0	5	SE5	
Viola sororia	Woolly Blue Violet	Violaceae	4	0	S5	
Vitis riparia	Riverbank Grape	Vitaceae	0	0	S5	

Appendix 3. Lichen Survey Results

Scientific Name	Common Name	S-Rank (per NHIC, 2024)	Notes
Acarospora fuscata	Brown Cobblestone Lichen	S5	Saxicolous on shale in exposed areas.
Acrocordia cavata	A lichen	S4	Corticolous on *Acer saccharum*
Agonimia tristicula	A lichen	SU	Corticolous on various hardwood trees and stumps
Alyxoria varia	Bark Scribble	S4	Corticolous on mature *Fagus grandifolia*
Anisomeridium polypori	A lichen	S4?	Corticolous on *Quecus alba*
Arthonia lapidicola	A lichen	--	Saxicolous on shale, not previously known from Ontario
Arthothelium ruanum	A Lichen	S4?	Corticolous on *Carya ovata*
Aspicilia cinerea	Cinder Lichen	S5	Saxicolous on granite eratics
Bacidina delicata	A Lichen	SU	Saxicolous on Shale
Bacidina egenula	Rock-Loving Dot Lichen	S4	Saxicolous on granite eratics in dry and wet areas
Candelaria concolor	Candleflame Lichen	S5	Corticolous on various hardwood trees
Candelariella vitellina	Common Goldspeck	S5	Saxicolous on eratics in exposed areas
Catillaria nigroclavata	A Lichen	S4S5	Corticolous on *Cornus racemosa*
Chrysothrix caesia	Frosted Comma Lichen	S5	Corticolous on various hardwood trees
Cladonia coniocraea	Common Powderhorn	SU	Lignicolous on old stumps
Cladonia peziziformis	Turban Lichen	S4?	Terracolous on soil in exposed area
Coenogonium pineti	Pink Dimple Lichen	S4?	Lignicolous on old stump
Cresponea chloroconia	A lichen	S4	Corticolous on mature *Carya ovata*
Dictyocatenulata alba	A lichen	S4S5	Corticolous on mature *Fagus grandifolia*
Enchylium bachmanianum	Bachman's Jelly Lichen	S3	Terracolous on perodically wet soil
Endocarpon pallidulum	Western Crepes	SU	Saxicolous on eratics in shaded areas
Flavoparmelia caperata	Common Greenshield Lichen	S5	Corticolous on various hardwood trees
Graphis scripta	Common Script Lichen	S5	Corticolous on *Carya ovata* , *Tilia americana*
Hyperphyscia adglutinata	Grainy Shadow-crust Lichen	S5	Corticolous on various hardwood trees
Illosporiopsis christiansenii	A Lichenicolous Fungus	S4?	Parasitic on *Physcia stellaris*
Ionaspis alba	Dry Eyes Lichen	S4	On granite eratics in shaded areas
Julella fallaciosa	A lichen	S4?	Corticolous on various hardwood trees
Lecania naegelii	A Dot Lichen	S4	Corticolous on various hardwood trees
Lepraria finkii	Fluffy Dust Lichen	S5	On various hardwood trees
Lithothelium septemseptatum	A Lichen	S1S3	Corticolous on *Quercus alba*
Myriolecis dispersa	Mortar Rim Lichen	S5	Saxicolous on shale in exposed areas
Phaeocalicium polyporaeum	Polypore Needles	S4S5	Fungicolous on *Trichaptum biforme*
Phaeophyscia adiastola	Powder-tipped Shadow Lichen	S4	Saxicolous on granite eratics in shaded areas
Phaeophyscia orbicularis	Mealy Shadow Lichen	S5	Corticolous on various hardwood trees
Phaeophyscia pusilloides	Pom-pom Shadow Lichen	S5	Corticolous on various hardwood trees
Phaeophyscia rubropulchra	Orange-cored Shadow Lichen	S5	Corticolous on various hardwood trees
Physcia adscendens	Hooded Rosette Lichen	S5	Corticolous on various hardwood trees
Physcia aipolia var. aipiola	Hoary Rosette Lichen	S5	Corticolous on various hardwood trees
Physcia millegrana	Rosette Lichen	S5	Corticolous on various hardwood trees
Physcia stellaris	Star Rosette Lichen	S5	Corticolous on various hardwood trees
Physciella melanchra	Mealy Cryptic Shade Lichen	S5	Corticolous on various hardwood trees
Punctelia rudecta	Rough Speckled Shield Lichen	S5	Corticolous on various hardwood trees

Scientific Name	Common Name	S-Rank (per NHIC, 2024)	Notes
Ropalospora viridis	A Lichen	S5	Corticolous on various hardwood trees
Sarcogyne hypophaea	Stepdaughter Grain-spored Lichen	SU	Saxicolous on granite eratics in shaded areas
Complex Trapelia coarctata	Arctic Dot Lichen	--	Saxicolous on shale in exposed areas
Trapelia placodioides	A Lichen	S5	Saxicolous on granite eratics in shaded areas
Verrucaria dolosa	A Lichen	SNR	Saxicolous on granite eratics in shaded areas
Verrucaria nigrescens	A Lichen	S5	Saxicolous in exposed areas
Viridothelium virens	Speckled Blister Lichen	S3	Corticolous on mature *Fagus grandifolia*
Xanthocarpia feracissima	Sidewalk Firedot	S5	Corticolous on various hardwood trees
Xanthomendoza fallax	Hooded Sunburst Lichen	S5	Corticolous on various hardwood trees
Xanthomendoza webri	Bare-bottom Sunburst Lichen	S4	Corticolous on various hardwood trees
Xanthoparmelia cumberlandia	Cumberland Rock Shield	S5	Saxicolous on shale in exposed areas
Xanthoria parietina	Common Sunburst Lichen	S5	Corticolous on various hardwood trees

Subnational Ranks (S-Ranks) are interpreted as follows:
S1: Critically Imperiled - Extremely rare in Ontario; usually 5 or fewer occurrences in the province, or very few remaining hectares.
S2: Imperiled - Very rare in Ontario; usually between 5 and 20 occurrences in the province, or very few remaining hectares.
S3: Vulnerable - Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with some extensive examples remaining.
S4: Apparently Secure – Apparently secure in the province, with many occurrences.
S5: Secure – Demonstrably secure in Ontario.
SH: Possibly Extirpated – Known from only historical records but still some hope of discovery.
--: Not recorded from Ontario/status unknown

Appendix 4. Snag Assessment & Bat Survey Results

1 BAT MATERNITY ROOST ASSESSMENT METHODOLOGY

Targeted surveys of bat habitat on the Subject Property focused on identifying the presence of candidate maternity roost sites. Surveys followed protocols outlined in the MECP *Treed Habitats – Maternity Roost Surveys (Forests/Woodlands) Protocol* (2022). Vegetation mapping according to Ecological Land Classification (ELC) was used to identify potential maternity roost habitats, particularly forests. Snag/cavity tree surveys were conducted during leaf off conditions within treed vegetation communities.

Acoustic surveys were then completed throughout the Subject Property in locations informed by the results of the snag survey, such as in areas adjacent large cavity trees or clusters of cavity trees. Ultrasonic acoustic recording units were deployed at seventeen (17) locations from 21 June 2024 to 20 August 2024 (see **Figure A-1**). The acoustic survey utilized SM4BAT full spectrum digital song meter units (Wildlife Acoustics Inc.) and ultrasonic directional microphones (SMM-U2).

The acoustic monitoring units were programmed to record continuously thirty (30) minutes before sunset until thirty (30) minutes after sunrise each day. Unit settings presented below were selected to produce optimal recordings based on the recording conditions (i.e., to capture echolocation pulses in a treed environment):

- A gain setting of 12 dB (default recommended by the manufacturer to capture general foraging activity).
- 16kHz analog high-pass filter turned on with a corresponding minimum trigger frequency of 16kHz to minimize non-bat recordings and noise (suitable as no bat species in Ontario typically produce vocalizations with an average minimum frequency below 16kHz).
- A 256kHz sample rate was utilized (given that the sample rate must be double the highest expected frequency to be recorded and Ontario bat species are not known to produce calls with an average maximum frequency over 120kHz).

Additionally, ultrasonic microphones were deployed strategically within the canopy opening in locations with relatively low amounts of clutter (i.e., obstacles such as dense vegetation or built structures which may decrease recording quality by producing echoes) to achieve high quality echolocation call recordings and maximize the likelihood of bat detections. Weather conditions were fair throughout the survey period.

2 RESULTS

The results of the snag and cavity tree assessment and the acoustic monitoring are presented below in **Table 1** and **Table 2**. Call summaries by ARU deployment area and overall are provided in **Table 3** and **Table 4**. Readers are directed to **Section 3.2.4** for a discussion of bat survey results.

Table 1. Snag and Cavity Tree Assessment

Snag Number	Common Name	Scientific Name	Dia. at Breast Height (cm)	Decay Class	Height Class[1]	Structural Attributes	Comments
1	Red Oak	*Quercus rubra*	90	1	2	Seven cavities (10 cm), one large (30 cm) on trunk.	
2	Green Ash	*Fraxinus pennsylvanica*	26	3	3	One (5 cm) cavity.	Loose bark.
3	Green Ash	*Fraxinus pennsylvanica*	45	3	2		Loose bark.
4	Green Ash	*Fraxinus pennsylvanica*	23	3	3		Loose bark.
5	White Ash	*Fraxinus americana*	57	4	2		Loose bark.
6	White Ash	*Fraxinus americana*	92	4	2		
7	White Ash	*Fraxinus americana*	32	3	2		Loose bark.
8	White Ash	*Fraxinus americana*	55	4	2		Loose bark.
9	White Ash	*Fraxinus americana*	36	3	2		Loose bark.
10	Green Ash	*Fraxinus pennsylvanica*	22	5	4	Large (30 cm) cavity.	
11	Green Ash	*Fraxinus pennsylvanica*	23	6	4	One large (40 cm) cavity.	
12	Green Ash	*Fraxinus pennsylvanica*	27	3	3		Loose bark.
13	Red Oak	*Quercus rubra*	90	1	1		Loose bark.
14	Red Oak	*Quercus rubra*	70	4	1		Loose bark.
15	Red Oak	*Quercus rubra*	79	1	1	One (5 cm) dead branch.	Loose bark.
16	Sugar Maple	*Acer saccharum*	82	6	4	Large cavities and hollow (40 cm, 80 cm).	
17	Basswood	*Tilia americana*	21	5	3	One cavity (30 cm) at top.	
18	Sugar Maple	*Acer saccharum*	82	1	4	Three (40-50 cm) cavities, one stem hollow.	
19	American Beech	*Fagus grandifolia*	19	6	4	Six cavities (5-10 cm).	
20	American Beech	*Fagus grandifolia*	47	5	2	Four cavities (5-10 cm), upper branches appear hollow.	
21	Basswood	*Tilia americana*	21	4	3	One cavity (20 cm) at top.	
22	White Ash	*Fraxinus americana*	40	4	3		Loose bark.
23	Swamp Maple	*Acer x freemanii*	22, 90	1	2	Six cavities (5-10 cm) at top of one branch.	

Snag Number	Common Name	Scientific Name	Dia. at Breast Height (cm)	Decay Class	Height Class[1]	Structural Attributes	Comments
24	White Ash	*Fraxinus americana*	58	5	2		Loose bark.
25	Green Ash	*Fraxinus pennsylvanica*	43	4	2		Loose bark.
26	Green Ash	*Fraxinus pennsylvanica*	59	4	2		Loose bark.
27	Green Ash	*Fraxinus pennsylvanica*	27	3	2		Loose bark.
28	Bur Oak	*Quercus macrocarpa*	27	4	3		Loose bark.
29	Bur Oak	*Quercus macrocarpa*	27	4	3		Loose bark.
30	Bur Oak	*Quercus macrocarpa*	25	4	3		Loose bark.
31	Bur Oak	*Quercus macrocarpa*	21	5	3		Loose bark.
32	Bur Oak	*Quercus macrocarpa*	31	5	3		Loose bark.
33	Bur Oak	*Quercus macrocarpa*	47	4	3		Loose bark.
34	Bur Oak	*Quercus macrocarpa*	90	3	2		
35	American Beech	*Fagus grandifolia*	44	6	1	One large cavity at base (2 m), second cavity (30 cm).	
36	Bur Oak	*Quercus macrocarpa*	38	5	4		Loose bark.
37	White Pine	*Pinus strobus*	40	6	3	Hollow at top, one (10 cm) cavity midway.	
38	White Pine	*Pinus strobus*	50	1	4	Six cavities on trunk (10-20 cm).	
39	Sugar Maple	*Acer saccharum*	60	3	2		Loose bark.
40	Sugar Maple	*Acer saccharum*	20	4	2	Three cavities (10-20 cm) at top.	Loose bark.
41	Green Ash	*Fraxinus pennsylvanica*	29	3	3		Loose bark.
42	Swamp Maple	*Acer x freemanii*	33	4	3	Eight cavities (5-30 cm).	
43	Basswood	*Tilia americana*	18	1	3	Two cavities (1 m, 10 cm).	Loose bark.
44	Red Oak	*Quercus rubra*	71	4	3		Loose bark.
45	Hybrid Crack Willow	*Salix x fragilis*	40, 45, 35	1	1	Two cavities mid-way up trunk (10 cm).	
46	White Ash	*Fraxinus americana*	30, 24	4	2		Loose bark.
47	White Pine	*Pinus strobus*	22	4	3	Seven shallow cavities (5-20 cm).	Loose bark.
48	Sugar Maple	*Acer saccharum*	88	1	3	One (10-20 cm) knot hole; large hollow at 3 m (30 cm).	
49	White Pine	*Pinus strobus*	50	6	2	Two cavities, (10 cm, 30 cm).	
50	Green Ash	*Fraxinus pennsylvanica*	25	4	4		Loose bark.
51	Green Ash	*Fraxinus pennsylvanica*	36	4	3		Loose bark.
52	Bur Oak	*Quercus macrocarpa*	34	4	2		
53	Bur Oak	*Quercus macrocarpa*	37	3	2		
54	Bur Oak	*Quercus macrocarpa*	81	3	2		Loose bark.
55	Sugar Maple	*Acer saccharum*	25	6	1	One (50 cm) hollow at top.	

Snag Number	Common Name	Scientific Name	Dia. at Breast Height (cm)	Decay Class	Height Class[1]	Structural Attributes	Comments
56	Shagbark Hickory	*Carya ovata*	31	5	4	One cavity (10 cm) at top.	
57	Swamp Maple	*Acer x freemanii*	27	5	3	One cavity (10 cm) near top.	Loose bark.
58	American Beech	*Fagus grandifolia*	44	6	3	Three cavities (20 cm, 40 cm, 10 cm).	
59	Sugar Maple	*Acer saccharum*	49	6	4	One cavity (20 cm) midway, and large crack at top.	
60	Sugar Maple	*Acer saccharum*	18	2	4	Two cavities (20 cm) at top.	
61	Bur Oak	*Quercus macrocarpa*	46	3	4		Loose bark.
62	Red Oak	*Quercus rubra*	43	1	2	One (30 cm) knot hole.	
63	Basswood	*Tilia americana*	38	1	2	One cavity (20 cm) midway on trunk.	
64	Basswood	*Tilia americana*	39	2	3	One cavity (10 cm) halfway up trunk.	
65	Red Oak	*Quercus rubra*	61	1	3	Large (1 m) cavity at base.	
66	Black Walnut	*Juglans nigra*	54	1	2	One (10 cm) knot hole.	
67	Sugar Maple	*Acer saccharum*	37	2	2	One leader is dead with cracks.	
68	Sugar Maple	*Acer saccharum*	31	1	2	Three cavities midway up trunk (two 20 cm, one 10 cm).	
69	Basswood	*Tilia americana*	37	6	2	Nine cavities of various sizes (10 cm to 1 m), trunk appears hollow.	
70	Green Ash	*Fraxinus pennsylvanica*	23, 23, 20	4	4		Loose bark.
71	Sugar Maple	*Acer saccharum*	38	2	3	One (50 cm) cavity halfway up trunk.	
72	Sugar Maple	*Acer saccharum*	39	1	2	One (10 cm) knot hole.	
73	Basswood	*Tilia americana*	37	2	3	Two cavities (50 cm and 30 cm), two thirds up trunk.	
74	Shagbark Hickory	*Carya ovata*	40	3	2		Loose bark.
75	Shagbark Hickory	*Carya ovata*	35	4	2	Two cavities (10 cm), and one cavity (30 cm) at top.	Loose bark.
76	Shagbark Hickory	*Carya ovata*	34	3	2		Loose bark.
77	Green Ash	*Fraxinus pennsylvanica*	33	4	2		Loose bark.
78	American Beech	*Fagus grandifolia*	54	5	2	Large crack 1-2 m. Two (30 cm) cavities.	
79	Green Ash	*Fraxinus pennsylvanica*	32	4	4		Loose bark.
80	Green Ash	*Fraxinus pennsylvanica*	40	4	2		
81	White Pine	*Pinus strobus*	34	6	2	Two cavities (20 cm, 10 cm).	
82	Sugar Maple	*Acer saccharum*	64	4	4	Large (1 m long) cavity at 8 m height.	
83	White Pine	*Pinus strobus*	53	6	3	Three cavities (5-10 cm).	

Snag Number	Common Name	Scientific Name	Dia. at Breast Height (cm)	Decay Class	Height Class[1]	Structural Attributes	Comments
84	White Pine	*Pinus strobus*	66	4	4	Four cavities (10-40 cm), large crack, appears hollow.	
85	Sugar Maple	*Acer saccharum*	79	1	2	One (1 m) hollow at 4 m height.	
86	Basswood	*Tilia americana*	47, 26 20	1	2	Large hollow at top.	
87	Hybrid Crack Willow	*Salix x fragilis*	45, 46, 48	1	2	Three cavities (two 50 cm, one 20 cm).	
88	Bur Oak	*Quercus macrocarpa*	76	4	2	Three cavities, (two 5 cm, one 20 cm).	Loose bark.
89	Swamp Maple	*Acer x freemanii*	51	1	3	One large (20 cm) knot hole.	
90	Swamp Maple	*Acer x freemanii*	47, 41	1	2	One leader hollow, with 2 m hollow at base. One cavity (10 cm) at top.	
91	Sugar Maple	*Acer saccharum*	31	1	2	Dead branch and cavity (10 cm) at top.	
92	Shagbark Hickory	*Carya ovata*	55, 35	1	2	Two knot holes (10-20 cm) midway and below canopy.	
93	Sugar Maple	*Acer saccharum*	32	1	2	Two cavities (10 cm and 40 cm) at top.	
94	Sugar Maple	*Acer saccharum*	55	1	3	Two (20 cm) knot holes.	
95	Sugar Maple	*Acer saccharum*	37	5	2	Three large cavities (40 cm).	
96	Sugar Maple	*Acer saccharum*	57	1	2	Four cavities (10-20 cm) on dead branch.	
97	Basswood	*Tilia americana*	57, 37	1	2	One (50 cm) knot hole.	
98	American Beech	*Fagus grandifolia*	27	5	2	Six cavities (10-40 cm) at top.	
99	Sugar Maple	*Acer saccharum*	30	1	3	Five cavities (5-20 cm) towards top of tree.	
100	Sugar Maple	*Acer saccharum*	39	1	2	One knot hole (10 cm) at 4 m height.	
101	White Ash	*Fraxinus americana*	40	4	2		Loose bark.
102	American Beech	*Fagus grandifolia*	36	5	2	Six cavities (10-30 cm) at top.	

[1] Height classes are as follows: 1 = Less than 4.9 m; 2 = 5-9.9 m; 3 – 10-14.9 m; 4 – 15-19.9 m; 5 = 20-24.9 m, 6 = > 25 m.

Table 2. Bats documented via Ultrasonic Acoustic Monitoring within the Subject Property

Survey Station	Start Date	End Date	Species Detection (No. of Passess)
Deployment Area A	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (5,781)
			Hoary Bat (1,016)
			Little Brown Myotis (89)
			Red Bat (342)
			Tricolored Bat (4)
			Unknown *Myotis* species (616)
			TOTAL PASSES (7,848)
Deployment Area B	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat (1)
			Big Brown Bat / Silver-haired Bat (6,644)
			Hoary Bat (667)
			Red Bat (392)
			Little Brown Myotis (6)
			Tricolored Bat (1)
			Unknown *Myotis* species (103)
			TOTAL PASSES (7,814)
Deployment Area C	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat (1)
			Big Brown Bat / Silver-haired Bat (4,457)
			Hoary Bat (718)
			Little Brown Myotis (10)
			Red Bat (457)
			Unknown *Myotis* species (72)
			TOTAL PASSES (5,715)
Deployment Area D	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (349)
			Hoary Bat (43)
			Little Brown Myotis (3)
			Red Bat (6)
			Unknown *Myotis* species (80)
			TOTAL PASSES (481)
Deployment Area E	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (466)
			Hoary Bat (147)
			Red Bat (16)
			Unknown *Myotis* species (3)
			TOTAL PASSES (632)
Deployment Area F	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (151)
			Hoary Bat (172)
			Little Brown Myotis (5)

Survey Station	Start Date	End Date	Species Detection (No. of Passess)
			Red Bat (13)
			Unknown *Myotis* species (50)
			TOTAL PASSES (391)
Deployment Area G	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (22)
			Hoary Bat (25)
			Little Brown Bat (2)
			Unknown *Myotis* species (10)
			TOTAL PASSES (59)
Deployment Area H	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (298)
			Hoary Bat (98)
			Little Brown Bat (1)
			Red Bat (31)
			Unknown *Myotis* species (136)
			TOTAL PASSES (564)
Deployment Area I	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (428)
			Hoary Bat (235)
			Little Brown Bat (1)
			Red Bat (33)
			Tricolored Bat (1)
			Unknown *Myotis* species (15)
			TOTAL PASSES (713)
Deployment Area J	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (399)
			Hoary Bat (190)
			Little Brown Bat (1)
			Red Bat (10)
			Unknown *Myotis* species (12)
			TOTAL PASSES (612)
Deployment Area K	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (465)
			Hoary Bat (187)
			Red Bat (13)
			Unknown *Myotis* species (43)
			TOTAL PASSES (708)
Deployment Area L	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat (9)
			Big Brown Bat / Silver-haired Bat (2,001)
			Silver-haired Bat (273)
			Hoary Bat (1,294)
			Little Brown Myotis (10)
			Red Bat (74)

Survey Station	Start Date	End Date	Species Detection (No. of Passess)
			Unknown *Myotis* species (138)
			TOTAL PASSES (3,799)
Deployment Area M	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (398)
			Hoary Bat (190)
			Little Brown Myotis (6)
			Red Bat (23)
			Unknown *Myotis* species (144)
			TOTAL PASSES (761)
Deployment Area N	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (1,116)
			Hoary Bat (231)
			Little Brown Myotis (17)
			Red Bat (43)
			Unknown *Myotis* species (237)
			TOTAL PASSES (1,644)
Deployment Area 3 (O)	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (1,953)
			Hoary Bat (483)
			Little Brown Myotis (3)
			Red Bat (635)
			Unknown *Myotis* species (6)
			TOTAL PASSES (3,080)
Deployment Area 4 (P)	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat (1)
			Big Brown Bat / Silver-haired Bat (1,566)
			Hoary Bat (102)
			Little Brown Myotis (27)
			Red Bat (127)
			Unknown *Myotis* species (194)
			TOTAL PASSES (2,017)
Deployment Area 5 (Q)	21 June 2024 (PM)	20 August 2024 (AM)	Big Brown Bat / Silver-haired Bat (1,933)
			Hoary Bat (501)
			Red Bat (120)
			TOTAL PASSES (2,554)

Table 3. Site-wide Statistics by Species or Species Grouping

Species or Species Grouping	Total Calls (Site-wide)	Average Calls (Site-wide)
Big Brown Bat/Silver-haired Bat	28,712	1,689
Hoary Bat	6,299	371
Myotis spp. (i.e., Little Brown Bat, Unknown Myotis, and Tricolored Bat) and Perimyotis	2,046	120
Red Bat	2,335	137
All species/ Species groupings	**39,392**	2,317

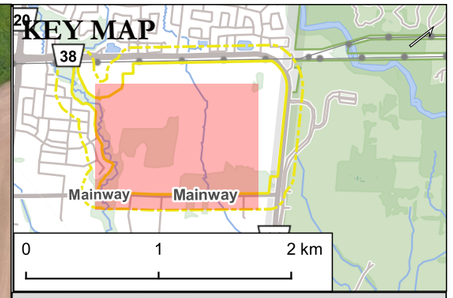
Table 4. Species Statistics by Acoustic Monitoring Unit Deployment Area, with Above-average Records Highlighted in Green

ARU	All Species/Calls	Big Brown Bat/Silver-haired Bat	Hoary Bat	Myotis spp. and Perimyotis	Red Bat
A	7848	5781	1016	709	342
B	7814	6645	667	110	392
C	5715	4458	718	82	457
D	481	349	43	83	6
E	632	466	147	3	16
F	391	151	172	55	13
G	59	22	25	12	0
H	564	298	98	137	31
I	713	428	235	17	33
J	612	399	190	13	10
K	708	465	187	43	13
L	3799	2283	1294	148	74
M	761	398	190	150	23

ARU	All Species/Calls	Big Brown Bat/Silver-haired Bat	Hoary Bat	Myotis spp. and Perimyotis	Red Bat
N	1644	1116	231	254	43
O	3080	1953	483	9	635
P	2017	1567	102	221	127
Q	2554	1933	501	0	120
TOTAL	**39392**	**28712**	**6299**	**2046**	**2335**



KEY MAP



Legend

Area of Assessment
- Subject Property
- Adjacent Lands (120 m)

Survey Stations
- Bat Acoustic Monitoring Stations
- ARU Detection Area (30 m radius)
- Snag Tree

Significant Natural Features - Terrastory
- Watercourse
- Unevaluated / Other Wetland

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

TERRASTORY
environmental consulting inc.
info@terrastoryenviro.com 905.745.5398

1:3,750 | 0 25 50 75 100 m

Location:
Bronte Meadows, Burlington

Project No.: 22195
Date: 2025-01-10
By: AB **Checked:** JC
Orthophotograph Date: 2018, Google.

Figure A-1:
Bat Surveys - Locations of Snags and Acoustic Recording Units

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Appendix 5. Breeding Bird Survey Results

Common Name	Scientific Name	Srank	SARO Status	SARA Status	Halton Status	Breeding Bird Stations[1] and Breeding Status[2]						
						BI-1	BI-2	BI-3	BI-4	BI-5	BI-6	BI-7
American Crow	*Corvus brachyrhynchos*	S5				Po					Po	
American Goldfinch	*Spinus tristis*	S5				Po		Po	Po	Po	Pr	Po
American Redstart	*Setophaga ruticilla*	S5B				Po					Po	
American Robin	*Turdus migratorius*	S5				Pr	Pr	Po	Pr		Pr	Pr
American Woodcock	*Scolopax minor*	S4B						Po				
Baltimore Oriole	*Icterus galbula*	S4B				Pr				Po		Po
Barn Swallow	*Hirundo rustica*	S4B	SC	SC								Pr
Blackburnian Warbler	*Setophaga fusca*	S5B			HR				O			
Black-capped Chickadee	*Poecile atricapillus*	S5				Pr	Po	Pr	Pr	Pr		Po
Blue Jay	*Cyanocitta cristata*	S5				Po		Pr	Co	Pr	Pr	
Brown-headed Cowbird	*Molothrus ater*	S5					Po		Po		Po	
Canada Goose	*Branta canadensis*	S5										Po
Cedar Waxwing	*Bombycilla cedrorum*	S5						Po		Pr		
Common Grackle	*Quiscalus quiscula*	S5					Pr		Po		Po	
Common Yellowthroat	*Geothlypis trichas*	S5B, S3N							Po			
Downy Woodpecker	*Dryobates pubescens*	S5						Co	Co		Po	
Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC							Po	
European Starling	*Sturnus vulgaris*	SNA				Po						Pr
Gray Catbird	*Dumetella carolinensis*	S5B, S3N					Po		Po			
Great Blue Heron	*Ardea herodias*	S4								Fl		
Great Crested Flycatcher	*Myiarchus crinitus*	S5B				Pr		Po	Pr		Pr	
Hairy Woodpecker	*Dryobates villosus*	S5				Po						
Herring Gull	*Larus argentatus*	S4B, S5N				Fl						
Horned Lark	*Eremophila alpestris*	S4			HU		Po	Po		Po		Po
House Sparrow	*Passer domesticus*	SNA				Po						
Indigo Bunting	*Passerina cyanea*	S5B									Po	
Killdeer	*Charadrius vociferus*	S4B				Po	Po			Po		Po
Northern Cardinal	*Cardinalis cardinalis*	S5				Pr	Pr	Po	Po	Po	Po	Po
Northern Flicker	*Colaptes auratus*	S5						Po				
Red-bellied Woodpecker	*Melanerpes carolinus*	S5			HU				Po			

Red-eyed Vireo	*Vireo olivaceus*	S5B			Po	Po	Po		Po		
Red-tailed Hawk	*Buteo jamaicensis*	S5	NAR			Po			Pr		
Red-winged Blackbird	*Agelaius phoeniceus*	S5					Po	Po			Pr
Ring-billed Gull	*Larus delawarensis*	S5		Fl							
Savannah Sparrow	*Passerculus sandwichensis*	S5B, S3N			Po			Po			
Song Sparrow	*Melospiza melodia*	S5		Pr	Po	Pr	Po	Pr	Po	Pr	
Spotted Sandpiper	*Actitis macularius*	S5B								Po	
Swainson's Thrush	*Catharus ustulatus*	S5B		O							
Swamp Sparrow	*Melospiza georgiana*	S5B, S4N								Po	
Tennessee Warbler	*Leiothlypis peregrina*	S5B						O			
Warbling Vireo	*Vireo gilvus*	S5B								Pr	
White-breasted Nuthatch	*Sitta carolinensis*	S5		Po	Po	Po	Po				
Wild Turkey	*Meleagris gallopavo*	S5						Po	Po		

Appendix 6. Anuran Calling Survey Results

1 ANURAN CALLING SURVEY METHODOLOGY

Calling anuran surveys were conducted in accordance with the *Marsh Monitoring Program for Surveying Amphibians* (Bird Studies Canada et al. 2008). This protocol involves the completion of three (3) rounds of surveys once per month between April and June from 30 minutes after sunset until approximately midnight. Appropriate weather conditions include no or very light precipitation and wind speed ≤3 on the Beaufort wind scale. As the Subject Property is located within the central region (between the 43rd and 47th parallels), all three (3) rounds of surveys should occur during the second half of the month (i.e., April 15-30, May 15-31, and June 15-30).

A total of six (6) anuran calling stations were established and situated systematically to cover potentially significant anuran breeding habitats, particularly those that are near proposed areas disturbance. Each station was surveyed for a minimum duration of three (3) minutes. Anurans and evidence of anuran breeding (i.e., vocalizations, tadpoles, etc.) were also recorded incidentally during other field activities on-site.

2 RESULTS

Table 1. Results of Anuran Calling Surveys.

Station ID[1]	Feature or ELC Community Surveyed	Bearing (°)	Survey #1 – 13 April 2023	Survey #2 – 15 May 2023	Survey #3 – 28 June 2023	Comments[2]
AN-1		120	No Frogs Calling	Green Frog 1-2	Green Frog 1-3	**Survey #1:** Goldfish present in pond. **Survey #2:** **Survey #3:**
AN-2		120	No Frogs Calling	No Frogs Calling	No Frogs Calling	**Survey #1:** Little water at location. **Survey #2:** **Survey #3:**
AN-3		-60	Gray Treefrog 1-1 Spring Peeper 3	Gray Treefrog 1-1 Spring Peeper 1-1	Gray Treefrog 2-4	**Survey #1:** **Survey #2:** **Survey #3:**
AN-4		50	American Toad 2-4 Spring Peeper 3	Spring Peeper 1-2	Gray Treefrog 1-2	**Survey #1:** Spring Peeper 2-4 10 m west of station in field. **Survey #2:** **Survey #3:**
AN-5		-100	Spring Peeper 2-6	No Frogs Calling	Gray Treefrog 1-2	**Survey #1:** **Survey #2:** **Survey #3:**
AN-6		-60	---	Spring Peeper 1-2	Gray Treefrog 2-5	**Survey #1:** **Survey #2:** **Survey #3:**

[1] Locations of Anuran Calling Stations are shown in **Figure 2**.

[2] **Call Code 1** = Individuals can be counted; calls not simultaneous; **Call Code 2** = Calls distinguishable; some simultaneous calling; **Call Code 3** = Full chorus; calls continuous and overlapping. Second number after the call code indicates the estimated number of individuals calling; no estimate of individuals is provided for Call Code 3.

Appendix 7. Insect Survey Results

Common Name	Scientific Name	S Rank (per NHIC, 2024)	Local Status, per Halton NAI
Bees & Wasps			
A Weevil Wasp	*Cercerus atramontensis*	--	--
Square-legged Leafcutter Bee	*Megachile latimanus*	S5	--
Eastern Bumblebee	*Bombus impatiens*	S5	--
Mexican Grass-carrying Wasp	*Isodontia mexicana*	--	--
Oak Rosette Gall Wasp	*Andricus quercusfrondosus*	--	--
Pure Green Sweat Bee	*Augochlora pura*	S5	--
Spring Beauty Miner Bee	*Andrena erigeniae*	S2S3	--
Spurred Ceratina	*Ceratina calcarata*	S5	--
Butterflies			
American Lady	*Vanessa virginiensis*	S5	HC
Black Swallowtail	*Papilio polyxenes*	S5	HC
Cabbage White	*Pieris rapae*	SNA	HC
Clouded Sulphur	*Colias philodice*	S5	HC
Common Ringlet	*Coenonympha california*	S5	HC
Common Wood-nymph	*Cercyonis pegala*	S5	HC
Dun Skipper	*Euphyes vestris*	S5	HC
Eastern Tiger Swallowtail	*Papilio glaucus*	S5	HC
Essex Skipper	*Thymelicus lineola*	SNA	HC
Hickory Hairstreak	*Satyrium caryaevorus*	S4	HC
Hobomok Skipper	*Poanes hobomok*	S5	HC

Common Name	Scientific Name	S Rank (per NHIC, 2024)	Local Status, per Halton NAI
Least Skipper	*Ancyloxypha numitor*	S5	HC
Monarch	*Danaus plexippus*	S2N, S4B	HC
Northern Crescent	*Phyciodes cocyta*	S5	--
Peck's Skipper	*Polites peckius*	S5	HC
Orange Sulphur	*Colias eurytheme*	S5	HC
Question Mark	*Polygonia interrogationis*	S5	HC
Red Admiral	*Vanessa atalanta*	S5B	HC
Silvery Blue	*Glaucopsyche lygdamus*	S5B	HU
Silver-spotted Skipper	*Epargyreus clarus*	S4	HC
Spring Azure	*Celastrina ladon*	SU	HC
Wild Indigo Duskywing	*Erynnis baptisiae*	S4	HU
Moths			
Carrot Seed Moth	*Sitochroa palealis*	SNA	--
Marsh Dagger	*Acronicta insularis*	S5?	--
Spotted Grass Moth	*Rivula propinqualis*	S5	--
Odonates			
Band-winged Meadowhawk	*Sympetrum semicinctum*	S4	HU
Black Saddlebags	*Tramea lacerata*	S4	HC
Blue Dasher	*Pachydiplax longipennis*	S5	HC
Carolina Saddlebags	*Tramea carolina*	SNA	--
Citrine Forktail	*Ischnura hastata*	SNA	--

Common Name	Scientific Name	S Rank (per NHIC, 2024)	Local Status, per Halton NAI
Common Green Darner	*Anax junius*	S5	HC
Common Whitetail	*Plathemis lydia*	S5	HC
Dot-tailed Whiteface	*Leucorrhinia intacta*	S5	HC
Eastern Forktail	*Ischnura verticalis*	S5	HC
Eastern Pondhawk	*Erythemis simplicicollis*	S5	HC
Ebony Jewelwing	*Calopteryx maculata*	S5	HC
Emerald Spreadwing	*Lestes dryas*	S5	HC
Familiar Bluet	*Enallagma civile*	S5	HC
Fragile Forktail	*Ischnura posita*	S4	HR
Halloween Pennant	*Celithemis eponina*	S4	HR
Ruby Meadowhawk	*Sympetrum rubicundulum*	S5	HC
Skimming Bluet	*Enallagma geminatum*	S4	HR
Twelve-spotted Skimmer	*Libellula pulchella*	S5	HC
Unicorn Clubtail	*Arigomphus villosipes*	S3	HU
True Bugs (Hemiptera)			
A True Bug	*Acanthocephala terminalis*	S5?	--
Diamondback Spittlebug	*Lepyronia quadrangularis*	S5	--
Two-striped Planthopper	*Acanalonia bivittata*	S5?	--

Legend

Regional ranks are to be interpreted as follows (As per Halton NAI 2006)
HR: Halton Rare
HU: Halton Uncommon
HC: Halton Common
HE: Halton Extripated
--: Not recorded in Halton region

Subnational Ranks (S-Ranks) are interpreted as follows:
S1: Critically Imperiled - Extremely rare in Ontario; usually 5 or fewer occurrences in the province.
S2: Imperiled - Very rare in Ontario; usually between 5 and 20 occurrences in the province.
S3: Vulnerable - Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province.
S4: Apparently Secure – Apparently secure in the province, with many occurrences.
S5: Secure – Demonstrably secure in Ontario.
SH: Possibly Extirpated – Known from only historical records but still some hope of discovery.
SNA: Not Ranked.

Appendix 8. Headwater Drainage Feature Photo Log

HDFA Round 1 Survey



Photo 1. SCT-1 facing towards Upper Middle Road.



Photo 2. SCT-2 facing towards Mainway Woodland.



Photo 3. SCT-3 facing towards Mainway Woodland.



Photo 4. SCT-4 view of scoured channel in agricultural field.



Photo 5. SCT-5 feature along west side of Mainway Woodland.



Photo 6. SCT-6 pooled water along edge of Sheldon Creek Woodland facing towards Upper Middle Road.



Photo 7. SCT-6b facing south into Sheldon Creek Woodland.



Photo 8. SCT-6e facing towards Mainway.



Photo 9. SCT-6f facing towards Sheldon Woodland from Mainway.



Photo 10. SCT-7 origin near Upper Middle Road.



Photo 11. SCT-11, facing towards Mainway.



Photo 12. SCT-13 in Mainway Woodland facing west.

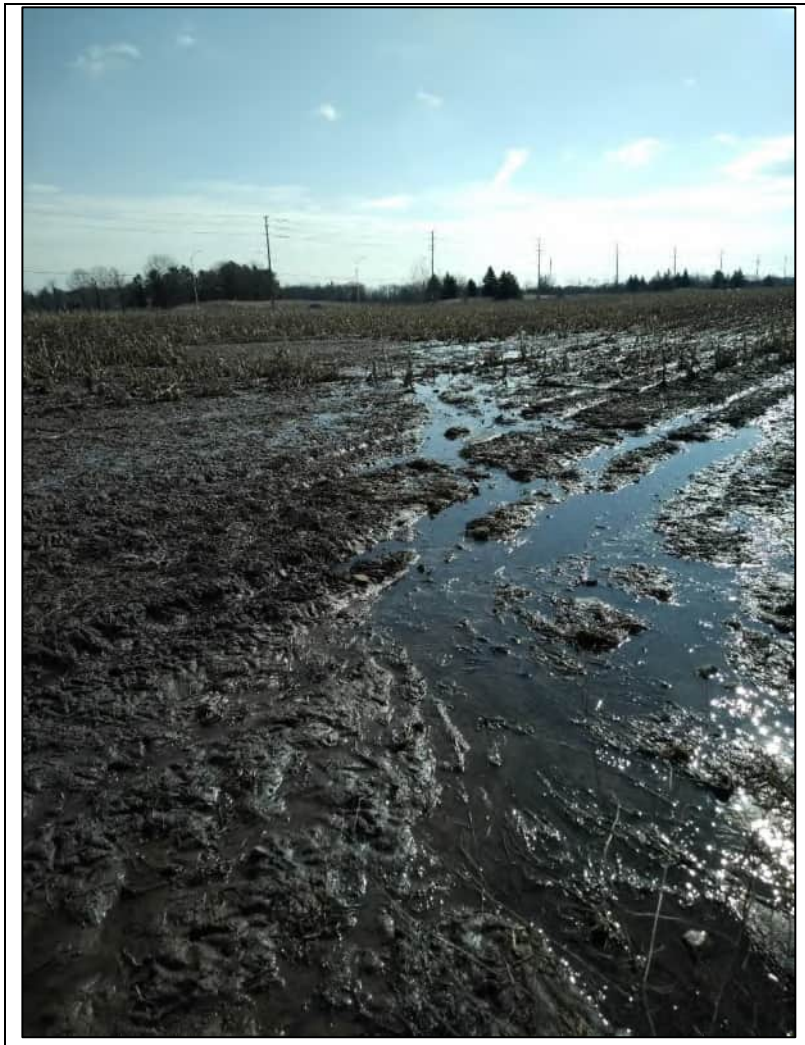


Photo 13. BCT-1 facing towards Burloak Drive

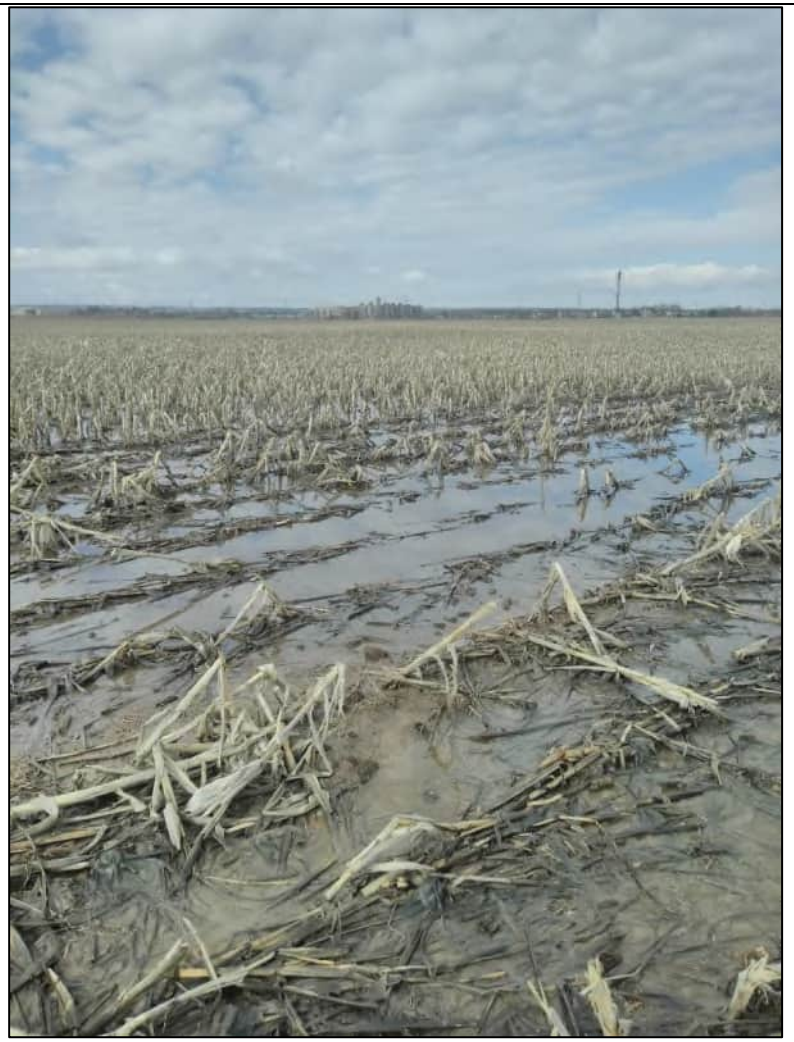


Photo 14. BCT-2 facing west into the agricultural field from Mainway Woodland.



Photo 15. BCT-2a view of ponded water in Mainway Woodland facing south.



Photo 16. BCT-3 in agricultural field facing west.



Photo 17. BCT-4 facing towards Upper Middle Road.

HDFA Round 2 Survey



Photo 18. SC-2 facing towards Upper Middle Road.



Photo 19. SCT-2 dry HDF in agricultural field facing towards Upper Middle Road.



Photo 20. SCT-3, dry channel facing towards Sheldon Creek Woodland.



Photo 21. SCT-4, dry channel in agricultural field facing towards Sheldon Creek Woodland.



Photo 22. SCT-5 facing west.



Photo 23. SCT-6 dry channel in agricultural field facing towards Upper Middle Road.



Photo 24. SCT-6b dry channel in Sheldon Creek Woodland.



Photo 25. SCT-6 facing towards Mainway.



Photo 26. SCT 7, view of dug channel along Sheldon Creek Woodland.



Photo 27. SCT-8 standing water in feature.



Photo 28. SCT-9, pooled water in agricultural field, facing west.



Photo 29. SCT-9a braided channels in Sheldon Creek Woodland.



Photo 30. SCT 7, view of dug channel along Sheldon Creek Woodland.



Photo 31. SCT-8 standing water in feature.



Photo 32. SCT-10b, facing south.



Photo 33. SCT-11 braided channels in Sheldon Creek Woodland.



Photo 34. SCT 11a, channel with standing water in agricultural field facing towards Mainway.



Photo 35. SCT-12 standing water in feature, facing towards Sheldon Creek Woodland.



Photo 32. SCT-10b, facing south.



Photo 33. SCT-11 braided channels in Sheldon Creek Woodland.

HDFA Round 3 Survey



Photo 34. BCT 1, feature planted with soy, facing towards Upper Middle Road.

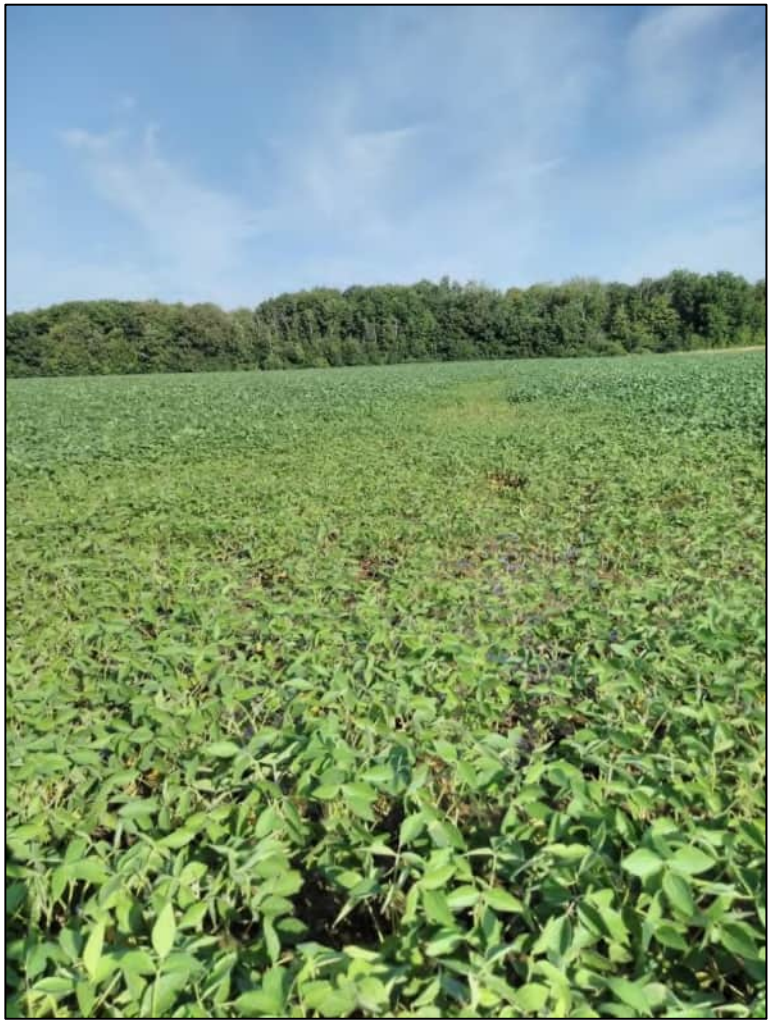


Photo 35. SCT-6f feature planted through with soy with minimal flow and areas of standing water in feature.

Appendix 9. Headwater Drainage Feature Assessment

Note: Rows highlighted in green indicate that the corresponding HDF is in a natural heritage feature.

Sheldon Creek HDFA

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
SC-1	**SC-1**	**2**	1	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Small swale features conveying water a short distance into Sheldon Creek valley.	No Management Required	• Conveys ephemeral flow into Sheldon Creek Valley
SC-2	**SC-2**	**2**	1	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Small swale features conveying water a short distance into Sheldon Creek valley.	No Management Required	• Conveys ephemeral flow into Sheldon Creek Valley
SCT-1	**SCT-1**	**1**	2	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Feature contained small	No Management Required	• Conveys flow to phragmites wetland.

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
										isolated areas of standing water and moist soils.		
SCT-2	**SCT-2**	**1**	4	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Minimal flow was observed during Round 1 however, feature was dry during Round 2.	Mitigation	• Provides water conveyance to downstream fish habitat.
		2	1									
SCT-3	**SCT-3**	**1**	2	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Small swale feature that contained standing water during the 1st site visit.	No Management Required	• Provides water conveyance to downstream fish habitat.
		2	1									
SCT-4	**SCT-4**	**1**	4	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Pool area in middle of field with a scoured defined	Mitigation	• Provides water conveyance to downstream fish habitat.
		2	1									

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
										swale in the field towards Mainway Woodland.		
SCT-5	**SCT-5**	**1**	4	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	This feature is adjacent to the Mainway woodland and acts a collector from HDFs flowing southerly to the Mainway Drive roadside ditch.	Mitigation	• Provides conveyance function from Sheldon Woodland and wetlands. • Provides water conveyance to downstream fish habitat.
		2	2									
SCT-6	**SCT-6**	**1**	4	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	During second round, swale	Mitigation	• Water supports wetland function Sheldon Woodland
		2	2	7								

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
										feature was dry with standing water pooled at Sheldon Woodland interface.		
	SCT-6a	**1**	2	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Feature contained some standing water and moist soils but no flowing water.	No Management Required	• Water supports wetland function Sheldon Woodland
	SCT-6b	**1** **2** **3**	4	6	Important	No	Important Functions	Contributing Functions	Valued Functions	Conveys flow from agricultural field into SCW-3	Protection	• Water supports wetland function in Sheldon Woodland
	SCT-6c	**2**	2	6	Important	No	Important Functions	Contributing Functions	Valued Functions			• Water supports wetland function in Sheldon Woodland

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
	SCT-6d	**2**	2	6	Important	No	Important Functions	Contributing Functions	Valued Functions			• Water supports wetland function in Sheldon Woodland
	SCT-6e	**1**	4	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Swale conveys flow from Sheldon Woodland down to Mainway catchbasin	Mitigation	• Provides conveyance function from Sheldon Woodland and wetlands. • Provides water conveyance to downstream fish habitat (tbc)
		2	1	7								
		3	1	7								
	SCT-6f	**1**	4	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Swale conveys flow from Sheldon Woodland down to Mainway catchbasin	Mitigation	• Provides conveyance function from Sheldon Woodland and wetlands. • Provides water conveyance to downstream fish habitat (tbc)
		2	4	7								
		3	4	7								
SCT-7	**SCT-7**	**1**	2	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Moist soils along the length of the swale	Mitigation	• Provides water conveyance to
		2	2	7								

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
										with standing water at Sheldon Woodland interface.		downstream fish habitat (tbc)
	SCT-7a	**1**	2	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Moist soils along the length of the swale with standing water at Sheldon Woodland interface.	Mitigation	
	SCT-7b	**1**	2	2	Contributing	Dug Channel	Important Functions	Contributing Functions	Contributing Functions	Dug channel along the eastern Sheldon Woodland boundary. Conveys flow towards	Mitigation	
		2	1									

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
										SCT-6 features on south side of Sheldon Woodland.		
SCT-8	**SCT-8**	**2**	2	6	Contributing	Dug Channel	Important Functions	Contributing Functions	Contributing Functions	Small dug channel along the edge of forest which directs water into bottom end of SCW-1.	Conservation	• Water supports wetland function in Sheldon Woodland
SCT-9	**SCT-9**	**2**	2	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Feature wasn't discovered until the 2nd round surveys. Conveys water to SCW-1.	No Management Required	• Supports wetland function. • Provides conveyance function from Sheldon Woodland and wetlands.

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
	SCT-9a	**2**	2	4	Contributing	None	Important Functions	Contributing Functions	Contributing Functions	Braided channel conveys water from agricultural field to SCW-1 through Sheldon Woodland.	Conservation	
	SCT-9b/SCW-1	**2**	2	6	Important	None	Important Functions	Contributing Functions	Important Functions	Wetland	Protection	
SCT-10	**SCT-10**	**2**	2	3	Contributing	Unknown	Valued Functions	Contributing Functions	Value Functions	Meadow marsh community that connects SCW-1 to SCW-2.	Mitigation	• Supports wetland function. • Provides conveyance function from Sheldon Woodland and wetlands.
	SCT-10a/SCW-2	**1**	2	9	Contributing	Dug pond	Important Functions	Contributing Functions	Important Functions	Dug pond, that receives water from SCW-1.	Protection	

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
	SCT-10b	1	4	4	Contributing	Unknown	Important Functions	Contributing Functions	Contributing Functions	Conveys water from SCW-2 to agricultural field through Sheldon Woodland.	Conservation	
SCT-11	**SCT-11**	**2**	4	3	Contributing	None	Important Functions	Contributing Functions	Contributing Functions	Conveys water from SCW-1 via braided channels to agricultural field.	Conservation	• Provides conveyance function from Sheldon Woodland and wetlands.
	SCT-11a	**2**	4	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Water pools along the edge of the agricultural field and conveys flow through agricultural swale	Mitigation	• Provides conveyance function from Sheldon Woodland and wetlands. • Provides water conveyance to downstream fish habitat (tbc)

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
										towards roadside ditch at Mainway.		
SCT-12	**SCT-12**	**1**	4	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	A large pooled area was observed where water from the Sheldon Woodland enters the agricultural field. Moist soils were still noted during the 3rd site visit.	Mitigation	• Provides conveyance function from Sheldon Woodland and wetlands. • Provides water conveyance to downstream fish habitat (tbc)
		2	4	7								
		3	1	7								
SCT-13	**SCT-13**	**1**	4	4	Contributing	Unknown	Important Functions	Contributing Functions	Important Functions	Surface water runoff from the agricultural	Protection	• Supports wetland function. • Provides water conveyance to
	SCT-13a	**1**	4	9	Contributing	Dug pond	Important Functions	Contributing Functions	Important Functions			

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations	Supported Natural Heritage Features/Functions
		Function			Classification	Modifiers						
		Survey	FC	FT								
	SCT-13b	**1**			Contributing	Dug Channel/Outlet	Important	Contributing Functions	Important Functions	field pools into the Mainway Woodland towards SCW-4.		downstream fish habitat.

Bronte Creek HDFA

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations (per TRCA Guidelines)	Supported Natural Heritage Features and Functions
		Function			Classification	Modifiers						
		Round	FC	FT								
BCT-1	BCT-1	1	4	7	Valued	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Water is conveyed from Upper Middle Road to ditch along Burloak Drive (BCT-1b). Water was observed during the 3rd visit.	Mitigation	Supports downstream Silver Shiner habitat.
		2	4									
		3	1 (moist soils)									
	BCT-1a	1	2	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Small swale conveys flow to BCT-1.	No Management Required	
	BCT-1b	1	5	8	Contributing	Roadside Ditch	Contributing Functions	Contributing Functions	Limited Functions	Roadside ditch receives water from agricultural field and conveys water to	Mitigation	
		2	4									
		3	2									

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations (per TRCA Guidelines)	Supported Natural Heritage Features and Functions
		Function			Classification	Modifiers						
		Round	FC	FT								
										catchbasin under Burloak Drive.		
BCT-2	BCT-2	**1**	2	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	No flow, but standing pockets of water observed with pooled water along the Sheldon Woodland edge.	Mitigation	Supports downstream Silver Shiner habitat.
		2	1									
		3	1									
	BCT-2a	**1**	2	4	Contributing	None	Important	Contributing Functions	Valued Functions	Conveyance feature through low quality wetland.	Conservation	
		2	1	4				Contributing Functions				
	BCT-2b	**1**	3	6	Contributing	Dug channel	Important Functions	Contributing Functions	Limited Functions	Dug channel conveying flow to the culvert.	Conservation	
		2	3									

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations (per TRCA Guidelines)	Supported Natural Heritage Features and Functions
		Function			Classification	Modifiers						
		Round	FC	FT								
BCT-3	BCT-3	**1**	4	7	Contributing	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Feature contained minimal flow during 1st site visit, standing pockets of water during the 2nd survey and dry during the last survey.	Mitigation	Supports downstream Silver Shiner habitat.
		2	2									
		3	1									
	BCT-3a	**1**	2	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Small swale feature that conveys water to BCT-3.	No Management Required	
	BCT-3b	**1**	2	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Small swale feature that conveys water to BCT-3.	No Management Required	
	BCT-3c	**1**	3	6	Valued	N/A					Protection	

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations (per TRCA Guidelines)	Supported Natural Heritage Features and Functions
		Function			Classification	Modifiers						
		Round	FC	FT								
		2	3				Important Functions	Contributing Functions	Contributing Functions	Feature conveys water from agricultural field into Mainway Woodland. Feature likely conveys water east towards SCT-2b, where water is contained within channel which flows under Burloak Drive.		
BCT-4	**BCT-4**	**1**	2	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Small areas of standing water, mostly moist soils.	No Management Required	--

Drainage Feature	Segments	Step 1. Hydrology					Step 2. Riparian	Step 3. Fish Habitat	Step 4. Terrestrial Habitat	Comments	Management Recommendations (per TRCA Guidelines)	Supported Natural Heritage Features and Functions
		Function			Classification	Modifiers						
		Round	FC	FT								
BCT-5	**BCT-5**	**2**	2	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Receives overland flow from Bronte Creek tributary and conveys water downstream.	No Management Required	--
BCT-6	**BCT-6**	**2**	2	7	Limited	Plowed and planted through	Limited Functions	Contributing Functions	Limited Functions	Conveys water down to Mainway Woodland.	Mitigation	Supports downstream Silver Shiner habitat.
	BCT-6a	**2**	2	4	Limited	None	Important Functions	Contributing Functions	Contributing Functions	This feature disperses into the woodland.	Conservation	Supports downstream Silver Shiner habitat.

Appendix 10. Watercourse Photo Log

Sheldon Creek Tributary – Aquatic Habitat Assessment

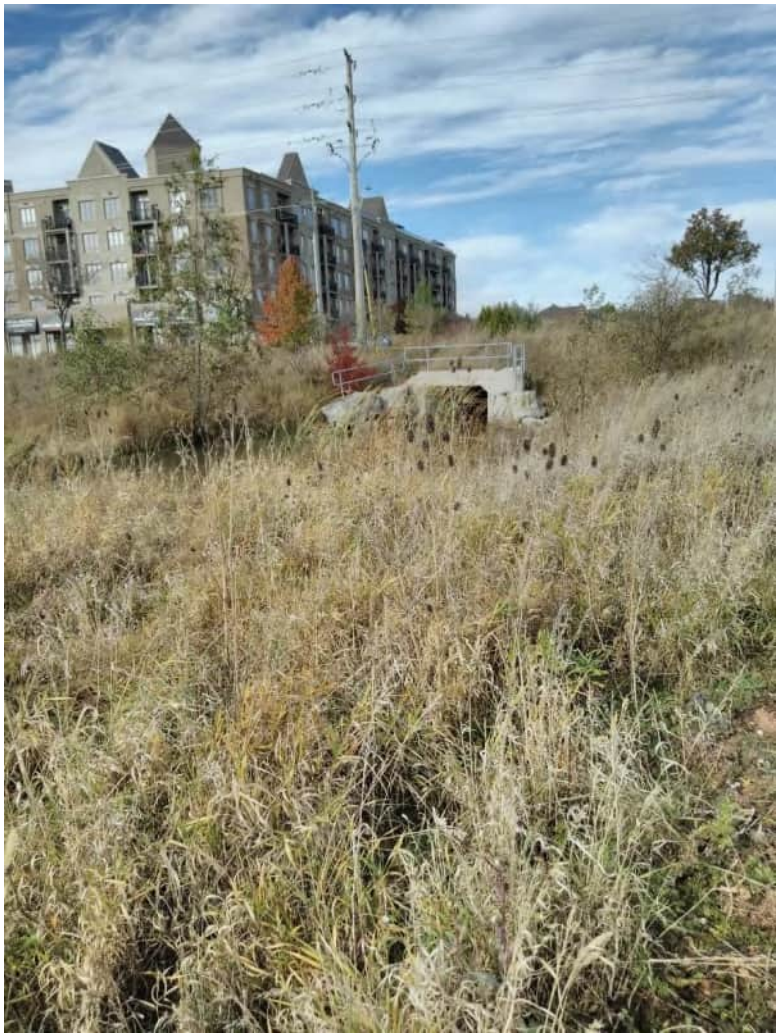


Photo 1. View of box culvert under Upper Middle Creek (November 15, 2023).



Photo 2. Sheldon Creek Tributary riparian corridor (November 15, 2023).



Photo 3. View of narrow channel in upper reaches of tributary (November 15, 2023).



Photo 4. Farm crossing (November 15, 2023).



Photo 5. Channel choked with Common Reed (November 15, 2023).



Photo 6. Naturalized channel prior to entering Mainway Woodland (November 15, 2023).



Photo 7. Sheldon Creek Tributary Side Channel looking upstream from confluence with Sheldon Creek Tributary (March 28, 2023).



Photo 8. Concrete drop structure (potential fish barrier) and cablecrete, facing downstream towards Mainway (March 28, 2023).



Photo 9. Cross section view of concrete drop structure (May 10, 2023).



Photo 10. Sheldon Creek Tributary facing downstream at Mainway box culvert (May 10, 2023).



Photo 11. Sheldon Creek Tributary side channel, facing upstream near confluence (May 10, 2023).



Photo 12. Sheldon Creek Tributary side channel, upstream reach near edge of Mainway Woodland (May 10, 2023).

Bronte Creek Tributary – Aquatic Habitat Assessment



Photo 13. Bronte Creek Tributary at Upper Middle Road, facing south (November 15, 2023).



Photo 14. Channel choked with vegetation, facing Upper Middle Road (November 15, 2023).



Photo 15. Middle reach of tributary loses channel definition (November 15, 2023).

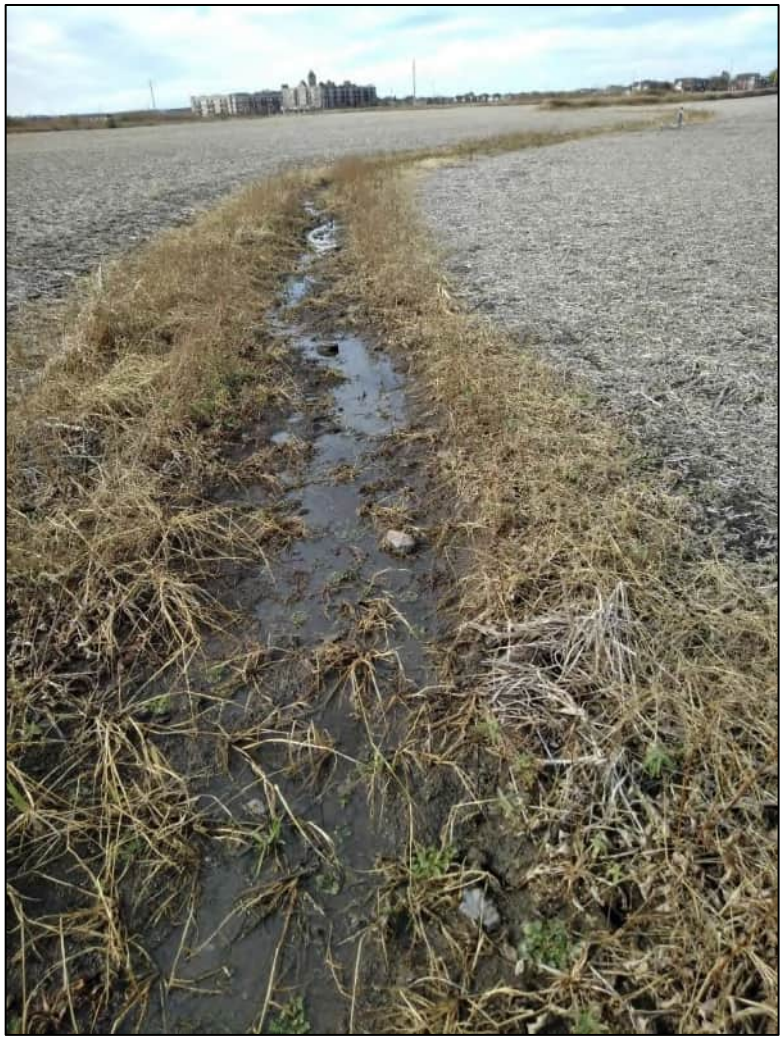


Photo 16. Standing water in channel facing Upper Middle Road (November 15, 2023).



Photo 17. Wide riparian corridor with no defined channel near Mainway Woodland, facing Upper Middle Road (November 15, 2023).

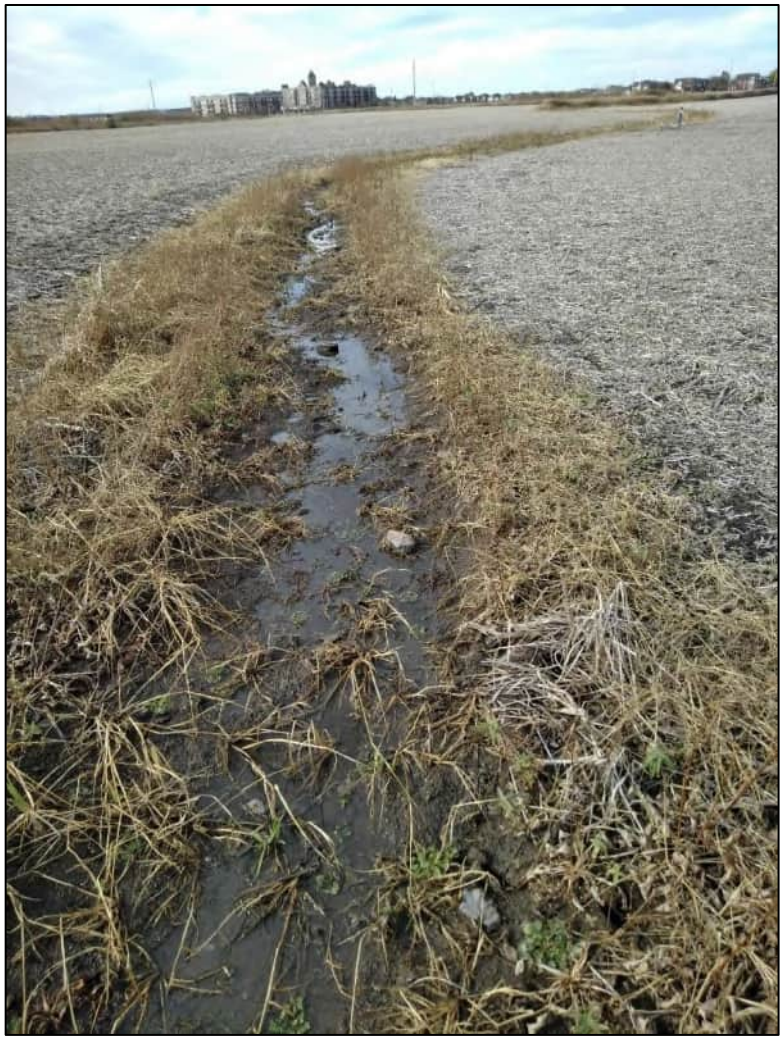


Photo 18. Standing water in channel facing Upper Middle Road (November 15, 2023).



Photo 19. Bronte Creek Tributary avulsion from channel into agricultural field (March 28, 2023).



Photo 20. Bronte Creek Tributary in Mainway Woodland, facing south (March 28, 2023).



Photo 21. Bronte Creek Tributary through Mainway Woodland (May 10, 2023).



Photo 22. Bronte Creek Tributary in Mainway Woodland, facing north (March 28, 2023**).**



Photo 23. Bronte Creek Tributary through Mainway Woodland (May 10, 2023).



Photo 24. Bronte Creek Tributary at Mainway (May 10, 2023).

Sheldon Creek – Aquatic Habitat Assessment



Photo 25. Sheldon Creek at proposed road crossing, facing upstream (November 15, 2023).



Photo 26. Sheldon Creek at proposed road crossing, facing downstream (November 15, 2023).

Appendix 11. Incidental Wildlife

Common Name	Scientific Name	COSEWIC Status (Federal)	COSSARO Status (Provincial)	Subnational Rank (S-Rank)	Local Status, per Halton NAI
Amphibians					
American Toad	*Anaxyrus americanus*	--	--	S5	HC
Green Frog	*Lithobates clamitans*	--	--	S5	HC
Gray Treefrog	*Dryophytes versicolor*	--	--	S5	HC
Spring Peeper	*Pseudacris crucifer*	--	--	S5	HC
Birds					
American Robin	*Turdus migratorius*	--	--	S5	HC
American Woodcock	*Scolopax minor*	--	--	S5B	--
Baltimore Oriole	*Icterus galbula*	--	--	S4B	HC
Black-capped Chickadee	*Poecile atricapillus*	--	--	S5	HC
Brown Creeper	*Certhia americana*	--	--	S5	HU
Cooper's Hawk	*Accipiter cooperii*	--	--	S4	HU
Eastern Wood-pewee	*Contopus virens*	SC	SC	S5B	--
Grackle	*Quiscalus quiscula*	--	--	S5	HC
Great-horned Owl	*Bubo virginianus*	--	--	S4	--
Green Heron	*Butorides virescens*	--	--	S4B	HU
Hairy Woodpecker	*Leuconotopicus villosus*	--	--	S5	--
Marsh Wren	*Cistothorus palustris*	--	--	S4B, S3N	HU
Nashville Warbler	*Leiothlypis ruficapilla*	--	--	S5B	HR
Northern Parula	*Setophaga americana*	--	--	S5B	--

Common Name	Scientific Name	COSEWIC Status (Federal)	COSSARO Status (Provincial)	Subnational Rank (S-Rank)	Local Status, per Halton NAI
Pileated Woodpecker	*Dryocopus pileatus*	--	--	S5	HU
Red-tailed Hawk	*Dryocopus pileatus*	--	--	S5	HC
Red-winged Blackbird	*Agelaius phoeniceus*	--	--	S5	HC
Ruby-throated Hummingbird	*Archilochus colubris*	--	--	S5B	--
Spotted Sandpiper	*Actitis macularius*	--	--	S5B	--
White-breasted Nuthatch	*Sitta carolinensis*	--	--	S5	HC
Wood Thrush	*Hylocichla mustelina*	SC	THR	S4B	--
Wild Turkey	*Meleagris gallopavo*	--	--	S5	HU
Fish					
Fathead Minnow	*Pimephales promelas*	--	--	S5	HU (Bronte)
Goldfish	*Carassius auratus*	--	--	SNA	E
Mammals					
Coyote	*Canis latrans*	--	--	S5	HC
Deer Mouse	*Peromyscus maniculatus*	--	--	S5	HC
Eastern Chipmunk	*Tamias striatus*	--	--	S5	HC
Eastern Grey Squirrel	*Sciurus carolinensis*	--	--	S5	HC
Northern short-tailed shrew	*Blarina brevicauda*	--	--	S5	HC
Raccoon	*Procyon lotor*	--	--	S5	HC
Virginia Opossum	*Didelphis virginiana*	--	--	S5	HC
White-tailed Deer	*Odocoileus virginianus*	--	--	S5	HC

Common Name	Scientific Name	COSEWIC Status (Federal)	COSSARO Status (Provincial)	Subnational Rank (S-Rank)	Local Status, per Halton NAI
Insects					
Backswimmer species	*Notonecta irrorata*	--	--	SNR	--
Bronze Ground Beetle	*Carabus nemoralis*	--	--	SE	--
Emerald Spreadwing	*Lestes dryas*	--	--	S5	HC
Spring Fishfly	*Chauliodes rasticornis*	--	--	SNR	--
Western Honey Bee	*Apis mellifera*	--	--	SE	--
Woodland Predaceous Diving Beetle	*Acillius sylvanus*	--	--	S4	--
Bryophytes					
Floating Crystalwort	*Riccia fluitans*	--	--	S3	--
Fringed Heartwort	*Ricciocarpus natans*	--	--	S3	--
Pear-shaped Urn Moss	*Physcomitrium pyriforme*	--	--	S4	--
Tree Moss	*Climacium dendroides*	--	--	S5	--
Wavy-leaf Moss	*Plagiomnium ciliare*	--	--	S5	--
Crustaceans					
Knobbedlip Fairy Shrimp	*Eubranchipus bundyi*	--	--	SNR	--
Reptiles					
Eastern Gartersnake	*Thamnophis sirtalis sirtalis*	--	--	S5	HC
Spiders (Araneae)					
Spined Micrathena	*Micrathena gracilis*	--	--	S3S4	--

Subnational Ranks:
S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences).

S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer).
S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer).
S4: Apparently Secure—Uncommon but not rare.
S5: Secure—Common, widespread, and abundant in the province.
SX: Presumed extirpated. **SH: Possibly Extirpated (Historical**). **SNR: Unranked** **SU: Unrankable**—Currently unrankable due to lack of information. **SE: Exotic.**

Provincial (CASSARO) and Federal (COSEWIC) Status:
END: Endangered
THR: Threatened
SC: Special Concern
NAR: Not At Risk
---: No Status

Local Status (Halton Region):
HR: Halton Rare
HU: Halton Uncommon
HC: Halton Common
HE: Halton Extirpated
E: Exotic
---: Not recorded in municipality

Appendix 12. Significant Wildlife Habitat Assessment

1 SIGNIFICANT WILDLIFE HABITAT ASSESSMENT METHODOLGY

The PPS protects Significant Wildlife Habitat (SWH) from development and site alteration unless it can be demonstrated that no negative impacts on the feature or its function will occur. As outlined in the SWH Technical Guide (OMNR 2000) and supporting Ecoregion Criteria Schedules (OMNRF 2015), SWH is composed of four (4) principal components:

- Seasonal Concentration Areas of Animals
- Rare Vegetation Communities or Specialized Habitats;
- Habitat of Species of Conservation Concern; and
- Animal Movement Corridors.

The process for identifying SWH is outlined in s. 9.2.3 of the Natural Heritage Reference Manual (OMNR 2010). Step 1 considers the nature of the development application proposed and involves the assembly of background ecological information for the Study Area and Adjacent Lands. If the application triggers a need to protect SWH (e.g., change in land-use that requires approval under the Planning Act, etc.), a more thorough investigation of potential SWH features within the Study Area or Adjacent Lands must occur. Any confirmed SWH for the Study Area and Adjacent Lands as identified in relevant planning documents or by the MNRF should be noted at this stage.
Where a need to protect SWH is triggered, step 2 involves undertaking a more thorough analysis of features, functions, and habitats within the Study Area via Ecological Land Classification (see Section 2.8). The list of ELC Ecosite codes generated for the Study Area is compared to those codes considered candidate SWH in the relevant Ecoregion Criterion Schedule (i.e., 5E, 6E, or 7E) in step 3. Where a positive match between an ELC Ecosite and candidate SWH exists, the area is considered candidate SWH.

Two options are available for candidate SWH: 1) the area may be protected without further study, or 2) the area may be evaluated to ascertain whether confirmed SWH is present. Evaluation may involve generating more detailed maps of vegetation cover, or conducting surveys of the wildlife population within the candidate SWH including reproductive, feeding, and movement patterns. If the area is confirmed SWH, the final step in the process is the completion of an impact assessment to demonstrate that no negative impacts to the confirmed SWH or its function will occur. The impact assessment process is assisted by SWH Mitigation Support Tool (OMNRF 2014).

2 RESULTS

Table 1. Results of the Significant Wildlife Habitat Assessment.

Ecoregion 7E	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?
Seasonal Concentration Areas of Animals		
Waterfowl Stopover and Staging Areas (Terrestrial)	**No.** Meadows, fields, and/or thickets that annually flood during spring and could support significant congregations of migrating waterfowl are absent.	--
Waterfowl Stopover and Staging Areas (Aquatic)	**No.** Large surface water features (e.g., ponds, lakes, bays, coastal inlets, large watercourses, etc.) and/or wetlands that annually flood during spring could support significant congregations of migrating waterfowl are absent.	--
Shorebird Migratory Stopover Areas	**No.** Unvegetated open areas adjacent to surface water features (e.g., shorelines, beaches, mudflats, etc.) and could support significant congregations of migrating shorebirds are absent	--
Raptor Wintering Areas	**No.** While forest and (to a lesser extent) meadow habitats are present, which may occasionally support low numbers of wintering raptors, such habitats are too small to support significant congregations of wintering raptors. The agricultural lands on the Subject Property was planted with corn in 2022 and corn in 2023, both of which provide minimal habitat for small mammals during winter (major prey item).	--
Bat Hibernacula	**No.** Natural features and habitats that could support hibernating bats (e.g., caves, mine shafts, crevices, karsts, etc.) are absent.	--
Bat Maternity Colonies	**Unknown**. Mature deciduous and mixed forests with a high-density (i.e., >10/ha) of large-diameter (i.e., ≥25 cm DBH) trees containing cracks/cavities may be present. Snag density was not calculated for this study.	**Yes.** Acoustic monitoring devices were deployed in all woodlands on the Subject Property, with a focus on areas potentially impacted by the proposed development (see **Appendix 4** for locations of snags and acoustic recording units). As provided in **Section 3.2.4**, potential maternity roosts are present in the Sheldon Creek Woodland.
Turtle Wintering Areas	**No.** Wetlands with soft, muddy substrate which (likely) do not freeze to the bottom during winter are present (i.e., wetlands SCW-4 and BCW-2). However, these wetlands are too small to support a significant number of individuals, and no turtles were observed incidentally during field surveys.	--
Reptile Hibernaculum	**No.** Features (e.g., small mammal burrows, rock crevices, etc.) and/or habitats (e.g., certain wetlands with a fluctuating water table, etc.) that could provide snakes with access below the frost line are absent. The foundations of demolished farmstead buildings in the north of the Subject Property have been wither removed or filled in.	--
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	**No.** Features that could support nesting by Cliff Swallow and Northern Rough-winged swallow (e.g., eroding soft banks, sandy hills, borrow pits, steep slopes, cliff faces, etc.) are absent. Eroding banks in the Sheldon Creek Valley are characterized by shale and thus not suitable for nesting.	--
Colonially - Nesting Bird Breeding Habitat Breeding Habitat (Tree/Shrubs)	**No.** Large swamp and treed fen communities are absent and characteristic species were not recorded during breeding bird surveys.	--
Colonially - Nesting Bird Breeding Habitat (Ground)	**No.** Rocky islands or peninsulas along lakes or large rivers are absent.	--
Migratory Butterfly Stopover Areas	**No.** The southern boundary of the Subject Property is approx. 4.6-4.8 km from the Lake Ontario shoreline. While a mixture of small meadow and forests within 5 km from the shoreline of Lake Erie or Lake Ontario is present, the small meadow (which until recently was farmed) near the Mainway Woodland likely does not represent significant habitat opportunities for Monarch.	--

Ecoregion 7E	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?
Landbird Migratory Stopover Areas	**No.** Relevant criteria is not met. While migrating landbirds may temporarily stopover to feed and rest, the Subject Property is unlikely to support significant congregations of migrating landbirds as the majority of woodlands are greater than 5 km from the shoreline of Lake Ontario. The Mainway Woodland, the southern portion of which is within 5 km of the Lake Ontario shoreline, is >5 ha in size. While small meadows and wetlands are near or within the Mainway Woodland, their functionality for migratory birds is limited by their small size and type/composition.	--
Deer Winter Congregation Areas	**No.** The Subject Property and/or Adjacent Lands have not been identified as a deer wintering area by MNRF.	--
Rare Vegetation Communities or Specialized Habitats for Wildlife		
Cliffs and Talus Slopes	**No.** Cliffs and talus slope communities are absent.	--
Sand Barren	**No.** Sand barren communities are absent.	--
Alvar	**No.** Alvars and flora characteristic of alvars are absent.	--
Old Growth Forest	**No.** Based on a review of historical aerial photographs, some of the deciduous forest (i.e., Mainway woodland east of the Bronte Creek Tributary, south east portions of the Sheldon Creek Woodland, and most of the Sheldon Creek valley) has emerged recently and would not be expected to exhibit old-growth characteristics (e.g., old trees, abundant snags and downed woody debris, canopy gaps caused by species turnover, limited disturbance, etc.). Furthermore, there is evidence of logging in the Mainway woodland. The eastern Sheldon Creek valley ridge and portions of the western edge of the Sheldon Creek woodland contain substantially large trees that are estimated to be over 120 years old. The areas in which these trees were recorded are shown as being in mature woodland in historic air photos. However, these observations are not substantial enough to warrant classifying the forests in which they are located as old growth. Rather, these are remnant old-growth trees.	--
Savannah	**No.** Flora characteristic of savannahs are absent.	--
Tallgrass Prairie	**No.** Tallgrass prairie communities are absent. The record of Big Bluestem (*Andropogon gerardii*) represents a single individual in a meadow adjacent to the Sheldon Creek Woodland.	--
Other Rare Vegetation Community	**Yes.** Provincially rare vegetation communities are present.	**Yes.** Two (2) provincially rare vegetation communities are present within the Subject Property. SWDM1-2 (Bur Oak Mineral Deciduous Swamp), which is analogous to SWD1-2, represents the entirety of wetland SCW-3, which is in the Sheldon Creek Woodland, and has a provincial rank of S3. FODM2-3, which is analogous to FOD2-3, is in the western portion of the Mainway Woodland and has a provincial rank of S3S4.
Waterfowl Nesting Area	**No.** Wetlands which may support nesting waterfowl are absent. Wetlands on site are likely too small to support sufficient populations of waterfowl, and no evidence of waterfowl nesting was recorded during biophysical surveys.	--
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	**No.** Forest communities adjacent to large surface water features are absent.	--
Woodland Raptor Nesting Habitat	**No.** On-site forest communities (e.g., the Sheldon Creek Woodland) support nesting raptors, however suitable winter foraging areas are absent and interior forest size is below the suggested threshold.	--
Turtle Nesting Areas	**No.** Exposed mineral soils adjacent to surface water features (e.g., lakes, ponds, etc.) and/or wetlands that may support turtles are absent.	--
Seeps and Springs	**No.** Areas where groundwater emerges at the surface and may support specialized habitat for plants and wildlife are absent.	--

Ecoregion 7E	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?
Amphibian Breeding Habitat (Woodland)	**Yes.** Forests with wetlands, ponds, and/or pools within or adjacent to woodlands are present.	**Yes.** Wetlands SCW-1 and SCW-2 are two hydrologically connected wetlands in the Sheldon Creek woodland that support significant amphibian (anuran) breeding. HDF SCT-10 and adjacent meadow as well as the surrounding woodland likely acts as a corridor between the two wetlands. Though movement studies were not completed, amphibians were observed in and near HDF SCT-10 on multiple occasions. The two wetlands are near one another, with the area between containing natural cover. Considered with the multiple observations of amphibians, it is the opinion of Terrastory that areas of natural cover near HDF SCT-10 function as an amphibian corridor. Wetlands SCW-4 and BCW-2 also support significant amphibian (anuran) breeding. Readers are directed to **Section 3.2.8** for further detail. According to Table 1.1 of the ecoregional criteria schedule (Ecoregion 7E), significant amphibian breeding habitat is the wetland area plus a 230 m radius of woodland area as well as travel corridors. All significant breeding wetlands contain woodland habitat and/or corridors within a 230 m radius, which includes all of the Sheldon Creek Woodland and land including and north of HDF SCT-10 (i.e., the swale connecting wetlands SCT-1 and SCT-2, and the meadow to the north), part of the Sheldon Creek Valley Woodland, almost all of the Mainway Woodland. These habitats have been included in **Figure 5**. Note that Wetland BCW-3 and the woodland patch immediately east are not included in the delineation of SWH due to the woodland being unsuitable for amphibians due to location and disturbed ground layer.
Amphibian Breeding Habitat (Wetlands)	**Yes.** Riparian wetlands are present along the Sheldon Creek and Bronte Creek tributaries.	**No.** While wetlands that may support significant congregations of breeding amphibians are present along the Sheldon Creek Tributary and Bronte Creek Tributary, these features do not support significant amphibian breeding.
Woodland Area-Sensitive Bird Breeding Habitat	**Yes.** (Narrow) Interior forest interior conditions (i.e., >200 m from edge) are present in the east portion of the Sheldon Creek woodland.	**No.** One representative species were recorded in the Sheldon Creek woodland during breeding bird surveys: White-breasted Nuthatch. A pair of Brown Creeper were recorded incidentally outside of the breeding bird survey window on two separate occasions, once in spring and again in autumn. Notably, more representative species were recorded in areas without interior woodland habitat (i.e., the Sheldon Creek valley). In the opinion of Terrastory, the presence of White-breasted Nuthatch alone does not indicate that the Sheldon Creek Woodland is important to area sensitive species overall.
Habitat for Species of Conservation Concern		
Marsh Bird Breeding Habitat	**No.** Wetlands with shallow water and emergent aquatic vegetation are absent.	--
Open Country Bird Breeding Habitat	**No.** Meadow habitats of sufficient size are absent.	--
Shrub/Early Successional Bird Breeding Habitat	**No.** Shrub/early-successional habitats of sufficient size are absent.	--
Terrestrial Crayfish	**Yes.** Marsh and swamp communities and/or wet fields are present	**No.** Terrestrial crayfish chimneys were not documented.
Special Concern and Rare Wildlife Species	**Yes.** See **Table 2** below.	**Yes.** See **Table 2** below.
Animal Movement Corridors		

Ecoregion 7E	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?
Amphibian Movement Corridors	**Yes.** Significant amphibian breeding habitat is present in wetlands SCW-1 and SCW-2 within the Sheldon Creek woodland and wetlands SCW-4 and BCW-2 in the Mainway woodland. HDFs SCT-10 and SCT-10a and the adjacent meadow, which are located between wetlands SCW-1 and SCW-2, likely function as an amphibian movement corridor. Amphibian movement between the Sheldon Creek and Mainway woodlands is not known.	**Yes.** Amphibian movement studies were not completed as part of the work plan. However, it is highly likely that amphibians use HDFs SCT-10 and SCT-10a and adjacent meadow and woodland habitat as a corridor between wetlands SCW-1 and SCW-2, both of which represent significant Amphibian Breeding Habitat (Woodland). Notably, Spring Peepers were heard incidentally in HDF SCT-10 during salamander surveys conducted in spring 2024.

Table 2. Results of the Special Concern and Provincially Rare Species Assessment.

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area
Birds				
Bald Eagle (*Haliaeetus leucocephalus*)	Special Concern	iNaturalist	• Generally found feeding along waterbodies and shorelines, and adjacent deciduous and mixed forests. • Super-canopy trees are used for nesting and roosting. • Feeds largely on fish and carrion.	**Negligible.** Species was not recorded during breeding bird surveys.
Barn Swallow (*Hirundo rustica*)	Special Concern	Terrastory; NHIC: iNaturalist	• Nests in barns, bridge/culvert undersides, awnings/overhangs on sides of buildings, and (historically) tree cavities. • Forages in a variety of open areas including agricultural lands, meadows, prairies, woodland clearings, marshes, and above waterbodies.	**Confirmed.** Species was recorded as a possible breeder at station BI-7, located at the uppermost reach of the Bronte Creek tributary. Given the location of the observation and the lack of breeding habitat on the Subject Property, it is likely that the species is breeding off-site and forages over the Subject Property.
Eastern Wood-pewee (*Contopus virens*)	Special Concern	Terrastory; NHIC; iNaturalist; OBBA	• Breeds and forages in relatively open, deciduous and mixed forests of various sizes (including urban forest fragments) and along forest edges.	**Confirmed.** Species was recorded as a probable breeder at station BI-6, located in the eastern portion of the Mainway woodland. It was also recorded incidentally in the same approximate location in 2023. However, in the opinion of Terrastory. The low number of individuals recorded does not constitute SWH.
Grasshopper Sparrow (*Ammodramus savannarum*)	Special Concern	NHIC	• Breeds and forages in hayfields, savannahs, pastures, meadows, grasslands, and prairies.	**Negligible.** Species was not recorded during breeding bird surveys.
Olive-sided Flycatcher *(Contopus cooperi)*	Special Concern	iNaturalist	• Breeds and forages in open coniferous or mixed coniferous forests with tall trees, often located near water or wetlands	**Negligible.** Species was not recorded during breeding bird surveys.
Peregrine Falcon (*Falco peregrinus*)	Special Concern	iNaturalist	• Nests on tall, steep ledges usually close to waterbodies, including cliffs, quarry walls, and buildings.	**Negligible.** Species was not recorded during breeding bird surveys.
Purple Martin (*Progne subis*)	S3B	OBBA; iNaturalist	• Forages over towns, cities, parks, open fields, dunes, streams, wet meadows, beaver ponds, and other open areas. • Nests in cavities (both artificial and natural), though is almost entirely dependent on human constructed nesting structures (martin houses) in Ontario.	**Negligible.** Species was not recorded during breeding bird surveys.

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area
Rough-legged Hawk (***Buteo lagopus)***	S1B	iNaturalist	• Nests in cliffs, bluffs, and tall trees. • Forages over open landscapes such as meadows, hayfields, prairies, grasslands, savannahs, and pastures.	**Negligible.** Species was not recorded during breeding bird surveys.
Upland Sandpiper (***Bartramia langicauda***)	S2B	NHIC	•	**Negligible.** Species was not recorded during breeding bird surveys.
Wood Thrush (***Hylocichla mustelina***)	Special Concern	NHIC; iNaturalist; OBBA	• Breeds and forages in second-growth and mature deciduous and mixed forests with a well-developed understory.	**Negligible.** Species was not recorded during breeding bird surveys.
Insects				
American Bumble Bee (***Bombus pensylvanicus***)	Special Concern	Species distribution and on-site habitats	• Occupies a range of open areas with nectaring sites. • Nests above ground in dense mats of long grasses but has also been known to nest in abandoned rodent burrows and bird nests high above the ground.	**Negligible.** Species is a habitat generalist and occupies a wide range of habitats. However, this species was not recorded during insect surveys.
Azure Bluet (***Enallagma asperum***)	S3	iNaturalist	• Habitat includes slow-moving waterbodies including ponds, marshes, lakes, and streams.	**Negligible.** Species is a habitat generalist and occupies a wide range of habitats. However, this species was not recorded during insect surveys.
Citrine Forktail (***Ichnura hastata***)	SNA	Terrastory	• Areas of slow-moving shallow water (e.g., wetlands, watercourses) having emergent vegetation.	**Confirmed.** Species was recorded in the northern portion of the Bronte Creek tributary during insect surveys. This species used to be tracked by the NHIC, but is now considered an irregular breeding immigrant to Ontario, thus an S-Rank of SNA.
Double-striped Bluet (***Enallagma basidens***)	S3	NHIC	• Habitat includes slow-moving waterbodies including ponds, marshes, lakes, and streams.	**Negligible.** Species is a habitat generalist and occupies a wide range of waterbodies. However, this species was not recorded during insect surveys.
Fraternal Potter Wasp (***Eumenes fraternus***)	S3	NHIC; iNaturalist	• Habitat includes glades, thickets, and forest edges. • Adults forage on nectar and pollen; larvae feed on caterpillars. • Builds pot-shaped nests from mud.	**Negligible.** Species is a habitat generalist and occupies a wide range of habitats. However, this species was not recorded during insect surveys.
Four-toothed Mason Wasp (***Monobia quadridens***)	S2?	NHIC	• Adults forage on nectar; larvae feed on caterpillars. • Usually nests in wood borings, but sometimes burrows in dirt banks or abandoned nests of carpenter bees and ground bees or mud-dauber cells.	**Negligible.** Species is a habitat generalist and occupies a wide range of habitats. However, this species was not recorded during insect surveys.
Giant Leopard Moth ***(Hypercompe scribonia)***	S3	iNaturalist	• Typical habitat includes woodland edges, meadows, orchards, and gardens.	**Negligible.** Species is a habitat generalist and occupies a wide range of habitats. However, this species was not recorded during insect surveys.
Monarch (***Danaus plexippus***)	Special Concern	Species distribution and on-site habitats; iNaturalist; Butterfly Atlas	• Oviposits on Milkweeds (*Asclepias* spp.). • Generalist foraging that nectars in most areas with wildflowers.	**Confirmed.** Ovipositing sites (i.e., species in the genus *Asclepias*) are present, albeit limited, and species was observed foraging on the Subject Property. However, habitat opportunities are limited, and Monarch were recorded in low numbers. As such, in the opinion of Terrastory, SWH for Monarch is not present.
Spined Micrathena (***Micrathena gracilis***)	S3S4	Terrastory	• Found in dense woods or forests, often near floodplains or wetlands, as the presence of moisture is a habitat requirement. • Less commonly found in anthropogenic environments	**Confirmed.** Species' presence in all woodlands within the Subject Property has been confirmed through field surveys, with the highest concentrations being recorded in the Sheldon Creek valley.
Spring Beauty Miner Bee (***Andrena erigeniae***)	S2S3	Terrastory	• Often found on Spring Beauty (*Claytonia* spp.), which is spring ephemeral found in deciduous and mixed forests.	**Confirmed.** Species was recorded in the southeast corner of the Sheldon Creek Woodland during insect surveys in summer 2024.

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area
			• Nests underground in well-drained loamy soils.	
Unicorn Clubtail (*Arigomphus villosipes*)	S3	Terrastory; iNaturalist	• Occupies ponds and sluggish streams with mucky bottoms and little emergent vegetation.	**Confirmed.** Species recorded during insect surveys at the SWM pond south of Thornburn Drive during insect surveys. This species is likely not breeding within the Subject Property; Sheldon Creek and the Sheldon Creek tributary are primarily characterized by shale substrate, and the Sheldon Creek and Bronte Creek tributaries likely do not have enough flow to support the species. Accordingly, SWH for Unicorn Clubtail is not present.
West Virginia White (*Pieris virginiensis*)	Special Concern	Butterfly Atlas	• Occupies moist, deciduous woodlands. • Oviposits on Toothworts (*Cardamine* spp.).	**Negligible.** Larval host was not recorded within the Subject Property, and species was not recorded during insect surveys.
Yellow Banded Bumble Bee (*Bombus terricola*)	Special Concern	Species distribution and on-site habitats	• Occupies a range of open areas with nectaring sites. • Nests underground in abandoned rodent burrows or decomposing logs.	**Negligible.** Species is a habitat generalist and occupies a wide range of waterbodies. However, this species was not recorded during insect surveys.
Plants				
Copenhagen Hawthorn (*Crataegus intricata*)	SH	NHIC	• Occupies hedgerows, thickets, open woods, and meadows.	**Negligible.** Species was not recorded during botanical surveys. Known from historic records.
Cup Plant (*Silphium perfoliatum*)	S2	iNaturalist	• Occupies wet prairies and high-quality floodplains; most often found in sunny areas.	**Negligible.** Species was not recorded during botanical surveys, and potentially suitable habitat not present.
Largebracted Tick-trefoil (*Desmodium cuspidatum*)	S3	NHIC	• Often occupies savannahs and open woodlands on acidic substrate.	**Negligible.** Species was not recorded during botanical surveys.
Slim-flowered Muhly (*Muhlenbergia tenuiflora*)	S2	NHIC	• Often occupies dry (often Oak) woodland slopes, savannahs, bluffs and riverbanks.	**Negligible.** Species was not recorded during botanical surveys.
Smooth Yellow Foxglove (*Aureolaria flava*)	S2?	NHIC; iNaturalist	• Occupies Oak woodlands on acidic substrates.	**Negligible.** Species was not recorded during botanical surveys.
Swamp Rosemallow (*Hibiscus moscheutos*)	Special Concern	NHIC; iNaturalist	• Occupies shoreline marshes along the Great Lakes and Lake St. Clair.	**Negligible.** Species was not recorded during botanical surveys.
Woodland Flax (*Linum virginianum*)	S2	NHIC	• Occupies dry clearings, roadsides, meadows, and open Oak woodlands.	**Negligible.** Species was not recorded during botanical surveys.
Woodland Muhly (*Muhlenbergia sylvatica*)	S2?	NHIC	• Occupies forests, shaded riparian areas, and rocky ledges.	**Negligible.** Species was not recorded during botanical surveys.
Bryophytes				
Floating Crystalwort (*Riccia fluitans*)	S3	Terrastory	• Occupies slow-moving or stagnant waters.	**Confirmed.** Species was recorded in Wetland SCW-2 and Wetland SCW-4.
Floating Heartwort (*Ricciocarpus natans*)	S3	Terrastory	• Occupies slow-moving or stagnant waters.	**Confirmed.** Species was recorded in Wetland SCW-2.
Lichens				
A Lichen	S3?	NHIC	• Occupies the bark of woody plants.	**Negligible.** Species was not recorded during lichen surveys.

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area
(***Anisomeridium biforme***)				
A Lichen (*Arthonia lapidicola*)	--	Terrastory	• Occurs on many different rock types, but is most often found on siliceous rock.	**Confirmed.** This species was recorded in the Sheldon Creek Valley within and south of the Subject Property. This species is not previously known from Ontario and thus is not ranked. In nearby provinces and states (i.e., Quebec, Manitoba, Pennsylvania, and Indiana), the species is ranked as SNR or SU, indicating a lack of sufficient information on the species (likely due to rarity). The national rank is NU. In consideration of the technical rationale above, this species is considered in this SWH analysis table and included corresponding figures as a conservative measure/for information purposes.
A Lichen (*Lithothelium septemseptatum*)	S1S3	Terrastory	• Occupies the bark of woody plants, primarily hardwood trees.	**Confirmed.** Potentially suitable habitat is present within the Subject Property where woody plants, especially hardwood trees, are present. This species was recorded in the Mainway Woodland.
Bachman's Jelly Lichen (*Enchylium bachmanianum*)	S3	Terrastory	• On periodically wet soil.	**Confirmed.** This species was recorded on the northeastern edge of an agricultural field adjacent the meadow near the Sheldon Creek Woodland.
Speckled Blister Lichen (*Viridothelium virens*)	S3	Terrastory; NHIC	• Occupies smooth bark of woody plants.	**Confirmed.** Potentially suitable habitat is present within the Subject Property where woody plants, including but not limited to mature Beech (*Fagus grandifolia*), are present. This species was recorded on Beech in the eastern portion of the Sheldon Creek Woodland.
Reptiles				
Northern Map Turtle (*Graptemys geographica*)	Special Concern	iNaturalist; Reptile and Amphibian Atlas	• Occupies lakes and large rivers with slow moving currents. • Nests in exposed, usually coarse, friable substrate.	**Negligible.** Potentially suitable habitat is not present.
Snapping Turtle (*Chelydra serpentina*)	Special Concern	NHIC; iNaturalist; Reptile and Amphibian Atlas	• Occupies a variety of aquatic habitats with slow moving water. • Nests in exposed, usually coarse, friable substrate. • Known to make long-distance overland movements (i.e., several kilometers) between habitats.	**Possible.** Wetlands SCW-4 and BCW-2 may provide marginal habitat for Snapping Turtle. However, these shaded wetlands are relatively small, and no evidence of use by turtles was observed. The species may use Sheldon Creek as dispersal and foraging habitat, and may also use SWM ponds adjacent to the Subject Property.

[1] Likelihood categories should be interpreted as follows:

Negligible: so limited that the assessed species can be assumed absent.

Unlikely: while theoretically conceivable, species presence very improbable or temporary based on available information (e.g., habitat conditions, range, abundance in local landscape, etc.).

Possible: species presence plausible based on available information; no convincing evidence suggesting species could not occur on-site.

Probable: while not confirmed, available information suggests species has a high likelihood of being present.

Confirmed: species observed and/or evidence of occupation (e.g., tracks, etc.) documented.

Subnational Ranks (S-Ranks) are interpreted as follows:
S1: Critically Imperiled - Extremely rare in Ontario; usually 5 or fewer occurrences in the province, or very few remaining hectares.
S2: Imperiled - Very rare in Ontario; usually between 5 and 20 occurrences in the province, or very few remaining hectares.
S3: Vulnerable - Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with some extensive examples remaining.
S4: Apparently Secure – Apparently secure in the province, with many occurrences.
S5: Secure – Demonstrably secure in Ontario.
SH: Possibly Extirpated – Known from only historical records but still some hope of discovery.

SX: Extirpated – A species or vegetation community that is extirpated from Ontario.
SNA: Not Applicable – A conservation status risk is not applicable because the species or vegetation community is not a suitable target for conservation activities.
SNR: Unranked – Conservation status not yet assessed.
SU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

Appendix 13. Endangered and Threatened Species Assessment

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area[1]
Amphibians				
Unisexual Ambystoma (Jefferson Salamander dependent population) (Ambystoma laterale – (2) jeffersonianum)	END	NHIC: Ontario Reptile and Amphibian Atlas	•Breeds and forages in fishless ponds, vernal pools, and wetlands in or near woodlands. •Hibernates and forages in woodlands	**Negligible.** Species not documented during limited surveys in 2023 and 2024 within areas of potentially suitable habitat.
Birds				
Bobolink (*Dolichonyx oryzivorus*)	THR	NHIC; OBBA; iNaturalist	•Breeds and forages in hayfields, pastures, meadows, grasslands, and prairies which are often (but not always) greater 4 ha. •May be found in more marginal habitats (e.g., shrubby fields, smaller fields, etc.) during migration or following disturbance to breeding habitats (e.g., hay cutting).	**Negligible.** Species not documented during breeding bird surveys, and potentially suitable habitat not present.
Eastern Meadowlark (*Sturnella magna*)	THR	NHIC; OBBA	•Breeds and forages in hayfields, savannahs, pastures, meadows, grasslands, prairies, and shrubby fields.	**Negligible.** Species not documented during breeding bird surveys, and potentially suitable habitat not present.
Henslow's Sparrow (*Ammodramus henslowii*)	END	NHIC	•Breeds and forages in hayfields, pastures, meadows, and wet meadows.	**Negligible.** Species not documented during breeding bird surveys, and potentially suitable habitat not present.
Least Bittern (*Ixobrychus exilis*)	THR	OBBA	•Breeds and forages in marshes dominated by robust emergent vegetation containing areas of open water (i.e., interspersion).	**Negligible.** Species not documented during breeding bird surveys, and potentially suitable habitat not present.
Northern Bobwhite (*Colinus virginianus*)	END	NHIC	•Breeds and forages in savannahs, grasslands, around abandoned farm fields, along brushy fencerows.	**Negligible.** Species not documented during breeding bird surveys.
Red-headed Woodpecker (*Melanerpes erythrocephalus*)	END	NHIC	•Breeds and forages in open woodland and woodlands edges. It is also often found in parks, golf courses and cemeteries with many dead trees. Which the bird uses for nesting and perching.	**Negligible.** Species not documented during breeding bird surveys.
Short-eared Owl (*Asio flammeus*)	THR	NHIC; iNaturalist	•Breeds and forages in open areas such as grasslands, marshes and tundra where it nests on the ground and hunts for small mammals, especially voles.	**Negligible.** Species not documented during breeding bird surveys and potentially suitable habtiat not present.
Yellow-breasted Chat (*Icteria virens*)	END	NHIC; iNaturalist; OBBA	•Breeds and forages in prefer dense thickets around wood edges, riparian areas, and in overgrown clearings	**Negligible.** Species not documented during breeding bird surveys.
Fish				
American Eel (*Anguilla rostrata*)	END	NHIC	•May occupy all freshwater, estuary, and coastal marine waters accessible to the Atlantic Ocean.	**Negligible.** Potentially suitable habitat not present within the Study Area. This record was likely from Lake Ontario.
Redside Dace (Clinostomus elongatus)	END	NHIC	•Occupies pools and low-velocity areas of small coolwater streams.	**Negligible.** According to the DFO SAR mapping website, this species is found in Fourteen Mile Creek, which is in another subwatershed east of the Study Area.
Silver Shiner (*Notropis photogenis*)	THR	DFO SAR Mapping; NHIC	•Occupies moderate to large, deep, relatively clear streams with swift currents, and moderate to high gradients.	**Confirmed.** Potentially suitable direct habitat not present within the Subject Property, likely due to the presence of fish barriers on Mainway. However, DFO SAR mapping indicates that Silver Shiner is likely present in Bronte Creek Provincial Park Tributary 2, which is off-site and accepts flow from within the Subject Property.
Insects				

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area[1]
Mottled Duskywing (*Erynnis martialis*)	END	Ontario Butterfly Atlas	•Occupies forested and open habitats with its larval food plant, New Jersey Tea species (*Ceoanotheus* spp.).	**Unlikely.** Foraging opportunities are limited and the species' host plant is not present on the Subject Proeprty.
Mammals*				
Eastern Small-footed Myotis (*Myotis leibii*)	END	Species distribution and on-site habitats; Terrastory	•Maternal roosting sites include exposed rock outcrops, crevices, and cliffs. •Overwinters in caves and mines that maintain temperatures above 0°C.	**Unlikely.** The calls of this species are difficult to ascertain from other Myotis species. While species may forage above open habitats on the Subject Property or adjacent lands, potential maternal roosting habitat (e.g., rock outcrops, cliffs, etc.) is absent.
Little Brown Myotis (*Myotis lucifugus*)	END	Species distribution and on-site habitats; Terrastory	•Maternity roosts sites most often include buildings and large diameter trees with cracks, crevices, and/or exfoliating bark. •Overwinters in caves and mines that maintain temperatures above 0°C.	**Confirmed.** This species was recorded in all woodlands on the Subject Property. Potentially suitable habtiat for this species is present in forests throughout the Subject Property and Adjacent Lands.
Northern Myotis (*Myotis septentrionalis*)	END	Species distribution and on-site habitats; Terrastory	•Maternity roosts most often include large diameter trees with cracks, crevices, and/or exfoliating bark (buildings rarely used). •Overwinters in caves and mines that maintain temperatures above 0°C.	**Possible.** The calls of this species are difficult to ascertain from other Myotis species. Potentially suitable habtiat for this species is present in forests throughout the Subject Property and Adjacent Lands, however the Subject Property is south of the species' typical range in Ontario.
Eastern Red Bat (*Lasiurus borealis*)	END	Species distribution and on-site habitats; Terrastory	• Maternity roost sites are typically within deciduous or coniferous forests of all age classes, with a preference for roosting in tall, large diameter trees. • Occurrences of roosting in anthropogenic structures are rare. • A migratory species primarily found in Ontario during the summer months, with summer habitat consisting of foraging, drinking, and roosting sites.	**Confirmed.** This species was recorded in all woodlands on the Subject Property. Potentially suitable habtiat for this species is present in forests throughout the Subject Property and Adjacent Lands.
Hoary Bat (*Lasiurus cinereus*)	END	Species distribution and on-site habitats; Terrastory	• Maternity roost sites are typically within deciduous or coniferous forests of all age classes, with a preference for roosting in tall, large diameter trees. • Occurrences of roosting in anthropogenic structures are rare. • A migratory species primarily found in Ontario during the summer months, with summer habitat consisting of foraging, drinking, and roosting sites.	**Confirmed.** This species was recorded in all woodlands on the Subject Property. Potentially suitable habtiat for this species is present in forests throughout the Subject Property and Adjacent Lands.
Silver-haired Bat (*Lasionycteris noctivagans*)	END	Species distribution and on-site habitats; Terrastory	• Maternity roost sites are typically within decaying, large diameter deciduous or coniferous trees with heart-rot or exfoliating bark. • Known to occasionally roost on or in buildings. • A migratory species primarily found in Ontario during the summer months, with summer habitat consisting of foraging, drinking, and roosting sites.	**Confirmed.** This species was recorded in all woodlands on the Subject Property. Potentially suitable habtiat for this species is present in forests throughout the Subject Property and Adjacent Lands.

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area[1]
Tri-colored Bat (*Perimyotis subflavus*)	END	Species distribution and on-site habitats; Terrastory	•Maternal roosting sites include Maple (Acer spp.) and Oak (Quercus spp.) with dead/dying leaf clusters. •Overwinters in caves and mines that maintain temperatures above 0°C.	**Confirmed.** This species was recorded in the Sheldon Creek Valley Woodland and Sheldon Creek Woodland. Potentially suitable habtiat for this species is present in forests throughout the Subject Property and Adjacent Lands.
Reptiles				
Common Five-lined Skink (Carolinian population) (*Plestiodon fasciatus*)	END	Ontario Reptile and Amphibian Atlas	•Occupies generally open environments along or near the Great Lakes including dunes, fields, and deciduous forest edges.	**Negligible.** Potentially suitable habtiat for this species is not present.
Wood Turtle (*Glyptemys insculpta*)	END	Bronte Creek Provincial Park Management Plan (MECP 2002)	•Occupies clear rivers, streams or creeks with a slight current and sandy or gravelly bottom. •Often feeds in upland areas adjacent to streams. •Nests in exposed, usually coarse, friable substrate.	**Negligible.** Potentially suitable habtiat for this species is not present.
Plants				
American Ginseng (*Panax quinquefolius*)	END	Bronte Creek Provincial Park Management Plan (MECP 2002)	•Occupies rich, relatively undisturbed deciduous forests.	**Negligible.** Species not documented during vascular plant surveys and history of grazing in woodlands may preclude this species.
Black Ash (*Fraxinus nigra*)	END	Species distribution and on-site habitats	•Occupies deciduous swamps (often peaty), floodplains, and wet woods.	**Negligible.** Species not documented during vascular plant surveys.
Butternut (*Juglans cinerea*)	END	Species distribution and on-site habitats; NHIC; iNaturalist	•Occupies a variety of treed habitats including mature forests, early-successional forests, and hedgerows.	**Negligible.** Species not documented during vascular plant surveys.
Dense Blazing Star (*Liatris spicata*)	THR	NHIC	•Prairies	**Negligible.** Species not documented during vascular plant surveys and potentially suitable habitat is not present.
Eastern Flowering Dogwood (*Cornus florida*)	END	NHIC	•Dry (usually with Oak) to rich deciduous forests, often on hillsides and river banks.	**Negligible.** Species not documented during vascular plant surveys.

* Note that the following migratory bat species are expected to be listed as Endangered in Ontario in February 2025: Haory Bat, Silver-haired Bat, and Red Bat. All of these species were recorded on the Subject Property during acoustic monitroing. See **Section 3.2.4** for details.

[1] Likelihood categories are to be interpreted as follows:

Negligible: so limited that the assessed species can be assumed absent.

Unlikely: while theoretically conceivable, species presence very improbable or temporary based on available information (e.g., habitat conditions, range, abundance in local landscape, etc.).

Possible: species presence plausible based on available information; no convincing evidence suggesting species could not occur on-site.

Probable: while not confirmed, available information suggests species has a high likelihood of being present.

Confirmed: species observed and/or evidence of occupation (e.g., tracks, etc.) documented.