River's Edge Subdivision

Environmental Impact Study

Prepared for:

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NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

River's Edge Subdivision

Environmental Impact Study

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by Thomasfield Homes Ltd. in July 2021 to complete an Environmental Impact Study (EIS) for the River's Edge subdivision development in the Town of Grand Valley, Ontario.

The River's Edge subject property is comprised of two main parcels: one parcel that is accessed from Scott Street in the southern portion of the site, and a second parcel, which comprises the bulk of the central and northern portion of the site (Map 1). Thomasfield Homes also owns two parcels to the east that front onto the Grand River and are predominantly mapped as floodplain.

This report characterizes the natural heritage features within and adjacent to the subject property and assesses potential impacts arising from the proposed residential development. Additionally, this report addresses potential impacts within the subject property relating to the construction of a collector road as shown in the Town of Grand Valley Transportation Master Plan (R.J. Burnside 2017). Mitigation measures to reduce impacts associated with the development are summarized, as well as recommendations for naturalization plantings and monitoring.

Due to the presence of the Grand River, valley lands, and a wetland, all along the eastern edge of the subject property, a portion of the proposed development area is regulated by the Grand River Conservation Authority (GRCA) Ontario Regulation 150/06 and identified on Schedule A-1 in both the Town of Grand Valley Comprehensive Zoning By-Law (2022) and Official Plan (2017) as Environmental Protection with a Development layer to the immediate west. Natural feature layers and the GRCA regulation limit are shown on Map 1.

Technical studies relevant to other aspects of the development, such as planning, stormwater management, hydrogeology, and engineering, were prepared by the consulting team and have been used to help assess potential impacts to the natural features. This report is to be read in conjunction with the studies outlined below.

The consulting team is comprised of:

- GM BluePlan (Preliminary Hydrogeology Study);
- GM BluePlan (Functional Servicing Report);
- GSP Group (Planning);
- Salvini Consulting (Transportation); and
- NRSI (Natural Heritage).

1.1 Proposed Undertaking

Thomasfield Homes is proposing to develop the site as a serviced residential subdivision with stormwater management located in the southeast. The residential development will be comprised of 182 single family and semi-detached lots, a Townhouse Block, Apartment Block, two Park Blocks, and open space areas (Appendix I). The proposed collector road reflects the intent of the alignment identified in the Transportation Master Plan (R.J. Burnside 2017) and the alignment agreed upon with the Town, with connections to Bielby Street in the south and County Road 25 and Luther Road in the northwest. The property was previously an aggregate pit, therefore, grading for the proposed development and collector road will require the introduction of a large volume of fill to raise the grade of the abandoned aggregate pit.

1.2 Project Scoping

1.2.1 Study Area

The Study Area includes the subject property where the development is proposed, as well as the lands within approximately 120m of the property to ensure contiguous and adjacent natural heritage features and wildlife habitat were considered.

The 36.583 hectare (ha) subject property is located at Part Lots 31 and 32, Concession 3 in the Township of East Luther Grand Valley (Map 1). The subject property is located at the northeast extent of the Town of Grand Valley, with existing residential development to the west and south. The Grand River and associated riparian meadow and forest are present to the north and east.

1.2.2 Collection and Review of Background Information

Existing natural heritage information was gathered and reviewed to identify key natural heritage features and species that are reported from or have the potential to occur within the Study Area. Background information on the natural environment features within the Study Area vicinity was

also gathered from the Town of Grand Valley Official Plan (2017), the GRCA Interactive Mapping Tool (2023), and relevant taxa-specific databases, as listed below.

Initial wildlife species lists were compiled to provide information on species reported from the vicinity of the Study Area (within approximately 10km of the subject property) using various online atlases. These initial species lists were used to guide the scope and type of wildlife surveys required, as outlined in the following sections. The sources that were reviewed to inform project scoping include the following:

- Town of Grand Valley Official Plan (April 2017 Consolidation);
- Dufferin County Official Plan (July 2017 Consolidation);
- GRCA Interactive Mapping Tool (2023);
- Government of Canada Species at Risk Act (SARA) Registry (2023);
- Natural Heritage Information Centre (MNRF 2023);
- Species at Risk list in Ontario (SARO) (MECP 2023);
- Ontario Breeding Bird Atlas (OBBA) (BSC et al. 2006);
- Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature 2020);
- Atlas of the Mammals of Ontario (Dobbyn 1994);
- Department of Fisheries and Oceans Canada - Aquatic SAR Mapping (DFO 2022);
- Ontario Butterfly Atlas (Macnaughton et al. 2023); and
- Ontario Odonata Atlas (2023).

The wildlife and insect atlases listed above provide data based on 10x10 km survey squares. Information was compiled from the atlas square that overlaps the Study Area (Square 17NJ56).

The background information is integrated with original data collected by NRSI during the 2021-2023 field surveys to inform the characterization component of the EIS.

1.2.3 Species at Risk and Species of Conservation Concern Screening

Based on the initial species lists, several Species at Risk (SAR) and Species of Conservation Concern (SCC) were identified as having records near the Study Area. Species at Risk are those species listed on the Species at Risk in Ontario (SARO) List (MECP 2023). These include species identified by the Committee on the Status of Species at Risk in Ontario (COSSARO) as provincially Endangered, Threatened, or Special Concern. Species listed as

Endangered or Threatened are protected under the *Endangered Species Act* (ESA) 2007, which includes protection to their habitat, and are referred to herein as “regulated SAR”.

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

Habitat for SCC is considered Significant Wildlife Habitat (SWH) (OMNR 2010), which is afforded protection under the Provincial Policy Statement (PPS) (MMAH 2020) and municipal natural heritage protection policies. For the purposes of this report, the term “SAR” will refer to provincially Threatened and Endangered species regulated under the *ESA,* while provincial species of Special Concern will be considered SCC.

Based on NRSI’s examination of background sources and federally or provincially significant species with occurrence records near the Study Area, an assessment of SAR and SCC suitable habitat presence within the Study Area was completed. Assessments of habitat suitability in the Study Area were made by cross-referencing each species’ known habitat preferences or requirements (e.g., OMNR 2000) with habitat availability based on air photography interpretation and available mapping. The results of the SAR and SCC screening, based on original field surveys and habitats present, are provided in Appendix II and discussed in more detail in Sections 4 and 5.

1.2.4 Significant Wildlife Habitat Screening

A screening for the presence of SWH was also completed for the Study Area. The Significant Wildlife Habitat Technical Guide (SWHTG) outlines the types of habitats that the Ministry of Natural Resources and Forestry (MNRF) considers significant in Ontario, as well as criteria to identify these habitats for Ecoregion 6E, in which the Study Area is located (OMNR 2000, MNRF 2015). The SWHTG groups SWH into four broad categories: i) seasonal concentration areas, ii) rare vegetation communities and specialized wildlife habitat, iii) habitats of SCC, and iv) animal movement corridors. The results of the SWH screening exercise based on original field surveys are provided in Appendix III and discussed in more detail in Section 5.4.

1.2.5 Fieldwork Scoping

NRSI has been involved with natural heritage surveys on the subject lands intermittently since 2012. A renewed push for a development application that began in 2021 involved discussion with Town of Grand Valley staff as well as R.J. Burnside (environmental consultant on behalf of the Town) to determine the scope of surveys necessary to support the EIS. Although a formal Terms of Reference had been circulated in 2012, the determination of required surveys in 2021-2022 was determined through discussions with the Town and R.J. Burnside (C. Dixon pers. comm. 2021; M. Kluge pers. comm. 2021). An initial scoping inquiry was also sent to GRCA staff. In consideration of the background review and screenings, as well as input from the Town, it was determined that the following environmental surveys would be completed to inform the EIS and Tree Inventory and Preservation Plan (TIPP):

- Updated characterization and mapping of vegetation communities;
- Delineation and surveying of the woodland dripline;
- Delineation and surveying of the wetland boundary, following review with GRCA staff;
- A Species at Risk screening;
- An updated two-season vegetation survey;
- Breeding bird surveys during the peak breeding bird season (end of May – early July);
- Leaf-off SAR bat habitat assessment; and,
- An inventory of trees ≥10cm Diameter at Breast Height (DBH) and tally of the homogenous conifer plantation areas.

In relation to the proposed stormwater pond outlet, additional tree inventory work and an aquatic habitat assessment were completed in early 2023 to characterize the conditions at this location.

2.0 Relevant Policies, Legislation and Planning Studies

Table 1 summarizes the legislation, policies and planning studies that are relevant to the proposed development in relation to the protection of natural heritage features within the Town of Grand Valley and Dufferin County. The specific implications of these policies to the Study Area are discussed in further detail in this report.

Table 1. Relevant Policies, Legislation and Planning Studies

Policy/Legislation	Description	Project Relevance
Canadian *Fisheries Act* (Government of Canada 2023)	• Last amended in August 2019, the federal *Fisheries Act* provides for the protection of fish and fish habitat • The Act prohibits the 'harmful alteration, disruption, and destruction' (HADD) of fish and their habitats. • Department of Fisheries and Oceans (DFO) has developed an online, self-assessment tool, where proponents can determine whether their projects require DFO review based on the type of water body the work is occurring in and the nature of the proposed activity.	• The subject property and proposed development are adjacent to the Grand River. The Grand River will be the receiver for stormwater runoff from the development. • HADD of fish or fish habitats is not anticipated to result from the proposed project activities and DFO review is not expected to be required.
Dufferin County Official Plan (Dufferin County 2017)	• The Natural Heritage policies aim to protect, restore or where possible enhance natural heritage features and the environment and foster the creation of an enhanced and connected natural heritage system. • Development and site alteration are to be directed away from significant natural heritage features and areas. • Natural heritage features and areas will be protected for the long-term. • Schedule E1 identifies a preliminary county-wide Natural Heritage System. • Development and site alteration will not be permitted in significant wetlands, and will not be permitted in significant woodlands, valleylands, SWH or ANSIs unless it can be demonstrated that there will be no negative impact on the feature or its ecological function.	• Most of the contiguous treed feature along the Grand River is identified in Schedule E1 (Natural Heritage System) as part of the OP Preliminary Natural Heritage System and is being retained as part of the proposed development.
Endangered Species Act (ESA) (Government of Ontario 2007)	• The ESA prohibits killing, harming, harassing or capturing of Endangered and Threatened species and protects their habitats from damage and destruction. • Ontario Regulation 242/088 under the ESA applies to all species on the Species at Risk in Ontario List, as of June 2, 2017.	• Probable breeding evidence for Eastern Meadowlark, a SAR in Ontario, was observed and the meadow located in the old aggregate pit in the southern extent of the subject property. • The agricultural field in the northern extent of the subject property provides nesting habitat for Bobolink but is used as rotational cropland and does not constitute protected habitat for the species.

Policy/Legislation	Description	Project Relevance
Fish and Wildlife Conservation Act (Government of Ontario 1997)	• The FWCA provides protection for certain bird species, not protected under the MBCA (i.e., raptors), as well as furbearing mammals and their dens or habitual dwellings, aside from the Red Fox (*Vulpes vulpes*) and Striped Skunk (*Mephitis mephitis*). • The FWCA provides protection for fish.	• The timing of construction activities, in particular vegetation clearing, must have consideration for bird nesting and den sites for furbearing mammals. • No dens (active or inactive) were noted within the subject property. • Where vegetation clearing cannot occur in the winter months, wildlife sweeps by qualified biologists may be warranted prior to any vegetation removals/clearing. Habitats deemed to be complex may not be effectively searched and may require that vegetation removal be delayed if bird nesting is suspected. • The Grand River provides fish habitat.
GRCA Ontario Regulation 150/06 (GRCA 2015)	• Regulation issued under *Conservation Authorities Act,* R.S.O. 1990. • Through this Regulation, the GRCA has the responsibility to regulate activities in natural and hazardous areas (i.e., areas in and near rivers, streams, floodplains, wetlands, and slopes), and in areas where development could interfere with the hydrologic function of a wetland, including areas up to 120m of all Provincially Significant Wetlands (PSWs), or hazard lands including floodplain and valley slope. • Section 3.25.8 of the Town Zoning by-law states "*All buildings and structures shall be located a minimum of 30 metres from the edge of a local, or unevaluated wetland*." • In addition, Section 6.2.14 of the GRCA Wetland Policy (GRCA 2003) states "*The GRCA will encourage member municipalities and the private sector to avoid wetlands in designing and building transportation and utilities infrastructure*." • However, Section 8.4.6 of *Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation* (Ontario Regulation 150/06) (GRCA 2015) states "*Public Infrastructure including but not limited to roads, sanitary sewers, utilities, water supply wells, well houses, and pipelines, within a wetland larger than specified in Sections 8.4.4-8.4.5 may be permitted in*	• Lands regulated by the GRCA (unevaluated wetland, steep slope, slope erosion, floodplain) are present within the subject property. • The proposed SWM outlet dispersion trench will encroach on the wetland buffer and will be in close proximity to the wetland. • No PSWs are present within the study area. • In accordance with this policy, the proposed development must demonstrate no negative impacts to the regulated natural features or their ecological functions. • Permitting from the GRCA must be obtained for proposed works within regulated areas and adjacent lands.

Policy/Legislation	Description	Project Relevance
	accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, provided that it can be demonstrated that: *a) an Environmental Assessment or other comprehensive plan supported by the GRCA, demonstrates that all alternatives to avoid wetland loss or interference have been considered and that the proposed alignment minimizes wetland loss or interference to the greatest extent possible, and* *b) where unavoidable, intrusions on significant natural features or hydrologic or ecological functions are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions*."	
Grand Valley Comprehensive Zoning By-law (Town of Grand Valley 2022)	• The by-law establishes various zones as outlined in Schedules A-1, A-2 and A-3. • The Environmental Protection zone boundary is intended to generally identify the location of potentially hazardous environmental features (floodplain). • The boundaries of the EP Zone can be refined in consultation with the Conservation Authority. Where detailed resource mapping and/or site inspection occurs, this may result in a minor re-interpretation of the limits of the EP Zone boundary. • Additionally, a technical evaluation, approved by the Conservation Authority may be used to further delineate the limits of the EP Zone.	• The Town Zoning By-law identifies the subject property as a Development layer with the eastern edge of the subject property considered Environmental Protection. • The Environmental Conservation layer reflects the extent of floodplain and the proposed residential development does not overlap the floodplain as currently mapped by the GRCA. • The proposed SWM outlet dispersion trench extends into the floodplain but is above the 100-year flood level elevation.
Grand Valley Official Plan (Town of Grand Valley 2017)	• The OP does not permit new developments or site alterations within PSW boundaries, or within or adjacent to Significant Woodlands, Environmentally Significant Areas or Streams. • If developments or site alterations are being proposed within or adjacent to (within 120m of) Core Areas under the OP, an environmental impact assessment is required to ensure there will be no negative impacts on the natural features or their ecological functions.	• The small wetland is not identified on Schedule B-1 – Natural Heritage as the feature was not known to be present. This feature has been treated as an Unevaluated Wetland in this report. • The OP acknowledges that the boundaries of the Environmental Conservation designation (shown on

Policy/Legislation	Description	Project Relevance
		Map 1) may be imprecise and refined through an environmental study. • The dripline survey completed by NRSI provides a refined extent of the Environmental Conservation layer as shown on Map 2.
Migratory Birds Convention Act (Government of Canada 1994)	• The MBCA protects migratory game birds, insectivorous birds, and several other migratory non-game birds from persecution in the form of harassment. • The schedule of on-site work must consider the MBCA window, with timing of breeding bird season generally extending between late March to late August. • "Incidental take" is considered illegal, with the exception of a permit obtained by the Canadian Wildlife Service.	• Numerous species protected by the *Migratory Birds Convention Act* were identified in background screening for the study area and confirmed as present during surveys. The timing of construction activities, in particular vegetation clearing, must have consideration for the MBCA.
Provincial Policy Statement (PPS) (MMAH 2020)	• Section 2.1 of the PPS – Natural Heritage establishes clear direction on the adoption of an ecosystem approach and the protection of resources that have been identified as 'significant'. • Section 3.1.7 states that development and site alteration may occur within hazard lands where the effects can be mitigated and no adverse environmental impacts will occur. • The Natural Heritage Reference Manual (OMNR 2010) and the Significant Wildlife Habitat Technical Guide (MNRF 2000, MNRF 2012) were prepared by the MNRF to provide guidance on identifying natural features and in interpreting the Natural Heritage sections of the PPS.	• Based on a preliminary analysis and field surveys, natural features were identified within the study area which have implications under the PPS (wetland). • SWH was identified (both candidate and confirmed habitats) in the woodland feature along the Grand River.
Town of Grand Valley Tree By-law 2019-10 (Town of Grand Valley 2019)	• A by-law outlining the manner in which the Town of Grand Valley will protect and enhance the tree canopy and natural vegetation in the Town. • The Town requires developers to include provisions for preserving, replacing and enhancing trees and natural vegetation in the approved plans. • Private property owners are encouraged to replace cut trees using native tree species.	• The clearing of areas of conifer plantation, individual trees in the vicinity of the abandoned aggregate pit and adjacent to the stormwater outlet will require compensation. • A Tree Inventory and Preservation Plan has been prepared by NRSI (Appendix IV) and outlines the details of trees proposed for removal and considerations for compensation.

Policy/Legislation	Description	Project Relevance
		• The natural feature buffer along the eastern edge of the proposed development will include plantings of native trees and shrubs to protect and enhance this feature.

3.0 Field Methods

3.1 ELC and Vegetation Surveys

All vegetation communities were mapped using the ELC system for southern Ontario (Lee et al. 1998) (Map 2). An inventory of vascular plants was completed for each ELC community including composition, dominance, uncommon species, soil characterization, topography and evidence of human impacts. An inventory of plants was conducted in August 2021 as well as May and June 2022.

3.2 Natural Feature Boundary Delineation

The dripline of the woodland along the eastern extent of the proposed development was surveyed by NRSI arborists in 2022 using sub-metre accuracy SXBlue II GNSS GPS units. Similarly, the boundary of a small wetland located to the east of the abandoned gravel pit was delineated by an NRSI biologist trained in the Ontario Wetland Evaluation System. The wetland boundary was subsequently reviewed with GRCA staff in the field on June 30, 2022 and the boundary was surveyed using a GPS unit.

3.3 Tree Inventory

A comprehensive tree inventory and assessment was completed by NRSI Certified Arborists and Registered Professional Foresters in October and December 2021, and March 2023. The inventory included the tagging (or painting) and assessment of all trees ≥10cm Diameter at Breast Height (DBH) within and adjacent to the limits of grading associated with the proposed residential development and associated stormwater management. Trees within the subject property were tagged with prenumbered aluminum forestry tags or painted with tree numbers while adjacent off property/private trees that may incur damage were assigned a unique letter for mapping purposes. The location of individual trees inventoried was surveyed by NRSI staff using sub-metre accuracy GPS units.

Through email correspondence with Carley Dixon at R.J. Burnside on behalf of the Town of Grand Valley on November 4, 2021, it was noted that a tally of the trees within the dense coniferous plantation areas would be suitable to inform potential removal and compensation requirements. As such, the dripline of the coniferous plantation areas, as well as one area comprised of dense Manitoba Maple (*Acer negundo*) was surveyed. A tally of trees within the polygon areas was documented, along with the overall condition and health of the trees.

A complete list of the trees that were assessed and their overall health and potential for structural failure is included in the TIPP (Appendix IV).

3.4 Breeding Bird Surveys

Early morning breeding bird surveys were conducted on May 27 and June 24, 2022 under favourable weather conditions. A total of four survey stations were established throughout the subject property (Map 2). During the point count surveys that were conducted between dawn and 1000hrs, a NRSI biologist documented all bird species observed during the 10-minute survey at each station, recording breeding evidence as per the Ontario Breeding Bird Atlas protocol (OBBA 2001). Observations of birds made while travelling between point count stations and during other, non-target field surveys were also recorded.

3.5 Calling Anuran Surveys

A total of three evening anuran call surveys were conducted with one visit in each of April, May and June of 2022. Survey stations focused on suitable habitat within and adjacent to the subject property. Surveys followed the Marsh Monitoring Protocol (BSC 2009), noting species diversity and abundance from the single monitoring station indicated on Map 2.

3.6 Bat Habitat Assessment

A bat habitat assessment inventory was conducted during the leaf off period in conjunction with the vegetation and tree inventory surveys completed between 2021 and 2023. The assessments included a search of all trees proposed for removal, as well as all trees within the FOD4 community following current protocols (MECP 2022). Trees around the perimeter of the FOD6-4 community near the proposed development were also assessed on May 26, 2022. All trees within the 5m construction footprint surrounding the proposed linear dispersion trench were assessed in March 2023.

The following information was collected by NRSI for each standing live or dead tree ≥10 cm DBH with cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark to identify suitable roost trees:

- Species;
- Location;
- DBH (cm);
- Decay class (Watt & Caceres 1999);

- Canopy cover (%);
- Approximate tree height (m);
- Number, type, and height of cavities;
- Presence of loose bark;
- Presence of leaf clusters; and
- Evidence of use by predators or other species.

Other criteria were also considered, including the use of cavities by other wildlife, the potential for cavities to be used by predators, supporting/surrounding habitat, and other characteristics that may contribute to the habitat requirements of these species, such as temperature regulation.

3.7 Aquatic Habitat Assessment

An aquatic habitat assessment was conducted on March 21, 2023 for a 1.2km section of the Grand River along the eastern edge of the subject property boundary (Map 2). NRSI biologists recorded a variety of features of the watercourse, including bank and adjacent land conditions, in-stream cover and habitat, flow conditions and water depths, substrate composition, and in situ water quality measurements (i.e., water temperature, pH, conductivity, and dissolved oxygen). The area was also assessed for potential groundwater seepages and any additional ephemeral, intermittent, or permanent watercourse features.

3.8 Additional Wildlife

Incidental observations of wildlife, including signs, such as tracks, scat, and dens, were documented during all surveys. This included observations of birds, mammals and insects.

4.0 Existing Conditions

4.1 Soil, Terrain and Drainage

Subsurface soils at the subject property generally consist of a mixture of clayey silt till, sand, and gravely sand deposits (GM BluePlan 2023b). Topsoil depths range from 200mm in the eastern portion of the subject property to 800mm in the northern and western portions of the subject property (GM BluePlan 2023b). The agricultural field in the northern portion of the subject property is situated on Huron loam which is a clay-loam till with good drainage (Hoffman et al. 1964, MNDM 2006). The treed slope and river floodplain are characterized by Burford loam over gravel outwash, also with good drainage (Hoffman et al. 1964, MNDM 2006). The southern portion of the subject property was an aggregate extraction site for a number of years and the substrate in this area is gravel and sand on what would have been the floor and walls of the former pit. Based on the current vegetation conditions of this former aggregate extraction site, it has not been in production for over 20 years.

The topography in the northern field is gently rolling with surface drainage toward the north and east of the field. The treed slopes are moderately steep and contain two areas where groundwater seepage is evident near the toe-of-slope, just above the river floodplain. The abandoned aggregate pit in the south of the subject property is bowl-shaped and approximately 5-10m deep relative to the surrounding developed areas and agricultural field. Between the old pit and the Grand River, there is a topographic rise which would have been the eastern wall of the aggregate pit. The floor of the pit is approximately the same elevation as the floodplain to the east.

Due to the good drainage of the overburden and the underlying sand and gravel, the site is relatively dry. Surface water in the northern field infiltrates with some overland flow across the field toward the Grand River to the north and east (GM BluePlan 2023b). The field does not contain any defined flow-paths and soil erosion was not observed to be an issue. In the south of the subject property, the rear yards of lots that front onto Crozier Street and Scott Street direct surface water toward the old aggregate pit. A small wetland feature to the east of the pit has a localized catchment surrounding the depression, but the hydrology is likely associated with the groundwater elevation as the swamp is situated in the floodplain and approximately 80m west of the Grand River.

4.2 Vegetation

4.2.1 Vegetation Communities

The subject property is comprised of early successional old field meadow, well-established meadow, conifer plantation, annual row crops and both coniferous and deciduous forest (Map 2). The following descriptions outline the conditions within each community:

Mineral Cultural Meadow (CUM1)

The abandoned aggregate pit supports a dry meadow community with patchy groundcover and large areas of bare gravel and sand interspersed. The most common species present include Orange Hawkweed (*Pilosella aurantiaca*), Annual Fleabane (*Erigeron annuus*), Common Yarrow (*Achillea millefolium*), Common St. John's-wort (*Hypericum perforatum*), Black Medic (*Medicago lupulina*), Tufted Vetch (*Vicia cracca*), Deptford Pink (*Dianthus armeria*) and Bouncing-bet (*Saponaria officinalis*). Early establishment of trees and shrubs includes Red-osier Dogwood (*Cornus sericea*), Tartarian Honeysuckle (*Lonicera tatarica*) and Trembling Aspen (*Populus tremuloides*). A series of old ATV trails cross through this community and are now used by local residents as a walking trail.

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

The area surrounding the aggregate pit is comprised of a different composition of meadow species on account of the loam soil that is present. Grasses dominate the groundcover with Smooth Brome (*Bromus inermis*), Orchard Grass (*Dactylis glomerata*) and Tall Fescue (*Lolium arundinaceum*) occurring throughout the area. Forbs include Tall Goldenrod (*Solidago altissima*), New England Aster (*Symphyotrichum novae-angliae*), Creeping Thistle (*Cirsium arvense*), Wild Carrot (*Daucus carota*), Smooth Bedstraw (*Galium mollugo*) and Butter-and-eggs (*Linaria vulgaris*). With the exception of several species of asters and goldenrods, this community is entirely comprised of non-native species.

Mineral Cultural Woodland Ecosite (CUW1)

A series of small treed areas are present in the southwest of the subject property and also extend beyond the western extent of the parcel. These stands of mid-age Manitoba Maple have established on disturbed soils. The groundcover is a mixture of non-native cool season grasses and invasive species including Garlic Mustard (*Alliaria petiolata*) and Dame's Rocket (*Hesperis*

matronalis). The stands along Scott Street contain dumped building materials and other household waste.

White Pine Coniferous Plantation Type (CUP3-2)

Four mid-age White Pine (*Pinus strobus*) plantations are present to the west and north of the abandoned aggregate pit. The plantations are generally overstocked and have not been managed, resulting in some competition and dieback throughout the stands. The dense canopy largely excludes shrubs or herbaceous species from establishing.

Fresh – Moist White Cedar Coniferous Forest Type (FOC4-1)

The forest that spans much of the eastern limit of the subject property is a stand of Eastern White Cedar (*Thuja occidentalis*) interspersed with Black Cherry (*Prunus serotina*) and Balsam Poplar (*Populus balsamifera*) that occurs on a moderate slope toward the Grand River. Herbaceous cover includes scattered patches of Bulblet Fern (*Cystopteris bulbifera*), Field Horsetail (*Equisetum arvense*) and Sensitive Fern (*Onoclea sensibilis*). An informal trail that parallels the river has been established through the core of the feature. In the northern extent, regular ploughing of the field has likely root-pruned the trees that occur along the edge. Invasive shrubs that can establish along forest edges such as Common Buckthorn (*Rhamnus cathartica*) are generally not present in this feature due to the density of the conifers. A dumped car is present at the edge of the agricultural field. A small area of Fresh – Moist Sugar Maple (*Acer saccharum*) and White Elm (*Ulmus americana*) forest (FOD6-4) is present and exhibits higher groundcover diversity including Wild Black Currant (*Ribes americanum*), Wild Sarsaparilla (*Aralia nudicaulis*), Spinulose Wood Fern (*Dryopteris carthusiana*) and Calico Aster (*Symphyotrichum lateriflorum*).

Dry – Fresh Upland Deciduous Forest Ecosite (FOD4)

A deciduous forest edge is present in the northern extent of the site, adjacent to the agricultural field. The tree composition includes a small number of mature Sugar Maple, American Basswood (*Tilia americana*) and White Ash regeneration (*Fraxinus americana*). The groundcover has relatively low diversity and includes Hooked Agrimony (*Agrimonia gryposepala*), Broad-leaved Enchanter's Nightshade (*Circaea canadensis*), Large False Solomon's Seal (*Maianthemum racemosum*) and Avens (*Geum* sp.). Due to the available sunlight, invasive Common Buckthorn is present in small numbers along the edge of this

community. Based on the younger tree composition, the outer portion of this community was likely part of the cultivated field historically that was left fallow and reverted to forest cover.

Hedgerow (H1)

The far northern boundary of the subject property includes a hedgerow that is predominantly non-native Privet (*Ligustrum* sp.) with scattered Manitoba Maple in the eastern extent, near the treed slope. This feature provides a visual screen and physical separation between the subject property and the existing residential lot to the north.

4.2.2 Vascular Flora

A total of 139 vascular plant species have been documented from the subject property (Appendix V). No SAR, SCC or regionally significant species were observed. A patch of Mountain Death Camas (*Anticlea elegans*) is present along the bank of the Grand River and may be a new species for Dufferin County and as such would be rare in the county. This species occurred 40-50m beyond the proposed development limit and will not be affected by the development including the footprint of the SWM outlet.

Of the 139 species, 59 are non-native and a subset of these are considered problematic invasive species. The problematic species include Common Buckthorn, Scot's Pine (*Pinus sylvestris*), Black Locust (*Robinia pseudoacacia*), Tartarian Honeysuckle, Smooth Brome, Garlic Mustard and Dame's Rocket.

In general, the forested slope supports a mixture of common native species as well as non-native species that are most abundant along the edge of the feature. The abandoned aggregate pit contains a diversity of early successional species, including asters and goldenrods, but is largely comprised of introduced species that thrive in the xeric conditions.

A Tree Inventory and Preservation Plan has been prepared separately and outlines the composition and condition of trees within and adjacent to the proposed development area (Appendix IV).

4.3 Wildlife

4.3.1 Birds

A total of 35 bird species were documented from the subject property during the breeding bird surveys and as incidental observations during other surveys. Of the 35 species, 31 exhibited breeding evidence including confirmed breeding of 6 species. Bird species reported from the Study Area, as well as the breeding evidence for species observed on site are outlined in Appendix V.

Four significant bird species were documented; Eastern Wood-pewee (*Contopus virens*), Bobolink (*Dolichonyx oryzivorus*), and Eastern Meadowlark (*Sturnella magna*) showed probable breeding evidence, while Wood Thrush (*Hylocichla mustelina*) showed possible breeding evidence within the subject property.

Eastern Meadowlark (Threatened) is most commonly found in pastures, hayfields, orchards and shrubby overgrown fields (Jaster et al. 2022). During the breeding bird surveys, as many as four individuals were observed in the vicinity of the abandoned aggregate pit. Singing males were present; however, only possible breeding evidence was documented for this species at a given survey station. The surrounding areas of meadow to the northwest and southwest of the pit contain a high proportion of shrubs and tree cover and do not constitute suitable habitat for the species and these areas were not observed to be in use. Similarly, the composition of meadow within the floodplain is dense and lacks the patchy, open cover preferred by this species. The presence of individuals utilizing various portions of the old aggregate pit on both breeding bird survey dates suggests that the species utilizes the meadow habitat for nesting. Although the species was documented showing possible breeding evidence at any one breeding bird survey station (individuals were never recorded within the same survey station radius across the two survey dates), all observations placed birds within the old aggregate pit meadow which constitutes probable breeding evidence. The extent of the Mineral Cultural Meadow (CUM1) polygon represents suitable breeding habitat for Eastern Meadowlark.

Bobolink (Threatened) was observed on both breeding bird survey dates with three males and one female present in the hay field surrounding BMB-004 in the northern extent of the subject property. This species prefers the dense thatch of hayfields over sparse meadow vegetation, such as the areas found in the southern extent of the site. This agricultural field is cut at least once per year for hay and has alternated between hay and annual row crops in recent years. Therefore, this community is not considered suitable nesting habitat for Bobolink.

Eastern Wood-pewee (Special Concern) was documented singing on both breeding bird survey dates and was considered on territory by the late June survey. The individual was located to the northeast of BMB-003 within the conifer forest along the slope of the Grand River. This species prefers edges and clearing of deciduous or coniferous forest (Watt et al. 2020) and the forested slope provides suitable habitat for this species which is known to use a variety of treed communities. Therefore, the FOC4-1 community provides breeding habitat for Eastern Wood-pewee.

A single Wood Thrush (Special Concern) was heard from the forested riparian area to the north of BMB-004 on May 27, 2022. The narrow habitat appears to be marginally suitable, lacking the mature hardwood forest composition that this species typically utilizes. No other observations of Wood Thrush were made. Therefore, this community is not considered confirmed habitat for Wood Thrush.

4.3.2 Herpetofauna

Reptile and amphibian species documented from the Study Area are included in Appendix V. A single Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) was observed near the forest edge during the surveys. NRSI biologists did not observe any potential hibernacula sites as there are no structures, including old foundations, present within the subject property. The small wetland contained standing water throughout the spring and summer and calling anuran surveys documented a single American Toad (*Anaxyrus americanus*) and as many as three Spring Peepers (*Pseudacris crucifer*) within this feature during the spring. Gray Treefrog (*Hyla versicolor*) was calling from the forested slope, near the edge of the river.

In general, the site is far too dry to support significant numbers of breeding anurans and there are no wetland features to the west that would suggest the potential presence of a movement corridor.

4.3.3 Mammals

A small number of common mammal species were observed during the surveys, including White-tailed Deer (*Odocoileus virginianus*), Raccoon (*Procyon lotor*), Gray Squirrel (*Sciurus carolinensis*), Red Squirrel (*Tamiasciurus hudsonicus*) and Eastern Cottontail (*Sylvilagus floridanus*). A total of seven candidate bat roost trees that may provide suitable roosting habitat for Little Brown Myotis (*Myotis lucifugus*) and/or Northern Myotis (*Myotis septentrionalis*) were documented, all of which are located within the forested habitat along the river that will be

maintained (Map 2). Oak and Maple tree species also have the potential to provide suitable roosting habitat for Tri-colored Bat (*Perimyotis subflavus*) in the form of leaf clusters. Maple species are present within the subject property and are the dominant tree species in the FOD6-4 and CUW1 communities. No leaf clusters were observed during surveys. No oak trees are present within the subject property.

Mammal species documented from the Study Area are included in Appendix V.

4.3.4 Insects

A small number of butterflies were observed within the early successional meadow where nectar-producing plants occur in abundance, including invasive species such as Spotted Knapweed (*Centaurea stoebe*). These species include Common Ringlet (*Coenonympha tullia*), Cabbage White (*Pieris rapae*), Viceroy (*Limenitis archippus*) and Duskywing species (*Erynnis* sp.). No dragonfly or damselfly species were observed within the subject property.

4.4 Aquatic Habitat

The Grand River flows as a large, permanent warmwater feature along the eastern edge of the subject property and provides direct fish habitat for a diverse fish community that includes top predatory species such as Smallmouth Bass (*Micropterus dolomieu*) and Northern Pike (*Esox lucius*) (GRCA 2005). Upstream and downstream of the subject property, the river flows through a rural, predominantly agricultural landscape.

Adjacent to the subject property, the channel is slightly meandering with a relatively low gradient. The wetted width of the watercourse ranges from 20.8 to 26.4m with riffle and run habitats and one large pool, which is located at the upstream extent of the assessed area. The upstream extent of the assessed reach has a narrower wetted width, which widens moving downstream. During the assessment, hydraulic head measurements ranged from 60 to 110mm. Throughout the mid and downstream areas of the assessed reach, substrates are dominated by cobble with boulder, pebble, gravel, and a small proportion of sand, while the upstream area has higher proportions of sand. Epilithic algae was also noted to be present in low abundance. Backwater areas were observed to contain higher proportions of silt at several locations along the banks. Direct fish habitat is present throughout the full extent of the river adjacent to the subject property. The majority of instream fish habitat and cover is provided by abundant cobble substrates and riffle areas with some boulders, backwater areas, and in-stream emergent aquatic vegetation and woody debris in relatively low abundance adjacent to the

shoreline at some locations. The pool at the upstream extent of the assessed reach provides additional habitat and cover and contained a water depth >1.0m. Water depths throughout the river range from approximately 0.2 to 1.0m, with greater depths observed mid-channel and within run habitats. In situ water quality measurements were taken at several locations along the river between 9:00 and 13:30, during which the air temperature ranged from 4.0 to 5.0°C. Water temperatures were measured between 0.5 and 1.0°C, pH was 8.67 to 8.82, total dissolved solids were 0.25 to 0.26ppt, and conductivity was 0.51 to 0.52mS/cm.

Bank conditions were approximated due to snow and ice coverage. The banks range from approximately 0.5 to 2.0m in height and are gently to moderately sloped from the river's edge. Banks were also noted to be moderate to highly stable, although some areas of minor bank erosion were noted towards the upstream extent. The extent of frequent flood (i.e., bankfull width) ranges from approximately 10 to 20m from the edge of the river with established terrestrial vegetation characterized by Eastern White Cedar along the west bank and northern portions of the east bank, and by dense grasses and sparse shrubs along the southern portion of the east bank. The adjacent lands have a moderate slope with vegetation extending greater than 30m from the banks, generally characterized by scrublands and cedar forest. Additional detail on terrestrial vegetation communities across the subject property is provided in Section 4.2. The adjacent cedar forest and riparian zone do not provide high quality shade or canopy cover to the river.

No additional tributaries were noted within the subject property along the west bank, although areas of groundwater seepage were observed within the forested areas along the west bank of the river. In addition, two minor unnamed tributaries were observed along the east bank of the Grand River north of the proposed SWM outlet and dissipation area.

5.0 Significance and Sensitivity of Natural Features

5.1 Woodlands

Schedule B-1 of the Official Plan (Town of Grand Valley 2017) identifies the woodland slope along the Grand River as being part of a 4.01 - 39.9 ha Wooded Area. This feature also falls within the Environmental Protection designation under the Zoning By-law (Town of Grand Valley 2018) which reflects the GRCA floodplain limit but includes a large portion of the treed area (Map 1).

5.2 Wetlands

The hydrology of the wetland in the eastern portion of the subject property is closely tied to the water table elevation and seasonal flooding of the Grand River. The feature is visible on 1954 air photography (Figure 1; green circle), as well as a second depression that may have been filled in historically (University of Toronto 2023). The water in the wetland is below the grade of the gravel pit floor to the west and is separated by a 3m tall berm that historically would have been the eastern limit of the pit and likely the original elevation to the west of the floodplain. The catchment for the wetland is very localized with the embankment to the west and level floodplain to the east. During the surveys, the wetland contained water throughout the year and did not dry up by late spring or early summer, suggesting that the water is permanent and the feature is not ephemeral in nature. The wetland is approximately 80m west of the Grand River and the water level in this swamp feature appears to reflect the water level in the river.

The wetland is surrounded by Manitoba Maple, Crack Willow and American Elm which shade the feature almost entirely. Herbaceous vegetation is limited to Reed Canary Grass around the fringe of the shallow open water that is tolerant of minor fluctuations in water levels. A small number of anurans were documented calling from the feature, which functions as a vernal pool for amphibian breeding in this regard. The preservation of standing water within this wetland is important for preserving the anuran breeding habitat. The existing cover of herbaceous vegetation around the wetland stabilizes soil and ensures that the water quality is maintained. During spring flooding, the 0.1ha wetland may hold a small amount of floodwater when flows are exceptionally high.

Figure 1. 1954 air photograph of the Study Area

5.3 Species at Risk

5.3.1 Eastern Meadowlark

Breeding habitat for Eastern Meadowlark within the subject property includes approximately 5.81ha of the early successional meadow within the abandoned aggregate pit, as well as portions of the adjacent meadows surrounding the pit where tree and shrub cover is minimal. This species utilizes large areas of meadow that often includes fallow fields and graded lands that have re-vegetated over the course of several years.

5.3.2 Species at Risk Bats

Candidate habitat for Little Brown Myotis and/or Northern Myotis has been identified within the FOD4, FOC4-1 and FOD6-4 communities within the subject property (Map 2). These woodlands will be retained and afforded buffers that will be naturalized with native species plantings to enhance candidate SAR bat foraging and movement corridor habitats along the woodland edges.

No leaf clusters that would represent candidate habitat for Tri-colored bat were observed during the surveys and habitat for this species is not present.

5.4 Significant Wildlife Habitat

A total of six SWH types were identified as candidate within the subject property during the scoping process, including Turtle Nesting Habitat, Seeps and Springs, Amphibian Breeding Habitat (Wetland), Open Country Bird Breeding Habitat, Terrestrial Crayfish Habitat and Habitat for Special Concern and Rare Species. Through the field surveys completed, two of these SWH types were confirmed as being present within the subject property (Appendix II).

5.4.1 Confirmed Seeps and Springs

Seeps and springs are areas where groundwater comes to the surface and are typical of headwater areas, often at the source of coldwater streams. Seeps and springs are important feeding and drinking areas for wildlife, especially in the winter when they will typically support a variety of plant and animal species (MNRF 2000). This SWH type is confirmed by the presence of two or more seeps or springs within an ELC community. At least two groundwater seepage areas were observed within the FOC4-1 community, confirming the presence of Seeps and Springs SWH within this community (Map 2). The proposed development will be located outside of this confirmed SWH.

5.4.2 Confirmed Special Concern and Rare Wildlife Species

Eastern Wood-pewee was documented singing on both breeding bird survey dates and was considered on territory by the late June survey. The individual was located to the northeast of BMB-003 within the FOC4-1 community along the slope of the Grand River. This species prefers edges and clearing of deciduous or coniferous forest (Watt et al. 2020) and the forested slope provides suitable habitat for this species, which is known to use a variety of treed communities. Therefore, the FOC4-1 community is confirmed SWH for Special Concern and Rare Wildlife Species. The proposed development will be located outside of this confirmed SWH.

5.5 Aquatic Habitat

The section of the Grand River adjacent to the subject property provides direct fish habitat that supports a diverse warmwater fish community, including Smallmouth Bass and Northern Pike (GRCA 2005, MNRF 2007). This stretch is characterized by abundant in-stream cover and a variety of habitat types, including rock substrates (e.g., cobble, gravel and boulder), riffle, run,

and pool habitats, backwater areas, and aquatic vegetation. These areas provide suitable foraging, rearing, and spawning habitat for a variety of small and large-bodied fish species. The DFO Aquatic SAR Mapping Tool indicates that no aquatic SAR or their critical habitat occur within this stretch of the Grand River (Government of Canada 2022).

6.0 Impact Analysis

The boundaries of significant natural features and their recommended buffers were provided to the study team to guide the layout of the proposed development. This information was combined with other physical and planning constraints to design a suitable development plan for the subject property which respects the natural environment. The proposed development concept is shown on Map 3. Further details of the proposed development are included in the Preliminary Hydrogeology Study (GM BluePlan 2023a) and Functional Servicing Report (GM BluePlan 2023b).

6.1 Proposed Undertaking

The proposed development is a residential subdivision with single family and semi-detached lots, townhomes, and apartments, as well as open space areas, parks, stormwater management (SWM) facilities, and internal roadways. The development will be serviced with municipal water and sewage services.

A SWM "treatment train" approach will be applied to remove sediments and contaminants prior to the discharge of runoff to receiving outlets (i.e., Grand River and existing wetland) (GM BluePlan 2023b). The SWM facility will outlet to a linear dispersion trench that will direct flow to follow existing topography to the wetland and the Grand River (GM BluePlan 2023b).

The location of the linear dispersion trench was discussed in detail amongst the team. Due to the required elevation of the dispersion trench outlet, which must be above the Grand River 100-year flood level elevation of 455.13 m.a.s.l., the options for the location of this feature included an alignment through the coniferous forest to the north of the wetland, or through the narrow clearing between the wetland and the forest. NRSI biologists provided guidance to the team that the alignment in close proximity to the wetland represents a much-reduced impact in comparison to the clearing of a swath of forested slope. The potential impacts and recommended mitigations are outlined in the following sections.

6.2 Approach to Impact Analysis

The impact analysis presented here is based on a comparison of the development details to the existing natural features, their significance and sensitivity, and recommended buffers. The impact analysis incorporates the results of the Preliminary Hydrogeology Study (GM BluePlan 2023a) and Functional Servicing Report (GM BluePlan 2023b). The following is a description of the types of impacts which are discussed:

- **Direct** impacts to the natural features on the subject property associated with disruption or displacement caused by the actual proposed 'footprint' of the undertaking;
- **Indirect** impacts associated with changes in site conditions such as drainage and water quantity/quality; and
- **Induced** impacts associated with impacts after the development is constructed such as subsequent demand on the resources created by increased habitation/use of the area and vicinity.

6.3 Buffers

Using background information, data collected during field surveys, and referring to relevant policies, natural feature constraints within the Study Area were delineated and recommended buffers were applied.

The large woodland feature in the eastern portion of the subject property will generally be provided a 10m buffer from the feature dripline (Map 3). This buffer is anticipated to provide adequate protection to the ecological form and function of the woodland feature which contains confirmed SWH and candidate SAR habitat. Along much of the length of the feature, the existing edge is comprised of mature White Cedar that provides a wall of dense foliage that would separate the core of the natural feature from the adjacent development. Proposed encroachment into a portion of this buffer to facilitate site grading is discussed in Section 6.4.2 and is shown on Map 3.

The SWD4 wetland community will generally be provided a 15m buffer from the wetland boundary (Map 3). An encroachment on the northern portion of the wetland buffer is proposed to accommodate the construction of the linear dispersion trench. Recommendations to mitigate any potential impacts to the natural features are outlined in the following sections.

6.4 Direct Impacts and Recommended Mitigation

The approach to identifying and delineating the natural features and associated buffers was aimed at avoiding direct impacts from development on important natural features as much as possible. Tree and vegetation removal and site grading are sources of direct impacts associated with the proposed development. Comparison of the proposed development plan with the existing natural features in the Study Area indicates that the development is proposed to overlap with natural features as follows:

- 2.03ha of conifer plantations (CUP3-2) within the subject property are proposed for removal;
- 0.33ha of cultural woodland communities (CUW1) within the subject property are proposed for removal;
- 5.81ha of the cultural meadow (CUM1), the abandoned aggregate pit, are proposed for removal;
- 5.75ha of the cultural meadow community (CUM1-1) within the subject property is proposed for removal; and
- Removal of isolated trees within the subject property.

6.4.1 Tree and Vegetation Removal

The entire CUM1 (abandoned aggregate pit) community and 5.75ha of the CUM1-1 community within the subject property are proposed for removal. The CUM1 community contains a series of old ATV trails that are now used as walking trails. This community is largely comprised of non-native and early successional plant species. With the exception of several species of asters and goldenrods, the CUM1-1 community is also almost entirely comprised of non-native vegetation species. The CUM1 and CUM1-1 communities do not provide SWH or habitat for regionally, provincially, or federally significant vegetation species. However, the CUM1 (abandoned aggregate pit) community provides breeding habitat for Eastern Meadowlark, with probable breeding evidence documented due to the presence of singing male birds at the various survey stations over the course of the breeding bird surveys.

Four CUP3-2 communities (totaling 2.03ha), one CUW1 community and a portion of three CUW1 communities (totaling 0.33ha) are proposed for removal. The CUW1 communities are dominated by non-native and invasive vegetation species and contain dumped building materials and other household waste. These communities do not provide SWH or habitat for regionally, provincially, or federally significant vegetation or wildlife species.

In total, 606 trees ≥10cm DBH were inventoried and 1,415 trees were tallied within and adjacent to the subject property. As outlined in the Tree Inventory and Preservation Plan (Appendix IV), the location of inventoried trees was compared to the grading plans and tree removal and retention was determined. Of the 2,021 trees inventoried, 1,840 are anticipated to be removed to facilitate the proposed development (436 individually inventoried trees and 1,404 tallied trees). No regionally, provincially, or federally significant tree species were observed within the subject property.

Mitigation:

- *Detailed restoration planting plans should be prepared for the woodland and wetland buffers. Restoration plantings within the woodland buffer will result in an additional 1.09ha of woodland area contiguous with the existing feature and plantings within the wetland buffer will result in an additional 0.26ha of naturalized area surrounding the wetland feature.;*
- *During the development of planting plans, it is recommended that design options that mitigate for the loss of canopy cover from tree removals be considered. Tree compensation measures are outlined in the Tree Inventory and Preservation Plan (Appendix IV);*
- *A naturalized planting approach within the buffers is recommended to improve the existing condition of the natural features, increase the prevalence of native species, and improve wildlife and pollinator habitat;*
- *Species used for buffer plantings should be native to the area and be comprised of a mix of species (trees, shrubs, and herbaceous) to avoid a monoculture;*
- *Landscape plantings incorporated into the overall development area should not include any invasive species, such as Norway Maple or Tree of Heaven;*
- *Plantings adjacent to parking areas, roads, etc., should be tolerant of urban conditions such as drought and salt; and*
- *Plantings should be maintained appropriately throughout the warranty period.*

6.4.2 Site Grading

The woodland feature in the east portion of the subject property will generally be protected and buffered as shown on Map 3. However, grading within the woodland buffer is proposed at the rear of lots 19-26, as well as lots 38-40. This is not anticipated to negatively impact the ecological form and function of the woodland feature. The existing edge of the FOC4-1 community in the area of lots 19-26 consists of Eastern White Cedar trees which likely have reduced lateral root zones as annual tilling of the agricultural field has occurred adjacent to the woodland edge for a number of years. The proposed grading works in this area consist of adding fill above the root zone and will not result in cutting the roots of the edge trees. The proposed grading limit is a minimum of 5.0m from the woodland dripline in this area. Therefore, negative impacts to trees along the edge of the woodland feature in this area are not anticipated.

The woodland buffer at the rear of lots 38-40 currently consists of a steep embankment from the old aggregate pit. The proposed grading in this area will introduce fill to raise the grade to an elevation that likely reflects the conditions prior to aggregate extraction. The proposed grading limit is a minimum of 5.0m from the woodland dripline in this area (as per the engineering drawings). Therefore, negative impacts to trees along the edge of the woodland feature in this area are not anticipated.

Grading will also be required within the southern edge of the FOC4-1 woodland and the woodland and wetland buffers to accommodate the proposed SWM facility's linear dispersion trench (Map 3). The linear dispersion trench, associated grading and construction activities will be located outside of the wetland boundary; however, will encroach minimally into the southern edge of the FOC4-1 community. Although designing the outlet in this location, between the woodland and wetland features, will result in encroachment into buffers and the southern edge of the FOC4-1 community, the only alternative location based on topography would require the removal of a large area of trees within a portion of the FOC4-1 community, resulting in fragmentation of the woodland community.

An approximate construction footprint of 5m from the limit of grading has been shown on Map 3. Grading is proposed to occur up to a maximum of approximately 1.19m within the woodland community and works within the construction footprint may require the removal of approximately 7.56m^2 of woodland area along the southern edge of the FOC4-1 community. This will require the removal of 9 trees along the south edge of the FOC4-1 community with 8 identified for retention to be confirmed in the field as outlined in the Tree Inventory and Preservation Plan (Appendix IV). None of these trees are regionally, provincially, or federally significant species and do not provide suitable habitat for SAR bats.

Mitigation:

- *The following approach is recommended for grading activities on slopes within the woodland buffer:*
    - *Suitable Erosion and Sediment Control (ESC) measures will be put in place prior to the initiation of grading activities and restoration plantings will occur in the area of buffer that is disturbed;*
    - *Prior to any site grading, heavy duty ESC/Tree Protection Fencing (TPF) should be installed along the grading limit to prevent any impacts to the adjacent*

woodland edge. The location and installation of ESC/TPF fencing is to be inspected by a qualified professional, with inspection reports being circulated to the project team and agencies (the Town and GRCA) prior to any on-site works to confirm natural features are adequately protected;

- *Grading within 5m of the woodland dripline should be supervised by a Certified Arborist or Registered Professional Forester (RPF) to ensure that no adjacent trees identified for retention are damaged;*
- *Once grading in these areas is complete, the 10m woodland buffer should be clearly delineated with TPF and/or ESC fencing;*
- *TPF/ESC fencing must be regularly inspected and repaired or replaced in a timely manner throughout the construction phase of the project and until site soils are stabilized;*
- *Annual nurse crop and erosion blankets should be applied to the slopes after grading activities are completed. Hydroseeding or terraseeding with a native seed mix, appropriate to Dufferin County, can also be considered for these areas;*
- *Planting plans should identify hardy, fast-establishing native species in these areas to ensure that the soils are stabilized; and*
- *Prior to the implementation of the buffer planting, the few mature European Buckthorn that are present along the edge of the woodland should be removed, either cut-off at ground level with a saw or using a basal bark application of herbicide applied by a licensed contractor, to reduce the seed source and the potential for this invasive species to spread into the buffer area.*

- *The following phased approach is recommended for grading and construction activities within the woodland and woodland buffer to accommodate the construction of the linear dispersion trench:*

    - *Suitable ESC measures will be installed prior to the initiation of any grading activities within natural feature buffers. Restoration plantings and post-construction naturalization of the buffer areas, including the SWM outlet area, will mitigate any potential impacts to natural features effectively;*
    - *Prior to any site grading, trees within the woodland that are proposed for removal should be identified and clearly marked by a Certified Arborist or RPF;*

- *Tree removals should be supervised by a Certified Arborist or RPF to ensure that no adjacent trees are damaged and that works do not encroach farther than necessary into the woodland feature;*
- *Prior to grading activities, heavy duty ESC/TPF fencing should be installed along the grading limit (including limit of construction) to prevent any impacts to the retained adjacent trees;*
- *The location and installation of ESC/TPF fencing is to be inspected by a qualified professional, with inspection reports being circulated to the project team and agencies prior to any on-site works to confirm natural features are adequately protected;*
- *Grading within 5m of the woodland dripline should be supervised by a Certified Arborist or RPF to ensure that no adjacent trees identified for retention are damaged; and*
- *Once construction of the linear dispersion trench is complete, the woodland buffer and dispersion trench area should be restored through the planting of native trees, shrubs, and herbaceous species suitable for site conditions and reflective of forest communities in Dufferin County. Restoration of the linear dispersion trench should focus on the planting of native herbaceous species only, as planting of trees and shrubs may affect the function of the trench and would not be suitable.*

- *The following phased approach is recommended for grading and construction activities within the wetland buffer to accommodate the construction of the linear dispersion trench:*

  - *Prior to any grading activities, ESC fencing should be installed along the limit of grading (including limit of construction). Fencing should be installed along the limit of grading and not along the wetland boundary to maximize the setback distance from the wetland where possible;*
  - *Installation of fencing should occur once soils have thawed to allow effective post installation and keying-in of fence apron to "seal" the bottom and prevent mobile sediment from reaching the wetland;*
  - *A series of straw bales or a coir log should be set along the base of the outside of the ESC fencing as added protection against the movement of sediment;*

- *The location and installation of ESC fencing is to be inspected by a qualified professional, with inspection reports being circulated to the project team and agencies prior to any on-site works to confirm natural features are adequately protected;*
- *If dewatering is necessary, and water cannot be directed to excavations within the development area for infiltration, a pump and hose will direct water to a filter bag placed in the floodplain. The filter bag is to be located down gradient from the wetland, to the east of this feature. The filter bag should be located approximately 25m from the wetland and not in close proximity to the Grand River to allow for infiltration among the riparian meadow vegetation. To prevent scouring of soil and sediment deposition, under no circumstances should a dewatering hose discharge water into the floodplain without an end treatment feature (filter bag). Upon completion of dewatering, the filter bag will be removed from the floodplain;*
- *The contractor should prepare a dust suppression plan to ensure that dust and sedimentation does extend into the wetland and negatively affect anuran egg development;*
- *Upon final grading, a cover crop of annual rye or oats should be applied to all areas of exposed soil between the trench and the wetland. Biodegradable coconut fibre erosion blanket should also be rolled out over this area following nurse crop seeding;*
- *Once construction of the linear dispersion trench is complete, the wetland buffer and dispersion trench area should be restored through the planting of native trees, shrubs and herbaceous species suitable for site conditions; and*
- *The planting plan should include dense plantings of native clonal shrubs (e.g., Nannyberry, Gray Dogwood, Red Raspberry) and fast-establishing trees (e.g., Trembling Aspen, Eastern White Cedar, Black Cherry) and a site-appropriate seed mixture to re-establish wetland edge cover between the wetland and the trench area.*

6.4.3 Potential Impacts to Wildlife and Wildlife Habitats

Eastern Meadowlark

Probable breeding habitat for Eastern Meadowlark has been identified in the CUM1 (old aggregate pit) community. As this community is proposed for removal, consultation and permitting will be required by the Ministry of the Environment, Conservation and Parks (MECP) as the destruction of SAR habitat is a contravention under the *ESA*. Due to the limited area of available lands within the subject property, it is recommended that the removal of SAR habitat is compensated for by creating suitable habitat elsewhere within the ecodistrict, or by paying into the Species at Risk Conservation Fund.

Mitigation:

- *It is recommended that the removal of Eastern Meadowlark habitat be compensated for by creating and maintaining off-site habitat that fulfills the conditions of the Endangered Species Act. A second option to pay-in to the Species at Risk Conservation Fund can also be considered; and*
- *To avoid direct impacts to the species, vegetation and tree removal is recommended to occur outside of the active breeding bird and nesting season (approximately end April 1 – August 31).*

Significant Wildlife Habitat

The FOC4-1 community is confirmed SWH for Seeps and Springs and the FOC4-1 and FOD4 communities are confirmed SWH for Special Concern and Rare Wildlife Species (Eastern Wood-pewee). As these communities will be protected and appropriately buffered in the areas where the species and features were observed, impacts to these SWH types are not anticipated as a result of the proposed development. Encroachment into the woodland edge to accommodate the construction of the linear dispersion trench will not impact the function of the woodland to support these types of SWH and wildlife species.

Other Wildlife

The proposed development may temporarily displace wildlife species that are currently using the subject property while the site is under construction. Species that use the subject property are common and well-adapted to relatively urban conditions and landscapes, and are expected to return to the adjacent natural areas post-development. The native tree, shrub, and herbaceous plantings to be incorporated into the restoration planting plans within the woodland

and wetland buffers will enhance current conditions and when established, provide suitable habitat for local wildlife.

Vegetation clearing has the potential to directly impact bird breeding activity through damage and destruction of nests, eggs, and young, or avoidance of the area by breeding adults.

Construction works within the vicinity of the wetland may results in direct impacts to wetland wildlife. For example, anurans may be harmed by machinery operating in close proximity to the wetland.

Mitigation:

- *To remain in compliance with the Migratory Birds Convention Act (MBCA, 1994), vegetation and tree removal is recommended to occur outside of the active breeding bird and nesting season for migratory birds as established by the Canadian Wildlife Service;*
- *The peak breeding period for birds in southern Ontario extends from approximately April 1 through August 31 (Government of Canada 2018);*
- *Should vegetation removal be required during the breeding and nesting season for migratory birds, surveys for nesting birds in "simple habitats" may be undertaken by a qualified biologist to permit vegetation removal should breeding bird absence be confirmed;*
- *Equipment operators should be trained on a wildlife protocol. For example, if wildlife is spotted within the work area, cease construction operations, and allow it passage or assist it to move out of the area. A qualified biologist should be contacted if assistance is required to move any wildlife (e.g., if a turtle is encountered);*
- *Keyed-in ESC fencing will provide a separation between the wetland anuran habitat and the temporary disturbance associated with the dispersion trench construction; and*
- *Equipment operators should inspect the area around idle machinery within the vicinity of the wetland each morning for wildlife prior to beginning work.*

6.5 Indirect Impacts and Recommended Mitigation

Construction of the proposed development has the potential to cause indirect impacts to adjacent natural features and functions, if not mitigated appropriately. Recommended mitigation measures are provided for each potential impact below.

6.5.1 Surface Water Flow Patterns

The existing drainage conditions of the subject property generally consists of sheetflow overland across the subject property to the Grand River. Located to the east of a soil berm (the old aggregate pit wall), the wetland catchment is localized and the hydrology of this feature appears to be associated with the water table elevation with minimal surface water input. The SWM plan for the proposed development will result in the majority of runoff being directed to the SWM pond through the storm sewer system, roadway network, or overland sheetflow (GM BluePlan 2023b).

The SWM facility will outlet to a linear dispersion trench (15m long, 8m wide, and 0.5m deep) that will direct flow to the Grand River, with a smaller portion directed to the wetland (GM BluePlan 2023b). The trench will spread flows over a wide area in order to prevent a point source discharge and associated erosion issues. Flows that spill over the south side of the trench will discharge to the wetland with the majority of flow directed down the trench and dispersing across the existing floodplain topography in an easterly direction, ultimately reaching the Grand River.

In the post-development conditions, the flow rates to the wetland are generally reduced or similar to the existing (pre-development) flows, while the runoff volumes are generally increased (GM BluePlan 2023b). The post-development peak flow rates for the subject property are generally lower than the pre-development peak flow rates under minor storm events, as the SWM plan routes flows to the Grand River as quickly as possible (GM BluePlan 2023b).

Although the existing wetland does not provide SWH or habitat for significant species, it does provide breeding habitat for a small number of common anuran species. As flows will continue to be discharged to the wetland and the hydrology is closely tied to the groundwater elevation, it is anticipated that the wetland will continue to provide a suitable hydroperiod for anuran breeding.

Mitigation:

- *The localized catchment of the wetland, somewhat isolated from the development area by a soil berm, will be maintained. The SWM dispersion trench directs most surface water leaving the development to the Grand River to replicate existing conditions. The wetland may receive spill over from the trench under significant precipitation events across a naturalized separation between the wetland and trench.*

6.5.2 Water Quality

The SWM plan will provide an enhanced level of quality control (80% Total Suspended Solids (TSS) removal) from all runoff discharging from the site. A SWM "treatment train" approach will be applied to remove sediments and contaminants prior to the discharge of runoff to the Grand River and existing wetland (GM BluePlan 2023b). This will include lot level controls such as roof drainage first being filtered across grassed surfaces, flows being directed to rear yard swales to increase the contact time with grassed surfaces, and installing connections from the foundation drainage to the storm sewer system (GM BluePlan 2023b). Conveyance controls will be implemented by municipal maintenance of the storm sewer system. Oil/grit separators will provide pre-treatment of runoff before entering the SWM facility. The SWM facility has been designed as a wetland type facility with forebays and permanent pools to provide end of pipe water quality controls.

Therefore, it is anticipated that no significant impacts to the water quality of the wetland and the Grand River will occur as a result of the discharge from the proposed development. If all mitigation measures outlined in this report are implemented, no impacts to the water quality of the wetland due to construction activities are anticipated.

Mitigation:

- *Information packages provided to new homeowners should include reference to salt alternatives such as sand application on driveways and limiting the use of lawn fertilizers. The brochure or information sheet should highlight the connection between salt, fertilizer or petroleum runoff with the stormwater system and the health of the Grand River.*

6.5.3 Erosion and Sedimentation During Construction

During vegetation removal and site grading activities, areas of bare soil will be exposed which have the potential to erode during rainfall events and impact adjacent natural features. The removal of vegetation in combination with the presence of exposed soils during construction activities may also increase the potential for stormwater flow to down-slope areas if not appropriately mitigated. Increased stormwater surface flow and erosion processes may cause the deposition of sediments onto down-slope vegetation and receiving water bodies, ultimately causing vegetation die-back or impaired health. Further, sedimentation to the receiving water bodies may negatively impact fish habitat and the associated fish communities by inundating rock substrates with fine sediment or increasing turbidity.

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

Mitigation:

- *In order to protect on-site natural features from potential impacts due to sediment, an ESC Plan must be developed and implemented prior to any construction activities on-site. The primary principles associated with ESC protection measures are to: (1) minimize the duration of soil exposure, (2) retain existing vegetation, where feasible, (3) encourage re-vegetation as soon as feasible, (4) divert runoff away from exposed soils, (5) keep runoff velocities low, and (6) trap sediment as close to the source as possible.*

- *The following general recommendations should be implemented to mitigate erosion and sedimentation impacts:*

    - *Installation of heavy-duty ESC fencing along the construction limits in all locations where run-off will discharge to adjacent lands or on-site natural features and buffers;*
    - *ESC measures must be regularly inspected and repaired or replaced in a timely manner throughout the construction phase of the project and until site soils are*

stabilized. Accumulated sediment must be removed immediately and maintained away from natural areas;

- *Seeding of all graded areas not subject to active construction within 30 days. An annual nurse crop is recommended throughout the site, especially where exposed soils are adjacent to the woodland and wetland features. A native seed mix, appropriate to the site conditions, should be applied in areas adjacent to existing natural features once the final grade is achieved;*
- *Topsoil piles be located away from adjacent natural features and that ESC fencing be installed around piles to prevent off-site migration of water-borne sediments;*
- *Exclude machinery from entering/working in the buffer areas and locate material stockpiles and equipment storage locations away from natural features; and*
- *A Best Management Practice (BMP) and spill contingency plan (including a spill action response plan) should be in place for fuel handling, storage, and onsite equipment maintenance activities to minimize the risk of contaminant releases as a result of the proposed construction activities.*

6.5.4 Adjacent Communities

Vegetation clearing and other construction activities have the potential to inadvertently destroy, damage, and degrade existing vegetation along the development limits unless the development limit boundaries are clearly marked. For example, construction activities can cause scarring and decreased health of adjacent trees whose branches or root systems have been damaged by machinery or affected by construction-related dust and sedimentation. Damage to trees and other vegetation can also be caused by the compaction of soils within tree rooting zones along the woodland edge at the development limits.

Direct damage and indirect disturbances can cause stresses on the natural features that weaken their ecological integrity. Soil disturbance near natural features can lead to the establishment and proliferation of invasive, non-native species. Proliferation of invasive, non-native species within natural communities decreases their ecological value by suppressing native species, diminishing biodiversity, and reducing habitat suitability for wildlife.

Mitigation:

- *To limit ecological impacts during construction, clearly defined construction limits should be established with heavy-duty ESC fencing to avoid unnecessary vegetation removal. TPF should be installed following the requirements outlined in the TIPP (Appendix IV). In many areas, the TPF will align with the ESC fencing limit;*
- *With the exception of the stormwater management pond outlet (discussed under the following bullet), all TPF must be installed prior to construction activities, and be inspected by a Certified Arborist or RPF. Where TPF is not required along construction area limits, other forms of boundary demarcation should be used, which may include ESC fencing or brightly-coloured snow fencing;*
- *In the vicinity of the stormwater management pond outlet, tree removal may need to occur prior to fence installation. Those trees marked for removal along the outlet should be removed under the supervision of a Certified Arborist or Registered Professional Forester. Stumps of these trees should be retained and trees should be felled and dropped away from the natural area to ensure no further disturbance of adjacent trees. Earth works will not proceed in this area until the TPF/ESC fencing is installed;*
- *All forms of fencing installed as per the TIPP should be monitored by a qualified professional and maintained regularly throughout the construction phase of the project to ensure the fence is functioning as intended and vegetation identified to be retained is adequately protected;*
- *Any limbs or roots of trees to be retained which are damaged during construction should be pruned using appropriate arboricultural techniques; and*
- *Designated areas for construction lay-down, vehicle access and parking, equipment storage, materials stockpiling, and any on-site construction offices should be located entirely outside of the retained natural features and their buffers, and preferably located away from buffers so as to limit potential to indirectly impact the adjacent natural features. Specifically, no material stockpiling, equipment storage, fuel tanks, or re-fueling should be located within 50m of the wetland feature.*

6.5.5 Wildlife

Increased disturbance caused by excessive noise, dust, vibrations, artificial night-time lighting, and proximity of human presence during construction may cause certain wildlife species to

abandon or avoid the area for travel, nesting, roosting, or foraging. However, these impacts are anticipated to be minimal, localized, and temporary, and it is expected that displaced wildlife species will return to the Study Area following construction.

Mitigation:

- *In order to suppress dust, areas of bare soil can be dampened with water during construction activities to ensure that the amount of dust originating from within the subject property is reduced. A nurse crop of annual grass seed can be applied to areas of bare soil that will remain inactive for an extended period;*
- *Topsoil stockpile locations should be located in areas of lesser wind exposure and away from natural features and their buffers;*
- *To reduce noise impacts, construction activities should be limited to daylight hours; and*
- *Any lighting equipment associated with construction activities should be turned off following cessation of daily construction activities, or at least turned away from the adjacent natural features to prevent 'light wash' of these areas.*

6.6 Induced Impacts and Recommended Mitigation

Induced impacts are described as those that are not directly related to the construction or operation of the facilities in question, but rather arise from the use of the natural areas as a result of the development. The simplest example is an increase in the use of natural areas adjacent to a residential development by residents, feral domestic wildlife, and unauthorized trail/pathway construction. Natural areas and wildlife can be affected by the presence of residences and their occupants. Effects can include vegetation trampling, plant removal, dumping of refuse, creation of unauthorized trails, tree damage, introduction of non-native plant species, and wildlife predation and harassment by domestic pets.

Mitigation:

- *Restore and enhance the woodland and wetland buffers with a mix of native species to increase the setback from the development;*
- *It is recommended that permanent chain-link fencing with no gates be established along the rear and/or sides of lots located adjacent to natural feature buffers. Installation of permanent fencing with no gates is anticipated to represent an*

effective deterrence to human encroachment from these lots and the dumping of refuse or garden waste from the rear or sides of these lots into the adjacent natural areas;

- *Information packages provided to new homeowners should highlight the importance of proper yard waste disposal and the threat to natural areas posed by invasive garden plants such as Common Periwinkle (Vinca minor) and Goutweed (Aegopodium podagraria); and*
- *Any permanent outdoor lighting should be directed away from the natural features.*

7.0 Restoration and Enhancement

It is recommended that the woodland and wetland buffer areas, as well as the SWM outlet area, be restored and enhanced through the planting of native trees, shrubs, and herbaceous vegetation suitable for site conditions throughout the buffer areas. The TIPP outlines the recommendations for tree removal compensation (Appendix IV). The buffer areas should be designed as natural self-sustaining communities (i.e., not manicured landscaping areas). A restoration planting plan should be created outlining the details of planting plans.

The removal of several mature Common Buckthorn along the edge of the FOC4-1 community is also recommended to enhance the overall health of the woodland community and prevent the establishment and proliferation of invasive species within the restored woodland buffer areas. An invasive species removal plan is not necessary and a qualified biologist can direct these removals.

8.0 Monitoring

Pre-, during-, and post-construction monitoring is recommended as a means to ensure that the adjacent natural features are not impacted throughout all stages of property development. The recommended monitoring components are described below. Further details are recommended to be provided in a monitoring plan.

8.1 Pre-Construction Monitoring

- As described above, prior to the initiation of any construction activities within natural feature buffers, including vegetation clearing and site grading, on-site inspections of the following should be undertaken to ensure proper installation:
    - Erosion and sediment control measures (e.g., ESC fencing); and
    - Tree and natural area protection measures, including proper installation of TPF as confirmed by a Certified Arborist or RPF.
- Should vegetation and/or tree removal be required during the breeding and nesting season for migratory birds, surveys for nesting may be undertaken by a qualified biologist in simple habitats to permit vegetation removal should breeding bird absence be confirmed. Surveys should be completed prior to vegetation and tree removals; and
- Any grading activities within the natural feature buffers should be supervised by a Certified Arborist or RPF to ensure that no adjacent trees are injured and that works do not damage adjacent trees to be retained.

8.2 Construction Monitoring

Construction monitoring is the responsibility of the proponent and is tied to the specific undertaking. Generally, construction monitoring must occur to ensure compliance with the conditions of various permits. The following measures are recommended, at a minimum, during construction and will be the responsibility of the contract administrator or environmental monitor unless otherwise indicated:

- Periodic monitoring and repair of the above measures to ensure maintenance and effectiveness;
- Pruning of any limbs or roots (of trees to be retained) damaged during construction following proper arboricultural techniques; and

- Monitoring compliance of construction personnel toward adherence of required restrictions/limitations on personnel and vehicle access in buffers, machinery fueling locations, and equipment/stockpile locations away from natural features and buffers.

8.3 Post-Construction Monitoring

A post-construction monitoring plan is recommended to commence upon completion of site development and stabilization of exposed soils. Monitoring is recommended to include the following components:

- Inspections of the restored buffer areas to ensure proper establishment and succession toward the intended vegetation community composition. Monitoring will determine if any adaptive management actions are required to ensure the intended community composition is achieved and maintained (i.e., invasive species management);
- Inspection of seed establishment and stabilization of the buffer areas, followed by recommending removal of the ESC (which doubles as TPF in many areas) so that it doesn't remain in the environment; and
- Inspection of landscape plantings as per the standard warranty period (i.e., typically two years). All posts and tree ties should be removed to prevent girdling of the planted tree stock.

9.0 Summary

NRSI was retained to complete an EIS and TPP for the River's Edge subdivision development in the Town of Grand Valley, Ontario. This report provides a characterization of the natural features and their functions within the Study Area and an impact analysis based on the proposed development activities. It summarizes background information on natural heritage features, as well as the results of field surveys conducted by NRSI biologists. An assessment of potential impacts associated with details of the proposed development is provided along with recommended mitigation measures for avoiding or minimizing impacts.

Important natural features within the Study Area include the Grand River, an unevaluated wetland, and a woodland feature that is designated as Environmental Conservation by the Town of Grand Valley and part of the Dufferin County Natural Heritage System. The woodland feature is designated as confirmed SWH for Seeps and Springs, as well as Special Concern and Rare Wildlife Species (Eastern Wood-pewee). Candidate habitat for bat SAR and probable breeding habitat for Eastern Meadowlark are also present within the subject property. Although not considered SWH, the small wetland provides breeding habitat for anurans.

The proposed development incorporates suitable buffers for the woodland feature (10m) and wetland feature (15m) that will be restored and enhanced with a mix of native vegetation species suitable for site conditions. The restored woodland and wetland buffer areas will provide these natural features with additional protection from the potential impacts associated with the proposed development. It is recommended that the removal of confirmed breeding habitat for Eastern Meadowlark will be compensated for through habitat creation or payment into the Species at Risk Conservation Fund.

Direct and indirect impacts to natural features can generally be avoided if mitigation measures are properly implemented. A comprehensive list of mitigation measures that have been recommended for avoiding or minimizing impacts to the natural features and wildlife within the Study Area has been provided.

Provided that the mitigation strategies detailed in Section 6.0 of this scoped EIS are implemented, no adverse impacts to natural features or their ecological functions, as well as wildlife, are anticipated to result from the proposed development.

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Appendix I
Proposed Development Plan

Additional Lands Owned By Applicant

TOWNHOUSE
BLOCK 183
78 UNITS
2.125ha

APARTMENT
BLOCK 184
63 UNITS
1.268ha

PARK
BLOCK 185
0.532ha

PARK
BLOCK 186
2.0ha

STORMWATER
MANAGEMENT
BLOCK 188
2.321ha

OPEN
SPACE
BLOCK 187
13.434ha

FUTURE
DEVELOPMENT
BLOCK 189
0.786ha

WATER TOWER
BLOCK
190
0.047ha

COUNTY ROAD 25

BIELBY STREET

LUTHER ROAD

RIVER HILL STREET

JOYCE COURT

MARY COURT

SPRUYT AVENUE

BAKER COURT

CROZIER STREET

STREET A

STREET B

STREET C

SCOTT STREET

AMARANTH STREET EAST
(ORIGINAL ROAD ALLOWANCE BETWEEN CONCESSIONS 2 AND 3)

Grand River

FLOODLINE

HIGH WATER MARK

TOP OF BANK BY PETO MACCALLUM FEBRUARY 2012

6m SETBACK FROM TOP OF BANK

TREE DRIPLINE

REGULATORY FLOODPLAIN FROM GRCA DECEMBER 12, 2020

DRIPLINE FLAGGED BY NSRI JULY 12, 2022

10m BUFFER FROM DRIPLINE

15m WETLAND BUFFER

WETLAND BOUNDARY FLAGGED BY NRSI ON JULY 12, 2022

EXISTING HYDRO EASEMENT

DUFFERIN CONDOMINIUM PLAN 9

PART 1, PLAN 7R-1964

PART 1, PLAN 7R-1543

PART 1, PLAN 7R-4933

PART 2, 7R-1087

PART 1, 7R-1578

PART 2, 7R-3085

PART 3, 7R-5814

PART 1, 7R-4870

PART 11, 7R-4211

PART 12, 7R-4211

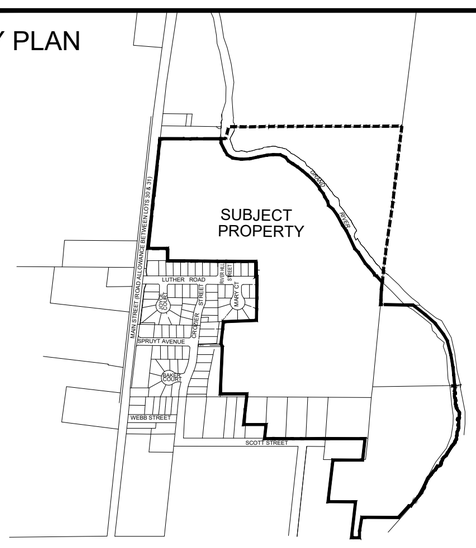
LOT 31, CON. 3

LOT 32, CON. 3

PLAN 114

REG'D PLAN

KEY PLAN
N.T.S.



LAND USE SCHEDULE

DESCRIPTION	LOTS /BLOCKS	UNITS	AREA (ha)
SINGLE DETACHED LOTS			9.271
11.6m	1-6, 52, 70-78, 82-83, 87-86, 108-118, 129-139, 160-163	54	
12.8m	7-29, 42-44, 50-51, 79-81, 84, 97-107, 126-128, 140-143, 146-159, 164-168, 178-179	71	
14.32m	40-41, 45-47, 54-69, 85, 144-145, 169-173, 175-176, 180-182	34	
15.84m	30-39, 48-49, 53, 86, 174, 177	16	
SEMI DETACHED	119-125	14	0.373
TOWNHOUSES	183	78	2.125
APARTMENT	184	63	1.268
PARK	185-186		2.532
OPEN SPACE	187		13.434
STORMWATER MANAGEMENT	188		2.321
FUTURE DEVELOPMENT	189		0.786
TO BE ADDED TO WATER TOWER	190		0.047
ROADS			4.425
TOTAL	190	330	36.583ha

ADDITIONAL INFORMATION
(UNDER SECTION 51(17) OF THE PLANNING ACT)

INFORMATION REQUIRED BY CLAUSES a,b,c,d,e,f,g,j and l ARE AS SHOWN ON THE DRAFT PLAN.
h) Municipal water supply
i) Silt, Clayey Silt Till, Gravel, Gravelly Sand, Sand, Unsubdivided Silt
k) All sanitary and storm sewers as required

OWNER'S CERTIFICATE

I AUTHORIZE THE GSP GROUP INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO RELATIONSHIP TO THE ADJACENT LANDS ARE CORRECTLY SHOWN.

Tom Krizsan
Ariss Glen Developments Limited

DATE

SURVEYOR'S CERTIFICATE

I CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE CORRECTLY SHOWN.

James. M. Laws
Ontario Land Surveyor

DATE

DRAFT PLAN OF SUBDIVISION

THOMASFIELD HOMES
RIVER'S EGDE

PART OF LOT 31, CONCESSION 3
GEOGRAPHIC TOWNSHIP OF EAST LUTHER
ALL OF BLOCK C
REGISTERED PLAN 114
(VILLAGE OF GRAND VALLEY)
TOWN OF GRAND VALLEY
COUNTY OF DUFFERIN

GSP group
PLANNING I URBAN DESIGN I LANDSCAPE ARCHITECTURE
gspgroup.ca

REVISIONS

Date: August 29, 2023	Drawn By: MN	Dwg File Name: dp23048a.dwg
Scale: 1: 1500 metric	Project No.: 23048	

Appendix II

Species at Risk and Species of Conservation Concern Screening Table

Species at Risk and Species of Conservation Concern Screening

Scientific Name	Common Name	S-RANK[1]	SARO[2]	COSEWIC[3]	SARA[3]	Background Source	Habitat Preference[4]	Suitable Habitat Present?	Rationale	NRSI Observed
Birds										
Buteo lineatus	Red-shouldered Hawk	S4B	NAR	NAR	Schedule 3	BSC et al. 2006	Moist, mature hardwood forests; woody swamps or wooded margins of marshes; wet bottomlands; restricted to mature, closed (>80%) closed forests; nests reused; requires a minimum of 10 ha of continuous forest to meet territorial requirements; prefers >100 ha of forest; tends to nest in interior.	No	Suitable habitat is not present within the study area.	No
Contopus virens	Eastern Wood-pewee	S4B	SC	SC	Schedule 1	BSC et al. 2006	Deciduous and mixed woodlots of varying size including small features. This species can be found in both urban and rural settings and prefers edge habitat.	Yes	Probable breeding evidence of Eastern Wood-pewee within the FOC4-1 community to the northeast of BMB-003 was documented during breeding bird surveys.	Yes
Dolichonyx oryzivorus	Bobolink	S4B	THR	SC	Schedule 1	BSC et al. 2006	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	Yes	Probable breeding evidence of Bobolink within the hayfield near BMB-004 was documented during breeding bird surveys. However, this field is cut at least once per year for hay and has alternated between hay and annual row crops in recent years.	Yes
Hirundo rustica	Barn Swallow	S4B	SC	SC	Schedule 1	BSC et al. 2006	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	Yes	Suitable foraging habitat may be present, but there are no structures present that could provide nesting habitat.	No
Hylocichla mustelina	Wood Thrush	S4B	SC	T	Schedule 1	BSC et al. 2006	Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m.	No	One individual was observed exhibiting possible breeding evidence in the FOD4 community during breeding bird surveys. The narrow habitat appears to be marginally suitable, lacking the mature hardwood forest composition that this species typically utilizes.	Yes
Riparia riparia	Bank Swallow	S4B	THR	T	Schedule 1	BSC et al. 2006	Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence.	No	Suitable banks are not present within the study area.	No
Sturnella magna	Eastern Meadowlark	S4B	THR	T	Schedule 1	BSC et al. 2006	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	Yes	Individuals were observed exhibiting possible breeding evidence at all monitoring stations during breeding bird surveys. The only suitable nesting habitat is present within the old agregate pit (CUM1 community).	Yes

Scientific Name	Common Name	S-RANK[1]	SARO[2]	COSEWIC[3]	SARA[3]	Background Source	Habitat Preference[4]	Suitable Habitat Present?	Rationale	NRSI Observed
Herpetofauna										
Chelydra serpentina serpentina	Common Snapping Turtle	S3	SC	SC	Schedule 1	Ontario Nature 2019	Permanent or semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddybanks or bottoms. The species often uses soft soil or clean dry sand on south-facing slopes for nest sites and may nest at some distance from water.	No	Although Snapping Turtle may use the creek or river corridors for movement, suitable overwintering and basking habitats are not present within the study area.	No
Chrysemys picta marginata	Midland Painted Turtle	S4	NAR	SC	No Schedule	Ontario Nature 2019	Ponds, marshes and slow-moving creeks with muddy bottoms and basking sites available.	No	Suitable habitat is not present within the study area.	No
Mammals										
Microtus pinetorum	Woodland Vole	S3?	SC	SC	Schedule 1	Dobbyn 1994	In Ontario, the Woodland Vole lives in mature deciduous forest in the Carolinian region where there is a deep litter layer that allows it to burrow.	No	Rich forest with abundant leaf litter is not present.	No
Myotis leibii	Eastern Small-footed Myotis	S2S3	END			Dobbyn 1994	Roosts in rock piles, caves, buildings, under bridges and in hollow trees.	No	Suitable habitat is not present within the study area.	No
Myotis lucifungus	Little Brown Myotis	S5	END	E	Schedule 1	Dobbyn 1994	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges	Yes	Suitable roosting habitat is present in candidate roost trees identified during the bat habitat assessment. No targeted bat surveys were completed.	No
Myotis septentrionalis	Northern Myotis	S3?	END	E	Schedule 1	Dobbyn 1994	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, man-made structures but prefers hollow trees or under loose bark; hunts within forest, below canopy	Yes	Suitable roosting habitat is present in candidate roost trees identified during the bat habitat assessment. No targeted bat surveys were completed.	No
Perimyotis subflavus	Tri-colored Bat	S3?	END	E	Schedule 1	Dobbyn 1994	During the summer, found in a variety of forested habitats. Day roosts and maternity colonies in older forest and occasionally in barns or other structures. Forage over water and along streams in the forest. Overwinter in caves.	Yes	Suitable roosting habitat is present in candidate roost trees identified during the bat habitat assessment. No targeted bat surveys were completed.	No
Taxidea taxus jacksoni	American Badger	S2	END	E	Schedule 1	Dobbyn 1994	In Ontario, badgers are found in a variety of habitats, such as tall grass prairie, sand barrens and farmland. These habitats provide badgers with small prey, including groundhogs, rabbits and small rodents.	No	The soils in the Grand Valley area are not sandy and conducive to Badger dens. Badger are known from much further south (Waterloo Region) but Grand Valley is removed from their known range. No candidate Badger dens were observed during surveys.	No

[1]NHIC 2022; [2]Government of Ontario 2023; [3]Government of Canada 2023; [4]OMNR 2000

Appendix III
Significant Wildlife Habitat Screening Tables

Significant Wildlife Habitat Assessment Tables

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Terrestrial)					
Rationale: Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	Fields with sheet water during Spring (mid March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available[cxlviii]. Information Sources • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • Any mixed species aggregations of 100 or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependent on local site conditions and adjacent land use is the significant wildlife habitat[cxlviii]. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMiST[cxlix] Index #7 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Aquatic)					
Rationale: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked Duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). Information Sources • Environment Canada • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100[i] or more of listed species for 7 days[i], results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH[cxlix] • The combined area of the ELC ecosites and a 100m radius area is the SWH[cxlviii] • Wetland area and shorelines associated with sites identified within the SWHTG[cxlviii] Appendix K[cxlix] are significant wildlife habitat. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWHMiST[cxlix] Index #7 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shorebird Migratory Stopover Area					
Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin Whimbrel	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. Information Sources • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area[cxviii] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #8 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Raptor Wintering Area					
Rational: Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class: Forest: FOD, FOM, FOC Upland: CUM, CUT, CUS, CUW	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering sites need to be > 20 ha[cxlviii, cxlix] with a combination of forest and upland.[xvi, xvii, xviii, xix, xx, xxi]. Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands[cxlix] Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water, large trees and snags available for roosting Information Sources • OMNRF Ecologist or Biologist • Field Natural Clubs • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Reports and other information available from Conservation Authorities CAs.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years)[cxlix] for a minimum of 20 days by the above number of birds • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Hibernacula					
Rationale Bat hibernacula are rare habitats in Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH • The locations of bat hibernacula are relatively poorly known. Information Sources • OMNRF for possible locations and contact for local experts • Natural Heritage Information Center (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH. • The habitat area includes a 200m radius around the entrance of the hibernaculum[cxlviii, ccvii] for most. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"[ccv] • SWHMiST[cxlix] Index #1 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Maternity Colonies					
Rationale: Known locations of forested bat maternity colonies is extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	Maternity colonies can be found in tree cavities, vegetation and often in buildings[xxii, xxv, xxvi, xxvii, xxxi] (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario[xxii] • Maternity colonies located in Mature deciduous or mixed forest stands[ccix, ccx] with >10/ha large diameter (>25cm dbh) wildlife trees[ccvii] • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3[ccxiv] or class 1 or 2[ccxii] • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred[ccx] Information Sources • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts.	• Maternity Colonies with confirmed use by: • >10 Big Brown Bats • >5 Adult Female Silver-haired Bats • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for wind Power Projects[ccv] • SWHMiS T[cxlix] Index #12 provides development effects and mitigation measures.	Bat habitat assessments have been completed in all of the listed ELC communities. None of these communities meet the criteria for bat maternity colony SWH. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Turtle Wintering Area					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles - ELC Community Classes: SW, MA, OA and SA; ELC Community Series: FEO and BOO Northern Map Turtle - Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen[cix, cx, cxi, cxviii]. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. Information Sources • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF ecologist or biologist • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May)[cvii] • Congregation of turtles is more common where wintering areas are limited and therefore significant[cix, cx, cxi, cxii]. • SWHMiST[cxiix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Snake Hibernaculum					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake Lizard: Special Concern (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. The existence of features that go below the frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line[xliv, l, li, liii, cxii.] • Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. • Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures cciii. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information from CAs. • Local Field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. clubs • Natural Heritage Information Center (NHIC) • OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population [i.e. strong hibernation site fidelity]. Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30m buffer is the SWH[i] • SWHMiST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula. • Presence of any active hibernaculum for skink is significant. • SWHMiST[cxlix] Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)					
Rationale: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow populations are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources • Reports and other information available from CAs • Ontario Breeding Bird Atlas [ccv] • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist clubs	Studies confirming: • Presence of 1 or more nesting sites with 8[cxlvix] or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests[ccvii] • Field surveys to observe and count swallow nests are to be completed during the breeding season Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #4 provides development effects and mitigation measures	Suitable habitat is not present within the study area. The naturalized gravel pit to the north of the Grand River does not contain steep slopes. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)					
Rationale: Large Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15m from ground, near the top of the tree. Information Sources • Ontario Breeding Bird Atlas[ccv], colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNR). • NHIC Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries • Reports and other information available from CAs • MNRF District Offices • Local naturalist clubs	Studies confirming: • Presence of 5[l] or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH [cc, ccvii] • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWHMiST[cxlix] Index #5 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. No evidence of nesting of the listed species was observed during breeding bird surveys. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Ground)					
Rationale: Colonies are important to local bird populations, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. Information Sources • Ontario Breeding Bird Atlas[ccv], rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs • Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of >25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern[i]. • Presence of 5 or more pairs for Brewer's Blackbird. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150m area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH[cc, ccvii] • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #6 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Migratory Butterfly Stopover Areas					
Rationale: Butterfly stopovers areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral Special Concern: Monarch	Combination of ELC Community Series: Need to have present one Community Series from each landclass: Field: CUM CUS CUT Forest: FOC FOM FOD CUP Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario[cxlix]. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south[xxxii, xxxiii, xxxiv, xxxv, xxxvi]. • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat cxlviii, cxlix. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes[xxxvii, xxxviii, xxxix, xl, xli]. Information Sources • OMNRF (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)[xliii]. MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day[xxxvii], significant variation can occur between years and multiple years of sampling should occur [xl, xlii]. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. • SWHMiST[cxlix] Index #16 provides development effects and mitigation measures.	The site is not located within 5km of Lake Ontario. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Landbird Migratory Stopover Areas					
Rationale: Sites with a high diversity of species as well as high number are most significant	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 ha[i] in size and within 5km [iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Ontario. • If multiple woodlands are located along the shoreline, those woodlands <2km from Lake Ontario are more significant[cxlix] • Sites have a variety of habitats; forest, grassland and wetland complexes[cxlix]. • The largest sites are more significant[cxlix] • Woodlots and forest fragments are important habitats to migrating birds[ccxviii], these features located along the shore and located within 5km of Lake Ontario are Candidate SWH[cxlviii]. Information Sources • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the woodlot by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #9 provides development effects and mitigation measures.	The site is not located within 5km of Lake Ontario. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Deer Yarding Areas					
Rationale: Winter habitat for deer is considered to be the main factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include: FOM, FOC, SWM and SWC. Or these ELC Ecosites: CUP2 CUP3 FOD3 CUT	• Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%[cxciv]. • OMNRF determines deer yards following methods outlined in “Selected Wildlife and Habitat Features: Inventory Manual"[cxcv] • Woodlots with high densities of deer due to artificial feeding are not significant.	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH[lvi, lvii, lviii, lix, lx, í]. • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations[cxcv]. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST[cxlix] Index #2 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Deer yarding areas have not been identified by MNRF in the surrounding area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Deer Winter Congregation Areas					
Rationale: Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions[cxlviii]	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50ha may also be used.	• Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Eco-region 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands[cxlviii]. • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha[ccxxiv]. • Woodlots with high densities of deer due to artificial feeding are not significant. Information Sources • MNRF District Offices • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF[cxlviii]. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNR[i]. • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques[ccxxiv] , ground or road surveys, or a pellet count deer density survey[ccxxv]. • If a SWH is determined for Deer Wintering Area of if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST[cxlix] Index #2 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

Significant Wildlife Habitat Assessment Tables

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

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Cliff and Talus Slopes					
Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF District • Natural Heritage Information Center (NHIC) has location information on their website • Local naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes[lxxviii] • SWHMiST[cxlix] Index #21 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Sand Barrens					
Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always <60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	Any sand barren area, >0.5ha in size. Information Sources • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location information on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens[lxxviii] • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics)[i]. • SWHMiST[cxlix] Index #20 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Alvar					
Rationale: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregion 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Indicator Species: 1) Carex crawei 2) Panicum philadelphicum 3) Eleochairs compressa 4) Scutellaria parvula 5) Trichostema branchiatum These indicator species are very specific to Alvars within Ecoregion 6E	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoo geographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover[lxxviii].	An Alvar site > 0.5 ha in size[lxxv]. Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists[lxxvi]. • Ontario Nature – Conserving Great Lakes Alvars[ccviii]. • Natural Heritage Information Center (NHIC) has location information on their website • Field Naturalist clubs • Conservation Authorities	Field studies identify four of the five Alvar indicator species[lxxv, cxlix] at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotics sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses[lxxv]. • SWHMiST[cxlix] Index #17 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Old Growth Forest					
Rationale: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland Stands areas 30ha or greater in size or with at least 10 ha interior habitat assuming 100m buffer at edge of forest Í. Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Forester, Ecologist or Biologist • Field Local naturalist clubs • Conservation Authorities • Sustainable Forestry License (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat[cxlviii] • The stand will have experienced no recognizable forestry activities[cxlviii] • The area of Forest Ecosites combined to make up the stand is the SWH. • Determine ELC Vegetation Type for forest stand[boxviii] • SWHDSS[cxlix] Index #23 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Savannah					
Rationale: Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.	• No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • Natural Heritage Information Center (NHIC) has location information on their website • OMNRF Ecologists • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in[lxxv] Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used[cxlviii]. • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics sp.). • SWHMiST[cxlix] Index #18 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Tallgrass Prairie					
Rationale: Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.	• No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNR Districts • Natural Heritage Information Center (NHIC) has location information available on their website • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in[lxxv] Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used[cxlviii]. • Area of the ELC Ecosite is the SWH • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMiST[cxlix] Index #19 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Other Rare Vegetation Communities					
Rationale: Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG[cxlviii]. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M[cxlviii] The OMNR/NHIC will have up to date listing for rare vegetation communities. Information Sources • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG[cxlviii]. • Area of the ELC Vegetation Type polygon is the SWH. • SWHMiST[cxlix] Index #37 provides development effects and mitigation measures.	NRSI biologists did not observe any other rare vegetation communities during ELC surveys. **Not SWH**

Significant Wildlife Habitat Assessment Tables

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Nesting Area					
Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends 120m[cxlix] from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120m of each individual wetland where waterfowl nesting is known to occur[cxlix]. • Upland areas should be at least 120m wide so that predators such as raccoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m[cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST[cxlix] Index #25 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat					
Rationale: Nest sites are fairly uncommon in Eco-region 6E are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey Special Concern: Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	• Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). Information Sources • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts • Sustainable Forestry License (SFL) companies will identify additional nesting locations through field operations. • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs. • Field naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area[cxlviii]. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWHccvii, maintaining undisturbed shorelines with large trees within this area is important[cxlviii]. • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH[cvi], ccvii. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat[cvi]. • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant[ccvii] • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #26 provides development effects and mitigation measures	There may be suitable nesting or perching habitat for these species along the river within the study area. The FOC4-1 community within the subject property likely does not provide suitable habitat due to the dominance of cedar trees. No stick nests were observed during surveys but the entire community was not surveyed. None of the listed species were observed during surveys. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Woodland Raptor Nesting Habitat					
Rationale: Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat[lxxxviii, lxxxix, xc, xci, xciii, xciv, xcv, xcvi, cxxxiii]. Interior habitat determined with a 200m buffer[cxlviii]. • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Cooper's hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. Information Sources • OMNRF • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	Studies confirm: • Presence of 1 or more active nests from species list is considered significant[cxlviii]. • Red-shouldered Hawk and Northern Goshawk – a 400m radius around the nest or 28ha area of habitat is the SWH[ccvii]. • Barred Owl – a 200m radius around the nest is the SWH[ccvii]. • Broad-winged Hawk and Coopers Hawk – a 100m radius around the nest is the SWH[ccvii]. • Sharp-shinned Hawk – a 50m radius around the nest is the SWH[ccvii]. • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMiST[cxlix] Index #27 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Turtle Nesting Area					
Rationale: These habitats are rare and when identified will often be the only breeding site for local populations of turtles	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m)[cxlviii] or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. Information Sources • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) • Field Naturalist clubs and landowners	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH[i] • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH[cxlviii]. • Travel routes from wetland to nesting area are to be considered within the SWH[cxlix]. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWHMiST[cxlix] Index #28 provides development effects and mitigation measures for turtle nesting habitat.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Seeps and Springs					
Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system[cxvii, cxlix]. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species[cxix, cxx, cxxi, cxxii, cxiii, cxiv] Information Sources • Topographical Map • Thermography • Hydrological surveys conducted by CAs and MOE • Field naturalists clubs and landowners • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat[cxlviii] • SWHMiST[cxlix] Index #30 provides development effects and mitigation measures	At least 2 groundwater seepage areas were observed within the FOC4-1 community. **Confirmed SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Woodland)					
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) [ccvii] within or adjacent (within 120m) to a woodland (no minimum size)[clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx] Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat[cxlviii] Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF District • OMNRF wetland evaluations • Field naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses)[lxxi] or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys[cviii] will be required during the spring March-June when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the woodland area plus a 230m radius of woodland area[lxiii,lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi] if a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is the be included in the habitat. • SWHMiST[cxlix] Index #14 provides development effects and mitigation measures.	Amphibian call surveys were completed in the SWD4 community. The wetland does not meet the criteria for SWH. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Wetland)					
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Tree frog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands >500m2 (about 25m diameter)[ccvii] supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats[clxxxiv]. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations • Reports and other information available from CAs.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species and with at least 20 individuals (adults or eggs masses)[lxxi, lxxiii], or 2 or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys[cviii] will be required during spring March to June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST[cxlix] Index #15 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Woodland Area-Sensitive Bird Breeding Habitat					
Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-Bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha.[cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxv, cxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvii, clviii, clix] • Interior forest habitats are at least 200m from forest edge habitat. Information Sources • Local bird clubs • Canadian Wildlife Service (CWS) for the location of forest bird monitoring. • Bird studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to greatest value to interior species • Reports and other information available from CAs.	• Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWHMiST[cxlix] Index #34 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

Significant Wildlife Habitat Assessment Tables

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Marsh Bird Breeding Habitat					
Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present[cxxiv]. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. Information Sources • Contact OMNRF, wetland evaluations are a good source of information. • Field naturalist clubs • Natural Heritage Information Center (NHIC) Records • Reports and other information available from CAs. • Ontario Breeding Bird Atlas[ccv]	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species[j]. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH[j]. • Area of the ELC ecosite is the SWH • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi]. • SWHMiST[cxlix] Index #35 provides development effects and mitigation measures	Suitable habitat is not present within the study area. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Open Country Bird Breeding Habitat					
Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern: Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha [clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix]. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years)[i]. Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Ask local birders • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owl is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMiST[cxlix] Index #32 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Savannah Sparrow was the only species listed that was observed during breeding bird surveys. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shrub/Early Successional Bird Breeding Habitat					
Rationale: This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records cxcix.	Indicator spp.: Brown Thrasher Clay-coloured Sparrow Common spp.: Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	Large field areas succeeding to shrub and thicket habitats>10ha[cbxiv] in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years)[i]. Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species [cbxiii]. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. Information Sources • Agricultural land classification maps Ministry of Agriculture Local bird clubs • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species[i]. • A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #33 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Brown Thrasher was observed during breeding bird surveys but only possible breeding evidence was observed. Confirmed breeding evidence of Field Sparrow was observed in the CUM1-1 community. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Terrestrial Crayfish					
Rationale: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.[ccii]	Chimney or Digger Crayfish: (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish: (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM	Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites[cci] • Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH • Surveys should be done April to August during in temporary or permanent water Note the presence of burrows or chemistry are often the only indicator of presence, observance or collection of individuals is very difficult[cci] • SWHMiST[cxlix] Index #36 provides development effects and mitigation measures.	Evidence of terrestrial crayfish was not observed dring surveys. **Not SWH**

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

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Special Concern and Rare Wildlife Species					
Rationale: These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites[lxxviii]. Information Sources • Natural Heritage Information Centre (NHIC) will have the Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website: "Get Information": http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas[ccv] • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWHMiST[cxlix] Index #37 provides development effects and mitigation measures.	Eastern Wood-pewee was documented from the Subject Property. See Species at Risk and Conservation Concern screening table for details. **Confirmed SWH**

Appendix IV
Tree Inventory and Preservation Plan

River's Edge Subdivision

Tree Inventory & Preservation Plan

Prepared for:

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Project No. 0757 | September 2023

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

River's Edge Subdivision

Tree Inventory & Preservation Plan

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by Thomasfield Homes Ltd. in September 2021 to complete a Scoped Environmental Impact Study (EIS) and Tree Inventory and Preservation Plan (TIPP) for a proposed residential development at the River's Edge property located in Grand Valley Ontario. The subject property is approximately 36.583 hectares and is located at the northeast extent of the Town of Grand Valley, with existing residential development to the west and south (Map 1A-1D).

Information on the natural features within and adjacent to the subject property is summarized in the Scoped EIS prepared by NRSI (2023). The Scoped EIS provides information on the natural feature buffers and identifies how the residential development and associated stormwater management will respect these buffers. This TIPP report is to be read in conjunction with the Scoped EIS (NRSI 2023).

The Town of Grand Valley Tree By-law 2019-10; Protecting and Enhancing Grand Valley's Tree Canopy and Natural Vegetation is intended to "*state the manner in which the Town of Grand Valley will protect and enhance the tree canopy and natural vegetation in the Town."* The By-law 2019-10 enacts that:

> *"2. Every owner of a tree within the Town shall take steps to preserve the tree canopy and natural vegetation on their property. If a property owner wishes to remove a tree located on their property (i.e., not on municipal property), they are encouraged to replace the tree on their property at a location of their choosing. Clear-cutting is strongly discouraged. The planting of native species is encouraged.*
>
> *8. The Town shall use its Official Plan to encourage the protection and enhancement of the Town's tree canopy and natural vegetation, in the Plan's mission, principles and objectives, and with specific standards within the general development criteria to which all land use applications will be subject.*
>
> *9. The Town shall require developers to include provisions for preserving, replacing and enhancing trees and natural vegetation in the approved plans for development…."*

The following TIPP has been prepared based on the subdivision layout and grading plans prepared by GM BluePlan (2023) in support of the Draft Plan Approval submission.

To satisfy the requirements of the Town's Tree By-law (2019) and Official Plan (Consolidation April 2017), this report summarizes the following:

- Findings of the tree inventory;
- Assessment of the overall health and potential for structural failure of inventoried trees and trees within coniferous plantation areas;
- Tree retention analysis based on details of the proposed development;
- Protection measures for trees to be retained, and;
- Recommended mitigation and compensation considerations.

2.0 Tree Inventory and Methodology

A comprehensive tree inventory and assessment was completed by NRSI Certified Arborists and Registered Professional Foresters in October and December 2021, and March 2023. The inventory included the tagging (or painting) and assessment of all trees ≥10cm Diameter at Breast Height (DBH) within and adjacent to the limits of grading associated with the proposed residential development and associated stormwater management. Trees within the subject property were tagged with prenumbered aluminum forestry tags or painted with tree numbers while adjacent off property/private trees that may incur damage where assigned a unique letter for mapping purposes. The location of individual trees inventoried was surveyed by NRSI staff using SXBlue II GNSS GPS units.

Through email correspondence with Carley Dixon at RJ Burnside on behalf of the Town of Grand Valley on November 4, 2021, it was noted that a tally of the trees within the dense coniferous plantation areas would be suitable to inform potential removal and compensation requirements. As such, the dripline of the coniferous plantation areas, as well as one dense area comprised of Manitoba Maple (*Acer negundo*) was surveyed. A tally of trees within the polygon areas was documented, along with the overall condition and health of the trees. As part of the natural feature characterization in support of the Scoped EIS (NRSI 2023), NRSI also surveyed the dripline of the forested areas along the east side of the subject property that are associated with the Town's Environmental Protection area (2017).

Inventoried trees, polygon areas and delineated natural features are shown on Map 1A-1D. A complete list of trees that were assessed and their overall health is included in Appendix I.

The following information was recorded for inventoried trees:

- Tree location;
- Tag number, painted number or letter;
- Species (common and scientific name);
- DBH (cm);
- Number of stems;
- Crown radius (metres);
- General health (excellent, good, fair, poor, very poor, snag);
- Potential for structural failure (Improbable, Possible, Probable, Imminent);

- Potential maternity roost habitat (i.e., cavities, loose bark, etc.) that could be used for Species at Risk (SAR) bats; and
- General comments (i.e., disease, aesthetic quality, development constraints, prune to reduce structural failure, sensitivity to development, etc.).

The overall health of each tree and potential for structural failure was assessed based on the criteria outlined in Appendix II (Dunster 2009, Dunster et al. 2013). In carrying out these assessments, NRSI has exercised a reasonable standard of care, skill and diligence as would be customarily and normally provided in carrying out these assessments. The assessments have been made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people. None of the trees examined were dissected, cored, probed or climbed and detailed root examinations involving excavation were not undertaken. The conditions for this assessment, including restrictions, professional responsibility and third-party liability can be found in Appendix III.

2.1 Bat Habitat Assessment Methodology

To inform both the tree inventory and Scoped EIS (NRSI 2023), assessments were conducted by NRSI November 23, 2021 and during the tree inventories in October and December 2021 and March 2023 to determine the presence of suitable habitat for Species at Risk (SAR) bats, including Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Eastern Small-Footed Myotis (*Myotis leibii*) within the subject property. These species are known to roost in tree cavities, hollows, or under loose bark, within leaf clusters, as well as within buildings (OMNR 2000).

Habitat assessments for significant bat maternity colony habitat were completed following the Ministry of Natural Resource and Forestry (MNRF's) guidance documents Bats and Bat Habitats: Guidelines for Wind Power Projects (OMNR 2011), as well as the Survey Protocol for Species at Risk Bats in Tree Habitats (MNRF 2017) and training from MNRF-led field sessions to help identify appropriate cavity trees. The MNRF documents outline that any deciduous or mixed forest communities (FOD or FOM) should be assessed for cavity trees ≥25cm DBH, which may be suitable for roosting bats. Additionally, buildings and isolated trees, of any DBH, may also provide suitable roosting habitat (MNRF 2014). This includes habitat for Little Brown

Myotis or Northern Myotis. As opposed to bat maternity colony SWH which stipulates a minimum DBH for suitable cavity trees and a minimum cavity tree density, habitat for SAR bats is irrespective of the concentration or DBH of cavity trees. A single suitable tree (or structure) may be utilized by a SAR bat and would constitute SAR habitat.

Leaf-off bat maternity roost assessments focused on all trees within the proposed development area following the above-mentioned guidance documents. Information considered (and recorded where applicable) for candidate roost trees included tree species, location, DBH, canopy cover, tree height, decay class according to Watt and Caceres (1999), and number of potentially suitable cavities. Other criteria were also considered, including the use of candidate roost trees by other wildlife, the potential for roosting features to be used by predators, supporting / surrounding habitat and other characteristics which may contribute to the habitat requirements of these species, such as temperature regulation.

3.0 Summary of Tree Inventory Findings

606 trees were inventoried and 1,415 trees were tallied on the subject property, comprising of 34 species. Of the trees assessed, 1,784 (88.3%) are native and 237 (11.7%) are non-native. A complete list of trees inventoried is provided in Appendix I and tree locations and tallied polygon areas within the subject property are shown on Map 1A-1D.

Appendix I provides a list of tree species inventoried within the subject property, whether they are native or non-native and their overall health. A summary of the overall health of trees inventoried within the study area, along with their potential for structural failure can also be found in Appendix IV. A majority of the trees inventoried and tallied are in good to fair health with an improbable potential for structural failure.

3.1 Bat Habitat Findings

Seven candidate roosting trees were identified within the subject property's protected woodland feature during the focused leaf-off Bat Habitat Assessment on November 23 2021. Candidate roosting tree locations can be found on Map 2 in the Scoped EIS (NRSI 2023). However, no suitable maternity roosting habitat was observed within the subject property's proposed development area for Little Brown Myotis, Northern Myotis, or Eastern Small-Footed Myotis. No suitable leaf clusters or candidate roost trees were observed within the subject property's proposed development for Tri-colored Bat. More information regarding the candidate bat habitat within the protected woodland feature can be found within the Scoped EIS (NRSI 2023).

4.0 Tree Removal and Retention Analysis and Compensation

The tree removal and retention analysis in this report is based on the following considerations:

- Trees identified as having a probable or imminent potential for structural failure or poor or very poor health or dead: The removal of these trees may be recommended for safety, especially if they are located within striking distance of a potential target.
- Trees that require removal based on the extent of the proposed draft plan of subdivision and associated grading (Map 1A-1D).

Trees within the tallied polygons are proposed for removal, with the exception of Polygon G which is located outside of the proposed development area, and areas of Polygon A and B which overlap with the 10m woodland buffer. Of the 1,415 trees tallied within the polygons, approximately 1,404 have been assessed for removal based on the proposed site grading. Of the 606 trees inventoried within the area of development, 436 trees have been assessed for removal based on the extent of the proposed site grading that is required to service the property.

A total of 1,840 trees are proposed for removal (individually inventoried + polygon tally). Table 1 provides a break-down of the retention/removal analysis and Appendix I includes a list of trees tallied, trees inventoried, their overall health and potential for structural failure, recommended action (retain, remove, etc.) and rationale for removal. Retention and removals are shown on Map 1A-1D. The following categories were included in the analysis:

- Retain;
- Retain / Confirm in Field – extent of final grading associated with the proposed development to be confirmed in the field just prior to site preparation to confirm retention opportunity. Extent of grading/disturbance may be impacted by equipment utilized; and
- Remove;
- Remove / Retain Stump.

Table 1. Retention and Removal Analysis

Proposed Action	Total
Remove - 425 trees ≥10cm DBH inventoried - 1,404 trees ≥10cm tallied	1,829
Remove/ Retain Stump	11
Total Trees to be Removed	**1,840**
Retain - 157 trees ≥10cm DBH inventoried - 11 trees ≥10cm DBH tallied	168
Retain / Confirm in Field	13
Total Trees to be Retained	**181**
Overall Total	**2,021**

One tree labeled as Retain/Confirm in Field is considered a boundary tree (BD). Should the tree require removal or be impacted by the proposed development, permission of all owners involved is required. If the main stem of any tree is located on multiple properties, all owners of those properties must be consulted before any tree removal or impact occurs.

5.0 Compensation Plan

The proposed development plan will result in the removal of canopy cover (1,840 trees). The Town of Grand Valley and the County of Dufferin do not have a specific requirement in regards to compensation planting; however, the Town's Tree By-law (2019-10) requires that developers replace and enhance trees and natural vegetation within approved development plans. To replace the loss of urban canopy, it is recommended that impacted trees in Fair to Excellent condition be replaced at a ratio of 2:1 with trees and/or 5:1 with shrubs. Therefore, 3208 trees should be planted as compensation for the 1604 trees in Fair to Excellent health that are proposed for removal (368 trees ≥10cm DBH inventoried and 1236 tallied). It is recommended that a mix of native trees and shrubs be incorporated in the natural feature buffers to increase protection from the adjacent residential development and enhance the area. Additional plantings should be considered throughout the residential development to increase urban canopy cover. Where compensation cannot be achieved on-site, a cash in lieu option could be discussed with the Town and County.

It is recommended that a landscape plan be prepared for the overall draft plan of subdivision and adjacent buffer areas (where suitable) that mitigates for the loss of this canopy cover. If it is determined that additional trees are required to be removed to allow for grading, or can be retained during the on-site review by a Certified Arborist/Forester or qualified other just prior to Tree Protection Fence installation, compensation plantings or a suitable strategy can be discussed with the study team and Town/County. The woodland and wetland buffers are to be restored and planted with a mix of native species suitable for the site conditions. A native seed mix, suitable to site conditions, should be implemented where soils are exposed adjacent to the natural areas. The buffer should be established and maintained as appropriate self-sustaining native vegetation.

During the development of the landscape plans, it is recommended that the following criteria be considered:

- Plantings directly adjacent to the woodland and wetland and their associated buffers are to be limited to native, non-invasive tree and shrub species indigenous to Dufferin County that complement the surrounding natural features;
- Incorporate hardy species to ensure successful early establishment and minimize potential for invasive species proliferation;

- Non-native species that are not invasive that are more tolerant to urban conditions (i.e., salt, drought, compaction) could be considered for landscape plantings where not in proximity to the woodland and wetland and associated buffers;
- A variety of species should be identified on the landscape plans so as to avoid a monoculture;
- The natural feature buffers should be comprised of a mix of native tree and shrub species in an attempt to naturalize the area, increase presence of native species, provide wildlife habitat and protect from adjacent development encroachment (i.e., human foot traffic, dumping);
- Tree and shrub species to be situated in close proximity to roads should be salt and drought tolerant;
- Avoid Ash (*Fraxinus spp.*) species due to the risk of the Emerald Ash Borer (*Agrilus planipennis*);
- All plant material is to conform to the latest edition of the *Canadian Nursery Trades Association Specifications and Standards;*
- Plantings installed as per specifications outlined in planting plans to be prepared by an OLA or qualified other;
- Spacing of plant material should account for the ultimate size and form of the selected species and also the purpose of the planting, whether it be for screening, shade, naturalizing, rehabilitation, etc.;
- Special attention to location and height of trees in proximity to utilities and buildings, and,
- Ensure that there is sufficient soil volume for all plantings.

Should the recommended compensation tree plantings not be accommodated within the space available within the subject property, alternatives for remaining compensation trees, such as possible cash-in-lieu or off-site planting (e.g., elsewhere within the Town of Grand Valley) should be discussed with the Town of Grand Valley.

6.0 Tree Protection Measures and Recommended Mitigation

Trees outside of the identified tree removal area will be protected throughout the proposed site alteration period. The Client, or their designate (e.g., construction inspector or site manager), will ensure that all employees and contractors are informed of the meaning and importance of tree protection measures and the ways in which trees to be retained are identified. The tree protection measures prescribed below have been developed based on the Town of Grand Valley Tree By-law 2019-10 (2019).

6.1 Prior to Construction and Site Alteration

Temporary Tree Protection Fencing (TPF) should be installed along the limit of grading and limit of construction to protect retained trees, as well as adjacent and off-site natural features. Trees to be retained and TPF have been identified on Map 1A-1D. TPF should be erected, secure, and complete with signage posted prior to any vegetation/tree removals, demolition, construction, or other works. It is recommended that the TPF be combined with the Erosion and Sediment Control (ESC) fence where suitable and be comprised of geotextile woven heavy-duty silt fencing with paige-wire backing. The TPF/ESC fencing will ensure that the proposed site grading does not result in erosion or sedimentation impacts to trees or other natural features to be retained. The fencing should follow the Ontario Provincial Standard for “heavy-duty silt fencing” (OPSD 219.130) and is anticipated to effectively protect trees to be retained throughout the site grading and development period. The combined ESC/TPF should be installed and maintained by the Client or its designate. Prior to works commencing on-site, fence installation and location should be inspected by a Certified Arborist, Registered Professional Forester and/or the on-site Environmental Monitor.

Where the removal of a tree is required in close proximity to another tree that has been assessed for retention, it is recommended that the stump of the removed tree be left intact and not disturbed, in order not to disrupt/damage the root zone(s) of retained trees and other vegetation. Necessary precautions should be taken not to damage retained trees in any way.

Trees marked for removal along the Stormwater Management outlet should be removed under the supervision of a Certified Arborist or Registered Professional Forester. Stumps of these trees should be retained and trees should be felled and dropped away from the natural area to ensure no further disturbance of adjacent trees.

6.1.1 Timing Windows

Migratory Birds Convention Act

The removal of trees and all vegetated areas (i.e., meadow) has the potential to disrupt nesting birds. The *Migratory Birds Convention Act* (MBCA) identifies a list of migratory bird species that are protected under the act. It prohibits the destruction of nests, individuals and activities that would cause an adult bird to abandon a nest. Tree and vegetation removal is to occur outside of the core nesting period for migratory birds as established by the Canadian Wildlife Service (CWS) (Government of Canada 2018) which extends from approximately April 1 – August 31. All developers/consultants/contractors, etc. are legally obligated to carry out due diligence to protect migratory birds from harm during all construction projects. For any tree or vegetation removal which occurs during the nesting period, nest surveys may be conducted by a qualified biologist within small, simple habitat areas (i.e., individual isolated trees) just prior to the removal activity (less than 48hrs prior to) to ensure that nesting birds are not present. Should any nest be identified in a vegetated area or tree(s) to be removed, there shall be no removal or construction activity until sign-off is obtained from the qualified biologist that the nest is no longer active. Vegetated areas and trees(s) identified as having no nesting activity can be removed; however, removal is to occur within 48 hours of the nest search. If removal does not occur within this time frame, additional nest searches are to be conducted.

In the event a nest survey is conducted, it is recommended that a clearance memo be prepared for the proponent's records. The memo will indicate that a qualified biologist undertook the surveys as proof of due diligence. It is not necessary to submit nest search results unless asked by the CWS.

Bat Roosting Habitat

Candidate roosting trees were identified within the natural area that will be protected and buffered (refer to NRSI's Scoped EIS (2023) for additional details). No candidate roost trees were identified within the proposed development area; therefore, the removal timing window for bats will not be applicable to this site.

6.2 During Construction

A Certified Arborist or Registered Professional Forester, or qualified other, is to be on-site during any excavation and vegetation removal activities where they are adjacent to trees identified to be retained to ensure that trees identified to be retained are not removed or damaged. It will be especially important that a Certified Arborist/RFP or qualified other is on-site

during removals that are adjacent to privately owned boundary trees, the stormwater management outlet area and along the natural area buffer limits. The Certified Arborist, RPF or qualified other should be on-site to ensure that the TPF is installed and functioning as intended and that removals are in accordance with this report/map and the timing windows described above. The TPF should be inspected by a Certified Arborist, RFP or qualified other occasionally throughout the construction period (i.e., once a month) or depending on frequency of works adjacent to the TPF.

The recommended ESC/TPF is to be maintained by the Client or its agents during the entire site alteration period to ensure that trees being retained (including their root systems) are protected. Minor damage (e.g., damage to limbs or roots) to trees to be retained must be pruned using proper arboricultural techniques. Root pruning, if necessary, should be performed by a Certified Arborist or Registered Professional Forester using an appropriate implement to make proper pruning cuts and encourage callous root growth. Should any of the trees intended to be retained be seriously damaged or die as a result of construction activities, Town staff should be consulted to determine a plan of action, such as treatment or compensation. If replacement species are chosen, they are to be reviewed by a Landscape Architect in good standing with the Ontario Association of Landscape Architects (OALA), Certified Arborist/RPF or qualified biologist.

Areas protected by the ESC/TPF shall remain undisturbed and shall not be used for temporary storage, placement or excavation of fill or top soil, the storage of construction materials or equipment, or the storage of debris. Where fill has to be temporarily located near tree protection barriers, plywood must be used to ensure no material enters the tree protection zones. Grading changes and construction of any kind are also prohibited within the tree protection zones. Recognizing the root system of a tree often extends well beyond its dripline (i.e., outside the protected area), construction contaminants such as fuels, oils, etc. should be kept clear of areas protected by the TPF. The tree protection zones will not be used for the storage of construction materials, equipment, soil, construction waste or debris wash facilities, portable rooms/buildings, or the movement of vehicles, equipment, or pedestrians.

6.3 Post Construction

It is recommended that the ESC / TPF be removed upon completion of construction activities associated with the development and adjacent areas are stabilized with a vegetative cover (i.e., native vegetation along buffer edge) to the satisfaction of the Environmental Monitor or qualified biologist. Where treatment is not identified for exposed soils in a landscape plan, it is recommended that they be treated with a suitable native seed mix with a cover crop of annual rye or oats.

7.0 Summary

NRSI was retained by Thomasfield Homes Ltd. to complete a Scoped Environmental Impact Study (EIS, NRSI 2023) and Tree Inventory and Preservation Plan (TIPP) for a proposed residential development at the River's Edge property located in Grand Valley Ontario.

NRSI Certified Arborists and Registered Professional Foresters conducted a tree tally and comprehensive inventory and assessment of trees within and adjacent to the subject property in October and December 2021, and March 2023 that have the potential to be negatively affected by the proposed development. A total of 2021 trees belonging to 34 common native and non-native species were inventoried and assessed for removal within the subject property. A total of 1840 trees inventoried are designated for removal based on the proposed draft plan of subdivision layout, stormwater management and associated grading plan prepared by GMBP (2023).

It is recommended that all proposed tree removals occur in consideration of general timing windows for migratory birds. It is required that written permission from impacted adjacent landowners be sought out and granted in advance of any boundary tree removals. A combination ESC and TPF is to be installed along the limit of development/grading prior to any vegetation or tree removal and clearing/grubbing to protect off property and adjacent natural area trees from removal and/or damage. The ESC / TPF is to be monitored and maintained by the Developer or their agent throughout the construction phase of the project, up until the site is developed and exposed soils are stabilized.

It is recommended that all trees proposed to be removed in Fair to Excellent condition be replaced at a 2:1 ratio, for a total of 3208 trees. For any compensation tree and/or shrub plantings that cannot be accommodated within the subject property, it is recommended that the Client discuss possible off-site planting locations within the Town of Grand Valley, or cash in lieu options so that the urban canopy of maintained/enhanced to the greatest extent possible.

8.0 References

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Appendix I
Tree Inventory and Tally Data

River's Edge Grand Valley Tree Protection Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Comments
1	Manitoba Maple	*Acer negundo*	Native	1	51.3	6.0	Possible	Fair	On Property	Retain	Dead lower branches; spreading crown; multiple leaders with included bark.
2	Manitoba Maple	*Acer negundo*	Native	1	65	5.0	Improbable	Fair	On Property	Retain	Wide, full crown with some dieback; vertical crack in 1 scaffold branch; some branches growing parallel to ground.
3	Manitoba Maple	*Acer negundo*	Native	2	18.4	3.0	Possible	Poor	On Property	Retain	Second stem under 10cm DBH; history of branch failure; wound on second stem.
4	White Ash	*Fraxinus americana*	Native	3	21.2 + 16.3 + 15.3	4.0	Possible	Poor	On Property	Retain	Crown dieback; some bark loss; fruiting bodies.
5	Manitoba Maple	*Acer negundo*	Native	3	16.0 + 14.5 + 12.9	3.0	Possible	Poor	On Property	Retain	Basal wound with rot; branch and stem rub; dead lower branches.
6	Manitoba Maple	*Acer negundo*	Native	7	33.2 + 33.1 + 30.1 + 28.8 + 13.4 + 13.1	6.0	Possible	Very Poor	On Property	Retain	Epicormic growth; extensive crown dieback; decay in 1 upper scaffold.
7	Norway Maple	*Acer platanoides*	Non-native	5	36.0 + 28.6 + 22.3 + 21.0 + 11.8	5.0	Possible	Poor	On Property	Retain	Stems fused in multiple locations; stem and branch rub; concrete slabs at base with roots growing around and overtop; stem wound with rot; bark staining.
8	Manitoba Maple	*Acer negundo*	Native	3	42.9 + 27.8 + 24.9	7.0	Improbable	Fair	On Property	Retain	Asymmetrical crown; epicormic growth; fruiting bodies on scaffold branch.
9	Common Apple	*Malus pumila*	Non-native	4	21.1 + 16.3 + 14.0 + 11.5	2.5	Possible	Poor	On Property	Retain	Epicormic growth; dead branches; underneath adjacent tree canopies; one stem dead; multiple dead branches.
10	Manitoba Maple	*Acer negundo*	Native	1	43.7	6.0	Improbable	Fair	On Property	Retain	Asymmetrical crown; epicormic growth; included bark with weaker union.
11	Common Apple	*Malus pumila*	Non-native	1	32.6	2.5	Improbable	Fair	On Property	Retain	Multiple dead branches; Virginia Creeper growing in canopy.
12	Manitoba Maple	*Acer negundo*	Native	4	21.0 + 18.0 + 17.0 + 11.0	4.0	Probable	Poor	On Property	Retain	Extensive decay in main stem; 1 branch parallel to ground; epicormic growth.
13	Manitoba Maple	*Acer negundo*	Native	1	31.0	3.5	Possible	Fair	On Property	Retain	Stem lean south; crooked stem; reduced second leader; some dead branches.
14	Black Cherry	*Prunus serotina*	Native	1	61.4	6.0	Possible	Poor	On Property	Retain	Decay in main stem; gummosis; irregular crown with dieback.
15	Black Walnut	*Juglans nigra*	Native	2	11.0	2.0	Improbable	Fair	On Property	Retain	Second stem under 10cm DBH; included bark.
16	Common Apple	*Malus pumila*	Non-native	4	16.7 + 12.0 + 11.0	4.0	Possible	Poor	On Property	Retain	Epicormic growth; one sided crown; draped in Virginia Creeper; crown dieback.
17	Manitoba Maple	*Acer negundo*	Native	1	54.5	5.0	Probable	Very Poor	On Property	Retain	Extensive decay through main stem; fruiting bodies; epicormic growth.
18	Manitoba Maple	*Acer negundo*	Native	2	21.5	9.0	Possible	Poor	On Property	Retain	Stems leaning in opposite directions (east and west); vines in canopy; second stem under 10cm DBH.
19	Manitoba Maple	*Acer negundo*	Native	5	25.3 + 21.4 + 19.4 + 15.5 + 15.3	9.0	Probable	Poor	On Property	Retain	Broken branches and stems; rot, indicated by fruiting bodies on stem; exfoliating bark.
20	Manitoba Maple	*Acer negundo*	Native	2	42.8 + 11.0	5.0	Possible	Fair	On Property	Retain	Small cavity on root flare and 1 open cavity on main stem; asymmetrical crown; some crown dieback.
21	Manitoba Maple	*Acer negundo*	Native	3	23.5 + 22.5 + 17.5	4.0	Improbable	Fair	On Property	Retain	Branch dieback; knothole cavity on stem with rot.
22	Black Walnut	*Juglans nigra*	Native	1	10.9	2.0	Improbable	Good	On Property	Retain	Asymmetrical crown to northeast.
23	Manitoba Maple	*Acer negundo*	Native	3	20.3 + 16.6 + 16.3	3.0	Possible	Poor	On Property	Retain	Included bark; crown dieback; growing along old wire fence; epicormic growth.
24	Manitoba Maple	*Acer negundo*	Native	5	30.1 + 24.6 + 21.3 + 15.2 + 13.0	10.0	Possible	Fair	On Property	Retain	Spreading crown due to multiple stems; smallest stem dead; fruiting body on stem; vines throughout canopy.

River's Edge Grand Valley Tree Protection Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Comments
25	Manitoba Maple	*Acer negundo*	Native	4	23.5 + 22.5 + 20.6 + 18.0	5.0	Possible	Poor	On Property	Retain	Included bark; draped in Virginia Creeper; one sided crown; crown dieback.
26	Manitoba Maple	*Acer negundo*	Native	2	32.0 + 16.4	3.5	Possible	Poor	On Property	Retain	Vines throughout canopy; fruiting bodies on stem; exfoliating bark; compartmentalized stem wound.
27	Manitoba Maple	*Acer negundo*	Native	2	30.9 + 29.4	6.0	Possible	Fair	Off Property	Retain	Some decay between stems; epicormic growth; 1 branch parallel to ground; Gypsy Moth cocoon.
28	Black Walnut	*Juglans nigra*	Native	1	10.0	2.5	Improbable	Good	On Property	Retain	Minor twig dieback.
29	Manitoba Maple	*Acer negundo*	Native	2	19.9 + 17.5	5.0	Possible	Fair	Off Property	Retain	2 larger stems broken away with decay; remaining stems fair; asymmetrical crown; minimal crown dieback.
30	Manitoba Maple	*Acer negundo*	Native	3	50.2 + 31.9 + 27.5	8.0	Probable	Very Poor	Off Property	Retain	Basal shoots; history of pruning and branch failure; fruiting bodies on broken, rotting stem.
31	Manitoba Maple	*Acer negundo*	Native	2	32.5 + 11.0	6.0	Probable	Very Poor	On Property	Retain	Two additional large, dead, fallen stems, split at base; fruiting bodies on dead stems; watersprouts.
32	Manitoba Maple	*Acer negundo*	Native	3	23.9 + 22.3 + 13.2	3.0	Possible	Poor	On Property	Retain	Narrow crown; epicormic growth; compartmentalization in old prune cuts.
33	Manitoba Maple	*Acer negundo*	Native	4	14.3	4.0	Improbable	Good	On Property	Remove	Minor epicormic growth; other stems under 10cm DBH.
34	Manitoba Maple	*Acer negundo*	Native	2	16.7 + 9.0	5.0	Improbable	Fair	On Property	Remove	Asymmetrical crown due to adjacent tree; some crown dieback.
35	Manitoba Maple	*Acer negundo*	Native	5	13.6 + 11.5	4.0	Improbable	Fair	On Property	Retain	Other stems <10cm DBH; epicormic growth; staining between branch union.
36	Manitoba Maple	*Acer negundo*	Native	1	10.2	3.0	Possible	Very Poor	On Property	Retain	Broken second stem; stem rot; stem lean north.
37	Manitoba Maple	*Acer negundo*	Native	4	14.0 + 12.5 + 11.0	4.0	Possible	Poor	On Property	Remove	Stem lean north; epicormic growth; branch rub; included bark.
38	Manitoba Maple	*Acer negundo*	Native	3	10.5	3.0	Improbable	Fair	On Property	Remove	Other stems under 10cm DBH; two old bird nests (grassy cups).
39	Manitoba Maple	*Acer negundo*	Native	1	10.5	2.0	Possible	Fair	On Property	Remove	Compartmentalized stem wound; watersprouts.
40	Manitoba Maple	*Acer negundo*	Native	2	13.0 + 11.1	3.0	Improbable	Fair	On Property	Remove	Included bark; some epicormic growth; minor dieback; growing out of old fill pile.
41	Manitoba Maple	*Acer negundo*	Native	2	16.5 + 14.2	3.0	Improbable	Fair	On Property	Remove	Stem crack with bark staining.
42	Balsam Poplar	*Populus balsamifera*	Native	1	14.8	3.0	Improbable	Good	On Property	Remove	Minor self pruning in lower scaffold; relatively solid main stem.
43	Balsam Poplar	*Populus balsamifera*	Native	1	11.0	1.5	Improbable	Good	On Property	Remove	Asymmetrical crown to south; minor dieback.
44	Balsam Poplar	*Populus balsamifera*	Native	1	11.5	2.5	Improbable	Good	On Property	Remove	Relatively solid main stem; full crown with minor light pruning.
45	Balsam Poplar	*Populus balsamifera*	Native	1	11.6	1.5	Improbable	Good	On Property	Remove	Asymmetrical crown to southeast; minor dieback.
46	Balsam Poplar	*Populus balsamifera*	Native	1	16.3	2.0	Improbable	Good	On Property	Remove	Full crown with minor light pruning; solid main stem.
47	Balsam Poplar	*Populus balsamifera*	Native	1	26.0	3.0	Possible	Fair	On Property	Remove	Branch and twig dieback; compartmentalized stem wound.
48	Balsam Poplar	*Populus balsamifera*	Native	1	10.7	2.0	Improbable	Good	On Property	Remove	Some minor light pruning; crown growing up through adjacent tree scaffold branch with small rub; healthy crown.
49	Balsam Poplar	*Populus balsamifera*	Native	1	16.3	2.0	Possible	Fair	On Property	Remove	Stem wound likely from boulder placement at base, not compartmentalized; some branch dieback.
50	Manitoba Maple	*Acer negundo*	Native	3	11.0 + 10.0 + 10.0	2.0	Improbable	Good	On Property	Remove	Full crown; small stem crack; heavy seed production.
51	Manitoba Maple	*Acer negundo*	Native	7	22.5 + 17.0 + 16.5 + 14.4 + 11.9	5.0	Improbable	Fair	On Property	Remove	Two stems under 10cm DBH; branch rub; watersprouts; branch and twig dieback. Two old bird nests (grassy cups).
52	Manitoba Maple	*Acer negundo*	Native	3	34.5 + 16.4 + 16.3	5.0	Probable	Very Poor	On Property	Remove	Decay in root flare with bark loss; epicormic growth; extensive crown dieback; bark loss in upper scaffold.

River's Edge Grand Valley Tree Protection Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Comments
53	Black Walnut	*Juglans nigra*	Native	1	23.5	5.0	Improbable	Good	On Property	Remove	Light pruning; heavy with seeds.
54	Common Lilac	*Syringa vulgaris*	Non-native	1	11.1	2.0	Improbable	Fair	On Property	Remove	Hedgerow type area with other small Lilac; some crown dieback.
55	Common Lilac	*Syringa vulgaris*	Non-native	1	10.8	3.0	Possible	Poor	On Property	Remove	Multiple smaller stems; stem lean east.
56	Manitoba Maple	*Acer negundo*	Native	1	18.1	5.0	Possible	Fair	On Property	Remove	Growing on 45 degree angle; epicormic growth; concrete blocks around root flare; minor light pruning.
57	European Mountain-Ash	*Sorbus aucuparia*	Non-native	3	11.0 + 10.5	3.0	Improbable	Fair	On Property	Remove	Branch and twig dieback; included bark at base of stems; asymmetrical crown to south.
58	Manitoba Maple	*Acer negundo*	Native	1	20.0	5.0	Possible	Poor	On Property	Remove	Extensive crown dieback; epicormic growth; half of root flare exposed due to erosion in fill pile.
59	Manitoba Maple	*Acer negundo*	Native	4	31.2 + 29.6 + 18.9 + 12.2	5.0	Possible	Fair	On Property	Remove	Light pruning and some dieback in upper crown; epicormic growth; old wound with compartmentalization; on edge of old fill pile.
60	Manitoba Maple	*Acer negundo*	Native	3	15.5	4.0	Possible	Poor	On Property	Remove	Dead stems and branches; white rot; fungi; exfoliating bark; epicormic growth.
61	Norway Maple	*Acer platanoides*	Non-native	1	16.7	2.0	Possible	Poor	On Property	Remove	Stem wound with some compartmentalized stem; epicormic growth; two leaders; branch rub.
62	Manitoba Maple	*Acer negundo*	Native	1	12.4	4.0	Improbable	Fair	On Property	Remove	One sided crown due to adjacent trees; heavy seed production; light pruning.
63	Manitoba Maple	*Acer negundo*	Native	4	31.7 + 26.7 + 24.3 + 18.2	4.5	Possible	Poor	On Property	Remove	Branch rub; history of branch failure; dieback; stem wounds.
64	Norway Maple	*Acer platanoides*	Non-native	2	11.6	5.0	Improbable	Fair	On Property	Remove	Asymmetrical crown; tar spot; included bark between branch unions.
65	Manitoba Maple	*Acer negundo*	Native	1	12.6	2.0	Improbable	Fair	On Property	Remove	Branch rub; dieback.
66	Manitoba Maple	*Acer negundo*	Native	2	14.9 + 10.6	2.0	Possible	Poor	On Property	Remove	Branch rub; dieback; stem lean north; basal cavity.
67	Norway Maple	*Acer platanoides*	Non-native	1	14.4	5.0	Possible	Fair	On Property	Remove	Growing mostly parallel to ground; phototrophic growth; tar spot; some compartmentalization.
68	Balsam Poplar	*Populus balsamifera*	Native	1	10.2	2.0	Improbable	Poor	On Property	Remove	Basal cavity with staining; branch and twig dieback.
69	White Ash	*Fraxinus americana*	Native	2	10.6	3.0	Possible	Poor	On Property	Remove	Epicormic growth; relatively extensive crown dieback; old wound with compartmentalization.
70	Manitoba Maple	*Acer negundo*	Native	3	29.0 + 17.3 + 15.5	6.0	Possible	Poor	On Property	Remove	Decay in root flare; 1 stem parallel to ground; epicormic growth crown dieback.
71	Manitoba Maple	*Acer negundo*	Native	2	21.0 + 10.2	3.0	Improbable	Fair	On Property	Remove	Dieback; stem lean south.
72	Manitoba Maple	*Acer negundo*	Native	2	26.2 + 20.6	6.0	Improbable	Fair	On Property	Remove	Asymmetrical crown with slight phototrophic growth toward road; light pruning in lower scaffold.
73	Manitoba Maple	*Acer negundo*	Native	3	36.5 + 32.8 + 31.0	10.0	Possible	Poor	On Property	Remove	Each stem with multiple leaders; included bark; dead branches; fruiting bodies; bark staining.
74	Norway Maple	*Acer platanoides*	Non-native	1	13.7	5.0	Improbable	Good	On Property	Remove	Relatively full crown; tar spot; will eventually get suppressed by adjacent tree.
75	Manitoba Maple	*Acer negundo*	Native	2	19.5 + 17.0 + 16.4 + 15.6 + 11.0	4.0	Possible	Fair	On Property	Remove	Epicormic growth; crown dieback; surrounded by Goutweed and Periwinkle.
76	Norway Maple	*Acer platanoides*	Non-native	1	28.8	4.5	Improbable	Fair	On Property	Remove	Branch rub; bark staining; multiple leaders.
77	Manitoba Maple	*Acer negundo*	Native	1	19.1	3.0	Improbable	Fair	On Property	Remove	Light pruning; epicormic growth; stem lean to southeast.
78	Balsam Poplar	*Populus balsamifera*	Native	1	12.7	1.0	Improbable	Fair	On Property	Remove	Stem lean to southeast; dieback.
79	Norway Maple	*Acer platanoides*	Non-native	1	19.9	4.0	Improbable	Fair	On Property	Remove	Gravel and fill high on one side of root flare; evidence of decay on main stem; some compartmentalization; tar spot; full crown.
80	Balsam Poplar	*Populus balsamifera*	Native	1	13.5	1.5	Improbable	Fair	On Property	Remove	Stem lean to southeast; dieback.
81	Balsam Poplar	*Populus balsamifera*	Native	1	10.7	1.5	Improbable	Fair	On Property	Remove	Narrow crown; slight phototrophic growth; light pruning dieback.

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Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Comments
82	Balsam Poplar	*Populus balsamifera*	Native	1	10.0	1.0	Improbable	Fair	On Property	Remove	Heavy stem lean to south; dieback.
83	Balsam Poplar	*Populus balsamifera*	Native	2	29.9 + 19.8	8.0	Possible	Fair	On Property	Remove	Asymmetrical crown due to adjacent trees; minimal bark loss in 1 upper scaffold; light pruning dieback.
84	Balsam Poplar	*Populus balsamifera*	Native	1	18.5	5.0	Possible	Fair	On Property	Remove	Growing on 10 degree angle; crack on root flare with evidence of decay.
85	Manitoba Maple	*Acer negundo*	Native	3	22.8 + 19.1 + 15.5	1.0	Possible	Poor	On Property	Remove	Asymmetrical crown to south; watersprouts; dieback; past branch failure.
86	Manitoba Maple	*Acer negundo*	Native	1	11.6	1.0	Improbable	Fair	On Property	Remove	Stem lean east; dieback.
87	Manitoba Maple	*Acer negundo*	Native	1	15.3	3.0	Possible	Fair	On Property	Remove	Small cavity on root flare; one sided crown; crown dieback
88	Manitoba Maple	*Acer negundo*	Native	3	14.6 + 14.3 + 11.1	2.0	Improbable	Fair	On Property	Remove	Stem lean south; dieback
89	Balsam Poplar	*Populus balsamifera*	Native	2	14.4	3.0	Improbable	Fair	On Property	Remove	Second stem less than 10cm DBH and dead with decay at union; compartmentalization; light pruning dieback
90	Manitoba Maple	*Acer negundo*	Native	2	31.5 + 17.4	3.0	Possible	Poor	On Property	Remove	Fruiting bodies; crown dieback; epicormic growth
91	Manitoba Maple	*Acer negundo*	Native	3	27.0 + 26.5 + 25.5	4.5	Possible	Poor	On Property	Remove	Stem lean south; dieback; branch failure; epicormic growth
92	Balsam Poplar	*Populus balsamifera*	Native	1	13.0	2.0	Improbable	Good	On Property	Remove	Minor phototrophic growth; light pruning dieback
93	Manitoba Maple	*Acer negundo*	Native	4	16.1 + 13.4 + 12.5	3.0	Possible	Poor	On Property	Remove	Fourth stem under 10cm DBH; stem and branch dieback; branch failure; epicormic growth
94	Manitoba Maple	*Acer negundo*	Native	2	25.0 + 11.4	3.0	Possible	Fair	On Property	Remove	Crown dieback; fruiting body in 1 branch union; weak branch union
95	Norway Maple	*Acer platanoides*	Non-native	1	10.3	2.5	Improbable	Fair	On Property	Remove	Competing with adjacent tree; bark rub; tar spot; asymmetrical crown
96	Black Walnut	*Juglans nigra*	Native	1	13.6	1.5	Improbable	Fair	On Property	Remove	Compartmentalized stem wound
97	Balsam Poplar	*Populus balsamifera*	Native	1	13.6	1.5	Improbable	Good	On Property	Remove	Relatively full crown with minor light pruning
98	Manitoba Maple	*Acer negundo*	Native	3	16.7 + 15.2 + 13.5	1.5	Possible	Poor	On Property	Remove	Dieback; stem lean north; epicormic growth; basal cavities with rot
99	Manitoba Maple	*Acer negundo*	Native	1	11.5	2.0	Possible	Fair	On Property	Remove	Evidence of decay on root flare; crown dieback; epicormic growth
100	Manitoba Maple	*Acer negundo*	Native	1	18.5	1.5	Probable	Very Poor	On Property	Remove	Second stem topped and rotting; fruiting bodies on dead and living stem; dieback; stem lean northwest
101	Manitoba Maple	*Acer negundo*	Native	1	63.9	8.5	Possible	Fair	On Property	Remove	Witches broom; some crown dieback; epicormic growth; evidence of decay on root flare
102	Manitoba Maple	*Acer negundo*	Native	3	22.4 + 13.5 + 13.5	4.0	Possible	Poor	On Property	Remove	Past branch and stem failure; epicormic growth.
103	Black Walnut	*Juglans nigra*	Native	1	17.2	3.0	Improbable	Good	On Property	Remove	Well dispersed, full crown; 1 canker with compartmentalization
104	Manitoba Maple	*Acer negundo*	Native	4	44.0 + 41.6 + 26.0 + 17.3	9.0	Possible	Poor	On Property	Remove	Asymmetrical crown to south; past branch and stem failure; epicormic growth; fruiting bodies on dead stem; included bark
105	Norway Maple	*Acer platanoides*	Non-native	3	17.2 + 17.0 + 15.2	4.0	Possible	Fair	On Property	Remove	Staining; girdling root; tar spot; some decay on main stem
106	Crabapple sp.	*Malus sp.*	Non-native	1	17.5	2.0	Improbable	Fair	On Property	Remove	Stem lean east; few smaller stems under 10cm DBH some dieback
107	Norway Maple	*Acer platanoides*	Non-native	2	10.7	4.0	Possible	Fair	On Property	Remove	Evidence of decay on root flare; tar spot; weak branch union
108	Norway Maple	*Acer platanoides*	Non-native	1	33.1	5.0	Improbable	Fair	On Property	Remove	Seam on main stem with staining; tar spot; girdling root
109	Balsam Poplar	*Populus balsamifera*	Native	1	12.6	2.0	Improbable	Fair	On Property	Remove	Stem lean west; asymmetrical crown to west

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110	Balsam Poplar	*Populus balsamifera*	Native	1	14.7	2.0	Improbable	Fair	On Property	Remove	Stem lean west; asymmetrical crown to west; light pruning
111	Balsam Poplar	*Populus balsamifera*	Native	1	22.7	2.0	Improbable	Fair	On Property	Remove	Epicormic growth; some crown dieback; dumping of yard waste around base
112	Balsam Poplar	*Populus balsamifera*	Native	1	13.0	1.0	Improbable	Fair	On Property	Remove	Light pruning
113	Balsam Poplar	*Populus balsamifera*	Native	1	27.0	3.0	Possible	Fair	On Property	Remove	Light pruning; compartmentalized stem wound; bark staining
114	Eastern Cottonwood	*Populus deltoides*	Native	1	58.3	5.0	Improbable	Good	On Property	Remove	Light pruning; minor bark rub on lower stem
115	Manitoba Maple	*Acer negundo*	Native	2	13.4 + 12.3	3.0	Possible	Fair	On Property	Remove	Epicormic growth; dead scaffold branch; some crown dieback
116	Norway Maple	*Acer platanoides*	Non-native	1	10.5	2.0	Improbable	Fair	On Property	Remove	Misshapen lower stem likely due to past wounds
117	Balsam Poplar	*Populus balsamifera*	Native	1	16.5	1.5	Improbable	Good	On Property	Remove	Narrow crown with minor dieback
118	Balsam Poplar	*Populus balsamifera*	Native	1	26.4	3.0	Improbable	Good	On Property	Remove	Relatively full crown with minor dieback; minor light pruning
119	Balsam Poplar	*Populus balsamifera*	Native	1	25.0	2.0	Improbable	Fair	On Property	Remove	Light pruning; stem wound with rot
120	Balsam Poplar	*Populus balsamifera*	Native	1	20.4	4.0	Improbable	Fair	On Property	Remove	Girdling root; slightly asymmetrical crown due to adjacent trees; minor dieback
121	Balsam Poplar	*Populus balsamifera*	Native	1	19.5	2.0	Improbable	Fair	On Property	Remove	Light pruning; basal crack with rot
122	Balsam Poplar	*Populus balsamifera*	Native	1	16.0	4.0	Improbable	Fair	On Property	Remove	Stem lean to south
123	Balsam Poplar	*Populus balsamifera*	Native	1	10.4	3.0	Improbable	Good	On Property	Remove	Full crown with minor light pruning dieback
124	Balsam Poplar	*Populus balsamifera*	Native	1	12.0	2.5	Improbable	Good	On Property	Remove	Slight phototrophic growth; minor light pruning
125	Balsam Poplar	*Populus balsamifera*	Native	1	13.8	1.5	Improbable	Fair	On Property	Remove	Stem lean west; light pruning
126	Balsam Poplar	*Populus balsamifera*	Native	1	15.5	2.5	Improbable	Fair	On Property	Remove	One sided crown; some competition with adjacent trees; crown dieback
127	Balsam Poplar	*Populus balsamifera*	Native	1	13.2	1.0	Improbable	Good	On Property	Remove	Light pruning
128	Balsam Poplar	*Populus balsamifera*	Native	1	11.5	1.5	Improbable	Good	On Property	Remove	Exposed feeder root; minor light pruning
129	Balsam Poplar	*Populus balsamifera*	Native	1	10.0	1.0	Improbable	Good	On Property	Remove	Light pruning
130	Balsam Poplar	*Populus balsamifera*	Native	2	14.4	2.0	Improbable	Good	On Property	Remove	Minor light pruning; crown otherwise full
131	Manitoba Maple	*Acer negundo*	Native	1	17.0	3.5	Possible	Fair	On Property	Remove	Asymmetrical crown to southeast; two leaders; dieback
132	Manitoba Maple	*Acer negundo*	Native	1	10.0	2.0	Probable	Poor	On Property	Remove	Fruiting bodies; extensive crown dieback
133	Balsam Poplar	*Populus balsamifera*	Native	1	13.8	4.0	Probable	Very Poor	On Property	Remove	Missing crown; almost dead
134	Balsam Poplar	*Populus balsamifera*	Native	1	10.0	1.0	Improbable	Good	On Property	Remove	Stem lean to north; light pruning
135	Balsam Poplar	*Populus balsamifera*	Native	1	13.1	1.0	Possible	Poor	On Property	Remove	Heavy stem lean to north; top of tree horizontal; light pruning
136	Balsam Poplar	*Populus balsamifera*	Native	1	18.9	3.0	Improbable	Good	On Property	Remove	Minor light pruning; crown slightly asymmetrical
137	Balsam Poplar	*Populus balsamifera*	Native	1	12.5	1.5	Improbable	Fair	On Property	Remove	Asymmetrical crown to northeast
138	Balsam Poplar	*Populus balsamifera*	Native	1	18.5	3.0	Improbable	Good	On Property	Remove	Phototrophic growth in upper crown; minor light pruning dieback
139	Balsam Poplar	*Populus balsamifera*	Native	1	12.5	1.0	Improbable	Fair	On Property	Remove	Asymmetrical crown to northeast; stem lean to northeast
140	Norway Maple	*Acer platanoides*	Non-native	1	11.0	2.5	Probable	Very Poor	On Property	Remove	Irregular growth on main stem with evidence of decay and staining; tar spot; crown dieback
141	Balsam Poplar	*Populus balsamifera*	Native	1	11.0	1.0	Improbable	Fair	On Property	Remove	Stem lean to northeast; light pruning
142	Balsam Poplar	*Populus balsamifera*	Native	1	12.3	1.5	Improbable	Fair	On Property	Remove	Stem lean to northeast; light pruning
143	Balsam Poplar	*Populus balsamifera*	Native	1	14.1	2.5	Improbable	Good	On Property	Remove	Slight phototrophic growth; full crown; minor light pruning
144	Balsam Poplar	*Populus balsamifera*	Native	1	14.9	2.0	Improbable	Fair	On Property	Remove	Light pruning; exposed girdling roots
145	Balsam Poplar	*Populus balsamifera*	Native	1	37.9	5.0	Improbable	Fair	On Property	Remove	History of branch failure; some crown dieback
146	Manitoba Maple	*Acer negundo*	Native	5	14.4 + 12.0 + 10.2	5.0	Possible	Fair	On Property	Remove	Two stems under 10cm DBH; stem lean to east; epicormic growth; old bird nest (sparse twigs)
147	Black Walnut	*Juglans nigra*	Native	1	18.2	4.5	Improbable	Good	On Property	Remove	Full, vigorous crown; light pruning dieback

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148	Balsam Poplar	*Populus balsamifera*	Native	1	10.6	1.5	Improbable	Fair	On Property	Remove	Upper stem on 10 degree angle; light pruning dieback
150	Balsam Poplar	*Populus balsamifera*	Native	1	10.5	1.5	Improbable	Fair	On Property	Remove	Phototrophic lean but otherwise good condition
151	Balsam Poplar	*Populus balsamifera*	Native	1	13.2	1.5	Possible	Fair	On Property	Remove	Steam lean to east
152	Balsam Poplar	*Populus balsamifera*	Native	1	10.1	1.5	Improbable	Fair	On Property	Remove	Slight phototrophic growth but otherwise good condition
153	Balsam Poplar	*Populus balsamifera*	Native	1	12.3	3.0	Possible	Fair	On Property	Remove	Steam lean to southeast
154	Norway Maple	*Acer platanoides*	Non-native	2	16.5 + 14.0	3.0	Improbable	Fair	On Property	Remove	Tar spot; included bark with minor staining
155	Manitoba Maple	*Acer negundo*	Native	3	19.5 + 10.0	5.0	Possible	Fair	On Property	Remove	Third stem under 10cm DBH; epicormic growth; dieback
156	Manitoba Maple	*Acer negundo*	Native	2	10.1	6.0	Possible	Poor	On Property	Remove	Crown dieback; epicormic growth; some decay on root flare
157	Balsam Poplar	*Populus balsamifera*	Native	1	12.3	1.0	Improbable	Fair	On Property	Remove	Stem lean to southeast; light pruning
158	Balsam Poplar	*Populus balsamifera*	Native	1	13.7	1.0	Improbable	Fair	On Property	Remove	Stem lean to southeast; light pruning
159	Balsam Poplar	*Populus balsamifera*	Native	1	15.5	4.0	Improbable	Good	On Property	Remove	Minor phototrophic growth; light pruning dieback; relatively full crown
160	Balsam Poplar	*Populus balsamifera*	Native	1	14.1	3.5	Possible	Fair	On Property	Remove	Small cavity on root flare with some decay; small seam with compartmentalization; asymmetrical crown
161	Balsam Poplar	*Populus balsamifera*	Native	1	13.6	4.0	Improbable	Good	On Property	Remove	Light pruning; asymmetrical crown to southwest
162	Balsam Poplar	*Populus balsamifera*	Native	1	10.6	4.0	Improbable	Good	On Property	Remove	Few dead branches; leaves have dropped; some epicormic growth
163	Balsam Poplar	*Populus balsamifera*	Native	2	32; 23	5.0	Improbable	Good	On Property	Remove	Some dead branches; nest at double leader; some epicormic growth
164	Balsam Poplar	*Populus balsamifera*	Native	1	14.1	5.0	Improbable	Good	On Property	Remove	Some dead branches; epicormic growth
165	Balsam Poplar	*Populus balsamifera*	Native	1	11.1	2.0	Improbable	Good	On Property	Remove	Some dead branches; slight lean
166	Balsam Poplar	*Populus balsamifera*	Native	1	11.1	2.0	Improbable	Good	On Property	Remove	Some dead branches; slight lean; large healed wound up side of trunk
167	Balsam Poplar	*Populus balsamifera*	Native	1	12.9	2.0	Improbable	Good	On Property	Remove	Some dead branches; slight lean; dead epicormic growth; asymmetrical crown
168	Balsam Poplar	*Populus balsamifera*	Native	1	14.1	3.0	Improbable	Good	On Property	Remove	Some dead branches; slight lean; dead epicormic growth
169	Balsam Poplar	*Populus balsamifera*	Native	1	10.1	2.0	Improbable	Good	On Property	Remove	Some dead lower branches
170	Balsam Poplar	*Populus balsamifera*	Native	1	15.2	3.0	Improbable	Fair	On Property	Remove	Some dead branches; large wound up entire side of trunk leaking sap, visible dead heartwood; slight lean; dead epicormic growth
171	Balsam Poplar	*Populus balsamifera*	Native	1	14.3	3.0	Improbable	Good	On Property	Remove	Some dead branches; slight lean
172	Balsam Poplar	*Populus balsamifera*	Native	1	27.8	5.0	Improbable	Good	On Property	Remove	Some dead branches; large branch with peeling bark; scaffold branch
173	Balsam Poplar	*Populus balsamifera*	Native	1	10	2.0	Improbable	Good	On Property	Remove	Slight lean
174	Balsam Poplar	*Populus balsamifera*	Native	1	21.5	4.5	Improbable	Good	On Property	Remove	Some dead branches; dead epicormic growth
175	Balsam Poplar	*Populus balsamifera*	Native	1	13.8	3.0	Improbable	Good	On Property	Remove	Large healed wound from base of tree; some dead branches; dead epicormic growth
176	Balsam Poplar	*Populus balsamifera*	Native	1	10.7	1.5	Improbable	Good	On Property	Remove	Slight epicormic growth
178	Balsam Poplar	*Populus balsamifera*	Native	1	10.9	3.0	Improbable	Good	On Property	Remove	Some dead branches; dead epicormic growth; asymmetrical crown
179	Balsam Poplar	*Populus balsamifera*	Native	1	10.7	3.0	Improbable	Good	On Property	Remove	Lost top, but grown new leader; some dead branches; poor branch attachment
180	Balsam Poplar	*Populus balsamifera*	Native	2	26.8 + 16.4	5.5	Improbable	Fair	On Property	Remove	Scaffold branches; large dead branches; epicormic growth; poor branch attachment; smaller stem has lost leader and large knot cavity mid way up trunk
182	Manitoba Maple	*Acer negundo*	Native	1	15.8	3.0	Possible	Fair	On Property	Remove	Large drooping branches; large dead epicormic growth; double leader, one broken and split down middle; wounds in large branch

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183	White Spruce	*Picea glauca*	Native	1	12.8	3.5	Improbable	Good	On Property	Remove	Some branch defoliation at bottom
184	Manitoba Maple	*Acer negundo*	Native	1	15.2	3.0	Improbable	Fair	On Property	Remove	Witches broom; branch crossed over trunk; lots of epicormic growth; poor branch attachment
185	Manitoba Maple	*Acer negundo*	Native	2	19.8 + 14.7	3.5	Improbable	Fair	On Property	Remove	Witches broom; lots of epicormic growth; second stem poorly attached
181	Balsam Poplar	*Populus balsamifera*	Native	1	12.5	3.0	Improbable	Fair	On Property	Remove	Dead lower branches,wounds on upper branches
186	Black Locust	*Robinia pseudoacacia*	Non-native	1	15.3	3.5	Improbable	Good	On Property	Remove	Multiple leaders.
187	Black Locust	*Robinia pseudoacacia*	Non-native	2	14.2 + <10	3.5	Improbable	Good	On Property	Remove	Virginia Creeper within canopy; some dieback
188	Slippery Elm	*Ulmus rubra*	Native	1	12.8	2.5	Improbable	Good	On Property	Remove	Double leader; Riverbank Grape in canopy; insect defoliation; secondary small stem from trunk
189	Black Locust	*Robinia pseudoacacia*	Non-native	2	14.8 + 11.5	4.0	Improbable	Good	On Property	Remove	Double leader on both stems; some branch rubbing
190	Slippery Elm	*Ulmus rubra*	Native	1	12.5	2.0	Improbable	Fair	On Property	Remove	Over taken by Virginia Creeper; high defoliation; insect leaf defoliation
191	Slippery Elm	*Ulmus rubra*	Native	2	12.8 + 11.5	3.5	Improbable	Good	On Property	Remove	Riverbank Grape in canopy; staining near attachment of stems, wound present; epicormic growth; insect defoliation
192	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	3.5	Improbable	Good	On Property	Remove	Silver Maple growing through crown; poor branch attachment; some defoliation; knot in trunk with numerous branches
193	Slippery Elm	*Ulmus rubra*	Native	2	11.8 + 11.2	3.0	Improbable	Good	On Property	Remove	Large epicormic growth; double leader on one stem; dead/broken double leader on one stem; insect defoliation
194	Black Locust	*Robinia pseudoacacia*	Non-native	1	11.1	3.5	Possible	Poor	On Property	Remove	Dead second stem, wounds at base, broken upper branches, slight lean
195	Crabapple sp.	*Malus sp.*	Non-native	1	15.2	4.5	Improbable	Good	On Property	Remove	Some signs of insect defoliation; growing on rock pile
196	Manitoba Maple	*Acer negundo*	Native	1	12.6	3.5	Improbable	Good	On Property	Remove	Double leader; poor branch attachment; epicormic growth; branch wounds
197	Manitoba Maple	*Acer negundo*	Native	2	10	2.0	Improbable	Fair	On Property	Remove	Dead cluster of suckers at base
198	Manitoba Maple	*Acer negundo*	Native	2	17.5 + 15.7	4.0	Possible	Fair	On Property	Remove	Asymmetrical crown; smallest stem has large wound at bottom, can see dead sapwood; dead branches; large stem with large wound at base with visible dead sapwood; doe leader on large stem, one rotten and broken, overtaken by Virginia Creeper
199	Manitoba Maple	*Acer negundo*	Native	1	13	2.5	Improbable	Fair	On Property	Remove	Lower branch dieback, wounds on upper branches
200	Manitoba Maple	*Acer negundo*	Native	2	16.8 + 14.2	5.0	Possible	Fair	On Property	Remove	Numerous large failed branches; one branch crossed over trunk; epicormic growth
201	Manitoba Maple	*Acer negundo*	Native	1	14.3	3.0	Improbable	Good	On Property	Remove	Multiple dead branches; epicormic growth
202	Manitoba Maple	*Acer negundo*	Native	2	12.5 + <10	3.5	Possible	Fair	On Property	Remove	Smaller stem broken half way up trunk; epicormic growth; dead and broken branches
203	Manitoba Maple	*Acer negundo*	Native	2	15.1 + <10	4.0	Possible	Fair	On Property	Remove	Smaller stem leaning and poor attachment; dead branches; multiple dead branches
204	Manitoba Maple	*Acer negundo*	Native	1	10.1	3.0	Improbable	Fair	On Property	Remove	Dead branches; epicormic growth
205	Manitoba Maple	*Acer negundo*	Native	2	10.5	1.0	Possible	Poor	On Property	Remove	Small live section of crown, squirrel drey, major epicormic growth, poorly balanced on uneven rock slabs
206	Manitoba Maple	*Acer negundo*	Native	1	12.6	2.0	Probable	Fair	On Property	Remove	Growing on rock pile; dead branches; large wound at base showing rot
207	Manitoba Maple	*Acer negundo*	Native	1	16.1	3.0	Improbable	Good	On Property	Remove	Double leader; epicormic growth; branch dieback; fruiting bodies at base
208	Manitoba Maple	*Acer negundo*	Native	4	20.8 + 16 + 12.1 + <10	5.0	Possible	Good	On Property	Remove	Poor branch attachment; some double leader; few dead branches; staining at stem attachment

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Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Comments
209	Manitoba Maple	*Acer negundo*	Native	6	12.2 + 11.8 + <10 + <10 + <10 + <10	5.0	Improbable	Good	On Property	Remove	Some staining at stem joint, branch dieback; branch of other tree growing into stems
210	Manitoba Maple	*Acer negundo*	Native	3	13 + 10.6 + 10.1	5.5	Improbable	Good	On Property	Remove	Growing on pile of rocks; large wound showing dead sapwood at base; double leader; dead branches
211	Manitoba Maple	*Acer negundo*	Native	1	*	3.0	Improbable	Good	On Property	Remove	Dead branches; double leader, growing rocks.
212	Manitoba Maple	*Acer negundo*	Native	2	10.4 + <10	4.0	Possible	Fair	On Property	Remove	Second stem has peeling bark showing dead sapwood; epicormic growth; growing on rock pile
213	Manitoba Maple	*Acer negundo*	Native	3	11.3 + 10.2 + <10	3.0	Improbable	Good	On Property	Remove	Large dead branches; epicormic growth
214	Manitoba Maple	*Acer negundo*	Native	1	10	2.0	Improbable	Good	On Property	Remove	Double leader, one dead; dead branches; epicormic growth
215	Manitoba Maple	*Acer negundo*	Native	1	12.8	2.0	Improbable	Good	On Property	Remove	Double leader; epicormic growth; dead branches; small dead stem from base
216	Common Apple	*Malus pumila*	Non-native	2	17.4 + 13.0	3.5	Improbable	Good	On Property	Remove	Included bark; a few water sprouts
217	Balsam Poplar	*Populus balsamifera*	Native	1	11.9	1.0	Improbable	Fair	On Property	Remove	Light pruning; slight stem lean to south
218	Manitoba Maple	*Acer negundo*	Native	3	20.5 + 16.7 + 16.5	3.0	Improbable	Fair	On Property	Remove	Dead sapwood in 1 stem; 1 past branch failure
219	Balsam Poplar	*Populus balsamifera*	Native	1	21.3	3.0	Possible	Fair	On Property	Remove	Light pruning; large low scaffold branch
220	Balsam Poplar	*Populus balsamifera*	Native	1	38.6	4.5	Improbable	Fair	On Property	Remove	Codominant leaders
221	Balsam Poplar	*Populus balsamifera*	Native	1	29.2	5.0	Possible	Poor	On Property	Remove	Light pruning; two leaders with included bark; large, compartmentalized upper stem wound
222	Balsam Poplar	*Populus balsamifera*	Native	1	10.5	2.5	Improbable	Good	On Property	Remove	Strong central leader; self-pruning
223	Paper Birch	*Betula papyrifera*	Native	2	15.7	4.0	Possible	Fair	On Property	Remove	Second stem under 1cm DBH; main stem with lean to east; compartmentalized lower stem wound
224	Balsam Poplar	*Populus balsamifera*	Native	1	33.8	4.0	Possible	Fair	On Property	Remove	Some tight branch unions; water sprouts; self-pruning
225	Balsam Poplar	*Populus balsamifera*	Native	1	11.2	2.0	Improbable	Fair	On Property	Remove	Asymmetrical crown to north; light pruning
226	Balsam Poplar	*Populus balsamifera*	Native	1	11.3	1.5	Improbable	Fair	On Property	Remove	Previous failure of second leader; light pruning
227	Balsam Poplar	*Populus balsamifera*	Native	1	11.5	2.0	Improbable	Good	On Property	Remove	Slightly crooked stem; self-pruning
228	Balsam Poplar	*Populus balsamifera*	Native	1	12.5	2.0	Improbable	Fair	On Property	Remove	Once lost leader
229	Balsam Poplar	*Populus balsamifera*	Native	2	11.0	1.0	Improbable	Fair	On Property	Remove	Second stem under 10cm DBH; light pruning; stem and branch rub
230	Norway Maple	*Acer platanoides*	Non-native	1	14.8	2.5	Improbable	Fair	On Property	Remove	Codominant leaders; 1 wound; closed bark seam; tar spot
231	Balsam Poplar	*Populus balsamifera*	Native	2	24.0 + 19.8	4.0	Possible	Poor	On Property	Remove	Included bark at stem junction; light pruning; one stem topped.
232	Balsam Poplar	*Populus balsamifera*	Native	1	11.8	2.0	Improbable	Fair	On Property	Remove	Tight unions with some scaffold branches; self-pruning.
233	Balsam Poplar	*Populus balsamifera*	Native	1	11.7	3.5	Improbable	Fair	On Property	Remove	Asymmetrical crown to north; multiple leaders at top of stem; light pruning.
234	Balsam Poplar	*Populus balsamifera*	Native	1	14	3.5	Improbable	Good	On Property	Remove	Light pruning; slightly crooked stem at base, likely due to phototrophic growth.
235	Balsam Poplar	*Populus balsamifera*	Native	4	35.5 + 25.4 + 17.4 + 15.2	5.0	Possible	Fair	On Property	Remove	Central stem still dominant but low branches have become secondary stems; 4 dead branches.
236	Balsam Poplar	*Populus balsamifera*	Native	1	12.3	1.0	Improbable	Fair	On Property	Remove	Light pruning; slight stem lean north.
237	Balsam Poplar	*Populus balsamifera*	Native	1	26.8	4.5	Improbable	Fair	On Property	Remove	Decent form; 2 dead branches.
238	Manitoba Maple	*Acer negundo*	Native	2	21.1	3.0	Possible	Fair	On Property	Remove	Light pruning; crooked stem; second stem under 10cm DBH.
239	Manitoba Maple	*Acer negundo*	Native	2	20.2 + 16.5	3.0	Possible	Fair	On Property	Remove	Medium branch dieback.
240	Manitoba Maple	*Acer negundo*	Native	1	14.8	3.0	Probable	Poor	On Property	Remove	Light pruning; stem lean northeast; some dead branches.
241	Manitoba Maple	*Acer negundo*	Native	1	21.1	3.0	Possible	Poor	On Property	Remove	Leaning north; basal wound; fruiting body at knot hole.
242	Scots Pine	*Pinus sylvestris*	Non-native	1	17.0	1.5	Improbable	Good	On Property	Remove	Multiple leaders at top.

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243	Manitoba Maple	*Acer negundo*	Native	1	14.6	2.0	Possible	Poor	On Property	Remove	Basal wound closed but fruiting bodies emerging; twig dieback; self pruning.
244	Manitoba Maple	*Acer negundo*	Native	1	15.5	3.0	Possible	Poor	On Property	Remove	Basal decay; small secondary stem; branch wound; epicormic growth.
245	Manitoba Maple	*Acer negundo*	Native	1	13.4	2.0	Possible	Poor	On Property	Remove	Two leaders; history of branch failure; decay near base of stem.
246	Manitoba Maple	*Acer negundo*	Native	2	15.0	1.5	Possible	Poor	On Property	Remove	Broken scaffold branch; crown thinning; dead basal shoot.
247	Balsam Poplar	*Populus balsamifera*	Native	1	15.3	4.0	Probable	Poor	On Property	Remove	Topped; asymmetrical crown to north; light pruning.
248	Balsam Poplar	*Populus balsamifera*	Native	1	10.3	1.5	Improbable	Fair	On Property	Remove	Arching lean north; good branch structure.
249	Balsam Poplar	*Populus balsamifera*	Native	1	10.7	1.5	Possible	Fair	On Property	Remove	Broken top.
250	Balsam Poplar	*Populus balsamifera*	Native	1	14.2	4.0	Probable	Poor	On Property	Remove	Topped; asymmetrical crown to north; light pruning.
251	Balsam Poplar	*Populus balsamifera*	Native	1	44.3	6.0	Possible	Poor	On Property	Remove	Multiple leaders with included bark; light pruning; history of branch failure.
252	Balsam Poplar	*Populus balsamifera*	Native	2	16.7 + 13.8	2.5	Possible	Fair	On Property	Remove	Broken top, laterals replaced; secondary stem dead.
253	Balsam Poplar	*Populus balsamifera*	Native	2	15.1 + 14.8	3.0	Possible	Fair	On Property	Remove	Codominant stems; 1 broken top, lateral replaced; slight lean east.
254	Norway Maple	*Acer platanoides*	Non-native	3	13.7 + 12.3 + 10.9	4.0	Possible	Poor	On Property	Remove	Included bark; basal cracks and wounds, compartmentalized.
255	Balsam Poplar	*Populus balsamifera*	Native	1	17.6	3.0	Possible	Poor	On Property	Remove	Open basal and stem wounds; once lost leader; self-pruning.
256	Norway Maple	*Acer platanoides*	Non-native	1	15.4	4.0	Possible	Poor	On Property	Remove	Multiple leaders with included bark; basal wounds with staining.
257	Manitoba Maple	*Acer negundo*	Native	1	17.8	3.0	Possible	Fair	On Property	Remove	5 dead branches; 1 fruiting body from knot hole, likely centre rot.
258	Balsam Poplar	*Populus balsamifera*	Native	1	16.1	5.0	Possible	Fair	On Property	Remove	Dead, large watersprout.
259	Balsam Poplar	*Populus balsamifera*	Native	1	15.7	2.5	Improbable	Good	On Property	Remove	Good structure; self-pruning.
260	Manitoba Maple	*Acer negundo*	Native	2	16.7 + 12.2	4.0	Probable	Very Poor	On Property	Remove	Basal rot; included bark; some dead branches.
261	Norway Maple	*Acer platanoides*	Non-native	2	26.1 + 20.0	4.0	Possible	Fair	On Property	Remove	Bark seam mostly closed; included bark; small cankers; tar spot.
263	Norway Maple	*Acer platanoides*	Non-native	5	13.9 + 12.1 + 10.7	4.0	Possible	Fair	On Property	Remove	Two stems under 10cm DBH; stem lean south; included bark; small stem with stem wound.
263	Manitoba Maple	*Acer negundo*	Native	4	27.0 + 23.2 + 22.6 + 20.9	5.0	Possible	Fair	On Property	Remove	Included bark; self-pruning; decay at 1 knot hole; heavy seed set.
264	Norway Maple	*Acer platanoides*	Non-native	3	15.8 + 15.2 + 13.7	6.0	Possible	Poor	On Property	Remove	Multiple leaders on each stem; included bark; basal bark staining; compartmentalized stem wounds.
265	Manitoba Maple	*Acer negundo*	Native	1	10.8	1.5	Possible	Fair	On Property	Remove	Crooked stem; phototropic growth; basal shoot; minor dieback.
266	Manitoba Maple	*Acer negundo*	Native	2	12.6 + 10.5	2.0	Possible	Poor	On Property	Remove	Codominant stems with included bark; broken top; open knot hole wound.
267	Balsam Poplar	*Populus balsamifera*	Native	1	10.6	0.5	Imminent	Very Poor	On Property	Remove	Mostly dead, some living epicormic shoots; heavy stem lean to northeast; exfoliating bark.
268	Manitoba Maple	*Acer negundo*	Native	4	22.0 + 21.5 + 21.4 + 17.0	10.0	Probable	Poor	On Property	Remove	Spreading crown due to stems leaning in various directions; epicormic growth; included bark with basal crack.
269	Balsam Poplar	*Populus balsamifera*	Native	1	31.9	6.5	Improbable	Good	On Property	Remove	Slightly crooked stem; self-pruning; full crow, 1 dead broken branch.
270	Balsam Poplar	*Populus balsamifera*	Native	1	14.5	2.5	Possible	Fair	On Property	Remove	Leaning west; closed basal wound; minor dieback.
271	Balsam Poplar	*Populus balsamifera*	Native	1	25.0	6.0	Possible	Fair	On Property	Remove	Dead, reduced second leader; branch dieback.
272	Balsam Poplar	*Populus balsamifera*	Native	1	17.2	3.0	Improbable	Good	On Property	Remove	Slight pistol butt; self-pruning; good form.
273	Norway Maple	*Acer platanoides*	Non-native	1	10.0	2.5	Improbable	Fair	On Property	Remove	Growing from small berm; minor epicormic growth.
274	Norway Maple	*Acer platanoides*	Non-native	2	12.4 + 10.9	4.0	Possible	Fair	On Property	Remove	Stem wounds; history of branch failure.

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275	Manitoba Maple	*Acer negundo*	Native	3	18.4 + 15.8	3.0	Possible	Poor	On Property	Remove	Third stem under 10cm DBH; epicormic growth; stem wound; fruiting body on stem; asymmetrical crown to south.
276	Manitoba Maple	*Acer negundo*	Native	1	21.3	3.0	Possible	Fair	On Property	Remove	Codominant leaders; 1 broken branch; fruiting bodies in lower stem.
277	Manitoba Maple	*Acer negundo*	Native	4	15.5 + 14.4 + 11.3	3.5	Improbable	Fair	On Property	Remove	Multiple stems from base; dieback.
278	Manitoba Maple	*Acer negundo*	Native	4	46.0 + 34.2 + 20.8 + 16.5	10.0	Probable	Poor	On Property	Remove	Fifth stem dead and broken off at base; history of branch failure; basal rot.
279	Balsam Poplar	*Populus balsamifera*	Native	1	26.5	4.5	Possible	Good	On Property	Remove	Vigorous laterals at tight angles; self-pruning.
281	Balsam Poplar	*Populus balsamifera*	Native	1	11.3	2.0	Improbable	Good	On Property	Remove	Low crown; good branch structure.
282	Balsam Poplar	*Populus balsamifera*	Native	1	27.5	5.0	Improbable	Fair	On Property	Remove	Two leaders; light pruning.
283	Manitoba Maple	*Acer negundo*	Native	2	18.5 + 16.7	3.0	Improbable	Fair	On Property	Remove	Codominant stems; minor dieback; 2 dead branches.
284	Manitoba Maple	*Acer negundo*	Native	2	13.9 + 10.4	2.5	Improbable	Fair	On Property	Remove	Primary stem leans north, phototropic growth; 1 water sprout; slightly suppressed.
285	Balsam Poplar	*Populus balsamifera*	Native	1	18.2	4.0	Improbable	Fair	On Property	Remove	Bark staining; asymmetrical crown to north.
286	Balsam Poplar	*Populus balsamifera*	Native	5	18.7 + 13.6 + 13.3 + 12.9 + 10.1	4.5	Improbable	Fair	On Property	Remove	History of pruning; light pruning.
287	Black Walnut	*Juglans nigra*	Native	1	10.9	1.5	Improbable	Fair	On Property	Remove	Leader superseded; basal shoots.
288	Black Walnut	*Juglans nigra*	Native	3	12.3	2.0	Possible	Fair	On Property	Remove	Small fruiting bodies at base; codominant stems.
289	Manitoba Maple	*Acer negundo*	Native	3	17.5 + 17.3	3.0	Possible	Poor	On Property	Remove	Third stem under 10cm DBH; multiple leaders with included bark; history of branch failure; epicormic growth; branch rub.
290	Norway Maple	*Acer platanoides*	Non-native	1	24.2	4.0	Possible	Poor	On Property	Retain	Stem lean to east; compartmentalized frost crack; multiple leaders with included bark.
291	Manitoba Maple	*Acer negundo*	Native	3	27.2 + 14.2	5.5	Possible	Poor	On Property	Retain	1 leader in primary stem girdled by saw, dead; leaning east; missing bark at base; epicormic growth.
292	Common Lilac	*Syringa vulgaris*	Non-native	3	12.2 + 12.1	5.0	Possible	Poor	On Property	Retain	History of branch failure; stem lean to east.
293	Common Lilac	*Syringa vulgaris*	Non-native	2	13.5 + 11.4	3.0	Probable	Very Poor	On Property	Retain	Stem failure; hollow; some living shoots but mostly dead.
294	Manitoba Maple	*Acer negundo*	Native	4	31.5 + 21.8 + 21.2 + 16.8	6.0	Possible	Fair	On Property	Retain	3 stems leaning east into subject property; 1 stem has shear crack; basal wound; water sprouts.
295	Black Cherry	*Prunus serotina*	Native	2	28.5	3.0	Possible	Poor	On Property	Retain	Second stem dead; stem lean southeast; multiple leaders.
296	Manitoba Maple	*Acer negundo*	Native	5	16.9 + 14.6 + 13.0 + 12.7 + 12.0	3.5	Improbable	Fair	On Property	Remove	Multiple stems from base, 2 twisting; decent wound closure.
297	Manitoba Maple	*Acer negundo*	Native	1	14.7	2.0	Improbable	Fair	On Property	Remove	Compartmentalized cracks in stem; watersprouts; branch rub.
298	Manitoba Maple	*Acer negundo*	Native	1	12.6	2.5	Improbable	Fair	On Property	Remove	Decent structure of main stem, but suckering.
299	Balsam Poplar	*Populus balsamifera*	Native	2	24.4 + 11.0	2.5	Improbable	Fair	On Property	Remove	Branch rub; history of branch failure.
480	Balsam Poplar	*Populus balsamifera*	Native	1	12.4	1.0	Possible	Poor	On Property	Remove	Hollow stem; large stem crack with bark staining.
501	Crack Willow	*Salix euxina*	Non-native	1	33.5	2.5	Improbable	Fair	On Property	Retain	Slightly asymmetrical crown; history of branch failure; irregular branch unions
502	Eastern White Cedar	*Thuja occidentalis*	Native	1	12.1	2.3	Improbable	Good	On Property	Retain	Open growth crown; straight, solid main stem
503	Scots Pine	*Pinus sylvestris*	Non-native	1	20.3	2.0	Improbable	Fair	On Property	Retain	Broad crown, weak leader.
504	Scots Pine	*Pinus sylvestris*	Non-native	2	13.5	2.3	Improbable	Good	On Property	Retain	Balanced crown; heavy cone production
505	Scots Pine	*Pinus sylvestris*	Non-native	1	12.3	1.5	Improbable	Fair	On Property	Retain	Crooked leader with tight branch union.
506	Scots Pine	*Pinus sylvestris*	Non-native	2	14.9 + 13.5	2.0	Possible	Fair	Core Natural Area Buffer	Retain	One stem once lost leader, ram's horn reinforces; swollen tissue; codominant stems.

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507	Manitoba Maple	*Acer negundo*	Native	1	10	1.5	Possible	Fair	Core Natural Area Buffer	Retain	Tight union between codominant leaders; epicormic growth.
508	Manitoba Maple	*Acer negundo*	Native	1	11.3	1.5	Possible	Fair	Core Natural Area Buffer	Retain	Asymmetrical crown; lower stem wounds mostly closed.
509	Manitoba Maple	*Acer negundo*	Native	1	14.7	2.0	Possible	Fair	Core Natural Area Buffer	Retain	Epicormic growth; 2 broken branches.
510	Manitoba Maple	*Acer negundo*	Native	2	13.1	1.5	Improbable	Fair	Core Natural Area Buffer	Retain	Dead basal shoot; included bark with secondary stem.
511	Manitoba Maple	*Acer negundo*	Native	2	14.5 + 14.2	2.0	Improbable	Fair	Core Natural Area Buffer	Retain	Codominant stems; epicormic growth.
512	Manitoba Maple	*Acer negundo*	Native	1	14.8	1.5	Improbable	Fair	Core Natural Area Buffer	Retain	Small dead branches; epicormic growth.
513	Trembling Aspen	*Populus tremuloides*	Native	1	13.7	2.0	Improbable	Good	Core Natural Area Buffer	Retain	Strong central leader; self-pruning.
514	Manitoba Maple	*Acer negundo*	Native	1	11.6	1.5	Possible	Poor	Core Natural Area Buffer	Retain	Epicormic growth; asymmetrical crown; crown dieback
515	Manitoba Maple	*Acer negundo*	Native	1	13.5	1.5	Possible	Poor	Core Natural Area Buffer	Retain	Ragged stem wounds show dead sapwood; fruiting bodies.
516	Manitoba Maple	*Acer negundo*	Native	2	14.6 + 13.5	2.5	Improbable	Poor	Core Natural Area Buffer	Retain	Dieback of medium branches; epicormic growth.
517	Balsam Poplar	*Populus balsamifera*	Native	1	21.2	2.0	Improbable	Fair	Core Natural Area Buffer	Retain	Some crown dieback; slight phototropic lean
518	Manitoba Maple	*Acer negundo*	Native	1	10.2	1.0	Improbable	Fair	Core Natural Area Buffer	Retain	Dead lower branches; closed stem wound; epicormic growth.
519	Manitoba Maple	*Acer negundo*	Native	1	10.7	1.5	Possible	Fair	Core Natural Area Buffer	Retain	Closed basal wound; epicormic growth.
520	Balsam Poplar	*Populus balsamifera*	Native	1	17	2.0	Improbable	Fair	Core Natural Area Buffer	Retain	Slightly asymmetrical crown due to adjacent tree; light pruning dieback
521	Trembling Aspen	*Populus tremuloides*	Native	1	12.6	2.0	Possible	Fair	Core Natural Area Buffer	Retain	Self-pruning; vigorous lateral; 1 canker.
522	Manitoba Maple	*Acer negundo*	Native	1	10.7	3.3	Possible	Fair	Core Natural Area Buffer	Retain	Asymmetrical crown due to adjacent tree; crown dieback; epicormic growth
523	Manitoba Maple	*Acer negundo*	Native	1	17.2	2.5	Improbable	Fair	Core Natural Area Buffer	Retain	Closed basal wound, slightly crooked stem; leaning toward river; epicormic growth.
524	Manitoba Maple	*Acer negundo*	Native	1	12.1	2.0	Possible	Poor	Core Natural Area Buffer	Retain	Relatively extensive crown dieback; asymmetrical crown; epicormic growth
525	Manitoba Maple	*Acer negundo*	Native	1	14.9	2.0	Improbable	Fair	Core Natural Area Buffer	Retain	Vigorous lateral with tight union; epicormic growth.
526	Manitoba Maple	*Acer negundo*	Native	1	15.9	3.0	Possible	Poor	Core Natural Area Buffer	Retain	Asymmetrical crown due to adjacent tree; extensive crown dieback; epicormic growth
527	Manitoba Maple	*Acer negundo*	Native	2	39.1 + 32.7	4.0	Improbable	Fair	Core Natural Area Buffer	Retain	Codominant stems; included bark; epicormic growth; dominant tree.
528	Manitoba Maple	*Acer negundo*	Native	1	20.2	3.0	Possible	Poor	Core Natural Area Buffer	Retain	Relatively extensive crown dieback; asymmetrical crown due to adjacent tree; epicormic growth
529	Manitoba Maple	*Acer negundo*	Native	2	12.5	2.0	Improbable	Fair	Core Natural Area Buffer	Retain	Codominant stems, otherwise decent form.
530	Manitoba Maple	*Acer negundo*	Native	1	22.9	3.0	Improbable	Fair	Core Natural Area Buffer	Retain	Open growth crown; epicormic growth; some crown dieback
531	Balsam Poplar	*Populus balsamifera*	Native	1	15.8	2.5	Improbable	Good	On Property	Retain	1 dead branch.
532	Manitoba Maple	*Acer negundo*	Native	2	14.1 + 13.7	2.5	Possible	Poor	On Property	Remove	Fruiting bodies; crown dieback; some wound wood in bark crack

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533	Balsam Poplar	*Populus balsamifera*	Native	1	24.1	4.0	Improbable	Fair	On Property	Remove	Some crown dieback; included bark; open growth crown
534	Balsam Poplar	*Populus balsamifera*	Native	1	15.1	2.0	Improbable	Good	On Property	Retain	Good structure.
535	Cherry sp.	*Prunus sp.*	**	1	12.3	1.3	Possible	Poor	On Property	Remove	Extensive crown dieback; included bark
536	Manitoba Maple	*Acer negundo*	Native	5	13.2 + 12.2 + 11.5 + 10.4 + 10.1	3.0	Possible	Fair	On Property	Remove	Included bark; some crown dieback
537	Manitoba Maple	*Acer negundo*	Native	3	15.6 + 14.3 + 11.9	2.5	Possible	Fair	On Property	Remove	Included bark at base; dense epicormic growth; water sprouts.
538	Balsam Poplar	*Populus balsamifera*	Native	1	14.6	2.0	Improbable	Fair	On Property	Remove	Self-pruning; strong taper.
539	Balsam Poplar	*Populus balsamifera*	Native	1	15.2	2.0	Improbable	Fair	On Property	Remove	Slightly asymmetrical crown due to adjacent tree; minor dieback; gull in epicormic growth
540	Balsam Poplar	*Populus balsamifera*	Native	2	13.2	2.0	Probable	Fair	On Property	Remove	Knot hole cavity reveals basal decay.
541	Balsam Poplar	*Populus balsamifera*	Native	1	17.8	3.0	Improbable	Fair	On Property	Remove	Minor epicormic growth; some crown dieback
542	Balsam Poplar	*Populus balsamifera*	Native	2	10.2	1.5	Improbable	Fair	On Property	Remove	Codominant, though secondary, stem <10cm.
544	Manitoba Maple	*Acer negundo*	Native	2	27.5 + 25.0	4.5	Improbable	Fair	On Property	Remove	Open growth crown; some crown dieback
545	Manitoba Maple	*Acer negundo*	Native	2	22.3 + 20.0	3.0	Possible	Fair	Core Natural Area Buffer	Retain/Confirm in Field	Codominant stems; dieback.
546	Manitoba Maple	*Acer negundo*	Native	1	17.6	2.0	Improbable	Fair	Core Natural Area Buffer	Retain	Epicormic growth; wound wood in bark wound; some crown dieback
547	Manitoba Maple	*Acer negundo*	Native	2	31.5 + 15.1	3.5	Possible	Good	Core Natural Area Buffer	Retain	Included bark at secondary stem; good form; good seed set.
548	Manitoba Maple	*Acer negundo*	Native	3	30.7 + 13.6 + 11.4	5.0	Improbable	Fair	Core Natural Area Buffer	Retain	Included bark; some crown dieback
549	American Elm	*Ulmus americana*	Native	2	13.2	1.5	Improbable	Good	On Property	Retain	Relatively full crown; solid main stem
550	Manitoba Maple	*Acer negundo*	Native	1	16.8	2.5	Improbable	Good	On Property	Retain	Decent form; few water sprouts.
551	Norway Spruce	*Picea abies*	Non-native	1	63	6.0	Improbable	Good	On Property	Remove	Very full, vigorous crown; balanced root flare
552	Norway Spruce	*Picea abies*	Non-native	1	27.8	3.0	Improbable	Good	On Property	Remove	Good form.
553	Norway Spruce	*Picea abies*	Non-native	2	18.1 + 11.6	3.0	Improbable	Good	On Property	Remove	Relatively full crown, vigorous crown; corrective growth on lower stem
554	White Spruce	*Picea glauca*	Native	1	10.4	1.5	Improbable	Fair	On Property	Remove	Pistol butt; irregular crown.
555	Norway Spruce	*Picea abies*	Non-native	1	18.2	3.5	Improbable	Good	On Property	Remove	Relatively full crown; well balanced root flare
556	White Spruce	*Picea glauca*	Native	1	16.2	2.0	Improbable	Fair	On Property	Remove	Good form; minor crown thinning, needles browning.
558	Norway Spruce	*Picea abies*	Non-native	1	18.1	2.5	Improbable	Fair	On Property	Remove	Sapsucker holes exuding sap; good form.
559	Norway Spruce	*Picea abies*	Non-native	2	14.4	3.0	Improbable	Good	On Property	Remove	Relatively full, healthy crown
560	Eastern White Pine	*Pinus strobus*	Native	1	24.6	3.0	Improbable	Good	On Property	Remove	Exuding sap under 1 branch.
561	Eastern White Pine	*Pinus strobus*	Native	1	20.1	3.0	Improbable	Fair	On Property	Remove	Sparse crown; once lost leader.
562	Eastern White Pine	*Pinus strobus*	Native	1	22.8	3.0	Improbable	Fair	On Property	Remove	Minor bark cracks; included bark; relatively full crown
563	Eastern White Pine	*Pinus strobus*	Native	1	12.7	2.0	Improbable	Fair	On Property	Remove	Weak leader; healthy foliage.
564	Eastern White Pine	*Pinus strobus*	Native	1	12.5	2.5	Improbable	Good	On Property	Remove	Open growth crown; solid main stem
565	Eastern White Pine	*Pinus strobus*	Native	1	14.8	2.5	Improbable	Fair	On Property	Remove	Sparse crown; some chlorosis; good growth this year.
566	Eastern White Pine	*Pinus strobus*	Native	1	25.	3.5	Improbable	Good	On Property	Remove	Full, vigorous tree; well balanced root flare
567	Eastern White Pine	*Pinus strobus*	Native	1	24.8	4.0	Improbable	Good	On Property	Remove	Full crown with minor necrosis; solid main stem
568	Red Pine	*Pinus resinosa*	Native	1	18	4.0	Improbable	Fair	On Property	Remove	Crown dieback; some necrosis
569	Manitoba Maple	*Acer negundo*	Native	6	14.6 + 14.3 + 13.8	3.5	Possible	Fair	On Property	Remove	Multiple stems/water sprouts; healthy crown, minor epicormic growth.
570	Manitoba Maple	*Acer negundo*	Native	1	26	5.0	Possible	Fair	On Property	Remove	Asymmetrical crown due to adjacent tree; growing on graded slope with corrective growth at root flare; some crown dieback
571	Manitoba Maple	*Acer negundo*	Native	2	15.1 + 13	5.0	Possible	Fair	On Property	Remove	Growing on 45 degree angle; response growth in upper scaffold
572	Manitoba Maple	*Acer negundo*	Native	1	16.1	2.5	Possible	Fair	On Property	Remove	Leaning east; water sprouts.

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573	Manitoba Maple	*Acer negundo*	Native	1	10.2	1.5	Possible	Poor	On Property	Remove	Sharply crooked lower stem; phototropic growth; epicormic growth.
574	Manitoba Maple	*Acer negundo*	Native	6	26.8 + 24 + 24 + 18 + 15 + 9.0	7.0	Possible	Fair	On Property	Remove	3 stems have failed and ate parallel to ground; history of branch failure in main stem
575	Manitoba Maple	*Acer negundo*	Native	1	14.0	2.0	Possible	Fair	On Property	Remove	Stem wounds nearly closed; leaning north; epicormic growth.
576	Manitoba Maple	*Acer negundo*	Native	2	18.7 + 11	5.0	Possible	Fair	On Property	Remove	Asymmetrical crown; some crown dieback; response growth in root flare
577	Manitoba Maple	*Acer negundo*	Native	4	23.0 + 21.0 + 19.6 + 18.1	4.5	Possible	Fair	On Property	Remove	Codominant stems leaning south; 1 broken branch; epicormic growth.
578	Norway Spruce	*Picea abies*	Non-native	1	52	4.5	Improbable	Good	On Property	Remove	Full, vigorous crown; solid main stem
579	Norway Spruce	*Picea abies*	Non-native	1	33	4.5	Improbable	Fair	On Property	Remove	1 broken branch; exuding sap; minor thinning.
581	Norway Spruce	*Picea abies*	Non-native	1	31.8	5.0	Improbable	Good	On Property	Remove	Full, vigorous crown; could benefit from minor pruning; solid main stem
582	Norway Spruce	*Picea abies*	Non-native	1	20.2	3.0	Improbable	Fair	On Property	Remove	Minor dieback; small bark cracks; open growth crown
583	Norway Spruce	*Picea abies*	Non-native	2	18.8 + 16.5	2.0	Improbable	Fair	On Property	Remove	Codominant stems; good form; minor twig gall.
584	Norway Spruce	*Picea abies*	Non-native	1	24.3	3.5	Improbable	Good	On Property	Remove	Open growth crown; well balanced root flare
585	Norway Spruce	*Picea abies*	Non-native	1	12	1.5	Improbable	Fair	On Property	Remove	Once topped at 1m; laterals now leaders.
586	Norway Spruce	*Picea abies*	Non-native	1	14.3	2.5	Improbable	Fair	On Property	Remove	Some needle dieback; slightly unbalanced crown
587	Norway Spruce	*Picea abies*	Non-native	1	37.8	4.0	Improbable	Fair	On Property	Remove	Some poor branch structures; codominant leaders; dieback on occasional branches.
588	Norway Spruce	*Picea abies*	Non-native	2	10.5 + 10.4	2.0	Improbable	Good	On Property	Remove	Open growth crown; full , vigorous tree
589	Norway Spruce	*Picea abies*	Non-native	1	13.0	1.5	Improbable	Fair	On Property	Remove	Irregular crown with some needles browning; vigorous.
591	Norway Spruce	*Picea abies*	Non-native	1	15	2.0	Possible	Fair	On Property	Remove	Once topped at 0.6m; poor branch attachments; full crown.
592	Norway Spruce	*Picea abies*	Non-native	1	20.2	4.0	Improbable	Fair	On Property	Remove	Some needle dieback and browning; solid main stem
593	Norway Spruce	*Picea abies*	Non-native	1	10.2	2.0	Improbable	Good	On Property	Remove	Full, vigorous tree
594	Norway Spruce	*Picea abies*	Non-native	1	28	2.5	Improbable	Good	On Property	Remove	Full, dense crown.
595	Norway Spruce	*Picea abies*	Non-native	1	20.4	2.0	Improbable	Good	On Property	Remove	Vigorous growth overcoming shade of neighbouring tree.
596	Eastern White Pine	*Pinus strobus*	Native	1	24	4.0	Improbable	Fair	On Property	Remove	Minor bark cracks; some necrosis
597	Eastern White Pine	*Pinus strobus*	Native	1	22.7	4.0	Improbable	Fair	On Property	Remove	Minor bark cracks; some necrosis; rocks piled around root flare
598	Norway Spruce	*Picea abies*	Non-native	1	28.1	5.0	Improbable	Fair	On Property	Remove	Well balanced root flare; some dieback could benefit from minor pruning
599	Black Pine	*Pinus nigra*	Non-native	1	25.3	2.5	Improbable	Fair	On Property	Remove	Once lost leader; sparse crown.
600	Black Pine	*Pinus nigra*	Non-native	1	27.9	3.0	Improbable	Fair	On Property	Remove	Sparse crown; self-pruning; slightly crooked stem.
601	Black Pine	*Pinus nigra*	Non-native	1	20.2	2.0	Improbable	Fair	On Property	Remove	Sparse crown; sapsucker holes.
602	Black Pine	*Pinus nigra*	Non-native	1	20.2	2.0	Possible	Fair	On Property	Remove	Sparse crown but healthy foliage in tufts at ends of twigs; vigorous lateral at tight angle.
603	Black Pine	*Pinus nigra*	Non-native	1	19.5	2.5	Possible	Fair	On Property	Remove	Sparse crown; broken leader.
604	Scots Pine	*Pinus sylvestris*	Non-native	1	20.6	2.5	Improbable	Fair	On Property	Remove	Once lost leader; crooked stem.
605	Scots Pine	*Pinus sylvestris*	Non-native	1	16.1	2.0	Improbable	Fair	On Property	Remove	Sparse crown; self-pruning.
606	Black Pine	*Pinus nigra*	Non-native	1	20.5	2.5	Possible	Fair	On Property	Remove	Weak leader; minor dieback.
607	Black Pine	*Pinus nigra*	Non-native	1	22.7	2.5	Improbable	Fair	On Property	Remove	Good form and structure; self-pruning; sapsucker holes.
608	Black Pine	*Pinus nigra*	Non-native	1	14.3	2.0	Possible	Fair	On Property	Remove	Healthy crown but weak leader; sapsucker holes; slightly crooked stem.
609	Blue Spruce	*Picea pungens*	Non-native	1	18.2	2.0	Improbable	Fair	On Property	Remove	Chlorosis at tips; epicormic growth; slightly crooked stem.
610	Scots Pine	*Pinus sylvestris*	Non-native	1	15.8	2.5	Possible	Fair	On Property	Remove	Asymmetrical crown; dead lower branches.
611	Scots Pine	*Pinus sylvestris*	Non-native	1	11.7	1.0	Possible	Dead	On Property	Remove	

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612	Black Pine	*Pinus nigra*	Non-native	1	19.0	2.0	Improbable	Fair	On Property	Remove	Self-pruning.
613	Black Pine	*Pinus nigra*	Non-native	1	17.1	2.0	Improbable	Fair	On Property	Remove	Codominant leaders; asymmetrical crown.
614	Black Pine	*Pinus nigra*	Non-native	1	22.9	2.5	Possible	Fair	On Property	Remove	Crooked stem, once lost leader; sapsucker holes; den beneath roots.
615	Black Pine	*Pinus nigra*	Non-native	1	23.0	2.0	Possible	Poor	On Property	Remove	Codominant leaders; low vigour; tip blight.
616	Black Pine	*Pinus nigra*	Non-native	1	14.7	1.5	Possible	Fair	On Property	Remove	Crooked stem; self-pruning.
617	Blue Spruce	*Picea pungens*	Non-native	1	18.2	1.5	Improbable	Fair	On Property	Remove	Narrow crown; epicormic growth; some crown dieback
618	Scots Pine	*Pinus sylvestris*	Non-native	1	20.3	3.0	Improbable	Fair	On Property	Remove	Strong central leader, but broken top; good structure.
619	Scots Pine	*Pinus sylvestris*	Non-native	2	20.2	2.5	Improbable	Fair	On Property	Remove	Light pruning dieback; small burrow near root flare
620	Blue Spruce	*Picea pungens*	Non-native	1	18.7	2.0	Improbable	Fair	On Property	Remove	Dense upper crown; thinning and epicormic growth in lower crown.
621	Black Pine	*Pinus nigra*	Non-native	1	27.7	3.0	Improbable	Fair	On Property	Remove	Asymmetrical crown due to adjacent tree; light pruning dieback; sapsucker damage
622	Black Pine	*Pinus nigra*	Non-native	1	26.4	2.0	Improbable	Good	On Property	Remove	Good structure; self-pruning.
623	Black Pine	*Pinus nigra*	Non-native	1	22.5	3.0	Improbable	Fair	On Property	Remove	Light pruning dieback; sapsucker damage
624	Black Pine	*Pinus nigra*	Non-native	1	21.6	2.5	Possible	Fair	On Property	Remove	Codominant leaders; sparse crown.
624	Scots Pine	*Pinus sylvestris*	Non-native	1	19.4	2.0	Improbable	Fair	On Property	Remove	Sparse crown; sapsucker holes.
625	Scots Pine	*Pinus sylvestris*	Non-native	1	25.1	3.3	Improbable	Fair	On Property	Remove	Included bark in upper stem union; minor dieback
627	Scots Pine	*Pinus sylvestris*	Non-native	1	18.2	3.0	Improbable	Fair	On Property	Remove	Asymmetrical crown due to adjacent tree; minor dieback sapsucker damage
628	Scots Pine	*Pinus sylvestris*	Non-native	1	20	2.5	Improbable	Poor	On Property	Remove	Relatively extensive crown dieback; asymmetrical crown due to adjacent tree
629	Manitoba Maple	*Acer negundo*	Native	3	21.0 + 20.4 + 19.7	4.5	Improbable	Fair	On Property	Remove	Closed bark seam; 1 broken branch.
630	Norway Maple	*Acer platanoides*	Non-native	3	17.8 + 17.8 + 16.3	4.5	Possible	Fair	On Property	Remove	Weak stem union; wound wood in bark wound; relatively full crown
631	Willow sp.	*Salix sp.*	**	3	11.7 + 11.4	2.0	Improbable	Fair	On Property	Remove	Growing on small hummock.
632	Manitoba Maple	*Acer negundo*	Native	2	36.2 + 26.0	4.5	Possible	Fair	On Property	Remove	History of branch failures; basal shoots; on upper slope; epicormic growth.
633	Eastern White Pine	*Pinus strobus*	Native	1	16.8	2.5	Improbable	Fair	On Property	Remove	Dead leader, but vigorous other branches.
634	Manitoba Maple	*Acer negundo*	Native	1	19.9	3.0	Possible	Fair	On Property	Remove	Leaning south; codominant leaders at 2m; supporting broken branch from another tree.
635	Manitoba Maple	*Acer negundo*	Native	1	20.4	6.0	Possible	Fair	On Property	Remove	Adjacent tree leaning on main stem; epicormic growth; shear crack in upper scaffold with some compartmentalization
636	Eastern White Pine	*Pinus strobus*	Native	1	14.4	2.5	Improbable	Fair	On Property	Remove	Asymmetrical crown east; weak leader; slightly crooked stem.
637	Manitoba Maple	*Acer negundo*	Native	2	50.3 + 34.1	6.5	Possible	Fair	On Property	Remove	Included bark; small cavity near root flare; history of branch failure
638	Eastern White Pine	*Pinus strobus*	Native	1	28.6	3.0	Improbable	Good	On Property	Remove	Lost leader; minor defoliation; self pruning.
639	Eastern White Pine	*Pinus strobus*	Native	1	26.6	3.5	Improbable	Good	On Property	Remove	Minor defoliation; self pruning.
640	Eastern White Pine	*Pinus strobus*	Native	1	18.5	3.0	Improbable	Good	On Property	Remove	Minor defoliation; self pruning.
641	Manitoba Maple	*Acer negundo*	Native	5	51.5 + 47.2 + 37.1 + 21.6 + 15.5	8.5	Probable	Poor	On Property	Remove	Knots on stems; poor branch attachment; evidence of branch failures; dead branches.
642	Manitoba Maple	*Acer negundo*	Native	1	14.3	3.0	Improbable	Fair	On Property	Remove	Knot at base; evidence of branch failures; dead branches.
643	Manitoba Maple	*Acer negundo*	Native	3	16.5 + 13.2 + 12.7	3.5	Improbable	Fair	On Property	Remove	Knot at Epicormic growth; evidence of branch failures; dead branches.
644	Manitoba Maple	*Acer negundo*	Native	2	11.7 + <10	4.0	Improbable	Fair	On Property	Remove	Slight lean; epicormic growth; evidence of branch failures; dead branches.

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645	Manitoba Maple	*Acer negundo*	Native	4	16.5 + 14.7 + 13.1 + 12.9	5.5	Improbable	Fair	On Property	Remove	Scaffold branches; slight lean; epicormic growth; evidence of branch failures; dead branches.
646	Manitoba Maple	*Acer negundo*	Native	1	19.6	2.0	Improbable	Fair	On Property	Remove	Double leader; slight lean; epicormic growth; evidence of branch failures; dead branches.
647	Manitoba Maple	*Acer negundo*	Native	3	21.3 + 18.5 + 11.3	4.0	Improbable	Fair	On Property	Remove	Slight lean; epicormic growth; evidence of branch failures; dead branches.
648	Manitoba Maple	*Acer negundo*	Native	3	38.7 + 20.1 + 15.0	5.5	Possible	Fair	On Property	Remove	Double leader; basal shoots; evidence of dead sapwood at base with peeling bark; slight lean; epicormic growth; evidence of branch failures; dead branches.
649	Manitoba Maple	*Acer negundo*	Native	2	21.6 + 20.8	5.0	Improbable	Fair	On Property	Remove	Basal shoots; slight lean; epicormic growth; evidence of branch failures; dead branches.
650	Manitoba Maple	*Acer negundo*	Native	2	22.5 + 19	5.5	Improbable	Fair	On Property	Remove	Basal shoots; slight lean; epicormic growth; evidence of branch failures; dead branches.
651	Manitoba Maple	*Acer negundo*	Native	3	19.2 + 17.9 + 13.2	3.5	Improbable	Fair	On Property	Remove	Basal shoots; multiple small dead stems; epicormic growth; evidence of branch failures; dead branches.
652	Manitoba Maple	*Acer negundo*	Native	2	18.4 + 10.5	3.5	Improbable	Fair	On Property	Remove	Epicormic growth; evidence of branch failures; dead branches.
653	Manitoba Maple	*Acer negundo*	Native	1	31.2	3.5	Possible	Fair	On Property	Remove	Large scaffold branches broken; epicormic growth; evidence of branch failures; dead branches.
654	Manitoba Maple	*Acer negundo*	Native	1	18.5	3.0	Improbable	Fair	On Property	Remove	Knots at base; epicormic growth; evidence of branch failures; dead branches.
655	Manitoba Maple	*Acer negundo*	Native	4	13.5 + 13.0 + 12.5 + 11.0	3.0	Improbable	Fair	On Property	Remove	Rot at base, peeled bark; epicormic growth; evidence of branch failures; dead branches.
656	Manitoba Maple	*Acer negundo*	Native	4	13.9 + 13.0 + 12.0 + <10	3.0	Improbable	Fair	On Property	Remove	Rot at base, peeled bark; epicormic growth; evidence of branch failures; dead branches.
657	Manitoba Maple	*Acer negundo*	Native	1	20.2	3.0	Improbable	Fair	On Property	Remove	Double leaders; epicormic growth; evidence of branch failures; dead branches.
658	Manitoba Maple	*Acer negundo*	Native	2	17.2 + 11.2	3.0	Improbable	Fair	On Property	Remove	Epicormic growth; evidence of branch failures; dead branches.
659	Manitoba Maple	*Acer negundo*	Native	1	12.4	2.0	Improbable	Fair	On Property	Remove	Multiple small stems; epicormic growth; evidence of branch failures; dead branches.
660	Manitoba Maple	*Acer negundo*	Native	1	16.7	3.0	Improbable	Fair	On Property	Remove	Epicormic growth; evidence of branch failures; dead branches.
661	Manitoba Maple	*Acer negundo*	Native	1	15.5	2.5	Improbable	Fair	On Property	Remove	Double leader; epicormic growth; evidence of branch failures; dead branches.
662	Manitoba Maple	*Acer negundo*	Native	1	13.2	2.5	Improbable	Fair	On Property	Remove	Epicormic growth; evidence of branch failures; dead branches.
663	Manitoba Maple	*Acer negundo*	Native	1	18.3	2.5	Improbable	Fair	On Property	Remove	Double leader; rot at base, dead sapwood; epicormic growth; evidence of branch failures; dead branches.
664	Manitoba Maple	*Acer negundo*	Native	1	16.1	2.5	Improbable	Fair	On Property	Remove	Rot at base, dead sapwood; epicormic growth; evidence of branch failures; dead branches.
665	Manitoba Maple	*Acer negundo*	Native	2	14.3 + 13.5	3.0	Improbable	Fair	On Property	Remove	Dead third stem, rotted; epicormic growth; evidence of branch failures; dead branches.
666	Manitoba Maple	*Acer negundo*	Native	4	12.7 + 10 + 10 + 10	3.0	Improbable	Fair	On Property	Remove	Epicormic growth; evidence of branch failures; dead branches.
667	Manitoba Maple	*Acer negundo*	Native	2	14.5 + 12.4	3.5	Improbable	Fair	On Property	Remove	Rotted at base, dead sapwood; basal shoots; epicormic growth; evidence of branch failures; dead branches.
668	Manitoba Maple	*Acer negundo*	Native	2	19.4 + 15.5	3.5	Improbable	Fair	On Property	Remove	Lean; rot at base; epicormic growth; evidence of branch failures; dead branches.

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669	Manitoba Maple	*Acer negundo*	Native	2	29.3 + 17.4	3.5	Improbable	Fair	On Property	Remove	Double leader; poor branch attachment; epicormic growth; evidence of branch failures; dead branches.
670	Manitoba Maple	*Acer negundo*	Native	3	14 + 14 + 12.4	4.0	Improbable	Fair	On Property	Remove	Double leader; poor branch attachment; epicormic growth; evidence of branch failures; dead branches.
671	Manitoba Maple	*Acer negundo*	Native	2	15.2 + 11.2	3.0	Improbable	Fair	On Property	Remove	Poor branch attachment; epicormic growth; evidence of branch failures; dead branches.
672	Manitoba Maple	*Acer negundo*	Native	1	12.3	4.0	Improbable	Fair	On Property	Remove	Poor branch attachment; epicormic growth; evidence of branch failures; dead branches.
673	Manitoba Maple	*Acer negundo*	Native	3	29.7 + 28.5 + 15.5	4.0	Improbable	Fair	On Property	Remove	Basal shoots; multiple leaders; poor branch attachment; epicormic growth; evidence of branch failures; dead branches.
674	Manitoba Maple	*Acer negundo*	Native	2	13 + 11.7	2.5	Improbable	Fair	On Property	Remove	Knot at base; poor branch attachment; epicormic growth; evidence of branch failures; dead branches.
675	Manitoba Maple	*Acer negundo*	Native	1	14.8	2.5	Improbable	Fair	On Property	Remove	Basal shoots; poor branch attachment; epicormic growth; evidence of branch failures; dead branches.
676	Manitoba Maple	*Acer negundo*	Native	1	12.2	2.0	Improbable	Fair	On Property	Remove	Multiple small stems; epicormic growth; poor branch attachment; epicormic growth; evidence of branch failures; dead branches.
677	Manitoba Maple	*Acer negundo*	Native	3	13.5 + 12.4 + 10	4.5	Improbable	Fair	On Property	Remove	Slight lean; epicormic growth; poor branch attachment; evidence of branch failures; dead branches.
678	Manitoba Maple	*Acer negundo*	Native	3	22.4 + 20.8 + 18.0	4.5	Improbable	Fair	On Property	Remove	Broken top; multiple leaders; epicormic growth; poor branch attachment; evidence of branch failures; dead branches.
679	Manitoba Maple	*Acer negundo*	Native	4	24.5 + 15.7 + 13.0 + 12.5	4.0	Improbable	Fair	On Property	Remove	Basal shoots; epicormic growth; poor branch attachment; evidence of branch failures; dead branches.
680	Eastern White Cedar	*Thuja occidentalis*	Native	2	44.7 + 11.3	3.0	Improbable	Good	Core Natural Area Buffer	Retain	Double leader; good crown structure.
681	Eastern Hop-hornbeam	*Ostrya virginiana*	Native	3	46.7 + 14.3 + 10.6	5.5	Possible	Poor	Core Natural Area Buffer	Retain	Multiple leader with knots; lost main leader, broken top; healed over seem in trunk; branches growing into smaller stem and growing around trunk
682	Eastern Hop-hornbeam	*Ostrya virginiana*	Native	2	23 + 10.7	3.5	Improbable	Fair	Core Natural Area Buffer	Retain	Asymmetrical crown due to larger proximity to 681; some dead branches.
683	Black Cherry	*Prunus serotina*	Native	1	26.2	5.0	Possible	Fair	Core Natural Area Buffer	Retain	Double leader, one broken top; numerous dead/broken branches; curved trunk.
684	Common Apple	*Malus pumila*	Non-native	1	55.5	5.5	Possible	Fair	Core Natural Area Buffer	Retain	Poor branch attachment; lean over field; evidence of branch failures; epicormic growth.
685	American Elm	*Ulmus americana*	Native	1	42.8	10.0	Improbable	Fair	Core Natural Area Buffer	Retain/Confirm in Field	Double leader; evidence of branch failures; few dead branches; epicormic growth.
686	Eastern Hop-hornbeam	*Ostrya virginiana*	Native	1	12.8	4.0	Improbable	Poor	Core Natural Area Buffer	Retain	Broken top; poor branch attachment; dead and rotted leader, peeling bark; healing wounds at base.
687	Eastern Hop-hornbeam	*Ostrya virginiana*	Native	4	16.5 + 14.8 + <10 + <10	3.5	Possible	Fair	On Property	Remove	Poor branch attachment; curved trunk; dead branches.
688	Manitoba Maple	*Acer negundo*	Native	8	29 + 26.7 + 25.6 + 23.2 + 22 + 21.6 + 19.4 + 16.5	5.5	Possible	Poor	On Property	Remove	Large broken stems; fruiting bodies in knot holes; broken branches; epicormic growth; some stems showing rotted sapwood; poor branch attachment.
689	Black Cherry	*Prunus serotina*	Native	1	32.6	5.0	Possible	Fair	On Property	Remove	Poor branch attachment; poor canopy structure; epicormic growth; dead branches ; crooked leader.
690	Norway Maple	*Acer platanoides*	Non-native	1	17.5	6.0	Improbable	Good	On Property	Retain	Slight lean; asymmetrical crown; evidence of branch failures; epicormic growth.
691	Norway Maple	*Acer platanoides*	Non-native	2	24.2 + 15.8	6.0	Improbable	Good	On Property	Retain	Signs of branch failures; epicormic growth.

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Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Comments
692	European Mountain-ash	*Sorbus aucuparia*	Non-native	1	10.0	3.5	Improbable	Fair	Boundary	Retain	Sealing wound at base; epicormic growth; asymmetrical crown.
693	Freeman's Maple	*Acer x freemanii*	Native	2	26.5 + 11.5	7.0	Possible	Fair	On Property	Retain	Large wound on large stem showing rotted core; against brush pile.
694	Norway Maple	*Acer platanoides*	Non-native	4	33.3 + 31.5 + +19.5 + 17.2	6.0	Possible	Poor	On Property	Retain	Large wound at stem connection with exposed rotted core; some stems have healed seams.
695	Siberian Elm	*Ulmus pumila*	Non-native	1	11.5	3.5	Possible	Poor	On Property	Retain	Epicormic growth; asymmetrical crown; lean; vines in canopy; large wounds at base.
696	Norway Maple	*Acer platanoides*	Non-native	2	13.5 + <10	4.0	Improbable	Good	Boundary	Retain	Double leader with good U attachment; epicormic growth.
697	Eastern White Pine	*Pinus strobus*	Native	1	11.2	2.5	Improbable	Fair	On Property	Retain	Vines growing into crown; thin/small crown; self pruning.
698	Siberian Elm	*Ulmus pumila*	Non-native	2	11.7 + <10	2.5	Possible	Poor	On Property	Retain	Epicormic growth; poor branch attachment; evidence of branch failures; vines in crown.
699	Siberian Elm	*Ulmus pumila*	Non-native	3	14.8 + 12.1 + 11.0	2.5	Possible	Poor	On Property	Retain	Epicormic growth; poor branch attachment; evidence of branch failures; vines in crown.
700	White Spruce	*Picea glauca*	Native	1	21.5	3.0	Improbable	Good	On Property	Retain	Good crown structure; some self pruning.
701	White Spruce	*Picea glauca*	Native	1	25.2	3.5	Improbable	Good	Boundary	Retain	Good crown structure; some self pruning.
702	White Spruce	*Picea glauca*	Native	1	32.3	4.5	Improbable	Good	On Property	Remove	Good crown structure; some self pruning.
703	White Spruce	*Picea glauca*	Native	2	17.8 + 17.5	3.0	Improbable	Good	On Property	Remove	Good crown structure; some self pruning.
704	Norway Spruce	*Picea abies*	Non-native	1	26.5	4.0	Improbable	Fair	On Property	Remove	Double leader; thinned canopy, bare near top.
705	White Spruce	*Picea glauca*	Native	1	20.1	4.0	Improbable	Fair	On Property	Remove	Double leader; topped; thin crown.
706	White Spruce	*Picea glauca*	Native	1	19.8	3.0	Improbable	Good	On Property	Remove	Thin canopy at bottom; self pruning.
707	Norway Spruce	*Picea abies*	Non-native	1	27.6	3.5	Improbable	Good	On Property	Remove	Thin at bottom due to crowding; good crown structure; self pruning.
708	Norway Spruce	*Picea abies*	Non-native	1	17.5	4.0	Improbable	Fair	On Property	Remove	Leader lost, broken off at canker; asymmetrical crown due to crowding.
709	Norway Spruce	*Picea abies*	Non-native	1	13.3	3.0	Improbable	Fair	On Property	Remove	Asymmetrical crown due to crowding; thin crown; dead branches.
710	Norway Spruce	*Picea abies*	Non-native	1	30.5	5.0	Improbable	Good	On Property	Remove	Good crown structure; self pruning.
711	White Spruce	*Picea glauca*	Native	1	15.3	1.5	Improbable	Good	On Property	Remove	Slight thin area in middle; good crown structure; self pruning.
A	Scots Pine	*Pinus sylvestris*	Non-native	1	20.1	2.0	Improbable	Fair	Boundary	Retain	Decent form; lacking some vigour, though closed one wound.
B	White Spruce	*Picea glauca*	Native	1	23	3.0	Improbable	Excellent	Boundary	Retain	Good form; healthy crown.
C	Eastern White Pine	*Pinus strobus*	Native	1	23.8	3.0	Possible	Fair	On Property	Remove	Codominant leaders; chlorosis; good form.
D	Manitoba Maple	*Acer negundo*	Native	2	25.2 + 15.0	4.0	Possible	Poor	On Property	Remove	Loose bark and included bark at base; codominant leaders in primary stem; crossing branches.
E	Manitoba Maple	*Acer negundo*	Native	1	14.1	2.0	Possible	Very Poor	On Property	Remove	Strongly leaning southeast, in another tree; loose bark at base. Almost dead.
F	Manitoba Maple	*Acer negundo*	Native	1	21.4	3.5	Possible	Fair	On Property	Remove	Codominant leaders; vigorous; epicormic growth.
G	Manitoba Maple	*Acer negundo*	Native	1	14.8	2.5	Possible	Fair	On Property	Remove	Codominant leaders with wide crotch; poor structure; epicormic growth.
H	White Spruce	*Picea glauca*	Native	1	33.7	4.0	Improbable	Fair	On Property	Retain/Confirm in Field	Heavy cone production; minor dieback; solid main stem; adjacent to shed.
I	Eastern Red Cedar	*Juniperus virginiana*	Native	3	13	1.5	Improbable	Fair	Off Property	Retain	Multi stem tree at fence line; some crown dieback
J	Scots Pine	*Pinus sylvestris*	Non-native	1	14	2.0	Improbable	Fair	On Property	Remove	Asymmetrical crown due to adjacent tree; minor dieback; growing on edge of residential property.
K	Scots Pine	*Pinus sylvestris*	Non-native	1	17.4	2.5	Improbable	Fair	Boundary	Retain	Asymmetrical crown due to adjacent tree; minor dieback; growing on edge of residential property.
L	White Spruce	*Picea glauca*	Native	1	14.7	2.0	Improbable	Fair	Boundary	Retain	Asymmetrical crown due to adjacent tree; crown otherwise healthy; boundary tree

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M	White Spruce	*Picea glauca*	Native	1	20.1	3.0	Improbable	Fair	Off Property	Retain	Some crown dieback; improper prune cuts; soil low on other property side; growing at edge of residential property.
N	Eastern White Pine	*Pinus strobus*	Native	1	25.1	4.0	Improbable	Fair	On Property	Retain/Confirm in Field	Asymmetrical crown due to adjacent tree; some necrosis; improper prune cuts; boundary tree.
O	Scots Pine	*Pinus sylvestris*	Non-native	1	16	2.0	Improbable	Fair	Off Property	Retain	Slightly asymmetrical crown due to adjacent tree; improper prune cuts; woodpecker damage; on private property.
P	Manitoba Maple	*Acer negundo*	Native	2	32 + 23.2	5.0	Possible	Poor	On Property	Remove	Crown dieback; included bark; scaffold branch dieback; growing at edge of residential property.
Q	Manitoba Maple	*Acer negundo*	Native	2	27.5 + 19	6.0	Possible	Poor	On Property	Remove	Relatively extensive crown dieback; on 10 degree angle toward yard; growing in slope; growing at edge of residential property.
R	Manitoba Maple	*Acer negundo*	Native	2	20.9 + 14.5	6.0	Improbable	Fair	On Property	Remove	Growing on 20 degree angle; growing out of slope; some crown dieback; growing at edge of residential property.
S	Manitoba Maple	*Acer negundo*	Native	2	23.3 + 16.5	8.0	Probable	Poor	On Property	Remove	Decay between stem union; crown dieback; epicormic growth; growing out of slope
T	Manitoba Maple	*Acer negundo*	Native	1	15.7	3.0	Improbable	Fair	On Property	Remove	Narrow crown with some dieback; compartmentalization in old prune cuts; growing out of slope
U	Eastern White Cedar	*Thuja occidentalis*	Native	4	13.5 + 12.2 + 11 + 10	2.0	Improbable	Fair	On Property	Retain	Branches growing around each other; some crown dieback
V	Manitoba Maple	*Acer negundo*	Native	2	58.4 + 23.9	7.0	Possible	Fair	Boundary	Retain	Some crown dieback; epicormic growth; weak stem union; boundary tree.
W	Manitoba Maple	*Acer negundo*	Native	1	44.4	5.0	Possible	Fair	On Property	Remove	Epicormic growth; a few lower branches broken; wound wood in bark wound; growing on slope.
X	Manitoba Maple	*Acer negundo*	Native	1	54.1	3.0	Possible	Poor	On Property	Remove	Epicormic growth; evidence of decay in main stem; crown dieback.
Y	Manitoba Maple	*Acer negundo*	Native	2	83.1 + 46	5.0	Possible	Fair	On Property	Remove	Evidence of decay but development of wound wood; epicormic growth; some crown dieback.
Z	Norway Maple	*Acer platanoides*	Non-native	1	29.8	4.0	Possible	Fair	On Property	Retain	Large stem wound shows decay; tar spot; boundary tree.
AA	Common Lilac	*Syringa vulgaris*	Non-native	3	12.5 + 11.5	2.0	Possible	Fair	On Property	Retain	Centre rot in 1 stem; basal shoots.
AB	Norway Maple	*Acer platanoides*	Non-native	1	33.3	3.5	Improbable	Fair	On Property	Retain	Long bark seams; full crown, tar spot; boundary tree.
AC	Manitoba Maple	*Acer negundo*	Native	2	32.8 + 28.0	6.0	Possible	Poor	On Property	Retain	Larger stem fell into subject property, still has live growth; fruiting bodies; significant dieback; broken leader; boundary tree but larger stem leans onto subject property.
AD	Manitoba Maple	*Acer negundo*	Native	1	34.9 + 21.1	6.5	Possible	Poor	On Property	Retain	1 former stem gone, likely basal rot; larger stem lies on ground, into subject property; bark rubbing wound on secondary stem with neighboring Black Cherry; boundary tree.
AE	Manitoba Maple	*Acer negundo*	Native	2	29.2 + 24.8	6.5	Probable	Poor	On Property	Retain	Large fruiting bodies at base; large section of bark healed over; centre rot in upright stem; other stem leans into subject property; boundary tree.
AF	Manitoba Maple	*Acer negundo*	Native	4	26.3 + 25.3 + 24.5 + 23.6	5.0	Probable	Very Poor	Boundary	Retain	4 former stems have failed; potential root rot; 1 stem dead, another with broken top; boundary tree.
AG	Manitoba Maple	*Acer negundo*	Native	3	61.0 + 26.5 + 24.2	6.0	Possible	Poor	Boundary	Retain	Primary stem failed at 3m; broken top, water sprouts; boundary tree.
AH	Siberian Elm	*Ulmus pumila*	Non-native	1	23	6.0	Possible	Fair	Off Property	Retain	Off property; staining up trunk; few dead branches; evidence of branch failures.

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AI	Siberian Elm	*Ulmus pumila*	Non-native	1	16	5.0	Improbable	Fair	Off Property	Retain	Off property; leaning slightly; staining up trunk; few dead branches; evidence of branch failures.
AJ	Siberian Elm	*Ulmus pumila*	Non-native	2	12 + 11	3.0	Possible	Fair	Off Property	Retain	Off property; epicormic growth; dead branches; evidence of branch failure, one recent.
AK	Siberian Elm	*Ulmus pumila*	Non-native	1	27	6.0	Possible	Fair	Off Property	Retain	Off property; numerous dead branches; evidence of branch failures.
AL	Sugar Maple	*Acer saccharum*	Native	1	29	4.0	Probable	Poor	Off Property	Retain	Off property; two morphed stems, thick seal; main leader has large wound showing rot midway up; multiple dead branches with peeling bark.
AM	Siberian Elm	*Ulmus pumila*	Non-native	1	16	4.0	Possible	Fair	Off Property	Retain	Off property; few dead branches, peeling bark; epicormic growth.
AN	Norway Spruce	*Picea abies*	Non-native	2	39 + 27	3.5	Improbable	Good	Off Property	Retain	Off property; some defoliation on N side; self pruning.
AO	White Spruce	*Picea glauca*	Native	1	55	4.0	Improbable	Good	Off Property	Retain	Off property; some self pruning; minor defoliation.
AP	Sugar Maple	*Acer saccharum*	Native	1	60	5.0	Improbable	Fair	Boundary	Retain	Off property; two stems above breast height; some branches growing into each other; multiple leaders; epicormic growth.
AQ	Norway Spruce	*Picea abies*	Non-native	1	40	5.0	Improbable	Good	Boundary	Retain	Good crown structure; some self pruning.
AR	White Spruce	*Picea glauca*	Native	1	25	3.5	Improbable	Good	Off Property	Retain	Off property; good crown structure; some self pruning.
AS	White Spruce	*Picea glauca*	Native	1	25	3.5	Improbable	Good	Off Property	Retain	Off property; good crown structure; some self pruning.
AT	Norway Spruce	*Picea abies*	Non-native	1	25	3.5	Improbable	Good	Off Property	Retain	Off property; good crown structure; some self pruning.
AU	Freeman's Maple	*Acer x freemanii*	Native	1	50	6.0	Improbable	Good	Off Property	Retain	Off property; epicormic growth; evidence of branch failures; few dead branches;
AV	Northern Red Oak	*Quercus rubra*	Native	1	55	8.0	Improbable	Good	Off Property	Retain	Off property; slight asymmetrical crown due to maple; few dead branches.
AW	White Spruce	*Picea glauca*	Native	1	30	4.0	Improbable	Good	Off Property	Retain	Off property; good crown structure; some self pruning.
AX	Freeman's Maple	*Acer x freemanii*	Native	1	75	8.0	Possible	Fair	Off Property	Retain	Off property; evidence of recent branch failures; staining at stem attachment.
AY	Norway Maple	*Acer platanoides*	Non-native	1	18	3.0	Improbable	Good	Boundary	Retain	Off property; good crown structure.
AZ	Norway Maple	*Acer platanoides*	Non-native	3	26 + 18 + 15	5.0	Improbable	Good	Boundary	Retain	Off property; growing closely to shed; good crown structure.
BA	Paper Birch	*Betula papyrifera*	Native	3	28 + 25 + 18	6.0	Improbable	Good	Boundary	Retain	Off property; wounds at branch attachment and on branches showing dead sapwood; growing through fence.
BB	Willow sp.	*Salix sp.*	**	1	88	9.0	Probable	Fair	Off Property	Retain	Off property; evidence of recent branch failures; dead branches.
BC	Norway Maple	*Acer platanoides*	Non-native	3	27 + 23 + 21	5.0	Improbable	Good	Boundary	Retain	Off property; good crown structure, unable to see base due to fence.
BD	Black Pine	*Pinus nigra*	Non-native	1	30	5.0	Improbable	Good	Boundary	Retain/Confirm in Field	Off property; multiple leaders, possible two stems unable to see; cant see base due to fence; evidence of recent branch failure.
BE	Eastern White Cedar	*Thuja occidentalis*	Native	2	28 + 15	4.0	Improbable	Good	On Property	Retain/Confirm in Field	Multiple leaders; asymmetrical crown due to crowding.
BF	Eastern White Cedar	*Thuja occidentalis*	Native	1	27	2.5	Improbable	Good	Boundary	Retain	Off property; multiple leader; asymmetrical crown due to crowding.
BG	Eastern White Cedar	*Thuja occidentalis*	Native	1	18	1.5	Improbable	Good	Boundary	Retain	Off property; multiple leader; asymmetrical crown due to crowding.
BH	Norway Maple	*Acer platanoides*	Non-native	1	20	3.5	Improbable	Good	Off Property	Retain	Off property; good crown structure.
BI	White Spruce	*Picea glauca*	Native	1	30	3.0	Improbable	Fair	Boundary	Retain	Off property; patchy crown, thin.
BJ	White Spruce	*Picea glauca*	Native	1	34	5.0	Improbable	Good	Off Property	Retain	Off property; good crown structure; some self pruning.
BK	Blue Spruce	*Picea pungens*	Non-native	1	37.3	4.0	Improbable	Good	On Property	Retain	Off property; good crown structure; some self pruning.
BL	White Spruce	*Picea glauca*	Native	1	43.5	5.0	Improbable	Good	Off Property	Retain	Off property; good crown structure; some self pruning.

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BM	White Spruce	*Picea glauca*	Native	1	35.8	3.0	Possible	Fair	On Property	Retain	Codominant leaders at 3m; irregular crown; some swollen tissue at base of branches.
BN	White Spruce	*Picea glauca*	Native	1	44.1	2.5	Possible	Fair	Off Property	Retain	Irregular crown; 10% dieback; narrow crown.
BO	White Spruce	*Picea glauca*	Native	1	19.0	2.5	Improbable	Good	Boundary	Retain	Good form and structure.
BP	Freeman's Maple	*Acer x freemanii*	Native	7	38.0 + 33.0 + 32.9 + 32.8 + 28.7 + 27.0 + 23.5 + 22.0 + 18.0	6.0	Possible	Fair	Off Property	Retain	Multi-stem tree with overlapping branches with branch rubs; staining; full, relatively vigorous crown. Crown over property boundary, machinery may impact some branches.
BQ	Sugar Maple	*Acer saccharum*	Native	1	50.5	5.0	Improbable	Fair	Off Property	Retain	Vigorous crown around main leader that has been pruned out; compartmentalization in prune cuts. Private tree, crown over property boundary.
BR	Balsam Poplar	*Populus balsamifera*	Native	1	15.0	3.0	Improbable	Good	On Property	Remove	Slightly asymmetrical crown due to adjacent trees; minor dieback; recent backyard grading near main stem. Private tree.
BS	Balsam Poplar	*Populus balsamifera*	Native	1	14.4	3.0	Improbable	Good	On Property	Remove	Slightly asymmetrical crown due to adjacent trees; minor dieback; recent backyard grading adjacent. Private tree.
BT	Balsam Poplar	*Populus balsamifera*	Native	1	11	1.5	Improbable	Good	On Property	Remove	Slight lean.
BU	Balsam Poplar	*Populus balsamifera*	Native	1	17.5	3.0	Improbable	Fair	On Property	Remove	Broken lower branches.
BV	Norway Maple	*Acer platanoides*	Non-native	1	35.8	5.0	Possible	Fair	Off Property	Retain	Basal crack; rub and stain line around stem, likely due to past girdling by anthropogenic object. Private tree, not tagged.
BW	Manitoba Maple	*Acer negundo*	Native	1	31.6	3.0	Possible	Poor	On Property	Retain	Watersprouts; second stem under 10cm DBH; boundary of yard; heavy stem lean to north; cut logs stacked at base.
BX	Common Lilac	*Syringa vulgaris*	Non-native	5	12.0 + 12.0 + 12.0 + 12.0 + 12.0	5.0	Possible	Fair	On Property	Retain	Stand of Lilac; some hollow stems.
BY	Black Cherry	*Prunus serotina*	Native	1	47.6	9.0	Possible	Poor	Boundary	Retain	Compartmentalized hollow basal cavity; stem lean southeast; two leaders; stem rub.
BZ	American Elm	*Ulmus americana*	Native	1	42.1	10.0	Possible	Poor	Off Property	Retain	History of branch failure; multiple leaders at top of tree; rot at previous branch failure location.
CA	White Spruce	*Picea glauca*	Native	1	37.0	4.0	Improbable	Fair	On Property	Retain	History of pruning; asymmetrical crown to southwest; Virginia Creeper growing on stem. In rear of private yard, not tagged.
CB	Freeman's Maple	*Acer x freemanii*	Native	5	26.2 + 25.0 + 18.9 + 13.5 + 10.0	4.0	Improbable	Good	Off Property	Retain	Off-property, dripline may extend into project area; past stem failure or pruning.
CC	White Spruce	*Picea glauca*	Native	1	44.5	5.0	Improbable	Good	On Property	Retain	History of pruning; resin exuding; in private yard.
1001	Crabapple species	*Malus sp.*	Non-native	3	12.8 + 11.8 + 10.8	3.0	Improbable	Very Poor	Core Natural Area	Remove/Retain Stump	Extensive crown dieback.
1002	Crabapple species	*Malus sp.*	Non-native	4	11.8 + 11.6 + 11.6 + 11.1	4.0	Possible	Poor	Core Natural Area	Retain/Confirm in Field	Relatively extensive crown dieback.
1003	Eastern White Cedar	*Thuja occidentalis*	Native	1	18.6	3.0	Improbable	Fair	Core Natural Area	Retain/Confirm in Field	Crown makes up dripline; wound on main stem with compartmentalization; light pruning dieback.
1004	Eastern White Cedar	*Thuja occidentalis*	Native	2	19.0 + 17.8	3.0	Improbable	Fair	Core Natural Area	Retain/Confirm in Field	Canopy makes up dripline; asymmetrical crown due to competition.
1005	Black Cherry	*Prunus serotina*	Native	2	28.4 + 27.5	5.0	Improbable	Fair	Core Natural Area	Remove/Retain Stump	Some crown dieback; light pruning dieback; crown is dripline.
1006	Black Cherry	*Prunus serotina*	Native	1	13.5	2.0	Improbable	Fair	Core Natural Area	Remove/Retain Stump	Phototrophic growth with slight lean toward open area; minor dieback.

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1007	Eastern White Cedar	*Thuja occidentalis*	Native	1	18.6	2.0	Improbable	Good	Core Natural Area	Remove/Retain Stump	Crown is dripline; asymmetrical crown due to competition; crown otherwise full.
1008	Common Apple	*Malus pumila*	Non-native	2	10.5	3.0	Possible	Poor	Core Natural Area	Remove/Retain Stump	Epicormic growth; crown dieback; phototrophic growth.
1009	Eastern White Cedar	*Thuja occidentalis*	Native	4	22.3 + 20.9 + 14.5 + 10.6	3.0	Improbable	Fair	Core Natural Area	Remove/Retain Stump	Light pruning dieback; crown is dripline.
1010	Eastern White Cedar	*Thuja occidentalis*	Native	1	21.1	1.5	Improbable	Fair	Core Natural Area	Retain	Light pruning dieback; minimal crown at top; however solid main stem.
1011	Eastern White Cedar	*Thuja occidentalis*	Native	2	19.7 + 13.3	1.5	Improbable	Fair	Core Natural Area	Retain/Confirm in Field	Light pruning dieback; crown is dripline.
1012	Eastern White Cedar	*Thuja occidentalis*	Native	1	32.0	3.0	Improbable	Good	Core Natural Area	Remove/Retain Stump	Solid main stem; asymmetrical crown due to competition; crown is dripline.
1013	Eastern White Cedar	*Thuja occidentalis*	Native	1	21.7	0.5	Improbable	Poor	Core Natural Area	Retain	Extensive light pruning dieback; solid main stem.
1014	Eastern White Cedar	*Thuja occidentalis*	Native	3	18.4 + 14.8 + 12.4	2.0	Improbable	Poor	Core Natural Area	Retain/Confirm in Field	Relatively extensive light pruning dieback; included bark; stems still solid.
1015	Eastern White Cedar	*Thuja occidentalis*	Native	1	21.5	4.0	Improbable	Fair	Core Natural Area	Remove/Retain Stump	Crown is dripline; asymmetrical crown due to competition; some light pruning dieback.
1016	Eastern White Cedar	*Thuja occidentalis*	Native	1	11.0	0.5	Improbable	Fair	Core Natural Area	Retain	Small axe wound; light pruning dieback.
1017	American Elm	*Ulmus americana*	Native	1	34.2	5.0	Improbable	Fair	Core Natural Area	Retain/Confirm in Field	Crown is dripline; some crown dieback; root flare growing against cedar.
1018	Eastern White Cedar	*Thuja occidentalis*	Native	3	25.7 + 23.1 + 21.8	3.0	Improbable	Good	Core Natural Area	Remove/Retain Stump	Crown is dripline; minor dieback.
1019	Manitoba Maple	*Acer negundo*	Native	1	42.2	4.5	Possible	Very Poor	Wetland Buffer	Remove/Retain Stump	Extensive dieback; almost dead.
1020	Manitoba Maple	*Acer negundo*	Native	1	65.6	8.0	Probable	Very Poor	Wetland Buffer	Remove/Retain Stump	Decay at root flare; epicormic growth; lean over wetland; extensive crown dieback.
1021	Manitoba Maple	*Acer negundo*	Native	2	25.9 + 20.5	4.0	Possible	Poor	Core Natural Area	Retain/Confirm in Field	Relatively extensive crown dieback; some bark loss on scaffold branches.

Summary of Tallied Trees

Polygon	Species	Condition	Size Class (cm DBH)				Notes
			10-20	20-30	30-40	40-50	
A	White Pine	Good	307	55			Polygon mainly White Pine plantation with Norway Spruce and White Spruce at eastern edge. Pedestrian foot trails running through polygon. Overall trees unlikely to have major failures, with an improbable potential for failure.
		Fair	12	2			
		Poor	8				
		Very Poor					
		Dead					
	Norway Spruce	Good	78	11			
		Fair	2				
		Poor					
		Very Poor					
		Dead					
	White Spruce	Good	38				
		Fair	1				
		Poor					
		Very Poor					
		Dead					
B	White Pine	Good	1	7			White Pine plantation with 1 edge comprised of Eastern White Cedar. Entire polygon with an improbable to possible potential for failure.
		Fair	64	42			
		Poor					
		Very Poor					
		Dead	3				
	White Cedar	Good	3				
		Fair	27				
		Poor					
		Very Poor					
		Dead					
	Black Cherry	Good					
		Fair	1				
		Poor					

Polygon	Species	Condition	Size Class (cm DBH)				Notes
			10-20	20-30	30-40	40-50	
		Very Poor					
		Dead					
	Common Apple	Good	1				
		Fair					
		Poor					
		Very Poor					
		Dead					
C	**White Pine**	Good	13				Smaller polygon, three species mixed throughout. Trees overall unlikely to have major failures with improbable potential for structural failure.
		Fair	2				
		Poor					
		Very Poor					
		Dead					
	Norway Spruce	Good	1	3			
		Fair					
		Poor					
		Very Poor					
		Dead					
	Black Cherry	Good					
		Fair	3				
		Poor					
		Very Poor					
		Dead					
D	**White Pine**	Good	4	13			All White Pine, on slight slope, trees on outer edge in better condition than inner due to crowding/shade. Trees overall unlikely to have major failures with improbable to possible potential for structural failure.
		Fair	165	169			
		Poor	12	3			
		Very Poor	3				
		Dead	6	5			
E	**White Pine**	Good	1	1			Lamium and periwinkle throughout parts of the stand, overall smaller and in worse condition than Polygon B. On slope. Overall
		Fair	112	53			
		Poor	40	1			

Polygon	Species	Condition	Size Class (cm DBH)				Notes
			10-20	20-30	30-40	40-50	
		Very Poor	2				trees unlikely to have major failures; however, improbable to potential for structural failure.
		Dead	55	2			
	Black Walnut	Good	2				
		Fair	3				
		Poor					
		Very Poor					
		Dead					
F	**Manitoba Maple**	Good					Manitoba Maple stand, some tagged; however not included in the mapped polygon area. Overall, relatively poor condition stand on old fill/aggregate pile, possible major failures within stand with a possible to probable potential for failure.
		Fair	34	5			
		Poor	16				
		Very Poor					
		Dead	12				
G	**Balsam Poplar**	Good					A small copse of trees dominated by mid-aged Poplar species, primarily Balsam Poplar. The Poplar trees are generally in fair condition with improbable to potential for structural failure. One mature Manitoba Maple tree was dead, and some younger regeneration of the species.
		Fair	6	4			
		Poor					
		Very Poor					
		Dead					
	Manitoba Maple	Good					
		Fair					
		Poor					
		Very Poor					
		Dead		1			

Appendix II
Tree Health & Risk Assessment Criteria

Tree Health Assessment Criteria

Assessment Criteria	Definition[1]
Excellent	Represents a tree in near perfect form, health, and vigour. This tree would exhibit no deadwood, no decline, and no visible defects.
Good	Represents a tree ranging from a generally healthy tree to a near perfect tree in terms of health, vigour and structure. This tree exhibits a complete, balanced crown structure with little to no deadwood and minimal defects as well as a properly formed root flare.
Fair	Represents a tree with minor health, balance or structural issues with minimal to moderate deadwood. Branching structure shows signs of included bark or minor rot within the branch connections or trunk wood. The root flare shows minimal signs of mechanical injury, decay, poor callusing, or girdling roots. Trees in the category require minor remedial actions to improve the vigour and structure of the tree.
Poor	Represents a tree that exhibits a poor vigour, reduced crown size (<30% of crown typical of species caused by overcrowding or decline), extreme crown unbalance, or extensive rot in the branching and trunk wood. Fungus could be seen from these rotting areas, suggesting further decay. These trees have extensive crown die back with a large amount of deadwood, and possibly dead sections. These weakened areas can lead to a potential failure of tree sections. Rooting zones show signs of extensive root decay or damage (fruiting bodies or mechanical damage) or girdling roots. Trees in this category require more extensive actions to prevent failure. A tree identified as poor would be a candidate for removal in the near future.
Very Poor	Represents a tree that exhibits major health and structural defects. Quite often the defects or diseases affecting this tree will be fatal. Large quantities of fungus, large dead sections with possible cavities and bark falling off all are signs that a tree is in an advanced state of decline and would be identified as very poor. These trees may have a probable or imminent potential for structural failure and may be identified for removal.
Dead	Represents a tree that exhibits no sign of new growth, including buds, foliage, or shoot growth. These trees may have a probable or imminent potential for structural failure and may be identified for removal.

[1]Dunster 2009

Potential for Structural Failure Assessment Criteria

Assessment Criteria*	Definition[2]
Improbable	The tree or branch is not likely to fail during normal weather conditions and may not fail in many severe weather conditions within the specified time frame.
Possible	Failure could occur, but it is unlikely during normal weather conditions within the specified time frame.
Probable	Failure may be expected under normal weather conditions within the specified time frame.
Imminent	Failure has started or is most likely to occur in the near future, even if there is no significant wind or increased load. This is a rare occurrence for a risk assessor to encounter, and it may require immediate action to protect people from harm.
*A specified time frame of 2 years will be used when assessing potential for structural failure.	

[2]Dunster et al. 2013

Appendix III
Conditions of Tree Inventory Assessment

Conditions of Tree Assessment

Limitations

This tree inventory and assessment is based on the circumstances and observations by Natural Resource Solutions Inc. (NRSI) as they existed at the time of the site inspection(s) of the Client's Property as described in this report (the "Subject Lands") and the trees situated thereon, and upon information provided by the Client to NRSI. The opinions in this assessment are given based on observations made and using generally accepted professional judgment, however, because trees are living organisms and subject to change, damage and disease, the results, observations, recommendations, and analysis as set out in this assessment are valid only at the date any such observations and analysis took place. No guarantee, warranty, representation or opinion is offered or made by NRSI as to the length of the validity of the results, observations, recommendations and analysis contained within this assessment. As a result, the Client shall not rely upon this assessment, save and except for representing the circumstances and observations at the date of site inspection(s), and the analysis and recommendations made in relation to the proposed undertaking. It is recommended that the inventoried trees discussed in this assessment should be re-assessed periodically, where required.

Further Services

Neither NRSI, nor any assessor employed or retained by NRSI (the "Assessor") for the purpose of preparing or assisting in the preparation of this assessment shall be required to provide any further consultation or services to the Client including, without limitation, acting as an expert witness or witness in any court in any jurisdiction unless the Client has first made specific arrangements with respect to such further services, including providing payment of the Assessor's regular hourly billing fees.

NRSI accepts no responsibility for the implementation of all or any part of this report, unless specifically requested to examine the implementation of such activities recommended herein. Any request for the inspection or supervision of all or part of the implementation shall be made in writing and the details agreed to in writing by both parties.

Assumptions

The Client is hereby notified that where any of the information set out and referenced in this assessment are based on assumptions, facts or information provided to NRSI, NRSI will in no way be responsible for the veracity or accuracy of any such information. Further, the Client acknowledges and agrees that NRSI has, for the purposes of preparing their assessment, assumed that the Property is in full compliance with all applicable federal, provincial, municipal and local statutes, regulations, by-laws, guidelines and other related laws. NRSI explicitly denies any legal liability for any and all issues with respect to non-compliance with any of the above-referenced statutes, regulations, by-laws, guidelines and laws as it may pertain to or affect the Property.

Restriction of Assessment

The assessment carried out was restricted to the areas as described in this report. NRSI is not legally liable for any other trees except those expressly discussed herein. The conclusions of this assessment do not apply to any areas, trees, or any other property not covered or referenced in this assessment.

Professional Responsibility

In carrying out this assessment, NRSI and any Assessor appointed for and on behalf of NRSI to perform and carry out the assessment has exercised a reasonable standard of care, skill and diligence. The assessment has been made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, discolored foliage (during the leaf-on period), the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people. Except where specifically noted in the assessment, none of the trees examined on the property were dissected, cored, probed, or climbed, and detailed root crown examinations involving excavation were not undertaken.

No guarantees are offered, or implied, that trees recommended for retention, or all parts of them, will remain standing. It is professionally impossible to predict with absolute certainty the behaviour of any single tree or group of trees, or all their component parts, in all given circumstances. Inevitably, a standing tree will always pose some risk. Most

trees have the potential to fall, lean, or otherwise pose a danger to property and persons in the event of extreme weather conditions, and this risk can only be eliminated if the tree is removed.

Without limiting the foregoing, no liability is assumed by NRSI or its directors, officers, employers, contractors, agents or Assessors for:

a) any legal description provided with respect to the Property;
b) issues of title and/or ownership with respect to the Property;
c) the accuracy of the Property line locations or boundaries with respect to the Property; and
d) the accuracy of any other information provided to NRSI by the Client or third parties;
e) any consequential loss, injury or damages suffered by the Client or any third parties, including but not limited to replacement costs, loss of use, earnings and business interruption; and
f) the unauthorized distribution of the assessment.

Third Party Liability

This assessment was prepared by NRSI for the Client. The data collected reflect NRSI's best assessment of the inventoried trees situated on the Property with the information available at the time of observation. Data analysis and the assessment of potential impacts to inventoried trees is specific to the proposed undertaking as described in this report. NRSI accepts no responsibility for any damages or loss suffered by any third party or by the Client as a result of decisions made or actions based upon the use of this assessment for purposes unrelated to the proposed undertaking.

General

Any plans and/or illustrations in this assessment are included only to help the Client visualize the issues in this assessment and shall not be relied upon for any other purpose.

This report shall be considered as a whole, no sections are severable, and the assessment shall be considered incomplete if any pages are missing.

Appendix IV
Tree Inventory Summary Tables

Summary of Inventoried Trees (excluding Tree Tally)

Common Name	Scientific Name	Excellent	Good	Fair	Poor	Very Poor	Dead	Total
Native								
American Elm	*Ulmus americana*		1	2	1			4
Balsam Poplar	*Populus balsamifera*		51	70	9	2		132
Black Cherry	*Prunus serotina*			4	3			7
Black Walnut	*Juglans nigra*		5	4				9
Eastern Cottonwood	*Populus deltoides*		1					1
Eastern Hop-hornbeam	*Ostrya virginiana*			2	2			4
Eastern Red Cedar	*Juniperus virginiana*			1				1
Eastern White Cedar	*Thuja occidentalis*		8	8	2			18
Eastern White Pine	*Pinus strobus*		7	11				18
Freeman's Maple	*Acer x freemanii*		2	3				5
Manitoba Maple	*Acer negundo*		14	139	59	12		224
Northern Red Oak	*Quercus rubra*		1					1
Paper Birch	*Betula papyrifera*		1	1				2
Red Pine	*Pinus resinosa*			1				1
Slippery Elm	*Ulmus rubra*		3	1				4
Sugar Maple	*Acer saccharum*			2	1			3
Trembling Aspen	*Populus tremuloides*		1	1				2
White Ash	*Fraxinus americana*				2			2
White Spruce	*Picea glauca*	1	15	10				26
Total		**1**	**110**	**260**	**79**	**14**		**464**
Non-native								
Black Locust	*Robinia pseudoacacia*		4		1			5
Black Pine	*Pinus nigra*		2	15	1			18

Common Name	Scientific Name	Excellent	Good	Fair	Poor	Very Poor	Dead	Total
Native								
Blue Spruce	*Picea pungens*		1	3				4
Cherry sp.	*Prunus sp.*				1			1
Common Apple	*Malus pumila*		1	2	3			6
Common Lilac	*Syringa vulgaris*			3	2	1		6
Crabapple sp.	*Malus sp.*		1	1	1	1		4
Crack Willow	*Salix euxina*				1	1		2
European Mountain-Ash	*Sorbus aucuparia*			1				1
Norway Maple	*Acer platanoides*			2				2
Norway Spruce	*Picea abies*		8	19	7	1		35
Scots Pine	*Pinus sylvestris*		17	14				31
Siberian Elm	*Ulmus pumila*		2	15	1		1	19
Willow sp.	*Salix sp.*			2				2
Total			**36**	**80**	**19**	**3**	**1**	**139**
Overall Total		**1**	**146**	**342**	**99**	**17**	**1**	**606**

Overall Condition of Trees Inventoried (Excluding Tree Tally)

Potential for Structural Failure Rating	Overall Condition						Total
	Excellent	Good	Fair	Poor	Very Poor	Dead	
Improbable	1	143	226	6	1	0	**377**
Possible	0	3	113	81	4	1	**202**
Probable	0	0	3	12	11	0	**26**
Imminent	0	0	0	0	1	0	**1**
Total	**1**	**146**	**342**	**99**	**17**	**1**	**606**

Map

Migratory Birds Convention Act
1. The destruction of migratory birds and their nests is prohibited under the federal *Migratory Birds Convention Act*, 1994, which is regulated by the Canadian Wildlife Service (CWS).
2. Vegetation clearing has the potential to directly impact bird breeding activity through damage and destruction of nests, eggs and young, or avoidance of the area by breeding adults.
3. Vegetation clearing is recommended to occur outside the bird nesting season (April 1 – August 31) so as to limit disturbances to nesting activities of birds within the proposed work zone.
4. Specific to simple habitats*, if vegetation clearing cannot be avoided during the bird nesting season, a qualified biologist will be retained to carry out a nest search ahead of clearing activities within the work zone.
5. Nest areas will be identified in the field. There shall be no construction activity in identified nesting areas until sign-off is obtained from the biologist.
6. Areas identified as having no bird nesting activity can be cleared; however, clearing must occur within 48 hours of nest searching. If vegetation clearing is not performed within 48 hours, additional nest searches must be conducted.
*Simple habitats are characterized by the CWS as habitats consisting of urban parks with isolated trees, vacant lots with few possible nest sites, a previously cleared area, or a structure such as a bridge, tower, or building, and specifically excludes meadows. More information is available at (https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html).

Species at Risk (SAR) Bat Habitat
1. The destruction of SAR bats and their habitat is prohibited under the *Endangered Species Act (ESA)*, 2007.
2. Vegetation clearing has the potential to directly impact bat roosting habitat.
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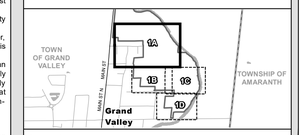
4. Any vegetation removal that has the potential to impact SAR bat habitat requires prior correspondence with the Ministry of Environment, Conservation and Parks (MECP).

Map 1A

River's Edge Subdivision, Grand Valley

Tree Inventory Preservation Plan



Legend
- Subject Property
- Inventoried Tree to be Retained (Crown to Scale)
- Inventoried Tree to be Retained / Confirmed in Field (Crown to Scale)
- Inventoried Tree to be Removed (Crown to Scale)
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- Tree Protection Fencing (TPF)/Erosion and Sediment Control Fencing
- Proposed Retaining Wall
- Proposed Grading
- Proposed Development
- Existing Conditions
- Proposed Servicing
- Woodland Dripline
- Dripline Setback (10m)
- Floodplain (GRCA)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 757	NAD83 - UTM Zone 17
Date: September 29, 2023	Size: 24x36"
	1:650

0 5 10 15 20 25 30 35 40 45 Meters

N

APARTMENT BLOCK 184 63 UNITS 1.268ha

WATER TOWER BLOCK 190

PARK BLOCK ~~185~~ 0.532ha

BUILDING FOOTPRINT USED: 11.9m WIDE BY 11.0m DEEP (TYP)

OPTION 3: TIERED RETAINING WALL REQUIRED TO MATCH EX GRADE AND SAVE EX. TREES. LOWER WALL = 0.9m TALL (TYP)

TOP OF BANK BY PETO MACCALLUM FEBRUARY 2012

REGIONAL FLOODLINE JANUARY 2021

PROPERTYLINE AT RIVERS EDG

HIGH WATER JULY 18, 200

FLOODLINE

5m BUFFER FROM DRIPLINE

BIELBY STREET

RIVER HILL STREET

LUTHER ROAD

LUTHER ROAD

FIFE RD

JOYCE COURT

MARY COURT

SPRUYT AVENUE

LUTHER ROAD

STREET A

STREET C

R=110m

R=84m

R=6m

R=8m

R=10m

R=12m

R=20m

20m

32m

35m

41m

33.6m

MAX 3:1 SLOPES

Migratory Birds Convention Act

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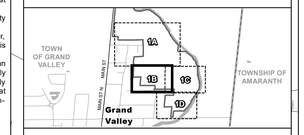
Map 1B

River's Edge Subdivision, Grand Valley

Tree Inventory Preservation Plan



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- Tree Protection Fencing (TPF)/Erosion and Sediment Control Fencing
- Proposed Retaining Wall
- Proposed Grading
- Proposed Development
- Existing Conditions
- Proposed Servicing
- Woodland Dripline

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 757	NAD83 - UTM Zone 17
Date: September 29, 2023	Size: 24x36"
	1:400

0 5 10 15 20 25 Meters

N

PARK BLOCK 186 2.0ha

STREET A

STREET B

SCOTT STREET

BIELBY STREET

20m

26m

32m

157.5m

34.5m

4.0m WIDE MAINTENANCE ACCESS

3.25m WIDE MAINTENANCE ACCESS ROAD

R=8m

R=28m

R=110m

Migratory Birds Convention Act

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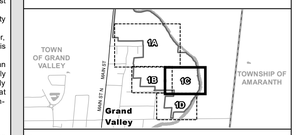
Map 1C

River's Edge Subdivision, Grand Valley

Tree Inventory Preservation Plan



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- Tree Tally Area to be Removed
- Tree Protection Fencing (TPF)/Erosion and Sediment Control Fencing
- Proposed Retaining Wall
- Proposed Grading
- Proposed Development
- Existing Conditions
- Proposed Servicing
- Wetland Boundary (NRSI flagged and GRCA reviewed June 30, 2022)
- Wetland Setback (15m)
- Woodland Dripline
- Dripline Setback (10m)
- Floodplain (GRCA)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 757	NAD83 - UTM Zone 17
Date: September 29, 2023	Size: 24x36"
	1:400

0 5 10 15 20 25 Meters

N

STORMWATER MANAGEMENT BLOCK 188 2.321ha

STREET B

R=28m

R=8m

4.0m WIDE MAINTENANCE ACCESS ROAD

3.25m WIDE MAINTENANCE ACCESS ROAD

3.2m WIDE MAINTENANCE ACCESS ROAD

20m

32m

38.4m

157.5m

64.5m

FLOODLINE

REGIONAL FLOODLINE JANUARY 2021

EXISTING HYDRO EASEMENT

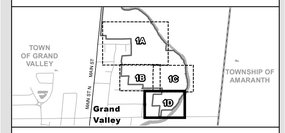
GRAND RIVER

OPEN SPACE BLOCK 187 13.434ha

Map 1D

River's Edge Subdivision, Grand Valley

Tree Inventory Preservation Plan



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- Inventoried Tree to be Removed / Retain Stump (Crown to Scale)
- Tree Tally Area to be Removed
- Proposed Development
- Existing Conditions
- Floodplain (GRCA)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 757
Date: September 29, 2023

NAD83 - UTM Zone 17
Size: 24x36"
1:400

0 5 10 15 20 25 Meters

N

460
459
458
457
456
455
454
3m
FUTURE DEVELOPMENT
BLOCK 189
0.786ha
OPEN SPACE
BLOCK
13.434h
AMARANTH ST
AMARANTH STREET EAST
CON RD 2 - 3

Appendix V

Vascular Flora and Wildlife Species Reported from the Study Area

Bird Species Reported from the Study Area

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	OBBA	NHIC Data	Highest Breeding Evidence	BMB-001	BMB-002	BMB-003	BMB-004	Incidental
		MNRF 2022a		Government of Canada 2023			Cadman et al. 2007	MNRF 2022b	NRSI					
Anatidae	**Ducks, Geese & Swans**													
Anas crecca	Green-winged Teal	S4					PO							
Anas platyrhynchos	Mallard	S5					PR							
Branta canadensis	Canada Goose	S5					CO							
Spatula discors	Blue-winged Teal	S4					PR							
Phasianidae	**Partridges, Grouse & Turkeys**													
Meleagris gallopavo	Wild Turkey	S5					CO							
Columbidae	**Pigeons & Doves**													
Columba livia	Rock Pigeon	SNA					PO							
Zenaida macroura	Mourning Dove	S5					PR		PR	PR	PR	PO	PR	OB
Trochilidae	**Hummingbirds**													
Archilochus colubris	Ruby-throated Hummingbird	S5B					PO							
Rallidae	**Rails, Gallinules & Coots**													
Porzana carolina	Sora	S4B					PO							
Charadriidae	**Plovers & Lapwings**													
Charadrius vociferus	Killdeer	S5B,S5N					PR							
Scolopacidae	**Sandpipers & Allies**													
Actitis macularia	Spotted Sandpiper	S5					PR							
Gallinago delicata	Wilson's Snipe	S5B					PO							
Scolopax minor	American Woodcock	S4B					PO							
Laridae	**Gulls, Terns & Skimmers**													
Larus delawarensis	Ring-billed Gull	S5B,S4N							OB			OB	OB	
Ardeidae	**Herons & Bitterns**													
Ardea herodias	Great Blue Heron	S4					CO							
Cathartidae	**Vultures**													
Cathartes aura	Turkey Vulture	S5B					PO							
Accipitridae	**Hawks, Kites, Eagles & Allies**													
Accipiter cooperii	Cooper's Hawk	S4	NAR	NAR	NS	No schedule	PO							
Accipiter striatus	Sharp-shinned Hawk	S5	NAR	NAR	NS	No schedule	PO							
Buteo jamaicensis	Red-tailed Hawk	S5	NAR	NAR	NS	No schedule	PO							
Buteo lineatus	Red-shouldered Hawk	S4B	NAR	NAR	SC		PO							
Circus hudsonius	Northern Harrier	S4B	NAR	NAR	NS	No schedule	CO							
Strigidae	**Typical Owls**													
Megascops asio	Eastern Screech-Owl	S4	NAR	NAR	NS	No schedule	PR							
Alcedinidae	**Kingfishers**													
Megaceryle alcyon	Belted Kingfisher	S4B					CO		PR	PR			PO	OB
Picidae	**Woodpeckers**													
Colaptes auratus	Northern Flicker	S4B					PO		OB					OB
Dryobates pubescens	Downy Woodpecker	S5					PO							
Dryocopus pileatus	Pileated Woodpecker	S5					PO							
Sphyrapicus varius	Yellow-bellied Sapsucker	S5B					CO							
Falconidae	**Caracaras & Falcons**													
Falco sparverius	American Kestrel	S4					PO							
Tyrannidae	**Tyrant Flycatchers**													
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC	SC	Schedule 1	PO		PR			PR		
Empidonax alnorum	Alder Flycatcher	S5B					PO							
Empidonax minimus	Least Flycatcher	S4B					PO							
Empidonax traillii	Willow Flycatcher	S5B					PO							
Myiarchus crinitus	Great Crested Flycatcher	S4B					PO		PO			PO	PO	
Sayornis phoebe	Eastern Phoebe	S5B					CO							
Tyrannus tyrannus	Eastern Kingbird	S4B					CO		PR	PR	PR			OB
Vireonidae	**Vireos**													
Vireo gilvus	Warbling Vireo	S5B					PO		PR	PR	PR	PR		OB
Vireo olivaceus	Red-eyed Vireo	S5B					CO							
Corvidae	**Crows & Jays**													
Corvus brachyrhynchos	American Crow	S5B					CO		PR		PO	PR		OB
Cyanocitta cristata	Blue Jay	S5					CO		PO		PO	PO	PO	OB
Alaudidae	**Larks**													
Eremophila alpestris	Horned Lark	S5B					CO							

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	OBBA	NHIC Data	Highest Breeding Evidence	BMB-001	BMB-002	BMB-003	BMB-004	Incidental
Hirundinidae	**Swallows**													
Hirundo rustica	Barn Swallow	S5B	THR	T	T	Schedule 1	CO							
Petrochelidon pyrrhonota	Cliff Swallow	S4B					CO							
Riparia riparia	Bank Swallow	S4B	THR	T	T	Schedule 1	CO							
Stelgidopteryx serripennis	Northern Rough-winged Swallow	S4B					CO							
Tachycineta bicolor	Tree Swallow	S4B					CO		PO	PO		PO		
Paridae	**Chickadees & Titmice**													
Poecile atricapillus	Black-capped Chickadee	S5					CO		PO	PO				OB
Sittidae	**Nuthatches**													
Sitta canadensis	Red-breasted Nuthatch	S5					PO							
Sitta carolinensis	White-breasted Nuthatch	S5							OB					OB
Troglodytidae	**Wrens**													
Troglodytes aedon	House Wren	S5B					PO		PO	PO	PO			OB
Troglodytes hiemalis	Winter Wren	S5B					PO							
Regulidae	**Kinglets**													
Regulus satrapa	Golden-crowned Kinglet	S5B					PO							
Turdidae	**Thrushes**													
Catharus fuscescens	Veery	S4B					PR							
Hylocichla mustelina	Wood Thrush	S4B	SC	T	T	Schedule 1	PR		PO				PO	
Turdus migratorius	American Robin	S5B					CO		CO	CO	PO	CO	PO	OB
Mimidae	**Mockingbirds, Thrashers & Allies**													
Dumetella carolinensis	Gray Catbird	S4B					PO							
Toxostoma rufum	Brown Thrasher	S4B					CO		PO	PO			PO	
Sturnidae	**Starlings**													
Sturnus vulgaris	European Starling	SNA					CO		CO	PR	PO		CO	
Bombycillidae	**Waxwings**													
Bombycilla cedrorum	Cedar Waxwing	S5B					PR		CO		CO			OB
Passeridae	**Old World Sparrows**													
Passer domesticus	House Sparrow	SNA					CO							
Fringillidae	**Finches & Allies**													
Haemorhous mexicanus	House Finch	SNA					PO							
Haemorhous purpureus	Purple Finch	S4B					PO		PO				PO	
Spinus tristis	American Goldfinch	S5B					CO		PR	PR	PO	PR	PO	OB
Emberizidae	**New World Sparrows & Allies**													
Melospiza georgiana	Swamp Sparrow	S5B					PO							
Melospiza melodia	Song Sparrow	S5B					CO		PR	PR	PR	PR	PR	OB
Passerculus sandwichensis	Savannah Sparrow	S4B					PR		PR	PR		PO	PO	OB
Pooecetes gramineus	Vesper Sparrow	S4B					PO							
Spizella pallida	Clay-colored Sparrow	S4B					PO							
Spizella passerina	Chipping Sparrow	S5B					CO							
Spizella pusilla	Field Sparrow	S4B							CO	CO		PO		OB
Zonotrichia albicollis	White-throated Sparrow	S5B					PR							
Icteridae	**Troupials & Allies**													
Agelaius phoeniceus	Red-winged Blackbird	S4					CO		CO	PR		PR	CO	OB
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	T	Schedule 1	PR	X	PR				PR	OB
Icterus galbula	Baltimore Oriole	S4B					PO		PR	PO	PO	PR		OB
Molothrus ater	Brown-headed Cowbird	S4B					PR		PO		PO			
Quiscalus quiscula	Common Grackle	S5B					CO		CO	PR	CO	CO	CO	OB
Sturnella magna	Eastern Meadowlark	S4B	THR	T	T	Schedule 1	PR		PO	PO	PO	PO	PO	OB
Parulidae	**Wood Warblers**													
Geothlypis trichas	Common Yellowthroat	S5B					PR							
Leiothlypis ruficapilla	Nashville Warbler	S5B					PO							
Mniotilta varia	Black-and-white Warbler	S5B					PO							
Parkesia noveboracensis	Northern Waterthrush	S5B					PO							
Seiurus aurocapilla	Ovenbird	S4B					PR							
Setophaga coronata	Yellow-rumped Warbler	S5B					PO		PO		PO			
Setophaga petechia	Yellow Warbler	S5B					PR							
Setophaga ruticilla	American Redstart	S5B					PO		PR	PR	PO			
Setophaga virens	Black-throated Green Warbler	S5B					PO							
Cardinalidae	**Cardinals, Grosbeaks & Allies**													
Cardinalis cardinalis	Northern Cardinal	S5					CO		OB					OB
Passerina cyanea	Indigo Bunting	S4B					PO		PO	PO				OB
Pheucticus ludovicianus	Rose-breasted Grosbeak	S4B					PR		PO			PO	PO	
Total							**85**	**1**	**35**	20	17	18	18	23

Butterfly Species Reported from the Study Area

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Ontario Butterfly Atlas	NHIC Data	NRSI Observed
		MNRF 2022a		Government of Canada 2023			Macnaughton et al. 2022	MNRF 2022b	
Hesperiidae	**Skippers**								
Carterocephalus palaemon	Arctic Skipper	S5					X		
Erynnis icelus	Dreamy Duskywing	S5					X		
Thymelicus lineola	European Skipper	SNA							X
Pieridae	**Whites and Sulphurs**								
Pieris rapae	Cabbage White	SNA					X		X
Lycaenidae	**Harvesters, Coppers, Hairstreaks, Blues**								
Satyrium acadica	Acadian Hairstreak	S4					X		
Nymphalidae	**Brush-footed Butterflies**								
Boloria bellona	Meadow Fritillary	S5					X		
Coenonympha california	Common Ringlet	S5							X
Limenitis archippus	Viceroy	S5					X		X
Nymphalis antiopa	Mourning Cloak	S5					X		
							7	**0**	**4**

Reptile and Amphibian Species Reported from the Study Area

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	ORAA	NHIC Data	NRSI Observed
		MNRF 2022a		Government of Canada 2023			Ontario Nature 2019	MNRF 2022b	
Turtles									
Chelydra serpentina	Snapping Turtle	S4	SC	SC	SC	Schedule 1	X		
Chrysemys picta marginata	Midland Painted Turtle	S4		SC	NS	No schedule	X		
Snakes									
Storeria occipitomaculata	Red-bellied Snake	S5					X		
Thamnophis sirtalis sirtalis	Eastern Gartersnake	S5							X
Frogs and Toads									
Anaxyrus americanus	American Toad	S5					X		X
Hyla versicolor	Gray Treefrog	S5					X		X
Pseudacris crucifer	Spring Peeper	S5					X		X
Lithobates clamitans	Green Frog	S5					X		
Lithobates pipiens	Northern Leopard Frog	S5	NAR	NAR	NS	No schedule	X		
Lithobates sylvaticus	Wood Frog	S5					X		
Total							**9**	**0**	**4**

Mammal Species Reported from the Study Area

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Ontario Mammal Atlas	NHIC Data	NRSI Observed
		MNRF 2022a		Government of Canada 2023			Dobbyn 1994	MNRF 2022b	
Didelphimorphia	**Opossums**								
Didelphis virginiana	Virginia Opossum	S4					X		
Eulipotyphla	**Shrews, Moles, Hedgehogs, and Allies**								
Blarina brevicauda	Northern Short-tailed Shrew	S5					X		
Condylura cristata	Star-nosed Mole	S5					X		
Parascalops breweri	Hairy-tailed Mole	S4					X		
Sorex cinereus	Masked Shrew	S5					X		
Sorex fumeus	Smoky Shrew	S5					X		
Sorex palustris	Water Shrew	S5					X		
Chiroptera	**Bats**								
Eptesicus fuscus	Big Brown Bat	S4					X		
Lasionycteris noctivagans	Silver-haired Bat	S4					X		
Lasiurus borealis	Eastern Red Bat	S4					X		
Lasiurus cinereus	Hoary Bat	S4					X		
Myotis leibii	Eastern Small-footed Myotis	S2S3	END				X		
Myotis lucifugus	Little Brown Myotis	S3	END	E	E	Schedule 1	X		
Myotis septentrionalis	Northern Myotis	S3	END	E	E	Schedule 1	X		
Perimyotis subflavus	Tri-colored Bat	S3?	END	E	E	Schedule 1	X		
Lagomorpha	**Rabbits and Hares**								
Lepus americanus	Snowshoe Hare	S5					X		
Lepus europaeus	European Hare	SNA					X		
Sylvilagus floridanus	Eastern Cottontail	S5					X		X
Rodentia	**Rodents**								
Castor canadensis	Beaver	S5					X		
Erethizon dorsatum	Porcupine	S5					X		
Glaucomys sabrinus	Northern Flying Squirrel	S5					X		
Marmota monax	Woodchuck	S5					X		
Microtus pennsylvanicus	Meadow Vole	S5					X		
Microtus pinetorum	Woodland Vole	S3?	SC	SC	SC	Schedule 1	X		
Mus musculus	House Mouse	SNA					X		
Napaeozapus insignis	Woodland Jumping Mouse	S5					X		
Ondatra zibethicus	Muskrat	S5					X		
Peromyscus leucopus	White-footed Mouse	S5					X		
Peromyscus maniculatus	Deer Mouse	S5					X		
Rattus norvegicus	Norway Rat	SNA					X		
Sciurus carolinensis	Eastern Gray Squirrel	S5					X		X
Synaptomys cooperi	Southern Bog Lemming	S4					X		
Tamias striatus	Eastern Chipmunk	S5					X		
Tamiasciurus hudsonicus	Red Squirrel	S5					X		X
Zapus hudsonius	Meadow Jumping Mouse	S5					X		
Canidae	**Canines**								
Canis latrans	Coyote	S5					X		
Vulpes vulpes	Red Fox	S5					X		
Felidae	**Felines**								
Lynx rufus	Bobcat	S4					X		
Mephitidae	**Skunks and Stink Badgers**								
Mephitis mephitis	Striped Skunk	S5					X		
Mustelidae	**Weasels and Allies**								
Mustela erminea	Ermine	S5					X		

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Ontario Mammal Atlas	NHIC Data	NRSI Observed
Mustela frenata	Long-tailed Weasel	S4					X		
Neovison vison	American Mink	S4					X		
Taxidea taxus jacksoni	American Badger (Southwestern Ontario	S1	END	E	E	Schedule 1	X		
Procyonidae	**Raccoons and Allies**								
Procyon lotor	Northern Raccoon	S5					X		X
Ursidae	**Bears**								
Ursus americanus	American Black Bear	S5	NAR	NAR	NS	No schedule	X		
Artiodactyla	**Deer and Bison**								
Odocoileus virginianus	White-tailed Deer	S5					X		X
Total							**46**	**0**	**5**

Odonata Species Reported From the Study Area

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	NHIC Data	Odonate Atlas	NRSI Observed
		MNRF 2022a		Government of Canada 2023			MNRF 2022b	MNRF 2022c	
Calopterygidae	**Broadwinged Damselflies**								
Calopteryx aequabilis	River Jewelwing	S5						X	
Calopteryx maculata	Ebony Jewelwing	S5						X	
Hetaerina americana	American Rubyspot	S4						X	
Lestidae	**Spreadwings**								
Lestes rectangularis	Slender Spreadwing	S5						X	
Coenagrionidae	**Narrow-winged Damselflies**								
Argia moesta	Powdered Dancer	S5						X	
Enallagma annexum	Northern Bluet	S4						X	
Enallagma antennatum	Rainbow Bluet	S4						X	
Enallagma civile	Familiar Bluet	S5						X	
Enallagma exsulans	Stream Bluet	S5						X	
Enallagma hageni	Hagen's Bluet	S5						X	
Gomphidae	**Clubtails**								
Phanogomphus exilis	Lancet Clubtail	S5						X	
Corduliidae	**Emeralds**								
Epitheca spinigera	Spiny Baskettail	S5						X	
Libellulidae	**Skimmers**								
Plathemis lydia	Common Whitetail	S5						X	
Total							**0**	**13**	**0**

Vascular Plant Species Reported from the Study Area

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Wellington-Dufferin	NHIC Data	NRSI Observed
		Oldham et al. 1998			MNRF 2022a		Government of Canada 2023			Riley 1989	MNRF 2022b	
Pteridophytes	**Ferns & Allies**											
Dryopteridaceae	**Wood Fern Family**											
Cystopteris bulbifera	Bulblet Fern	5	-3		S5							X
Dryopteris carthusiana	Spinulose Wood Fern	5	-3		S5							X
Matteuccia struthiopteris	Ostrich Fern	5	0	0	S5							X
Onoclea sensibilis	Sensitive Fern	4	-3		S5							X
Equisetaceae	**Horsetail Family**											
Equisetum arvense	Field Horsetail	0	0		S5							X
Gymnosperms	**Conifers**											
Cupressaceae	**Cypress Family**											
Juniperus virginiana	Eastern Red Cedar	4	3		S5							X
Thuja occidentalis	Eastern White Cedar	4	-3		S5							X
Pinaceae	**Pine Family**											
Picea abies	Norway Spruce	0	5	-1	SE3							X
Picea glauca	White Spruce	6	3		S5							X
Picea pungens	Blue Spruce	0	3	NA	SE1							X
Pinus nigra	Black Pine	0	5	-1	SE3							X
Pinus resinosa	Red Pine	8	3		S5							X
Pinus strobus	Eastern White Pine	4	3		S5							X
Pinus sylvestris	Scots Pine	0	3	-3	SE5							X
Taxaceae	**Yew Family**											
Taxus canadensis	Canada Yew	7	3		S4							X
Dicotyledons	**Dicots**											
Aceraceae	**Maple Family**											
Acer negundo	Manitoba Maple	0	0		S5							X
Acer saccharinum	Silver Maple	5	-3		S5							X
Acer saccharum	Sugar Maple	4	3		S5							X
Acer spicatum	Mountain Maple	6	3		S5							X
Anacardiaceae	**Sumac or Cashew Family**											
Rhus typhina	Staghorn Sumac	1	3		S5							X
Toxicodendron radicans var. *rydbergii*	Western Poison Ivy	2	0		S5							X
Apiaceae	**Carrot or Parsley Family**											
Angelica atropurpurea	Purple-stemmed Angelica	6	-5		S5							X
Daucus carota	Wild Carrot	0	5	-2	SE5							X
Apocynaceae	**Dogbane Family**											
Apocynum androsaemifolium	Spreading Dogbane	3	5		S5							X
Araliaceae	**Ginseng Family**											
Aralia nudicaulis	Wild Sarsaparilla	4	3		S5							X
Asclepiadaceae	**Milkweed Family**											
Asclepias syriaca	Common Milkweed	0	5		S5							X
Asteraceae	**Composite or Aster Family**											
Achillea millefolium	Common Yarrow	0	3	-1	SE5?							X
Arctium lappa	Great Burdock	0	3		SE5							X
Arctium minus	Common Burdock	0	3	-2	SE5							X
Artemisia vulgaris	Common Wormwood	0	5	-1	SE5							X
Bidens frondosa	Devil's Beggarticks	3	-3		S5							X
Centaurea stoebe	Spotted Knapweed	0	5	-3	SE5							X
Cichorium intybus	Chicory	0	5	-1	SE5							X
Cirsium arvense	Creeping Thistle	0	3	-1	SE5							X
Cirsium vulgare	Bull Thistle	0	3	-1	SE5							X
Erigeron annuus	Annual Fleabane	0	3		S5							X
Erigeron canadensis	Canada Horseweed	0	3		S5							X
Euthamia graminifolia	Grass-leaved Goldenrod	2	0		S5							X
Eutrochium maculatum	Spotted Joe Pye Weed	3	-5		S5							X
Pilosella aurantiaca	Orange Hawkweed	0	5	-2	SE5							X

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Wellington-Dufferin	NHIC Data	NRSI Observed
Pilosella caespitosa	Meadow Hawkweed	0	5	-2	SE5							X
Rudbeckia hirta	Black-eyed Susan	0	3		S5							X
Solidago altissima	Tall Goldenrod	1	3	0	S5							X
Solidago canadensis	Canada Goldenrod	1	3		S5							X
Solidago nemoralis	Gray-stemmed Goldenrod	2	5	0	S5							X
Solidago rugosa	Rough-stemmed Goldenrod	4	0	0	S5							X
Sonchus arvensis	Field Sow-thistle	0	3	0	SE5							X
Symphyotrichum ericoides	White Heath Aster	4	3	0	S5							X
Symphyotrichum lateriflorum	Calico Aster	3	0	0	S5							X
Symphyotrichum novae-angliae	New England Aster	2	-3		S5							X
Symphyotrichum pilosum	Old Field Aster	0	3	0	S5							X
Tanacetum vulgare	Common Tansy	0	5	-1	SE5							X
Taraxacum officinale	Common Dandelion	0	3	-2	SE5							X
Balsaminaceae	**Touch-me-not Family**											
Impatiens capensis	Spotted Jewelweed	4	-3		S5							X
Berberidaceae	**Barberry Family**											
Berberis vulgaris	European Barberry	0	3	-2	SE5							X
Betulaceae	**Birch Family**											
Betula papyrifera	Paper Birch	2	3		S5							X
Ostrya virginiana	Eastern Hop-hornbeam	4	3		S5							X
Boraginaceae	**Borage Family**											
Echium vulgare	Common Viper's Bugloss	0	5	-2	SE5							X
Myosotis laxa	Small Forget-me-not	6	-5		S5							X
Brassicaceae	**Mustard Family**											
Alliaria petiolata	Garlic Mustard	0	0	-3	SE5							X
Hesperis matronalis	Dame's Rocket	0	3	-3	SE5							X
Caprifoliaceae	**Honeysuckle Family**											
Lonicera tatarica	Tatarian Honeysuckle	0	3	-3	SE5							X
Viburnum lentago	Nannyberry	4	0		S5							X
Viburnum opulus ssp. *opulus*	Cranberry Viburnum	0	-3	0	SE3?							X
Caryophyllaceae	**Pink Family**											
Dianthus armeria	Deptford Pink	0	5	-1	SE5							X
Saponaria officinalis	Bouncing-bet	0	3	-3	SE5							X
Chenopodiaceae	**Goosefoot Family**											
Chenopodium album	White Goosefoot	0	3	-1	SE5							X
Clusiaceae	**St. John's-wort Family**											
Hypericum perforatum	Common St. John's-wort	0	5	-3	SE5							X
Cornaceae	**Dogwood Family**											
Cornus alternifolia	Alternate-leaved Dogwood	6	3		S5							X
Cornus racemosa	Gray Dogwood	2	0		S5							X
Cornus sericea	Red-osier Dogwood	2	-3		S5							X
Dipsacaceae	**Teasel Family**											
Dipsacus fullonum	Common Teasel	0	3	-1	SE5							X
Elaeagnaceae	**Oleaster Family**											
Elaeagnus umbellata	Autumn Olive	0	3	-3	SE3							X
Fabaceae	**Pea Family**											
Lotus corniculatus	Garden Bird's-foot Trefoil	0	3	-2	SE5							X
Medicago lupulina	Black Medic	0	3	-1	SE5							X
Robinia pseudoacacia	Black Locust	0	3	-3	SE5							X
Trifolium pratense	Red Clover	0	3	-2	SE5							X
Vicia cracca	Tufted Vetch	0	5	-1	SE5							X
Quercus rubra	Northern Red Oak	6	3		S5							X
Geraniaceae	**Geranium Family**											
Geranium robertianum	Herb-Robert	2	3	-2	S5							X
Grossulariaceae	**Currant Family**											
Ribes americanum	Wild Black Currant	4	-3		S5							X
Ribes cynosbati	Prickly Gooseberry	4	3		S5							X
Juglandaceae	**Walnut Family**											

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Wellington-Dufferin	NHIC Data	NRSI Observed
Juglans nigra	Black Walnut	5	3		S4?							X
Lamiaceae	**Mint Family**											
Monarda fistulosa	Wild Bergamot	6	3		S5							X
Origanum vulgare	Wild Marjoram	0	5	-2	SE5							X
Malvaceae	**Mallow Family**											
Malva neglecta	Dwarf Cheeseweed	0	5	-1	SE5							X
Oleaceae	**Olive Family**											
Fraxinus americana	White Ash	4	3		S4							X
Ligustrum vulgare	European Privet	0	3	-2	SE5							X
Syringa vulgaris	Common Lilac	0	5	-2	SE5							X
Onagraceae	**Evening-primrose Family**											
Circaea canadensis	Broad-leaved Enchanter's Nightshade	2	3		S5							X
Oenothera biennis	Common Evening-primrose	0	3		S5							X
Plantaginaceae	**Plantain Family**											
Plantago lanceolata	English Plantain	0	3	-1	SE5							X
Plantago major	Common Plantain	0	3	-1	SE5							X
Polygonaceae	**Smartweed Family**											
Polygonum aviculare ssp. *aviculare*	Prostrate Knotweed	0	3	0	SE5							X
Rumex crispus	Curly Dock	0	0	-2	SE5							X
Ranunculaceae	**Buttercup Family**											
Anemonastrum canadense	Canada Anemone	3	-3		S5							X
Anemone virginiana	Tall Anemone	4	3	0	S5							X
Clematis virginiana	Virginia Virgin's-bower	3	0		S5							X
Ranunculus acris	Tall Buttercup	0	0	-2	SE5							X
Rhamnaceae	**Buckthorn Family**											
Rhamnus cathartica	Common Buckthorn	0	0	-3	SE5							X
Rosaceae	**Rose Family**											
Agrimonia gryposepala	Hooked Agrimony	2	3		S5							X
Crataegus sp.	Hawthorn species											X
Fragaria virginiana	Wild Strawberry	2	3		S5							X
Geum canadense	White Avens	3	0		S5							X
Malus pumila	Common Apple	0	5	-1	SE4							X
Potentilla anserina	Silverweed	5	-3		S5							X
Potentilla recta	Sulphur Cinquefoil	0	5	-2	SE5							X
Prunus serotina	Black Cherry	3	3		S5							X
Prunus virginiana	Choke Cherry	2	3		S5							X
Rubus idaeus ssp. *strigosus*	Wild Red Raspberry	2	3		S5							X
Rubus occidentalis	Black Raspberry	2	5		S5							X
Sorbus aucuparia	European Mountain-ash	0	5	-2	SE4							X
Rubiaceae	**Madder Family**											
Galium mollugo	Smooth Bedstraw	0	5	-2	SE5							X
Salicaceae	**Willow Family**											
Populus balsamifera	Balsam Poplar	4	-3		S5							X
Populus deltoides	Eastern Cottonwood	4	0	0	S5							X
Populus tremuloides	Trembling Aspen	2	0		S5							X
Salix euxina	Crack Willow	0	0	0	SE							X
Scrophulariaceae	**Figwort Family**											
Linaria vulgaris	Butter-and-eggs	0	5	-1	SE5							X
Verbascum thapsus	Common Mullein	0	5	-2	SE5							X
Veronica officinalis	Common Speedwell	0	5	-2	SE5							X
Solanaceae	**Nightshade Family**											
Solanum dulcamara	Bittersweet Nightshade	0	0	-2	SE5							X
Tiliaceae	**Linden Family**											
Tilia americana	American Basswood	4	3		S5							X
Ulmaceae	**Elm Family**											
Ulmus americana	American Elm	3	-3		S5							X
Ulmus pumila	Siberian Elm	0	3	-1	SE3							X
Ulmus rubra	Slippery Elm	6	0		S5							X

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Wellington-Dufferin	NHIC Data	NRSI Observed
Verbenaceae	**Vervain Family**											
Verbena hastata	Blue Vervain	4	-3		S5							X
Vitaceae	**Grape Family**											
Parthenocissus vitacea	Thicket Creeper	4	3		S5							X
Vitis riparia	Riverbank Grape	0	0		S5							X
Monocotyledons	**Monocots**											
Cyperaceae	**Sedge Family**											
Carex aquatilis	Water Sedge	7	-5		S5							X
Carex blanda	Woodland Sedge	3	0		S5							X
Carex gracillima	Graceful Sedge	4	3		S5							X
Liliaceae	**Lily Family**											
Anticlea elegans	Mountain Death Camas	10	-3		S4							X
Maianthemum canadense	Wild Lily-of-the-valley	5	3		S5							X
Maianthemum racemosum	Large False Solomon's Seal	4	3		S5							X
Poaceae	**Grass Family**											
Bromus inermis	Smooth Brome	0	5	-3	SE5							X
Dactylis glomerata	Orchard Grass	0	3	-1	SE5							X
Lolium arundinaceum	Tall Fescue	0	3	-1	SE5							X
Phalaris arundinacea	Reed Canary Grass	0	-3		S5							X
Poa pratensis ssp. *pratensis*	Kentucky Bluegrass	0	3		SE5							X
Total											**0**	**139**

Appendix VI
Subject Property Photographs

Photograph 1: View of the abandoned aggregate pit looking south towards the existing residences on Scott Street.

Photograph 2: View to the west toward Crozier Street from the north edge of the abandoned aggregate pit showing several of the mid-age conifer plantations.

Photograph 3: A well-used footpath along the northeast edge of the abandoned aggregate pit. The edge of the conifer forest is well-defined by the dense White Cedar.

Photograph 4: A south-facing view of the dripline at the eastern extent of the abandoned aggregate pit. The trees in the upper right comprise the small SWD4 swamp feature.

Photograph 5: One of the mid-age stands of White Pine and a mound of overburden.

Photograph 6: The dense canopy within the conifer forest results in limited diversity in the understorey and groundcover.

Photograph 7: A view to the north taken from the southeast corner of the agricultural field shows the moderate slope toward the Grand River.

Photograph 8: A second view of the same area shown in Photograph 7, facing east, taken from the corner of the deciduous forest community. Several candidate bat roost trees are visible to the left.

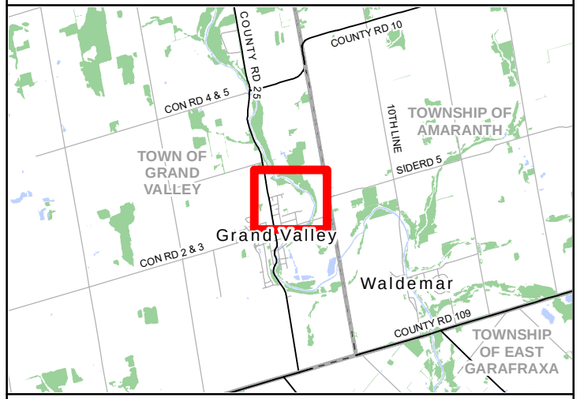
Photograph 9: The far northern extent of the forest dripline and agricultural field, taken from near the H1 hedgerow.

Photograph 10: A declining Sugar Maple with candidate bat roost habitat (CAV-002). All candidate bat roost trees are within the treed feature that will be retained and buffered.

Maps

Map 1

River's Edge Subdivision
Grand Valley
Study Area and Natural Features



554750 555000 555250 555500 555750

4862000 4861750 4861500 4861250 4861000

COUNTY RD 25
AMARANTH EAST LUTHER TLINE
Grand River
FIFE RD
MARY CRT
JOYCE CRT
SPRUYT AVE
MAIN ST
CROZIER ST
WEBB ST
SCOTT ST
BEILEY ST
GIER ST
CON RD 2 - 3
DOUGLAS ST
ILEESON ST
EMMA ST
AMARANTH ST

Legend

- Study Area (120m)
- Subject Property
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Wooded Area
- Regulation Limit (GRCA)
- Floodplain (GRCA)
- Slope Erosion Allowance (GRCA)
- River Valley Slope (GRCA)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 0757
Date: September 26, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:4,500

0 50 100 150 200 250 300 Metres

N

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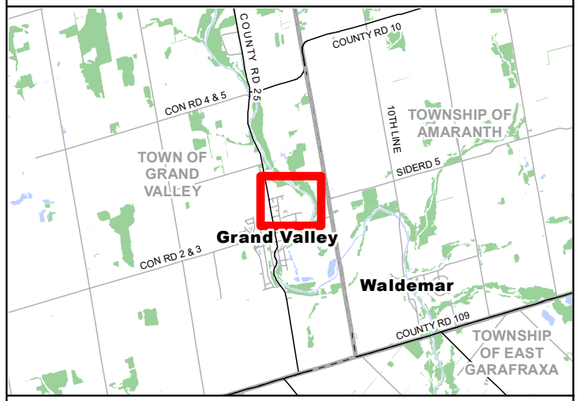
Map 2

River's Edge Subdivision
Grand Valley

Monitoring Stations and Existing Conditions



Legend

- Subject Property
- Anuran Call Station (ANR)
- Breeding Bird Station (BMB)
- Cavity Tree (CAV)
- Groundwater Seepage (GWS)
- Car Body
- Hazard Tree
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Wetland (GRCA Reviewed June 30, 2022)
- Woodland Dripline (2022)

Confirmed Significant Wildlife Habitat

- Eastern Wood-pewee Habitat
- Seeps and Springs

Confirmed Species at Risk Habitat

- Eastern Meadowlark Breeding Habitat
- Ecological Land Classification (ELC)
- ELC Inclusion

(CUM1) Mineral Cultural Meadow Ecosite

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

(CUP3-2) White Pine Coniferous Plantation Type

(CUW1) Mineral Cultural Woodland Ecosite

(FOC4-1) Fresh - Moist White Cedar Coniferous Forest Type

(FOD4) Dry - Fresh Deciduous Forest Ecosite

(FOD6-4) Fresh - Moist Sugar Maple - White Elm Deciduous Forest Type

(H) Hedgerow

(SWD4) Mineral Deciduous Swamp Ecosite

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

Project: 0757
Date: September 26, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:3,750

0 50 100 150 200 250 Metres

N

554750 555000 555250 555500 555750

4861750 4861500 4861250

H1 GWS-001 CUM1 FOD4 CAV-004 FOC4-1 CAV-002 CAV-001 CAV-005 CAV-003 BMB-004 Hay COUNTY RD 25 FIFE RD MARY CRT JOYCE CRT Grand River GWS-002 CUP3-2 BMB-003 CAV-007 CUP3-2 CAV-006 FOD6-4 CUM1 (Old Aggregate Pit) SWD4 ANR-001 CUW1 BMB-002 BMB-001 CUP3-2 CUM1-1 CUW1 CUW1 CUW1 SPRUYT AVE BAKER CRT CROZIER ST MAIN ST WEBB ST SCOTT ST BELBY ST CIER ST DOUGLAS ST CON RD 2 - 3 AMARANTH ST

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554750 555000 555250 555500 555750

4861750 4861500 4861250

H1 FOD4 CUM1 FOC4-1 CUP3-2 FOD6-4 CUM1 (Old Aggregate Pit) SWD4 CUW1 CUM1-1

TOWNHOUSE BLOCK 129 1.124ha

APARTMENT BLOCK 130 1.268ha

PARK BLOCK 131 1.532ha

PARK BLOCK 132 1.93ha

SWM BLOCK

Hay

Grand River

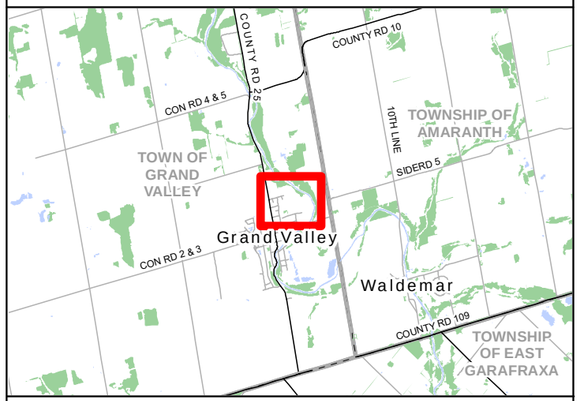
COUNTY RD 25 FIFE RD MARY GRT JOYCE GRT SPRUYT AVE BAKER CRT SCOTT ST BEILBY ST GIER ST

19 20 21 22 23 24 25 26

39 40 41

Map 3

River's Edge Subdivision
Grand Valley
Proposed Development



Legend

- Subject Property
- Proposed Development
- Proposed Grading
- Approximate Construction Footprint (5m)
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Wetland (GRCA Reviewed June 30, 2022)
- Woodland Dripline (2022)
- Wetland Buffer (15m)
- Woodland Buffer (10m)
- Wooded Area
- Ecological Land Classification (ELC)
- ELC Inclusion
- (CUM1) Mineral Cultural Meadow Ecosite
- (CUM1-1) Dry - Moist Old Field Meadow Type
- (CUP3-2) White Pine Coniferous Plantation Type
- (CUW1) Mineral Cultural Woodland Ecosite
- (FOC4-1) Fresh - Moist White Cedar Coniferous Forest Type
- (FOD4) Dry - Fresh Deciduous Forest Ecosite
- (FOD6-4) Fresh - Moist Sugar Maple - White Elm Deciduous Forest Type
- (H) Hedgerow
- (SWD4) Mineral Deciduous Swamp Ecosite

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Aquatic, Terrestrial and Wetland Biologists

Project: 0757
Date: September 26, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:3,750

0 50 100 150 200 250 Metres

N

Path: X:\0757_FifeProperty\NRSI_0757_Map3_ProposedDevelopment_4K_2023_09_25_KB.mxd