Technical Memorandum

To:	Helen Mihailidi	**From:**	Jesse Snider
Company:	Elfrida Community Builders Group Inc. c/o Brattys LLP	**Company:**	**SLR Consulting (Canada) Ltd.**
cc:	GeoProcess Research Associates; Stantec Consulting Ltd.; Delta Urban Inc.	**Date:**	February 28, 2025
		Project No.	244.V24356.00001
		Revision	0

RE: Preliminary General Vegetation Inventory and Tree Management Plan Proposed Urban Boundary Expansion for Elfrida Lands

1.0 Introduction

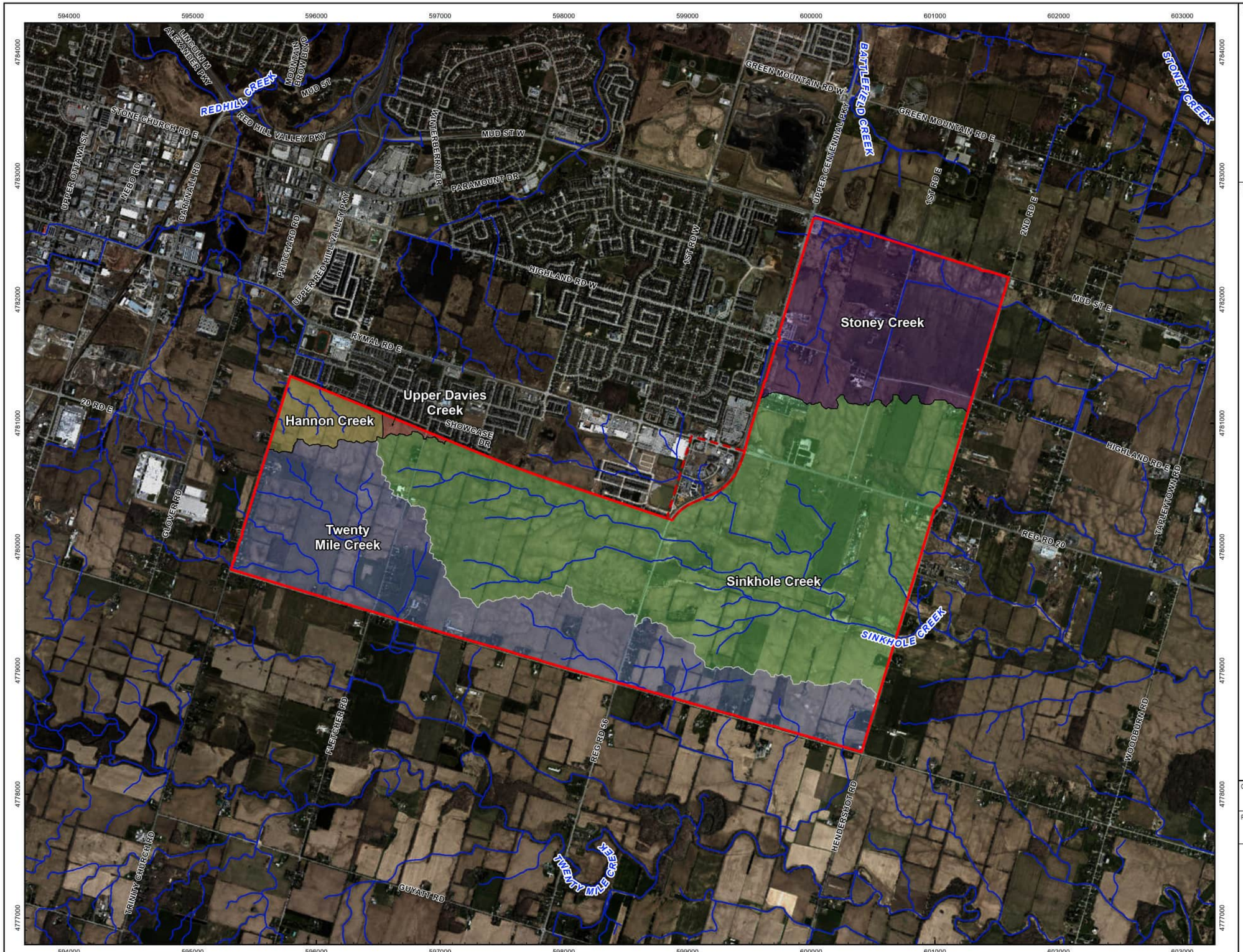
SLR Consulting (Canada) Ltd. ("SLR"), GeoProcess Research Associates ("Geoprocess"), and Stantec Consulting Ltd. (Stantec) are pleased to provide this Preliminary General Vegetation Inventory (GVI) memorandum for the lands formerly identified as an Urban Expansion Area (neighbourhoods) within the City of Hamilton Official Plan which contain portions of the following subwatersheds: Hannon Creek, Stoney Creek, Upper Davis Creek, Twenty Mile Creek, and Sinkhole Creek (the "Study Area" - **Figure 1**). The Study Area is 'L' shaped and is approximately 1,233 hectares (ha), and generally bounded by Trinity Church Road to the west, Golf Club Road to the southwest/south, Hendershot Road to the southeast/east, Mud Street to the northeast, and the existing Urban Boundary to the north (**Figure 1**).

The Study Area is comprised of multiple individual properties (i.e., parcels) which vary in size, shape, and current land use. Most of the parcels are being used for agricultural purposes, with limited commercial and light industrial uses noted along Upper Centennial, and institutional uses (i.e., an elementary school and a church) noted along Rymal Road/Regional Road 20. The parcel of land bounded by Regional Road 56 to the south/east, Swayze Road to the west, and Rymal Road to the north was added to the Urban Boundary Expansion (UBE) area in fall 2024 (please refer to *Additional Lands (Unsurveyed)* outlined within **Figure 1**). These lands are designated Rural Industrial – Business Park and are currently developed with industrial and commercial uses.

The purpose of the following Preliminary GVI is to provide a general overview of treed communities and their ecological functions within the Study Area, in addition to identifying treed communities that may require further investigation and protections through Tree Inventories and Tree Protection Plans (TPPs). The intent of this Preliminary GVI is to ensure that the applicant considers existing treed natural features and, where possible, incorporates them into site design at an early stage to maximize tree preservation (City of Hamilton, 2010). The Preliminary GVI is not intended to be a detailed tree inventory or detailed TPP but rather provide a general overview of the treed communities within the Elfrida Lands. This Preliminary GVI includes:

- A botanical inventory and brief description of treed communities within the Study Area;
- Site topography, soils, and drainage information (where applicable);
- Any significant natural and physical features (e.g., streams, ponds, steep slopes, wildlife habitat) within or immediately adjacent to treed communities within the Study Area; and,

- Reasons for whether treed communities require further analysis through a TPP, including the identification of high-quality, retainable treed communities.



KEY MAP

LEGEND

- Watercourse [1]
- Study Area
- Additional Lands (Unsurveyed)

Subwatersheds (SWS)[2]

Hamilton Conservation Authority
- Hannon Creek
- Stoney Creek
- Upper Davies Creek

Niagara Peninsula Conservation Authority
- Sinkhole Creek
- Twenty Mile Creek

1 - Land Information Ontario (LIO)
2 - Niagara Peninsula Conservation Authority / Aquafor Beech

NOTE: The information contained within this figure is preliminary and will be refined during further study.

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KILOMETRE

North American Datum 1983
Universal Transverse Mercator Projection Zone 17

Scale: 1:30,000
Page Size: Tabloid (11 x 17 inches)

Drawn: SM
Checked: DJ
Date: Feb 20, 2025

NORTH

Source Notes:
Imagery (2022) provided by Bramalea region map service. Key map base mapping provided by ESRI World Street Map. Contains information licensed under the Open Government Licence – Ontario.

CLIENT
Elfrida Community Builders Group Inc.

PROJECT
Elfrida Subwatershed Study
General Vegetation Inventory (GVI)

Stantec
GeoProcess RESEARCH ASSOCIATES
Palmer PART OF SLR

TITLE
Site Location

REF. NO. 2306301-1-2

Figure 1

Document Path: G:\Shared drives\Projects 2023\23063 - Elfrida Community Builders Group Inc\2306301 - Elfrida SWS\GIS\1_Workspace\Task 5 - Figures\(2025-02-20) GeneralVegInventoryFigures\(2025-02-20) GeneralVegInventoryFigures.aprx

2.0 Applicable Environmental Policy

2.1 City of Hamilton General Vegetation Inventory (2022)

The City of Hamilton's (2022) *Development Application Guidelines – General Vegetation Inventory* document outlines the general objective of a GVI, the certifications the authors of the GVI are to possess, and what the contents of the GVI report are to contain. The document then references the City of Hamilton's Tree Protection Guidelines – City Wide (October 2010) document for more detailed information. These guidelines are outlined in **Section 2.2** below.

2.2 City of Hamilton Tree Protection Guidelines – City Wide (2010)

The City of Hamilton's *Tree Protection Guidelines – City Wide* document (2010) provides direction on tree inventory completion and the preparation of TPPs, while also providing guidance on tree retention, protection, and replanting. Tree protections apply differently among trees situated on private property and trees on city-owned lands (i.e., right of ways - ROWs). For trees situated on city-owned lands, the City of Hamilton *By-law 15-125* (2015) would apply (**Section 2.3**). The *Tree Protection Guidelines – City Wide* document (2010), on the other hand, applies to privately-owned trees subject to the *Planning Act, 1990* or Niagara Escarpment Plan (NEP) permits. The City of Hamilton does not have a private tree by-law; however, the City does promote the building of the tree canopy within Hamilton and the protection of mature, healthy trees on private lands through its *Tree Protection Guidelines – City Wide* (2010). The City's four-step process for tree protection for *Planning Act, 1990* applications include:

1. A GVI for all portions of the Study Area.
2. TPPs for areas with quality vegetation requiring further study (as identified by the City during the GVI) – if a full TPP is submitted at the time of application, a GVI is not required.
3. Implementation of the TPPs (installation and monitoring of tree protection measures during construction).
4. A Landscape Plan (including re-planting and transplanting measures, if required).

The GVI is required to include:

- Inventory of treed vegetation units
- Mapping
- Analysis of vegetation units within the Study Area

For the purposes of a GVI, the inventory of treed vegetation units must identify '*distinct individual trees, groups of trees, or larger vegetation units*.' For each treed vegetation unit general biophysical characteristics must be identified, including vegetation type (i.e., coniferous, deciduous, hedgerow, etc.,), general species abundance, dominant species, density, locally significant trees / tree groupings, general tree conditions (i.e., health and structural condition), and DBH ranges for woodlands (City of Hamilton, 2010).

The analysis component of the GVI identifies priority areas for tree retention, potential development constraints, natural habitat linkages, recommendations for future proposed development design, and whether vegetation units require more detailed analysis (City of Hamilton, 2010).

If the GVI identifies that a more detailed analysis is required, a TPP must be prepared to identify which trees will be preserved and what protection and mitigation measures will be implemented (City of Hamilton, 2010). A TPP is required for high quality trees within treed vegetation units. The tree inventory must include any trees with a diameter at breast height (DBH) of 10 cm or greater, as well as “rare, unusual, and heritage trees” (City of Hamilton, 2010). The TPP must be approved by the City before implementation of the TPP begins (City of Hamilton, 2010). Tree protection fencing must be installed around individual trees, tree clusters, and woodland edges to be retained, at least 1 m from the woodland/tree dripline. Following City tree protection standards, tree protection fencing must be made of paige wire; snow fencing is not acceptable (City of Hamilton, 2010). Should any tree be slated for removal, the City will require compensation at a 1:1 ratio. If replanting within the Study Area is not feasible, the City will accept cash-in-lieu to fund off-site tree planting.

TPPs will be prepared during parcel-specific development applications and must be completed following the City of Hamilton’s *Tree Protection Guidelines – City Wide* document (2010). The TPPs would be required to include the following:

- Relevant policies as they pertain to trees in the City of Hamilton;
- Tree inventory methods and results;
- Identification of which trees need to be retained, removed, or preserved with the potential to be injured;
- Standard and site-specific tree protection measures including tree protection fencing, pruning, and felling and grinding methods;
- Determination of necessary compensation plantings; and,
- An outline of pre-construction, construction, and post-construction monitoring tasks.

2.3 City of Hamilton Tree By-law (15-125)

The City of Hamilton *By-law 15-125 - To Regulate Trees on or Affecting Public Property* applies to city-owned trees within the City of Hamilton (City of Hamilton, 2015). This by-law states that no person shall injure or destroy a public tree or permit the injury or destruction of a public tree. A permit must be obtained prior to performing work on, in, or around a public tree and the work must be conducted in accordance with the permit (City of Hamilton, 2015). ‘Work; is defined in the by-law as, ‘*excavating, constructing, developing, ditching, tunnelling, trenching, disturbing soil, compacting soil or removing part or all of a public tree*.’

3.0 Field Methodology

Ecological field investigations pertaining to vegetation classification were undertaken on multiple dates (as outlined in **Table 1** below), by International Society of Arboriculture (ISA) Certified Arborists and ecologists. Vegetation communities were mapped and classified following the Ecological Land Classification (ELC) System for Southern Ontario protocols (Lee, et al., 1998) and the updated, unpublished ELC tables (Lee H. , 2008). Boundaries of ELC communities were identified on field maps using recent aerial photographs and were further refined and delineated in the field. Treed communities determined through this ELC process are depicted on **Figure 2**.

Information collected during ELC surveys includes dominant species cover and community structure, as well as level of disturbance, presence of indicator species, and other notable features. Flora inventories were completed by traversing the Study Area and recording species observed in each vegetation community. The provincial plant status of each species was based on the *Provincially Rare Flora of Ontario* (Oldham & Brinker, 2009) and the Natural Heritage Information Centre (NHIC) species lists (Ministry of Natural Resources and Forestry, 2023). Searches for Butternut (*Juglans cinerea*) and Black Ash (*Fraxinus nigra*), *Endangered* trees on the Species at Risk of Ontario (SARO) list, were undertaken during the ELC surveys and flora inventories, as these Species at Risk (SAR) are known to be in the Hamilton Region.

Access to some parcels was not granted by landowners within the Study Area. Consequently, vegetation communities (including treed communities) on these parcels were classified to the ELC Community Class level (e.g., FOD, SWD, etc.) following a desktop review of aerial photography in combination with roadside observations or observations from adjacent parcels, where possible.

Additionally, Bousfields Inc. (“Bousfields”) provided linework for the municipal ROWs with a 3 m setback within the Study Area. This has allowed for consistent mapping across all consultant teams and has been used to identify municipally owned treed communities within the Study Area. At the request of the City of Hamilton, these municipally owned treed communities (i.e., those within the ROWs and their 3 m setbacks) have been separated from the privately owned tree communities for policy application purposes and subsequent management purposes. It should be noted that the separation of these communities was requested following the completion of ELC surveys and flora inventories conducted by SLR and Geoprocess. Thus, while the privately owned treed communities and municipally owned tree communities have been treated as separate within this Preliminary GVI, these communities have largely been classified together. Municipally owned treed communities, therefore, will require further field investigations to accurately characterize the trees within these communities.

Table 1: Field Investigations

Field Investigation	Dates Completed
ELC	August 21, 24, September 1, 5, 7, 13, October 11 and 18, 2023. May 23, 28, 29, 30, 31, June 6, July 4, 8, 23, October 2, and 3, 2024.
Dripline Delineation	October 11, 13, and 20, 2023.

4.0 GVI Framework and Analysis Methods

Treed communities were delineated and numbered within the Study Area (**Figure 2**). To inventory and describe the treed communities, observations from fieldwork and aerial photo analysis were compiled into **Table 2**. This table outlines the GVI framework, which is based on a combination of criteria from a variety of sources. These sources include:

- The Subwatershed Study for the Elfrida Lands (Aquafor Beech, 2018) – Hedgerow Assessment;
- City of Hamilton Official Plan (2022) policies;
- City of Hamilton Tree Protection Guidelines (2010);
- Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015);
- Ministry of the Environment Conservation and Parks (MECP) Treed Habitats – Maternity Roost Surveys document (2022); and,
- ELC for Southern Ontario protocols (Lee, et al., 1998).

The criteria that were assessed are standard characteristics that are either quantifiable or qualifiable, which can be used to provide a high-level classification of a treed community's ecological function. These criteria include, but are not limited to, unit size, minimum average width, presence of interior forest habitat, vegetation type, approximate diameter at breast height (DBH) range, relative species diversity, and canopy density.

The Study Area's biophysical characteristics (topography, soils, and drainage) were also considered for this Preliminary GVI. Upon investigation it was noted that the whole Study Area is designated as high-quality agricultural soils, which was further divided into two soil types; fine-textured glaciolacustrine deposits and till (clay to silt textured till) (ISO, 2013). The majority of the Study Area is comprised of fine-textured glaciolacustrine deposits, with a small band of till located along the interface of the Stoney Creek and Sinkhole Creek subwatersheds. As most of the Study Area was of similar soil type, soils characteristics were not used as a criterion for the Preliminary GVI. Conversely, aquatic features (i.e., watercourses, wetlands, swamps, and headwater drainage features - HDFs) across the Study Area landscape were considered and incorporated into the GVI framework (i.e., proximity to water), aside from HDFs classified as mitigation and no management (see **Figure 2**) as these aquatic features are subject to realignment and/or other alternations. It should be noted that hydrogeological, geotechnical, and geomorphological investigations are ongoing and will further assess the soils, topography, and drainage within the Study Area, potentially resulting in new criterion in the final GVI analysis.

Fifteen (15) parameters have been included in this Preliminary GVI analysis, ten (10) of which have been chosen as the scoring system for each treed community within the Study Area. The remaining five (5) parameters were used for community descriptor purposes. **Table 2** within **Section 4** of this report depicts the ten (10) scoring categories in orange. The following sections describe the various parameters that were scored as part of the Preliminary GVI analysis.

The criteria were used to determine a Retention Value (RV) to each treed unit. Using the scoring system a RV of High, Moderate, or Low was assigned to each community. This scoring provides an indication of the treed communities that should be incorporated into site design (and are of a higher likelihood to require further analysis through a TPP), treed communities that

should be considered for retention (Moderate RV communities), and treed communities that offer little to no ecological function.

4.1 High Retention Value Units

Communities classified as a High RV Unit include those with four (4) or more of the moderate retention criteria (see parameters listed under Moderate RV Units heading below) or one (1) Significant Feature criterion (i.e., Significant Wildlife Habitat (SWH), Species at Risk (SAR) habitat, Significant Tree, meets City of Hamilton Official Plan Significant Woodland criteria, or is associated with another Natural Heritage Feature (NHF). The definition of a Significant Feature is provided below.

Significant Features

Significant features are those natural and physical features that meet an ecological threshold as determined by provincial and local policies and/or guidelines (i.e., the Natural Heritage Reference Manual, the Provincial Planning Statement, Significant Wildlife Habitat Criteria Schedules, regional and municipal Official Plans (OPs), and conservation authority guidelines). Significant features were also cross referenced with the results from the previous *Preliminary Opportunities and Constraints Mapping Elfrida Lands Proposed Urban Boundary Expansion: Stoney Creek, Twenty Mile Creek, Hannon Creek, Upper Davis, and Sinkhole Creek Subwatersheds* (Palmer, Stantec, and Geoprocess, 2024).

Significant features are protected from development (with some exceptions) and are often mapped under these provincial and municipal policies and/or guidelines. Consequently, should a treed community meet this criterion, it is immediately classified as a High RV Unit due to the community's ecological significance and protections under multiple regulatory agencies.

Significant Trees (SAR species, regionally/locally rare)

The significant trees criterion is based off the 2007 Endangered Species Act (ESA) and Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015). SAR (including birds) are protected under the ESA and regionally/locally rare tree species and Special Concern bird species habitat can be protected under the Rare Vegetation Community Significant Wildlife Habitat (SWH) and Special Concern and Rare Wildlife Species SWH groupings within the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015). SAR and rare species are under threat of no longer occurring in the region or Ontario due to a variety of factors (e.g., disease, invasive species, etc.). Therefore, if a SAR or rare species is found within a treed unit the community must be protected despite other criteria scoring. Should the community meet the significant trees criterion, this would result in the community being considered a Significant Feature, which would subsequently result in the community being classified as a High RV Unit.

SAR/rare tree species recorded within the Study Area were Downy Hawthorn (*Crataegus mollis*), Fireberry Hawthorn (*Crataegus chrysocarpa*), Black Ash (*Fraxinus nigra*), and Butternut (*Juglans cinerea*). Special Concern avian species recorded include Barn Swallow (*Hirundo rustica*), Eastern Wood-Pewee (*Contopus virens*), and Savannah Sparrow (*Passerculus sandwichensis*).

Treed communities with a High RV Unit classification are those that are likely, with supplemental tree inventory data, to have proposed site-specific TPPs undertaken to protect and manage the trees within the community.

4.2 Moderate Retention Value Unit

Moderate RV Unit classifications indicate treed communities that should be considered for retention but are not absolutely necessary to retain. The completion of outstanding studies; however, may result in changes the to the final GVI classifications of treed communities and consequently impact their management recommendations.

Moderate RV Units are associated with 1 to 3 of the criteria listed below.

Unit Size (ha)

The unit size criterion is based off the City of Hamilton's significant woodland criteria found within the Chapter G – Glossary of the OP. The Elfrida Lands Study Area was determined to have approximately 5-10% forest cover across the landscape, resulting in any woodland community ≥2 ha being considered significant under the minimum patch size criteria table within the Chapter G - Glossary of the OP.

As a result of the low forest cover (5-10%) within the Study Area, woodlands ≥2 ha will have a higher ecological importance and therefore need to be preserved due to the lack of overall forest cover. Woodlands ≥2 ha will contain more internal habitat (i.e. SAR/SWH habitat) and potentially have a higher species diversity. Consequently, woodlands ≥2 ha were considered a significant feature and subsequently deemed a High RV Unit.

Minimum Average Width (m)

The minimum average width criterion was established using the City of Hamilton OP. As per the OP, the definition of a hedgerow is *a narrow, linear band or row of trees or shrubs with a minimum width of 10 metres and length of 200 metres or more. Hedgerows are linear natural or cultural features which may contribute to species dispersal* (2022). On the other hand, according to the Chapter G - Glossary of the City's OP, the definition for a woodland is a treed community that has a minimum average width of 40 m. Hedgerows <10 m and woodlands <40 m in width will have a lower ecological value due to a lack of overall canopy cover, species diversity, and lower likelihood of wildlife passage. Thin, open canopy hedgerows will likely be avoided by wildlife due to the species' exposure to potential predators. Consequently, if the treed community within the Study Area met the width criteria for a hedgerow or a woodland, it would achieve this criterion and count towards a Moderate / High RV Unit classification.

Interior Forest (≥100 m from edge)

The interior forest criterion is based off the City of Hamilton OP. Interior forest habitat is one of the significant woodland criteria under the Chapter G – Glossary of the OP. Interior forest habitat is considered woodland that is more than 100 m from a woodland edge. The larger the interior forest within a community the more potential wildlife habitat a community can have. Certain SWH criteria or SAR birds require large areas of interior forest to carry out it's life cycle. Consequently, if a community met the interior forest criterion it would count towards a Moderate / High RV Unit classification.

Relative Tree Species Diversity

The relative tree species diversity criterion is based on a combination of professional experience and ELC for Southern Ontario protocols (Lee, et al., 1998). Communities with three (3) or more native tree species are known to have higher ecological value due to species richness (biodiversity) and increased habitat availability. Conversely, monoculture communities (having

only one dominant tree species) can be susceptible to pests and/or disease that can ultimately decimate a community (i.e., Emerald Ash Borer or Beech Bark Disease). Consequently, if a community met the relative tree species diversity criterion it would count towards a Moderate / High RV Unit classification.

Overall Tree Density (high, medium, low)

The overall tree density criterion was based on the ELC for Southern Ontario protocols (Lee, et al., 1998). This criterion is associated with the percent canopy cover within a community, which correlates with the ecological function of a community (i.e., potential wildlife movements, protection from predation and adverse weather, etc.). The overall tree density classifications are as follows: High Density = >60% woody plant cover, Medium Density = 35-60% woody plant cover, Open = 25-35% woody plant cover (anything <25% woody plant cover would not be classified as a treed community). If a community met the high tree density classification, then this criterion was met and counted towards a Moderate / High RV Unit classification.

Linkage Function (minimal, some, important)

The linkage function criterion is based off the City of Hamilton OP and the previous *Preliminary Opportunities and Constraints Mapping Elfrida Lands Proposed Urban Boundary Expansion: Stoney Creek, Twenty Mile Creek, Hannon Creek, Upper Davis, and Sinkhole Creek Subwatersheds* (Palmer, Stantec, and Geoprocess, 2024). The linkage function of a community is one of the significant woodland criteria under the Chapter G – Glossary of the OP. Areas of proposed linkage, which contribute to the Natural Heritage System and provide connectivity between natural heritage features (wetlands and woodlands), are shown in **Table 2**. Based on field investigations completed to date, treed communities within the Study Area were ranked based on their linkage potential (i.e., ability to act as wildlife movement corridors). The linkage function was classified as minimal, some, and important in accordance with available data.

Ecological data collected by SLR and Geoprocess in 2023 and 2024 was reviewed and used to help determine linkage function. Communities continuous or adjacent to Provincially Significant Wetlands (PSWs) or woodlands or labelled as having a Potential Hedgerow Linkage Function in the *Preliminary Opportunities and Constraints Mapping Elfrida Lands Proposed Urban Boundary Expansion: Stoney Creek, Twenty Mile Creek, Hannon Creek, Upper Davis, and Sinkhole Creek Subwatersheds* document (Palmer, Stantec, and Geoprocess, 2024) were classified as Important. Hedgerows not labelled as having a Potential Hedgerow Linkage in the abovementioned document, but were connected to an important linkage function hedgerow or adjacent to unevaluated wetlands or smaller woodlands (i.e. cultural woodlands), were classified as having Some linkage function. All other communities were classified as having a minimal linkage function. Consequently, if a community was deemed as having an Important linkage function, then this criterion was met and counted towards a Moderate / High RV Unit classification.

Presence of Invasive Plants (minimal, some, dominant, unknown)

The presence of invasive plants criterion was determined through professional experience. The term *minimal* means only one to a few invasive individuals were present (i.e., 0% - 25% cover). The term *some* refers to invasive plants that are present and individually scattered throughout a community or represented by one or more large clumps of many individuals (i.e., 25% - 70%). The term *dominant* means invasive plants are the greatest cover or biomass within a community with a large number of individuals; visually more abundant (i.e., 70% - 100%).

Communities dominated by invasive species are usually a result of human disturbance (i.e., previously farmed, cleared, surrounded by urban development, etc.). As a result, invasive

dominant communities are not a naturally occurring community and lowers the ecological value of a community. Consequently, if this criterion was met, a negative score (-1) was applied to the overall score of the community. Communities that met the *dominant* definition under the presence of invasive plants criterion counted towards a Low RV Unit classification.

Proximity to Water

The proximity to water criterion is based off the City of Hamilton OP. The proximity to water is one of the significant woodland criteria as stated under the Chapter G – Glossary section of the OP. The definition of proximity to water under the OP is as follows; *Woodlands where any portion is within 30 metres of any hydrological feature, including all streams, headwater areas, wetlands, and lakes* (City of Hamilton, 2022). HDFs that were classified as mitigation or no management were not considered in the scoring criteria, as stated previously. Only conservation and protection level HDFs were used when scoring for this criterion. A woodland or hedgerow in close proximity to water is a continuation of the natural heritage feature and may provide a natural corridor/linkage, SWH, and/or SAR habitat. Therefore, if a community met the close proximity to water criterion it counted towards Moderate / High RV Unit classification.

4.3 Additional Criteria Features

The five (5) criteria features stated below do not count towards the scoring system of High, Moderate, or Low RVs for the treed communities. Through the application of the five criteria, no differentiation was noted across the communities. As a result, these criteria instead act as supplemental community information as they correlate with other scoring criteria features (i.e., overall tree density, maturity of woody plants, etc.).

General Condition (good, fair, poor)

General tree condition is a widely used criterion in tree inventories and evaluations. It is required by the City of Hamilton and most other regions/municipalities. The general condition of a community was assessed through field photos and fieldnotes from 2023-2024 fieldwork. As described in the City of Hamilton's *Tree Protection Guidelines* (2010) the general condition of a community can be classified as follows:

- *Good* - Dead branches less than 10%, signs of good compartmentalization on any wounds, no structural defects.
- *Fair* - 10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects.
- *Poor* - More than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects.

The overall condition of a treed community correlates back to overall tree density (canopy cover). A community with an overall poor condition will create a more open canopy cover meaning a lower tree density. A community in overall good condition will have a more closed/full canopy creating a higher tree density.

This criterion is not weighted in the scoring system but is used to give further information about the community being assessed.

Vegetation Features/Type (e.g., coniferous, deciduous, hedgerow, swamp, etc.)

The vegetation features/type criterion is used to describe what treed community type is being assessed (e.g., hedgerows, thickets, forests, etc. and deciduous, coniferous, etc.). Vegetation

features/types correlate to other criteria (i.e., wildlife attributes, unit size, interior forest habitat, and minimum width). Depending on the community classification (deciduous, coniferous, hedgerow, etc.) it may provide assumptions regarding wildlife habitat characteristics associated with SWH or SAR habitat. Vegetation features/types is also associated with the following three criteria: unit size, minimum average width, and interior forest habitat. Interior forest habitat is only associated with woodlands. An individual minimum width is designated to hedgerows and woodlands (>10 m and > 40 m respectively).

This criterion is not weighted in the scoring system but is used to make inferences for other criteria.

Approximate DBH Range (cm)

The approximate DBH range criterion was based off the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015) and the Treed Habitats – Maternity Roost Surveys document (MECP, 2022). Both guidelines note that a quality wildlife tree or snag tree must be ≥25 cm DBH. This correlates to the wildlife attributes (SWH/SAR species) criterion, as well as the maturity of woody plants criterion. Communities with an average DBH of ≥25 cm will have a higher likelihood of providing higher quality habitat for SAR and SWH. The average DBH of woody plants can help determine the overall maturity/stage of a community (i.e., young communities will have a lower average DBH due to saplings). As the DBH average increases, so does the maturity of woody plants.

This criterion is not weighted in the scoring system but is used to give further information about the community being assessed.

Maturity of Woody Plants (pioneer, young, mid-aged, mature)

The maturity of woody plants criterion is based off the City of Hamilton OP. Maturity of woody plants is one of the significant woodland criteria under the Chapter G – Glossary section of the OP. The definition of '*age*' under the OP states; *a woodland that contains 10 or more native trees greater than 100 years old per ha* (2022). The ELC for Southern Ontario protocols (Lee., et al 1998) was used to determine the four categories (pioneer, young, mid-aged, and mature). Pioneer communities are communities that have invaded disturbed or newly created sites and represents the early stages of either primary or secondary succession. Young communities consist of species that have not yet undergone a series of natural thinnings and replacements. Plant species grow as independent individuals rather than as member of the phytosociological community. Mid-aged communities are in a stage that have undergone natural thinning and replacement because of species interactions. The community often contains both early successional and late successional species. Mature communities are in a stage dominated by species that are replacing themselves and are likely to remain an important component of the community if it is not disturbed again (Lee., et al 1998).

This criterion is not weighted in the scoring system but is used to give further information about the community being assessed.

Wildlife Attributes (potential SWH/SAR species)

The wildlife attributes criterion is based off the ESA (2007) and Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015). SAR species are protected under the ESA; and the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015) describes

which features meet SWH. This criterion is not used in the scoring system but is used to give further information about the community being assessed. According to Habitats – Maternity Roost Surveys document (MECP, 2022), all treed communities have the potential to be suitable SAR bat habitat. This would mean all treed communities within the Study Area would meet the Wildlife Attributes criterion. For the purposes of this preliminary exercise, the criteria were not weighted in the scoring system and only used as additional information.

4.4 Low Retention Value Units

Low RV Unit classifications encompass all other treed communities that are dominated by invasive species, have open canopies (low tree density), have low relative tree species diversity, have a minimal linkage function, are young to mid-aged, have no significant trees, and are not in close proximity to retainable aquatic features. These communities have low ecological function, as reflected by the low RV score attained through the Preliminary GVI framework. The lower the score the lower ecological function a community will have. Since the low RV communities have minimal ecological function, removal of these communities would not be anticipated to negatively impact the Study Area.

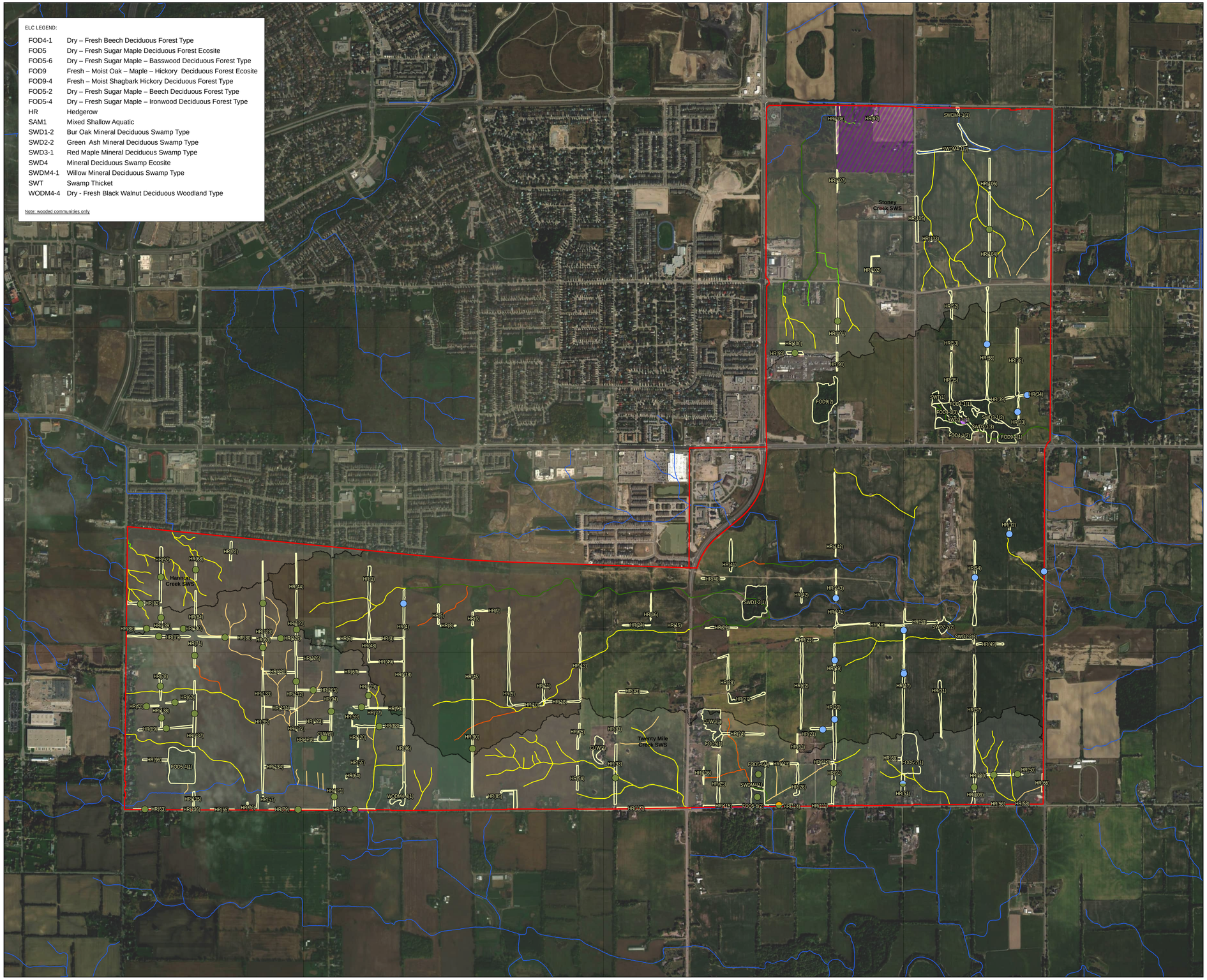
To avoid direct or indirect impacts to wildlife species, vegetation removals must occur outside the breeding bird period (April 1 – August 31), as per the Migratory Birds Convention Act, and the bat roosting period (April 1 – September 30), as per correspondence with MECP, informed by Ontario Recovery Strategies.

Low RV units have low ecological value and can be targeted for removals pending the completion of ongoing surveys. The results of the ongoing surveys may change the scoring of low RV units, which could change the RV Unit classification and subsequently impact management recommendations.

ELC LEGEND:

FOD4-1	Dry – Fresh Beech Deciduous Forest Type
FOD5	Dry – Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-6	Dry – Fresh Sugar Maple – Basswood Deciduous Forest Type
FOD9	Fresh – Moist Oak – Maple – Hickory Deciduous Forest Ecosite
FOD9-4	Fresh – Moist Shagbark Hickory Deciduous Forest Type
FOD5-2	Dry – Fresh Sugar Maple – Beech Deciduous Forest Type
FOD5-4	Dry – Fresh Sugar Maple – Ironwood Deciduous Forest Type
HR	Hedgerow
SAM1	Mixed Shallow Aquatic
SWD1-2	Bur Oak Mineral Deciduous Swamp Type
SWD2-2	Green Ash Mineral Deciduous Swamp Type
SWD3-1	Red Maple Mineral Deciduous Swamp Type
SWD4	Mineral Deciduous Swamp Ecosite
SWDM4-1	Willow Mineral Deciduous Swamp Type
SWT	Swamp Thicket
WODM4-4	Dry - Fresh Black Walnut Deciduous Woodland Type

Note: wooded communities only



LEGEND

Regionally Rare Species[1]

- *Crataegus mollis* (Downy Hawthorn)
- *Crataegus chrysocarpa* (Fireberry Hawthorn)
- *Fraxinus nigra* (Black Ash)
- *Juglans cinerea* (Butternut)
- Watercourse [2]

Headwater Drainage Feature (HDF)

- Conservation
- Protection
- Mitigation
- No Management Required
- Ecological Land Classification (ELC) - *Wooded Community*
- Eastern Meadowlark or Bobolink Habitat
- SWS Boundary
- Study Area

1 - Location is approximate
2 - Land Information Ontario (LIO)

NOTE: The information contained within this figure is preliminary and will be refined during further study.

0 250 500 750 1,000

METRE SCALE

DRAFT

North American Datum 1983
Universal Transverse Mercator Projection Zone 17

Scale: 1:11,000
Page Size: ANSI D (22 x 34 inches)

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CLIENT
Elfrida Community Builders Group Inc.

PROJECT
Elfrida Subwatershed Study
General Vegetation Inventory (GVI)

Stantec
GeoProcess RESEARCH ASSOCIATES
Palmer

TITLE
Existing Environmental Conditions

REF. NO. 2306301-1-1

Figure 2

Document Path: G:\Shared drives\Projects 2023\23063 - Elfrida Community Builders Group Inc\2306301 - Elfrida SWS\GIS\1_Workspace\Task 5 - Figures\(2025-02-20) GeneralVegInventoryFigures\(2025-02-20) GeneralVegInventoryFigures.aprx

5.0 Preliminary GVI Analysis

Table 2 shows the application of the Preliminary GVI framework, while **Figure 3** illustrates the various community characterizations spatially throughout the Study Area. Portions of communities that fall within the municipal ROWs and their associated 3 m setback are denoted by a sub identifier (i.e., HR117**-j**). Communities with a sub identifier are portions of the larger community (within Study Area) that overlap the municipal ROWs (public lands).

Following analysis, a total of 137 communities ranked as High RV Units, 48 ranked as Moderate RV Units, and 26 ranked as Low RV Units. Most of the communities that ranked as High RV scored high as they contain a significant tree or significant feature. These communities represent the highest ecological valued features within the Study Area and therefore require protection.

Relative tree species diversity and presence of native plants were the most reoccurring criteria scored amongst the Moderate RV Units. Most of these communities did not meet the size or width criteria but did meet an average of two (2) out of the ten (10) scored criteria. Further studies are ongoing and may impact or change the final GVI classification.

The Low RV Units either did not meet any of the 10 scored criteria or the presence of dominant invasive species brought down the scoring to a zero, cancelling out a higher score. These communities represent the lowest ecological valued features within the Study Area. These communities could be targeted for removal following the City of Hamilton's *Tree Protection Guidelines* (2010) and City of Hamilton's *Tree By-law 15-125* (2015).

Table 2: GVI Framework Analysis

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
CUW(1)	Twenty Mile Creek	0.589	32.91	N	Deciduous Woodland	<10-24	Y	Open (sub-canopy is high density)	Good	Minimal	Young	Dominant	Minimal (no invasive trees)	Y	Y (Barn Swallow-BASW)	Y	High	
CUW(2)	Twenty Mile Creek	0.335	46.11	N	Deciduous Woodland	<10-24	Y	Medium	Good	Minimal	Young	Dominant	Minimal (one invasive tree species)	N	Y	N	Moderate	
CUW(2a)	Twenty Mile Creek	0.013	3.07	N	Deciduous Woodland/ROW	<10-10	Y	Medium	Good	Some	Mid-aged	Dominant	Minimal	Y – Fireberry Hawthorn	Y	N	High	
CUW1(1)	Twenty Mile Creek/Sinkhole Creek	1.326	83.43	N	Deciduous Woodland	<10->50	Y	Medium	Good	Some	Mid-aged	Dominant	Minimal	N	Y	Y	High	Light grazing present
FOD4-1(1)	Sinkhole Creek	>2	>40	Y	Deciduous Forest	N/D	Y	High	Fair	Important	Mid-aged - Mature	Dominant	Some	Y	Y (EWPE)	Y	High	Contiguous with a Provincially Significant Wetland (PSW), beech bark disease and beach leaf

[1] Diameter breast height means: (i) The diameter of a trunk of a tree including the bark measured at 1.37 metres above the highest point on the tree where the ground meets its trunk; and, (ii) Where there are multiple trunks, the total diameters of the multiple trunks of a tree including the bark measured at 1.37 metres above the highest point on the tree where the ground meets one of those trunks (City of Hamilton, 2010).
[2] Tree condition (vigour, specimen) rated in the following manner: GOOD - dead branches less than 10%; signs of good compartmentalization on any wounds, no structural defects. FAIR - 10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects. POOR - more than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects. DEAD - tree shows no signs of life (City of Hamilton, 2010).
[3] Native Tree: A tree growing naturally in Canada, being indigenous to the Hamilton area (City of Hamilton, 2010).
[4] Invasive Tree Species: A tree species having the tendency to disrupt and/or invade a natural area through natural succession (City of Hamilton, 2010).
[5] Rare or Unusual Tree Species: A tree that may be described as a heritage, historic, landmark, special interest, mature tree, or an interesting or rare species locally that should be protected (City of Hamilton, 2010).
N/D indicates no data.

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
																		disease impacting health of beech-dominated canopy
FOD4-1(2)	Sinkhole Creek	>2	>40	Y	Deciduous Forest	N/D	Y	High	Fair	Important	Mid-aged - Mature	Dominant	Some	N	Y	Y	High	Contiguous with a PSW, beech bark disease and beach leaf disease impacting health of beech-dominated canopy
FOD4-1(3)	Sinkhole Creek	>2	>40	Y	Deciduous Forest	N/D	Y	High	Fair	Important	Mid-aged - Mature	Dominant	Some	N	Y	Y	High	Contiguous with a PSW, beech bark disease and beach leaf disease impacting health of beech-dominated canopy
FOD5(1)	Twenty Mile Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	
FOD5-6(1)	Twenty Mile Creek	1.086	74.78	N	Deciduous Forest/Swamp	<10->50	Y	High	Good	Important	Mature	Dominant	Minimal	Y – Fireberry Hawthorn	Y (Eastern Wood-Pewee (EWPE*),	Y	High	

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
															snags >25 cm DBH)			
FOD5-6(2)	Twenty Mile Creek	0.707	78.5	N	Deciduous Forest/Swamp	<10->50	Y	High	Good	Important	Mature	Dominant	Minimal	Y – Fireberry Hawthorn	Y (EWPE*, snags >25 cm DBH)	Y	High	
FOD5-6(2a)	Twenty Mile Creek	0.707	78.5	N	Deciduous Forest/Swamp	<10->50	Y	High	Good	Important	Mature	Dominant	Minimal	Y – Fireberry Hawthorn	Y (EWPE*, snags>25 cm DBH)	Y	High	
FOD9(1)	Twenty Mile Creek	>2	>40	N	Deciduous Forest	<5-100	Y	High	Fair - Good	Important	Mid-aged - Mature	Dominant	Some	Y	Y (EWPE)	Y	High	Some Bur Oaks ~100 cm DBH
FOD9(2)	Sinkhole Creek	>2	> 40	Y	Deciduous Forest	5-30	Y	Medium	Fair - Good	Some	Young	Dominant	Some	N	Y	N	High	Significant Woodland
FOD9-4(1)	Sinkhole Creek	>2	>40	Y	Deciduous Forest	N/D	Y	High	Good	Important	Mid-aged - Mature	Dominant	Some	N	Y	Y	High	Contiguous with a PSW
FOD9-4(1a)	Sinkhole Creek	<2	<40	N	Deciduous Forest	N/D	Y	High	Good	Important	Mid-aged - Mature	Dominant	Some	N	Y	N	High	Larger woodland contiguous with a PSW
FOD9-4(1b)	Sinkhole Creek	<2	<40	N	Deciduous Forest	N/D	Y	High	Good	Important	Mid-aged - Mature	Dominant	Some	N	Y	N	High	Larger woodland contiguous with a PSW
FODM5-4(1)	Twenty Mile Creek	2.932	139.23	N	Deciduous Forest	25-50	Y	Medium	Good	Minimal	Mature	Dominant	Minimal (none documented)	Y (some trees >50cm DBH)	Y (EWPE heard*)	Y	High	
HR(1)	Sinkhole Creek	< 2	> 10	N	Hedgerow	< 5-40	Y	High	Good	Minimal	Mid-aged	Dominant	Some	N	Y	N	High	Occasional Ash sp. Snags <10cm DBH

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
HR(10)	Sinkhole Creek	< 2	> 10	N	Hedgerow	< 5-25	N	High	Good	Some	Mid-aged	Dominant	Some	N	Y	N	Moderate	
HR(100)	Stoney Creek	0.06	4.74	N	Hedgerow	13-22.5	N	Open	N/D	Minimal	Young	Minimal	Dominant (understory)	N	Y	Y	Low	
HR(101)	Stoney Creek	0.29	11.13	N	Hedgerow	13-42	Y	Open	Good	Minimal	Mid-aged	Dominant	Dominant (understory)	Y – Fireberry Hawthorn	Y	N	High	
HR(102)	Stoney Creek	0.143	6.74	N	Hedgerow	<10-18	Y	Open	Good	Minimal	Young	Dominant	Dominant (understory)	N	Y	Y	Moderate	
HR(102u)	Stoney Creek	0.143	6.74	N	Hedgerow	<10-18	Y	Open	Good	Minimal	Young	Dominant	Dominant (understory)	N	Y	Y	Moderate	
HR(103)	Stoney Creek	0.06	11.01	N	Hedgerow	15-40	Y	Medium	Good	Minimal	Mid-aged	Dominant	Dominant (understory)	N	Y	Y	Moderate	
HR(104)	Stoney Creek	0.451	9.13	N	Hedgerow	<10-27	N	Open	Fair	Minimal	Young	Some	Dominant	Y – Fireberry Hawthorn	Y	N	High	
HR(105h)	Stoney Creek	0.404	15.06	N	Hedgerow	12-24.5	Y	Medium	Good	Minimal	Young	Dominant	Dominant (understory)	N	Y	N	Moderate	
HR(106)	Stoney Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	
HR(107)	Stoney Creek	0.075	5.63	N	Hedgerow	<10-36	Y	Open	Good	Minimal	Mid-aged	Some	Dominant (understory)	Y	Y (Downy Hawthorn and Fireberry Hawthorn - designation 'h')	Y	High	
HR(108)	Stoney Creek	0.324	12.28	N	Hedgerow	12-55	Y	Medium	Good	Some	Mature	Dominant	Dominant (understory)	N	Y	Y	Moderate	

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
HR(108v)	Stoney Creek	0.324	12.28	N	Hedgerow	12-55	Y	Medium	Good	Some	Mature	Dominant	Dominant (understory)	N	Y	Y	Moderate	
HR(109)	Twenty Mile Creek	0.212	12.32	N	Hedgerow	18-80	Y	Medium	Good	Minimal	Mature	Dominant	Dominant (understory)	Y – Fireberry Hawthorn	Y	Y	High	
HR(109w)	Twenty Mile Creek	0.212	12.32	N	Hedgerow	18-80	Y	Medium	Good	Minimal	Mature	Dominant	Dominant (understory)	Y – Fireberry Hawthorn	Y	Y	High	
HR(11)	Sinkhole Creek	< 2	> 10	N	Deciduous Hedgerow	< 5-25	N	High	Good	Some	Mid-aged	Dominant	Some	N	Y	N	Moderate	
HR(110)	Twenty Mile Creek	0.225	11.22	N	Hedgerow	<10-22	Y	Open	Good	Minimal	Mid-aged	Some	Dominant (understory)	Y – Fireberry Hawthorn	Y	N	High	
HR(111)	Twenty Mile Creek	0.034	3.9	N	Hedgerow	<10-52	N	Open	Good	Minimal	Mid-aged	Dominant	Dominant (understory)	Y – Fireberry Hawthorn	Y	N	High	
HR(111i)	Twenty Mile Creek	0.034	3.9	N	Hedgerow	<10-52	N	Open	Good	Minimal	Mid-aged	Dominant	Dominant (understory)	Y – Fireberry Hawthorn	Y	N	High	
HR(112)	Twenty Mile Creek	0.105	11.19	N	Hedgerow	10-60	Y	Medium	Good	Important (identified as primary linkage; connected to forest and wetland feature)	Mature	Dominant	Dominant (understory)	N	Y	Y	High	
HR(113)	Twenty Mile Creek	0.144	8.13	N	Hedgerow	13-36	Y	Open (sub-canopy)	Good	Important (identified as a primary linkage; connected to a	Mid-aged	Dominant	Some (ground cover)	N	Y	N	Moderate	

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
										significant woodland)								
HR(114)	Twenty Mile Creek	0.091	6.26	N	Hedgerow	<10-69	Y	Medium (sub-canopy)	Good	Some (connected to a forest)	Mid-aged	Dominant	Dominant (understory)	Y (Hybrid Butternut in understory and Fireberry Hawthorn)	Y	Y	High	
HR(114x)	Twenty Mile Creek	0.091	6.26	N	Hedgerow	<10-69	Y	Medium (sub-canopy)	Good	Some (connected to a forest)	Mid-aged	Dominant	Dominant (understory)	Y (Hybrid Butternut in understory and Fireberry Hawthorn)	Y	Y	High	
HR(115)	Twenty Mile Creek	0.205	8.17	N	Hedgerow	18-45	Y	Medium (sub-canopy)	Fair	Some	Mid-aged	Dominant	Some (understory)	Y	Y (EWPE*; snags)	Y	High	
HR(115y)	Twenty Mile Creek	0.205	8.17	N	Hedgerow	18-45	Y	Medium (sub-canopy)	Fair	Some	Mid-aged	Dominant	Some (understory)	Y	Y (EWPE*; snags)	Y	High	
HR(116)	Twenty Mile Creek	0.064	6.31	N	Hedgerow	<10-14	N	Medium (sub-canopy)	Fair	Minimal	Young	Some	Dominant (understory)	N	Y	N	Low	
HR(117)	Twenty Mile Creek	0.217	6.38	N	Hedgerow	<10-43	Y	Open	Good	Minimal	Mid-aged	Dominant	Some (understory)	N	Y	N	Moderate	
HR(117j)	Twenty Mile Creek	0.217	6.38	N	Hedgerow	<10-43	Y	Open	Good	Minimal	Mid-aged	Dominant	Some (understory)	N	Y	N	Moderate	
HR(118)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	N/D	N/D	Medium	Fair - Good	Minimal	N/D	Some	Some	N/D	Y	N	Low	
HR(119)	Twenty Mile Creek	0.072	5.38	N	Hedgerow	N/D	Y	Open	Good	Some	Young	Minimal	Dominant (understory, ground)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
HR(12)	Sinkhole Creek	< 2	> 10	N	Deciduous Hedgerow	< 5-30	N	Open	Poor	Minimal	Mid-aged	Dominant	Some	N	Y	N	Moderate	Majority of White Ash in canopy are dead snags
HR(120)	Twenty Mile Creek	0.084	7.33	N	Hedgerow	<10 - 24	Y	Open	Good	Some	Young	Some (sub-canopy, understory)	Dominant (understory)	N	Y	N	Low	
HR(121)	Twenty Mile Creek	0.113	7.98	N	Hedgerow	<10-40	Y	High	Good	Some	Mid-aged	Some	Some	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(121k)	Twenty Mile Creek	0.113	7.98	N	Hedgerow	<10-40	Y	High	Good	Some	Mid-aged	Some	Some	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(122)	Twenty Mile Creek	0.121	10.65	N	Hedgerow	<10-25	Y	Open	Good	Some	Mid-aged	Dominant	Some (understory)	N	Y	Y	High	
HR(123)	Twenty Mile Creek	0.192	10.21	N	Hedgerow	<10-43	Y	Open	Good	Some	Mid-aged	Some	Some	N	Y	N	Moderate	
HR(124)	Twenty Mile Creek	0.133	12.38	N	Hedgerow	<10-41	Y	Open	Good	Some	Mid-aged	Dominant (canopy, sub-canopy)	Dominant (understory)	N	Y	Y	Moderate	
HR(125)	Twenty Mile Creek	0.182	9.42	N	Hedgerow	10-38	Y	Open	Good	Some (connected to multiple other hedgerows. HDF crosses it)	Mid-aged	Some (sub-canopy, understory)	Dominant (understory, ground)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(125z)	Twenty Mile Creek	0.182	9.42	N	Hedgerow	10-38	Y	Open	Good	Some (connected to multiple other	Mid-aged	Some (sub-canopy, understory)	Dominant (understory, ground)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
										hedgerows. HDF crosses it)								
HR(126)	Twenty Mile Creek	0.103	10.69	N	Hedgerow	8-39	Y	Open	Good	Some (connected to multiple other hedgerows)	Mid-aged	Some (Canopy, sub-canopy, understory)	Some (Understory)	N	Y	N	Moderate	
HR(127)	Twenty Mile Creek/Sinkhole Creek	0.088	9.34	N	Hedgerow	<10	Y	Open	Good	Some	Young	Some (Sub-canopy, understory)	Dominant (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(128)	Hannon Creek/Twenty Mile Creek	0.468	10.56	N	Hedgerow	<10-75	Y	Medium	Good	Some	Mid-aged - mature	Dominant (canopy, sub-canopy, understory)	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(129)	Twenty Mile Creek	0.178	8.21	N	Hedgerow	<10-24	N	Open	Good	Some (connected to other hedgerows)	Mid-aged	Some (Canopy, sub-canopy, understory)	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(13)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	< 5-50	Y	Medium	Fair - Good	Minimal	Mid-aged	Dominant	Some	N	Y	N	Moderate	
HR(130)	Twenty Mile Creek	0.248	13.47	N	Hedgerow	10-39	Y	Open	Good	Some (connected to other hedgerows, and HDFs)	Mid-aged	Some (canopy, sub-canopy, understory)	Dominant (understory)	N	Y	N	Moderate	
HR(131)	Twenty Mile Creek	0.129	7.3	N	Hedgerow	10-32	Y	Open	Good	Some (connected to multiple hedgerows)	Mid-aged	Some (sub-canopy, understory)	Some (understory)	N	Y	Y	Moderate	
HR(132)	Twenty Mile Creek	0.449	11.07	N	Hedgerow	13-55	Y	Open	Good	Some	Mid-aged	Some (canopy, sub-	Dominant (understory)	Y (Fireberry Hawthorn –	Y	N	High	

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												canopy, understory)		designation 'h')				
HR(133)	Twenty Mile Creek	0.216	9.81	N	Hedgerow	<10-47	N	Open	Good	Some (connected to multiple hedgerows and connected to primary linkage)	Mid-aged	Some (canopy, sub-canopy, understory)	Dominant (understory)	N	Y	N	Low	
HR(134)	Twenty Mile Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	
HR(135)	Twenty Mile Creek	0.1	10.25	N	Hedgerow	10-80	Y	Open	Good	Important (connected to woodland, meadow marsh, and tributary of Twenty Mile Creek)	Mid-aged - Mature	Some (Canopy, Sub-canopy, understory)	Some (understory)	N	Y	Y	High	
HR(136)	Twenty Mile Creek	0.1	10.25	N	Hedgerow	10-80	Y	Open	Good	Important (connected to woodland, meadow marsh, and tributary of Twenty Mile Creek)	Mid-aged - Mature	Some (Canopy, Sub-canopy, understory)	Some (understory)	N	Y	Y	High	
HR(136l)	Twenty Mile Creek	0.042	5.73	N	Hedgerow	12-33	Y	Open	Good	Some (connected to important linkage and meadow marsh)	Mid-aged	Some (sub-canopy, understory)	Dominant (understory)	N	Y	Y	Moderate	

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HR(137)	Twenty Mile Creek	0.581	15.21	N	Hedgerow	19-44	Y	Open	Good	Important (connected to significant woodland)	Mid-aged	Dominant	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(138)	Twenty Mile Creek	0.097	8.78	N	Hedgerow	<10-20	N	Open	Good	Minimal	Young	Dominant (sub-canopy, understory)	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(139)	Hannon Creek/Twenty Mile Creek	0.149	12.24	N	Hedgerow	2 – 29	Y	Open	Good	Some (connected to wetland complex)	Mid-aged	Dominant	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(14)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	< 5-20	N	Open	Fair - Good	Minimal	Young	Some	Dominant	N	Y	N	Low	
HR(140)	Twenty Mile Creek	0.087	6.88	N	Hedgerow	9 – 24	N	Open	Good	Some (adjacent to shrub thicket)	Mid-aged	Minimal	Dominant	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(141)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	15-Oct	Y	N/D	Fair - Good	N	N/D	Dominant	Some	Y	Y	Y	High	
HR(142)	Sinkhole Creek	<2	< 10	N	Deciduous Hedgerow	5-40	Y	Medium	Fair - Good	Some	Young	Dominant	Some	N	Y	N	Moderate	
HR(143)	Sinkhole Creek	<2	< 10	N	Deciduous Hedgerow	5-15	Y	High	Fair - Good	Some	Young	Dominant	Some	Y	Y	Y	High	
HR(15)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	< 5-10	N	Open	Fair - Good	Minimal	Pioneer	Some	Some	N	Y	N	Low	Shrub species
HR(16)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	< 5-15	Y	Medium	Good	Minimal	Young	Some	Dominant	N	Y	Y	Moderate	

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HR(17)	Sinkhole Creek/Twenty Mile Creek	<2	<10	N	Deciduous Hedgerow	<5-70	Y	Medium	Fair - Good	Some	Mid-aged	Dominant	Some	Y	Y	Y	High	
HR(18)	Sinkhole Creek	<2	<10	N	Deciduous Hedgerow	N/D	Y	N/D	Fair - Good	Minimal	N/D	Dominant	Some	Y	Y	N	High	Downy Hawthorn
HR(19)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	<5-30	Y	Medium	Fair - Good	Some	Young	Dominant	Some	Y	Y	Y	High	Downy Hawthorn
HR(2)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	< 5-30	N	Open	Fair - Good	Minimal	Young	Some	Dominant	N	Y	N	Low	Gaps, abundant European Buckthorn
HR(20)	Sinkhole Creek/Twenty Mile Creek	<2	>10	N	Deciduous Hedgerow	<5-50	Y	N/D	Fair - Good	Some	Mid-aged	Dominant	Some	Y	Y	Y	High	Downy Hawthorn
HR(21)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	<5-40	Y	N/D	Fair - Good	Some	Mid-aged	Dominant	Minimal	N	Y	Y	High	
HR(22)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	N/D	N	Medium	Fair - Good	Some	Mid-aged	Minimal	Dominant	N	Y	Y	Moderate	
HR(23)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	N/D	N	Medium	Fair - Good	Some	Mid-aged	Minimal	Dominant	N	Y	Y	Moderate	
HR(24)	Twenty Mile Creek	0.295	11.97	N	Hedgerow	10-32	Y	Medium	Good	Some (connected to FOD5-6 through HR(25) and HR(115))	Mid-aged	Dominant	Dominant (understory)	N	Y	N	Moderate	
HR(25)	Twenty Mile Creek	0.394	13.3	N	Hedgerow	10-52	Y	Open	Good	Some (connected to other hedgerows)	Mid-aged	Dominant	Dominant (understory)	Y	Y (EWPE*)	Y	High	

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HR(26)	Twenty Mile Creek	0.247	13.43	N	Hedgerow	8-70	Y	Medium (sub-canopy)	Good	Some (connected to a primary linkage)	Mid-aged	Dominant	Dominant (understory)	N	Y	Y	Moderate	
HR(27)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	<5-40	Y	N/D	Fair - Good	Minimal	Young	Dominant	Some	N	Y	N	Moderate	
HR(28)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	<5-40	Y	N/D	Fair - Good	Minimal	Young	Dominant	Some	N	Y	N	Moderate	
HR(29)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	<5-40	Y	N/D	Fair - Good	Important	Young	Dominant	Some	N	Y	Y	High	Locally significant wetland, gaps
HR(3)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	< 5-50	Y	Medium	Fair - Good	Minimal	Mid-aged	Dominant	Some	N	Y	N	Moderate	
HR(30)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	<5-15	Y	Medium	Fair - Good	Important	Young	Dominant	Some	N	Y	Y	High	Locally significant wetland
HR(31)	Sinkhole Creek/Twenty Mile Creek	<2	>10	N	Deciduous Hedgerow	<5-20	Y	Medium	Fair - Good	Minimal	Mid-aged	Dominant	Some	Y	Y	N	High	Downy Hawthorn
HR(32)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	N/D	Y	Medium	Fair - Good	Minimal	N/D	Dominant	Some	Y	Y	N	High	Gaps, Downy Hawthorn
HR(33)	Sinkhole Creek	<2	<10	N	Deciduous Hedgerow	N/D	N	N/D	Fair - Good	Some	N/D	Dominant	Minimal	Y	Y	Y	High	
HR(34)	Sinkhole Creek	<2	<10	N	Deciduous Hedgerow	N/D	Y	N/D	Fair - Good	Some	N/D	Dominant	Minimal	Y	Y	N	High	
HR(35)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	N/D	N	Medium	Fair - Good	Important	Young	Minimal	Dominant	N	Y	Y	Moderate	Contiguous with a PSW

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HR(36)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	25	Y	N/D	Fair - Good	Some	N/D	Dominant	Some	N	Y	Y	High	
HR(36m)	Stoney Creek	<2	>10	N	Deciduous Hedgerow	25	Y	N/D	Fair - Good	Some	N/D	Dominant	Some	N	Y	Y	High	
HR(37)	Sinkhole Creek/Twenty Mile Creek	<2	>10	N	Deciduous Hedgerow	<5-50	Y	Medium	Fair - Good	Some	Mid-aged	Dominant	Some	N	Y	Y	High	
HR(38)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	N/D	Y	Medium	Fair - Good	Minimal	Young	Dominant	Minimal	Y	Y	N	High	
HR(39)	Sinkhole Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	Cleared
HR(4)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	< 5-80	Y	Medium	Fair - Good	Some	Mid-aged	Dominant	Some	Y	Y	N	High	Downy Hawthorn
HR(40)	Sinkhole Creek	< 2	> 10	N	Deciduous Hedgerow	< 10	N	Open	Fair - Good	Minimal	Pioneer	Some	Dominant	N	Y	N	Low	Shrub species, hydro tower
HR(41)	Sinkhole Creek	< 2	> 10	N	Deciduous Hedgerow	< 5-10	N	Medium	Fair - Good	Minimal	Pioneer	Some	Dominant	N	Y	N	Low	Many species are shrubs, shed
HR(42)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	10-30	Y	Open	Fair - Good	Minimal	Young	Dominant	Some	N	Y	Y	Moderate	Gaps
HR(43)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	15-35	N	Open	Good	Minimal	Mid-aged	Dominant	Some	N	Y	N	Moderate	Gaps, planted Freeman's Maple
HR(44)	Upper Davis Creek/Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	< 5-20	Y	Open	Fair - Good	Minimal	Young	Some	Some	N	Y	N	Moderate	Gaps

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HR(45)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	N/D	N/D	Open	Fair - Good	Some	Young	Some	Some	N	Y	Y	Moderate	
HR(46)	Twenty Mile Creek/Sinkhole Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	
HR(47)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	N/D	N/D	Open	Fair - Good	Minimal	Young	Some	Some	N/D	Y	N	Low	
HR(48)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	N/D	N/D	Open	Fair - Good	Minimal	Young	Some	Some	N/D	Y	N	Low	
HR(49)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	< 10-35	N	Open	Poor	Minimal	Mid-aged - Mature	Some	Some	N	Y	N	Low	Canopy dominated by dead and dying Ash sp.
HR(5)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	N/D	N	Medium	Fair - Good	Minimal	Young	Some	Dominant	N	Y	N	Low	
HR(50)	Twenty Mile Creek	0.0508	11.22	N	Hedgerow	<10-22	Y	Open		Minimal	Mid-aged	Some	Dominant (understory)	Y – Fireberry Hawthorn	Y	Y	High	
HR(51)	Twenty Mile Creek	0.226	19.38	N	Hedgerow	15-70	Y	High	Good	Important	Mid-aged - mature	Dominant	Some (understory)	Y – (Fireberry Hawthorn and Downy Hawthorn – designation ‘h’)	Y (snags, EWPE*)	Y	High	
HR(52)	Stoney Creek/Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	N/D	N	Medium	Fair - Good	Important	Young	Minimal	Dominant	N	Y	Y	High	Contiguous with a PSW
HR(52n)	Stoney Creek	<2	>10	N	Deciduous Hedgerow	N/D	N	Medium	Fair - Good	Important	Young	Minimal	Dominant	N	Y	Y	High	

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HR(53)	Sinkhole Creek	<2	>10	N	Deciduous Hedgerow	N/D	N	Medium	Fair - Good	Important	Young	Minimal	Dominant	N	Y	Y	High	Contiguous with a PSW
HR(54)	Sinkhole Creek	<2	> 10	N	Deciduous Hedgerow	20-30	Y	Open	Fair - Good	Some	Young	Dominant	Some	Y	Y	N	High	
HR(55)	Twenty Mile Creek	0.029	5.75	N	Hedgerow	10-65	Y	Medium	Good	Important	Mature	Dominant	Some (understory)	Y	Y (bats have been seen going in and out of large silver maples according to landowner, BASW, Savannah Sparrow (SASP*), SWH bat habitat >25cm DBH)	N	High	
HR(56)	Twenty Mile Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	
HR(56a)	Twenty Mile Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	
HR(57)	Twenty Mile Creek	0.037	4.98	N	Hedgerow	10-45	Y	Medium	Good	Minimal	Mid-aged	Dominant	Some (understory)	N	Y	Y	Moderate	
HR(58)	Twenty Mile Creek	0.037	5.07	N	Hedgerow	12-40	Y	Open	Good	Minimal	Mid-aged	Dominant	Dominant (understory)	N	Y	N	Low	

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HR(58b)	Twenty Mile Creek	0.037	5.07	N	Hedgerow	12-40	Y	Open	Good	Minimal	Mid-aged	Dominant	Dominant (understory)	N	Y	N	Low	
HR(59)	Twenty Mile Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	
HR(6)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	N/D	N	Medium	Fair - Good	Minimal	Young	Some	Dominant	N	Y	N	Low	Eastern Bluebird nesting boxes
HR(60)	Twenty Mile Creek	0.065	6.89	N	Hedgerow	N/A	N	Open	Good	Minimal	Young	Some (understory)	Dominant (understory, ground cover)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(61)	Sinkhole Creek/Twenty Mile Creek	<2	<10	N	Deciduous Hedgerow	<10	N/D	Open	N/D	Minimal	Pioneer	N/D	N/D	N/D	Y	N	Low	Open cover with little woody plant cover
HR(62)	Twenty Mile Creek	0.075	6.58	N	Hedgerow	<10-16	N	Open	Good	Minimal	Young	Minimal (sub-canopy)	Dominant (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(63c)	Twenty Mile Creek	0.078	5.22	N	Hedgerow	16-31	N	Open	Good	Minimal	Young	Some	Dominant (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(64)	Twenty Mile Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	
HR(65d)	Twenty Mile Creek	0.081	5.84	N	Hedgerow	10-25	Y	Open	Good	Some (connected to meadow marsh)	Young	Some (sub-canopy, understory)	Some (understory)	N	Y	Y	Moderate	
HR(66)	Twenty Mile Creek	0.054	5.09	N	Hedgerow	10-26	N	Open	Good	Minimal	Young	Some	Dominant (understory)	N	Y	N	Low	

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HR(66o)	Twenty Mile Creek	0.054	5.09	N	Hedgerow	10-26	N	Open	Good	Minimal	Young	Some	Dominant (understory)	N	Y	N	Low	
HR(67)	Twenty Mile Creek	0.092	5.28	N	Hedgerow	N/A	N	Open	Good	Minimal	Young	Some	Dominant (understory)	N	Y	N	Low	
HR(68)	Hannon Creek	0.103	8.14	N	Hedgerow	N/A	N	Open	N/A	Minimal	N/A	Minimal	Dominant (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(69)	Twenty Mile Creek	0.112	14.43	N	Hedgerow	<10-25	Y	Open	Good	Minimal	Mid-aged	Dominant	Some (sub-canopy)	N	Y	N	Moderate	
HR(7)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	N/D	N	Medium	Fair - Good	Minimal	Young	Some	Some	N	Y	N	Low	
HR(70)	Twenty Mile Creek	0.113	8.47	N	Hedgerow	22-28	N	Open	Good	Minimal	Mid-aged	Minimal	Dominant (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(71)	Twenty Mile Creek	0.128	8.8	N	Hedgerow	12-33	Y	Open	Good	Minimal	Mid-aged	Dominant (sub-canopy)	Dominant (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(72)	Hannon Creek	0.134	11.86	N	Hedgerow	N/A	N	Open	N/A	Minimal	N/A	Minimal	Some (understory)	N	Y	Y	Moderate	
HR(73)	Twenty Mile Creek/Sinkhole Creek	0.143	7.39	N	Hedgerow	N/A	N	No trees - understory only	N/A	Minimal	N/A	Some	Some	N	Y	N	Low	
HR(74)	Twenty Mile Creek	0.147	10.3	N	Hedgerow	10-73	N	High (sub-canopy)	Good	Minimal	Mid-aged	Dominant (canopy and sub-canopy)	Dominant (understory)	N	Y	N	Moderate	

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
HR(75)	Twenty Mile Creek	0.151	10.1	N	Hedgerow	12-48	Y	Medium (sub-canopy)	Good	Minimal	Mid-aged	Dominant	Some (understory)	N	Y	N	Moderate	
HR(76)	Twenty Mile Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	
HR(76p)	Twenty Mile Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/D	
HR(77)	Twenty Mile Creek	0.101	11.46	N	Hedgerow	<10	N	Open	Good	Some	Young	Some	Dominant (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(78)	Twenty Mile Creek	0.177	11	N	Hedgerow	<10	N	No trees - Dogwood dominated	N/A	Minimal	Mid-aged	Dominant (understory)	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(79e)	Twenty Mile Creek	0.191	5.61	N	Hedgerow	10-48	Y	Open	Good	Minimal	Mid-aged	Dominant	Dominant (understory)	Y - Fireberry Hawthorn	Y	N	High	
HR(8)	Sinkhole Creek	< 2	< 10	N	Deciduous Hedgerow	< 5-15	Y	Medium	Fair - Good	Minimal	Young	Some	Dominant	N	Y	N	Low	
HR(80)	Twenty Mile Creek	0.226	6.52	N	Hedgerow	20-36	N	Open	Good	Some (connects wetland complex and several hedgerows)	Mid-aged	Dominant (canopy)	Dominant (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(81)	Sinkhole Creek/Twenty Mile Creek	< 2	< 10	N	Deciduous Hedgerow	15-35	N	Open	Good	Minimal	Mid-aged	Dominant	Some	N	Y	N	Moderate	Gaps, planted Freeman's Maple
HR(82)	Hannon Creek	0.239	15.26	N	Hedgerow	12-47	Y	Open	Good	Important	Mid-aged	Some - dominant	Some	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	

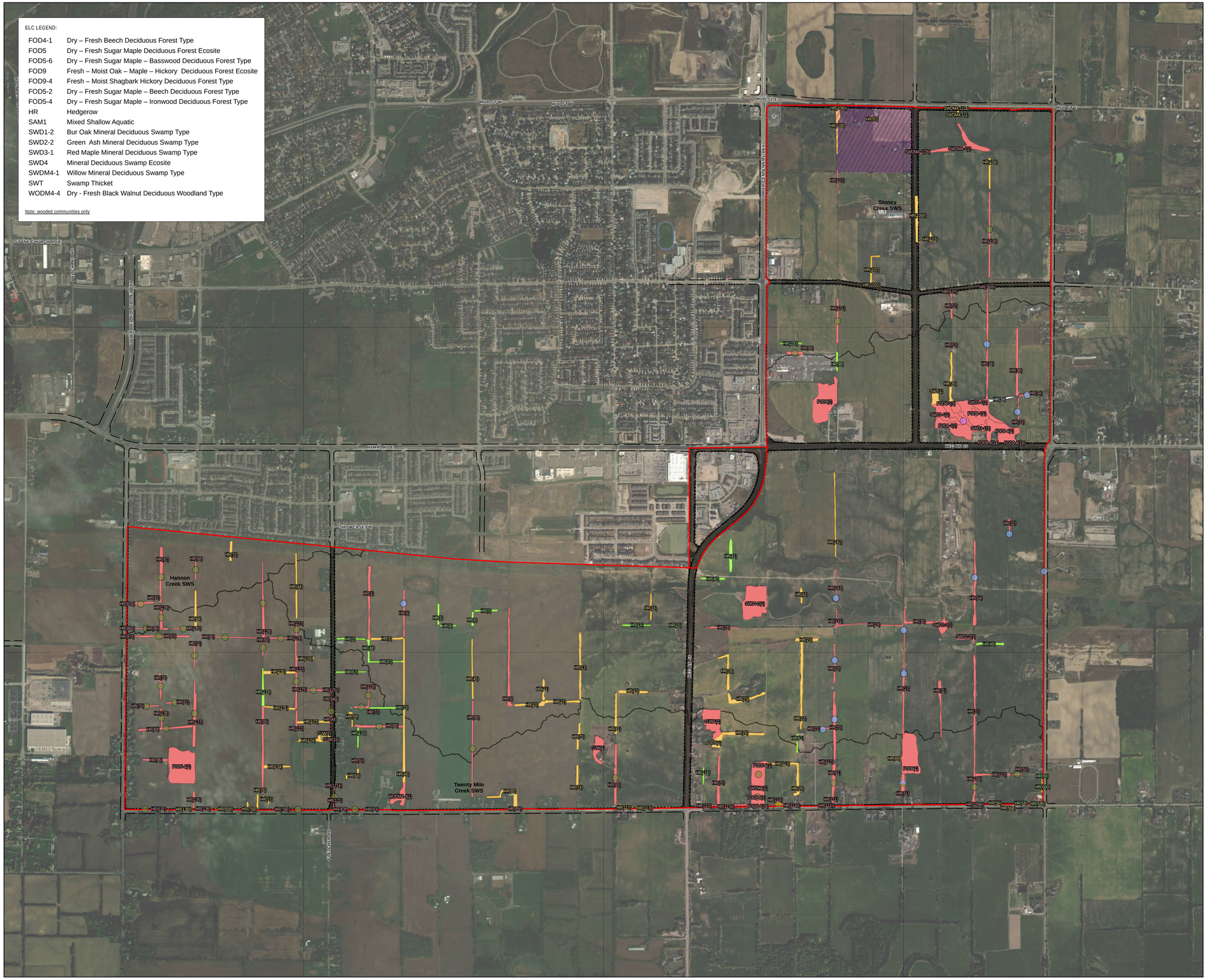
Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
HR(82q)	Hannon Creek	0.239	15.26	N	Hedgerow	12-47	Y	Open	Good	Important	Mid-aged	Some - dominant	Some	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(83)	Twenty Mile Creek	0.121	5.28	N	Hedgerow	<10-50	Y	Medium	Good	Minimal	Mature	Dominant (canopy, sub-canopy, understory, ground)	Minimal	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(83f)	Twenty Mile Creek	0.121	5.28	N	Hedgerow	<10-50	Y	Medium	Good	Minimal	Mature	Dominant (canopy, sub-canopy, understory, ground)	Minimal	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(84)	Hannon Creek/Twenty Mile Creek	0.325	10.98	N	Hedgerow	10-24	Y	High (sub-canopy)	Good	Minimal	Mid-aged	Dominant	Some (understory)	N	Y	N	Moderate	
HR(85)	Twenty Mile Creek	0.325	10.98	N	Hedgerow	10-24	Y	High (sub-canopy)	Good	Minimal	Mid-aged	Dominant	Some (understory)	N	Y	N	High	
HR(85r)	Twenty Mile Creek	0.179	7.63	N	Hedgerow	10-24	Y	Open	Fair	Some (connected to another hedgerow and backs onto thicket)	Mid-aged	Dominant (canopy)	Dominant (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(86)	Hannon Creek/Twenty Mile Creek	0.179	7.63	N	Hedgerow	8-71	Y	Open	Fair	Some (connected to another hedgerow and backs onto thicket)	Mid-aged	Dominant (canopy)	Dominant (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
HR(86s)	Hannon Creek	0.365	9.99	N	Hedgerow	8 – 57	Y	Open	Good	Some (connected to shrub thicket)	Mid-aged	Dominant	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(87)	Twenty Mile Creek	0.365	9.99	N	Hedgerow	8 – 57	Y	Open	Good	Some (connected to shrub thicket)	Mid-aged	Dominant	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(87t)	Twenty Mile Creek	0.349	12.23	N	Hedgerow	10-67	Y	Medium	Fair (5 40cm+ oak snags)	Some	Mature	Dominant	Minimal	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(88)	Twenty Mile Creek	0.325	10.98	N	Hedgerow	10-24	Y	High (sub-canopy)	Good	Minimal	Mid-aged	Dominant	Some (understory)	N	Y	N	Moderate	
HR(89)	Twenty Mile Creek	0.346	10.94	N	Hedgerow	17-50	Y	Open	Good	Some (connected to other hedgerows)	Mid-aged - mature	Dominant	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(9)	Sinkhole Creek	< 2	> 10	N	Deciduous Hedgerow	< 5-25	Y	High	Good	Some	Mid-aged	Dominant	Some	N	Y	N	High	Abundant mature, native trees
HR(90)	Sinkhole Creek/Twenty Mile Creek	0.451	8.08	N	Hedgerow	7-33	Y	Medium (high density sub-canopy)	Good	Some (connected to primary linkage)	Mid-aged	Some (sub-canopy)	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	Y	High	
HR(91)	Twenty Mile Creek	0.38	16.48	N	Hedgerow	10-55	Y	High	Good	Important (connected to woodland and other linkages)	Mature	Dominant	Minimal	Y (Fireberry Hawthorn – designation ‘h’)	Y (EWPE*)	Y	High	
HR(92)	Hannon Creek	0.497	15.33	N	Hedgerow	>10-25	Y	Medium	Good	Some	Mature	Dominant	Minimal (understory)	Y (Fireberry Hawthorn –	Y	Y	High	

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
														designation ‘h’)				
HR(93)	Twenty Mile Creek	0.498	14.33	N	Mixed Hedgerow	20-31	Y	Medium	Good	Some (coverage via coniferous trees and pond next to hedgerow)	Mid-aged - mature	Dominant	Some	Y	Y (BASW)	Y	High	
HR(94)	Twenty Mile Creek	0.163	6.82	N	Hedgerow	10-48	Y	Medium	Good	Some	Mid-aged	Dominant	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(94g)	Twenty Mile Creek	0.163	6.82	N	Hedgerow	10-48	Y	Medium	Good	Some	Mid-aged	Dominant	Some (understory)	Y (Fireberry Hawthorn – designation ‘h’)	Y	N	High	
HR(95)	Twenty Mile Creek	0.603	11.95	N	Hedgerow	<10-50	Y	High (sub-canopy)	Good	Some	Mid-aged	Dominant	Minimal (understory)	N	Y	Y	High	
HR(96)	Twenty Mile Creek	0.169	11.62	N	Hedgerow	10-26	Y	N/A	Good	Important (east-west linkage between woodland and treed backyards and other woodlands on Trinity Church Road)	Young	Some	Some (understory)	N	Y	Y	High	
HR(97)	Stoney Creek	0.02	4.95	N	Hedgerow	<10-60	Y	Open	Good	Minimal	Young	Dominant	Dominant (Sub-canopy)	N	Y	Y	Moderate	

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
HR(98)	Sinkhole Creek/Stoney Creek	< 2	< 10	N	Deciduous Hedgerow	<10-30	Y	Open	Good	Minimal	Young - Mid-aged	Some	Dominant	N	Y	N	Low	Invasive Common Reed occasional in understory
HR(99)	Stoney Creek	0.158	17	N	Hedgerow	<10-24	N	Open	Good	Minimal	Young	Some	Some	Y – Fireberry Hawthorn	Y	N	High	
SWD1-2(1)	Sinkhole Creek	>2	>40	Y	Deciduous Swamp	N/D	Y	Medium	Fair - Good	Some	Mature	Dominant	Minimal	Y	Y (EWPE)	Y	High	
SWD2-2(2)	Sinkhole Creek	<2	>40	N	Deciduous Swamp	N/D	Y	Open	Fair - Good	Important	Young	Dominant	Minimal	N	Y	Y	High	Locally significant wetland
SWD2-2(3)	Sinkhole Creek	<2	>40	N	Deciduous Swamp	N/D	Y	Open	Fair - Good	Important	Young	Dominant	Minimal	N	Y	Y	High	Locally significant wetland
SWD3-1(1)	Sinkhole Creek	>2	>40	Y	Deciduous Swamp	N/D	Y	High	Good	Important	Mid-aged - Mature	Dominant	Some	N	Y	Y	High	PSW
SWD3-1(2)	Sinkhole Creek	>2	>40	Y	Deciduous Swamp	N/D	Y	High	Good	Important	Mid-aged - Mature	Dominant	Some	N	Y	N	High	PSW
SWD3-1(3)	Sinkhole Creek	>2	>40	Y	Deciduous Swamp	N/D	Y	High	Good	Important	Mid-aged - Mature	Dominant	Some	N	Y	Y	High	PSW
SWDM4(1)	Twenty Mile Creek	0.166	21.71	N	Deciduous Swamp	<10-50	Y	High	Good	Important	Mature	Dominant	Minimal	Y (some trees >50cm DBH)	Y (SWH bats, EWPE*)	Y	High	
SWDM4-1(1)	Stoney Creek	0.019	7.53	N	Deciduous Swamp	<10-24	Y	Medium	Good	Some	Mid-aged	Dominant (canopy, ground)	Minimal (understory, ground cover)	N	Y	Y	Moderate	

Unit Identifier	**Subwatershed**	**Unit Size** (ha)	**Minimum Average Width** (m)	**Interior Forest** (≥ 100 m from edge – Y/N)	**Vegetation Features/Type** (e.g., coniferous, deciduous, hedgerow, swamp, etc.)	**Approx. DBH Range** (cm)[1]	**Relative Tree Species Diversity** (Y/N)	**Overall Tree Density** (high, medium, open)	**General Condition of Treed Community** (good, fair, poor)[2]	**Linkage Function** (minimal, some, important)	**Maturity of Woody Plants** (pioneer, young, mid-aged, mature)	**Presence of Native Trees in Canopy** (minimal, some, dominant, unknown)[3]	**Presence of Invasive Plants** (minimal, some, dominant, unknown)[4]	**Significant Trees** (SAR trees, regionally/locally rare trees, Special Concern bird habitat – Y/N)[5]	**Wildlife Attributes** (SWH/SAR species – Y/N)	**Proximity to Water** (Y/N)	**Retention Value** (high, medium, low)	**Comments**
SWDM4-1(1a)	Stoney Creek	0.023	14.76	N	Deciduous Swamp	<10-24	Y	Medium	Good	Some	Mid-aged	Dominant (canopy, ground)	Minimal (understory, ground cover)	N	Y	Y	Moderate	
SWDM4-1(2)	Stoney Creek	1.108	27.52	N	Deciduous Swamp	<10-24	Y	Medium	Good	Some	Mid-aged	Dominant (canopy, ground)	Minimal (understory, ground cover)	N	Y	Y	High	Locally significant wetland
SWDM4-1(2b)	Stoney Creek	1.108	27.52	N	Deciduous Swamp	<10-24	Y	Medium	Good	Some	Mid-aged	Dominant (canopy, ground)	Minimal (understory, ground cover)	N	Y	Y	Moderate	
SWT(1)	Sinkhole Creek	<2	<40	N	Deciduous Thicket Swamp	N/D	N/D	Medium	N/D	Some	Young	N/D	N/D	N/D	Y	Y	Moderate	PSW - No access to property
WODM4-4(1)	Twenty Mile Creek	0.486	35.5	N	Deciduous Woodland	10-50	N (only black walnut trees)	High	Good	Minimal	Young	Dominant	Minimal (no invasive trees)	Y	Y (EWPE*)	Y	High	



LEGEND

Regionally Rare Species[1]

- *Crataegus mollis* (Downy Hawthorn)
- *Crataegus chrysocarpa* (Fireberry Hawthorn)
- *Fraxinus nigra* (Black Ash)
- *Juglans cinerea* (Butternut)
- Existing ROW
- ROW Buffer (0-3 m)
- Eastern Meadowlark or Bobolink Habitat
- SWS Boundary
- Study Area

General Vegetation Inventory (GVI)

Retention Value

- Low
- Moderate
- High
- N/A - Cleared Area

1 - Location is approximate

NOTE: The information contained within this figure is preliminary and will be refined during further study.

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METRE SCALE

DRAFT

North American Datum 1983
Universal Transverse Mercator Projection Zone 17

Scale: 1:11,000
Page Size: ANSI D (22 x 34 inches)

Drawn: SM
Checked: DJ
Date: Mar 7, 2025

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CLIENT
Elfrida Community Builders Group Inc.

PROJECT
Elfrida Subwatershed Study
General Vegetation Inventory (GVI)

Stantec
GeoProcess RESEARCH ASSOCIATES
Palmer

TITLE
Existing Environmental Conditions

REF. NO.
2306301-1-1

Figure 3

Document Path: G:\Shared drives\Projects 2023\23063 - Elfrida Community Builders Group Inc\2306301 - Elfrida SWS\GIS\1_Workspace\Task 5 - Figures\(2025-02-20) GeneralVegInventoryFigures\(2025-02-20) GeneralVegInventoryFigures.aprx

6.0 Recommendations and Next Steps

As outlined in **Table 2**, 137 community units have been classified as high RV and will require a tree inventory and TPP. These TPPs will be created on a parcel-by-parcel basis when development is being proposed in these locations.

It should be noted that various ecological and fluvial geomorphological field investigations are ongoing, with some surveys proposed to occur in spring 2025. These include winter wildlife surveys, headwater drainage feature assessments, and amphibian surveys. The findings of the various outstanding surveys may result in changes to whether a community meets a criterion or not and as such may have an impact on the final GVI classification for that unit. Thus, the preliminary GVI classifications are subject to change.

7.0 Statement of Limitations

This report has been prepared by SLR, Geoprocess, and Stantec for Elfrida Community Builders Group Inc. c/o Brattys LLP (Client) in accordance with the scope of work and all other terms and conditions of the agreement between such parties. SLR, Geoprocess, and Stantec acknowledge and agree that the Client may provide this report to government agencies, interest holders, and/or Indigenous communities as part of project planning or regulatory approval processes. Copying or distribution of this report, in whole or in part, for any other purpose other than as aforementioned is not permitted without the prior written consent of SLR, Geoprocess, and Stantec.

Any findings, conclusions, recommendations, or designs provided in this report are based on conditions and criteria that existed at the time work was completed and the assumptions and qualifications set forth herein.

This report may contain data or information provided by third party sources on which SLR, Geoprocess, and Stantec are entitled to rely without verification. SLR. Geoprocess, and Stantec do not warranty the accuracy of any such data or information.

Furthermore, nothing in this report constitutes a legal opinion nor does SLR, Geoprocess, or Stantec make any representation as to compliance with any laws, rules, regulations, or policies established by federal, provincial territorial, or local government bodies, other than as specifically set forth in this report. Revisions to legislative or regulatory standards referred to in this report may be expected over time and, as a result, modifications to the findings, conclusions, or recommendations may be necessary.

8.0 Closure

Preliminary GVI classifications for treed communities within the Elfrida Lands Study Area have been determined using the available ecological and fluvial geomorphological data and GVI framework that was created by ISA Certified Arborists. All treed communities have been ranked as either High, Moderate, or Low Retention Units using the developed framework, with each classification subject to its own management strategies. These varying management strategies will help inform site design at an early stage to maximize tree preservation throughout the Study Area. Due to ongoing surveys and field investigations, these classifications are only preliminary in nature and are subject to change. Following the completion of the outstanding surveys and field investigations the GVI classifications will be finalized. Final classifications will be incorporated into and discussed at length within the Subwatershed Study that is being prepared for the Elfrida Lands.

Regards,

Proposed Urban Boundary Expansion for Elfrida Lands

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