Comprehensive Environmental Impact Study and Management Plan (CEISMP)
Snell's Hollow East Secondary Plan

Part A – Existing Baseline Conditions & Characterization
Part B – Land Use Evaluation & Impact Assessment

Snell's Hollow Developers Group
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(Note: Appendices A to H have been provided as separate files)

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PART A – EXISTING BASELINE CONDITIONS & CHARACTERIZATION

1.0 Introduction to the Study Area

R.J. Burnside & Associates Limited (Burnside), David Schaeffer Engineering Limited (DSEL), GEO Morphix Limited (GEO Morphix), and Golder Associates Limited (Golder) ("the Team") was retained by the Snell's Hollow Developers Group to undertake a Comprehensive Environmental Impact Study and Management Plan (CEISMP) for a development located at the northeast corner of Kennedy Road and Mayfield Road (herein referred to as the "subject property"). The subject property is in the Regional Municipality of Peel (Region), in the Town of Caledon (Town), and is within the jurisdiction of Toronto and Region Conservation Authority (TRCA).

The subject property is located at the southern edge of the Town, in the proposed Snell's Hollow East Secondary Plan area. The subject property is bounded by Highway 410 to the north and east, Mayfield Road to the south and Kennedy Road to the west (Figure 1). The subject property contains a portion of the Heart Lake Provincially Significant Wetland (PSW) Complex and an Unnamed Tributary of Spring Creek, which drains beneath Mayfield Road towards Heart Lake Conservation Area to the south. Note, some reports referenced in the CEISMP also refer to the tributary as "Tributary of Etobicoke Creek". The subject property is within the Spring Creek subwatershed of the Etobicoke Creek watershed. According to the Credit River Watershed and Region of Peel Natural Areas Inventory (NAI) (2014), the area around the subject property has undergone some significant land use changes in the past several decades. Highway 410 was constructed between 2009-2010, which bisected the subject property from the lands north of the highway. In 2010-2011, the residential subdivision to the west across Kennedy Road from the subject property was built. The northeast portion of the subject property was previously used for cattle grazing. By 2007, it appears that it was left to naturalize, including the area with the wetland depression. Since 2014, the fields on the tablelands above the wetland depression have been used for intensive agriculture.

2.0 Report Structure

In preparation for the Snell's Hollow East Secondary Plan Area, the Town, Region and TRCA developed a TOR for the CEISMP (dated April 3, 2019). A CEISMP is required as a sub-component of the overall Secondary Plan to provide detailed information regarding environmental features, functions, linkages and interdependencies, to recommend environmental protection, management and monitoring measures, and to assess the impacts of planned urban development on the ecosystem.

Data provided by the Town of Caledon, Region of Peel, Ministry of Natural Resources, Toronto Region Conservation Authority. Image reflects ground conditions in 2020.

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: North American 1983 CSRS	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -53°	Scale Factor: 0.99960

Grid North

0 100 200 300 400
Metres

Non-Participating Property

Secondary Plan Area

BURNSIDE

Client
SNELL'S HOLLOW DEVELOPERS GROUP

Figure Title
SNELL'S HOLLOW EAST SECONDARY PLAN
SUBJECT PROPERTY

Drawn	Checked	Date	Figure No.
PS	HM	2023/12/06	1
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Supporting studies by the Team are included in the Appendices; however, summaries have also been provided within the body of this report. This document was prepared in accordance with the approved Terms of Reference (TOR) dated April 8, 2019 (see Appendix A of this report), Section 4.1 (Natural Heritage) of the Provincial Planning Statement (PPS; MMAH, 2024), the Natural Heritage Reference Manual (NHRM) for Natural Heritage Policies (MNR, 2010) and the Significant Wildlife Habitat Technical Guide (SWHTG; MNR, 2000) and Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (North-South Environmental Inc. et al., 2009).

The CEISMP is structured into Part A and Part B, per the TOR (2019). The full CEISMP inclusive of Part A, Part B and Part C (Implementation) for the entire Secondary Plan Area will be submitted prior to draft plan approval. Per page 17, Item No. 8 of the TOR (2019), "a report on Part B will be submitted in draft form to the Town, Region and TRCA for review and approval prior to proceeding to Part C of the CEISMP." Part C will be a separate submission and will include details pertaining to the Long-term Monitoring Plan (LMP) and Adaptive Management Plan (AMP).

Part A – Existing Baseline Conditions & Characterization

- A review of applicable environmental and land use policies and regulations that may affect future development on the subject property.
- A review of existing secondary source data to identify any known natural features and constraints and agency consultation.
- The establishment of baseline conditions and characterization of the physical environment (physiography and topography, geology and hydrogeology, erosion, water balance, surface water resources, and natural heritage).
- Identification of provincially significant natural features to be investigated further in Part B.

The expectation is that the baseline reports, prepared under the TOR dated April 8, 2019, will fulfill the terms of Part A as they pertain to the natural environment.

Part B – Land Use Evaluation & Impact Assessment

- A summary of the detailed ecological studies completed in 2020 in support of the CEISMP.
- Identification of Provincially Significant Natural Features.
- Identification of habitat of Endangered and Threatened species.
- Identification of wildlife linkages and corridors.
- Identification of a Natural Heritage System (NHS).
- Description of the proposed land use change.
- Impact assessment, avoidance and mitigation measures.
- Ecological offsetting and compensation considerations.
- Environmental permits and approvals in support of future development proposals.
- Guidelines for site-specific Environmental Impact Studies (EIS).

- Summary and conclusions.

3.0 Planning and Policy Considerations

The following policies, Acts and regulations apply to features present on the subject property.

3.1 Federal Species at Risk Act, 2002

The *Species at Risk Act, 2002* (SARA), provides protection for Species at Risk (SAR) and their habitat. Schedule 1 of SARA is considered the official list of wildlife species at risk that receive legal protection under the Act and includes species that have been assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Extirpated, Endangered, Threatened, or Special Concern (Government of Canada, 2017).

To ensure the protection of SAR, Section 32(1) and (2) of the SARA states:

> *(1) No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species, or a threatened species*
>
> *(2) No person shall possess, collect, buy, sell or trade an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species, or any part or derivative of such an individual*

And Section 33 of the SARA states:

> *No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered or threatened species, or that is listed as an extirpated species if a recovery strategy has recommended reintroduction of the species into the wild in Canada*

SARA prohibitions pertaining to private lands include:

- Aquatic species listed on Schedule 1 as Endangered, Threatened or Extirpated.
- Migratory birds listed in the MBCA and also listed on Schedule 1 as Endangered, Threatened or Extirpated.
- May apply through an order to other species listed on Schedule 1 (i.e., not an aquatic or migratory bird species) as Endangered, Threatened or Extirpated, if provincial / territorial legislation or voluntary measures do not adequately protect the species and its habitat.

Although Environment and Climate Change Canada (ECCC) is the overall administrator of SARA, responsibility for implementation of the Act is shared by ECCC and the Canadian Wildlife Service, Parks Canada and Fisheries and Oceans Canada (DFO). On private lands, ECCC oversees matters related to migratory birds, while DFO oversees matters related to aquatic species. In most cases pertaining to non-aquatic species on private lands, provincial laws (e.g., the *Endangered Species Act, 2007*) provide protection for critical habitat (i.e., habitat that is necessary for the survival or recovery of a listed endangered, threatened or extirpated species). Alternatively, SARA prohibitions can be applied by an order, as described above, or through federal legislation (including SARA).

3.2 Federal Fisheries Act, 1985

The federal *Fisheries Act* prohibits causing the "death of fish by means other than fishing", and the "harmful alteration, disruption or destruction (HADD) of fish habitat". If construction activities have the potential to cause the death of fish, or HADD of fish habitat, then the project must be submitted to DFO as a Request for Review. The proponent responsible for the activities is required to obtain an *Authorization* from DFO as per Paragraph 34.4(2) and 35(2)(b) of the *Fisheries Act*.

3.3 Federal Migratory Birds Convention Act, 1994

The *Migratory Birds Convention Act, 1994* (MBCA) and the Migratory Bird Regulations (MBR) are federal legislative requirements that are binding on members of the public and all levels of government, including federal and provincial governments. The legislation protects certain species[1], controls the harvest of others and prohibits commercial sale of all species.

The MBCA has recently updated and modernized the MBR. The new MBR came into force on July 30, 2022. The previous regulations protected the nests of all migratory birds, at all times, for as long as they existed, which meant that many nests were protected when they no longer benefited migratory birds. The updated MBR provides protection to migratory bird nests when they are considered to have a high conservation value for migratory birds.

The nests of all migratory bird species are protected when they contain a live bird or a viable egg. The nests of 18 species (listed in Schedule 1 of the regulations), whose nests are reused by migratory birds, continue to have year-round nest protection, unless they have been shown to be abandoned. To be considered abandoned:

[1] Bird species not regulated under the Act include: Rock Dove, American Crow, Brown-headed Cowbird, Common Grackle, House Sparrow, Red-winged Blackbird, and European Starling. In addition, raptors are not regulated under the MBCA. However, they are protected under provincial legislation which restricts and regulates the taking or possession of eggs and nests. Furthermore, if the species identified is protected under Ontario's ESA or the federal SARA, additional restrictions may apply.

- Minister must be notified, via an online registration system (Notice: Abandoned Nest Registry - Canada.ca) that the nest does not contain a live bird or viable egg; and
- Nest is to remain unused by migratory birds during the designated wait time for that species.
- Of the 18 species, three are known to commonly breed in Southern Ontario: Great Blue Heron, Green Heron, and Pileated Woodpecker.

Permits are available under limited circumstances and mostly relate to egg or nest destruction or relocation "*for the purpose of reducing the danger that they are causing or are likely to cause to human health or public safety or the damage they are causing or are likely to cause to agricultural, environmental or other interests*".

ECCC and the Canadian Wildlife Service have compiled nesting calendars that show the variation in nesting intensity, by habitat type and nesting zone, within broad geographical areas distributed across Canada. While this does not mean nesting birds will not nest outside of these periods, the calendars can be used to greatly reduce the risk of encountering a nest. ECCC advises avoidance as the best approach.

3.4 Provincial Planning Act, 1990

Section 2 of the *Planning Act* contains matters of provincial interest that approval authorities must have regard to in carrying out the responsibilities under the Act. The matters of provincial interest include the protection of ecological systems, including natural areas, features and functions.

3.4.1 Provincial Planning Statement, 2024

The Provincial Planning Statement (PPS; MMAH, 2024) provides general policies on land use patterns, resources, and public health and safety that guide development across Ontario. All planning decisions are required to be consistent with the applicable provisions of the PPS.

Eight types of natural heritage features are identified in Section 4.1, policies 4.1.4 and 4.1.5 of the PPS, where development and site alteration are not permitted unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. The Natural Heritage Reference Manual (NHRM) (MNR, 2010) provides criteria for identifying provincially significant features; these are listed below and described in more detail in Section 7.7 of this report:

1. Significant Wetlands in Ecoregions 5E, 6E, and 7E.

2. Significant Coastal Wetlands.

3. Significant Wetlands in the Canadian Shield, north of Ecoregions 5E, 6E, and 7E.

4. Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River).

5. Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River).

6. Significant Wildlife Habitat (SWH).

7. Significant Areas of Natural and Scientific Interest (ANSIs).

8. Coastal wetlands in Ecoregions 5E, 6E, and 7E that are not subject to policy 2.1.4(b).

Section 4.1, policies 4.1.6, 4.1.7 and 4.1.8 of the PPS identifies three additional development and site alteration prohibitions and exemptions, as follows:

1. Fish habitat, except in accordance with provincial and federal requirements.

2. Habitat of Endangered and Threatened species, except in accordance with provincial and federal requirements.

3. On adjacent lands to the natural heritage features and areas identified in policies 4.1.4, 4.1.5, and 4.1.6, unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

The presence, or potential presence, of these features as well as the policy and planning implications of these features for development, are discussed in detail in this report.

3.5 Provincial Endangered Species Act, 2007

The *Endangered Species Act, 2007* (ESA) provides protection for SAR and their habitat. The ESA is now administered by the Ministry of Environment, Conservation and Parks (MECP) and provides policies for the protection of Extirpated, Endangered, and Threatened species, as well as species of Special Concern. These four categories of species form the Species at Risk in Ontario (SARO) List, which are classified by the Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is also responsible for maintaining criteria for assessing and classifying SAR.

The ESA helps protect species (Section 9) and their habitat (Section 10). Section 9(1)(a) of the ESA states:

> *No person shall kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species.*

Section 10(1)(a) of the ESA states:

> *No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species.*

The ESA includes general habitat regulations, as well as species-specific habitat regulations. Species up listed to Endangered, or Threatened, automatically receive general habitat protection under the ESA. The province is then required to prepare a species recovery strategy and establish a habitat regulation according to requirements of the ESA.

Regulatory amendments under the ESA were issued by the province in 2022, which streamlines ESA Authorizations for activities that have "predictable effects and common and routine mitigation actions with well understood requirements to minimize adverse impacts". Proponents are still required to avoid and minimize impacts on SAR and their habitats.

The use of a SAR Conservation Fund has been enabled for five designated conservation fund species when they seek permits and agreements related to these species (Eastern Whip-poor-will (*Antrostomus vociferus)*, Blanding's Turtle (*Emydoidea blandingii*)), or register for conditional exemptions (Eastern Meadowlark (*Sturnella magna)*, Bobolink (*Dolichonyx oryzivorus)*, and Butternut (*Juglans cinerea*)).

The SARO List is updated from time to time; therefore, it is the proponent's responsibility to practice due diligence to ensure that the ESA and its regulations are not violated.

3.6 Toronto and Region Conservation Authority

3.6.1 Conservation Authorities Act, 1990

3.6.1.1 Ontario Regulation 596/22

As of January 1, 2023, Conservation Authorities can no longer provide comments regarding natural heritage (e.g., wildlife habitat, SAR, fish habitat) and select aspects of stormwater management (SWM). All non-mandatory matters are the responsibility of the Municipality.

3.6.1.2 Ontario Regulation 41/24

On April 1, 2024, amendments to the *Conservation Authorities Act* governing the permitting process were proclaimed including a new section, "Part VI – Regulation of Areas Under Which Authorities Have Jurisdiction". A new Minister's regulation for all Conservation Authorities was approved on February 16, 2024, O.Reg. 41/24: *Prohibited Activities, Exemptions and Permits*, and also came into effect on April 1, 2024. This new,

single regulation replaces all existing individual CA permit regulations including TRCA's O.Reg. 42/06.

Part VI of the CA Act sets out the Regulatory Powers of Conservation Authorities. Specifically, the CA Act prohibits, in the absence of a permit "activities to straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or to change or interfere in any way with a wetland." Development activities are also prohibited in hazardous lands, wetlands, river or stream valleys and shorelines in the absence of a permit.

To implement, in part, the provisions of Part VI of the CA Act, O.Reg. 41/24 applies to all Conservation Authorities in the province, including TRCA. The principal mandate of TRCA is to prevent the loss of life and property due to flooding and erosion and to conserve and enhance natural resources. O.Reg. 41/24 is a key tool in fulfilling this mandate because it prevents or restricts development activity in areas where the control of flooding, erosion, dynamic beaches, unstable soil or bedrock may be affected by development. Further development activity is prohibited if an activity is likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in damage or destruction of property.

A significant portion of the subject property is located within TRCA's Regulated Area of the Etobicoke Creek Watershed. Lands regulated by TRCA on the subject property include:

- Wetlands (unevaluated).
- Heart Lake PSW Complex.
- Unnamed Tributary of Spring Creek
- Floodplain / Hazard lands.
- Headwater Drainage Features (HDFs).

TRCA will assess any future permit applications to determine if the proposed works will affect regulated features, in accordance with their programs and policies. TRCA permits will be required prior to any work commencing within TRCA's Regulated Area including topsoil stripping, rough grading, servicing, and final grading. Section 11.0 of this report provides recommendations to ensure that regulated features, located within or adjacent to the subject property, are not negatively impacted and, where applicable, recommend mitigation measures.

3.6.2 TRCA Living City Policies

One of TRCA's functions, in partnership with municipal, provincial, and federal governments, is to promote and help implement sustainable community development by advising Stakeholders and regulating activities in the planning and development process. The Living City Policies for Planning and Development in the Watersheds of

TRCA (LCP) contains the policies for the administration of TRCA's legislated and delegated roles and responsibilities in the planning and development approvals process.

The LCP is issued under the authority of Section 20 of the *Conservation Authorities Act* and was endorsed by TRCA's Board on November 28, 2014.

The LCP serves the following functions:

- Updates the previous Valley and Stream Corridor Management Program with new requirements in Federal, Provincial, and Municipal legislation, policies, and agreements affecting TRCA.
- Indicates to all Stakeholders TRCA's principles and policies for planning and development.
- Reflects the latest science known to TRCA.
- Complements TRCA's mandated regulatory and plan review roles in the planning and development process.
- Clarifies and implements TRCA responsibilities for Lake Ontario shoreline/waterfront management.
- Adds policy emphasis to the restoration, remediation, and enhancement of existing water and natural heritage systems in response to provincial planning directions geared to urban re-development and intensification.

3.6.3 Other TRCA Reports

Several TRCA reports are available that provide guidance and direction on protection of the Etobicoke Creek watershed and its resources. These include Greening our Watersheds: Revitalization Strategies for Etobicoke and Mimico Creeks, including the Etobicoke-Mimico Report Card (2002); Etobicoke and Mimico Creeks Watershed Technical Update Report (2010); and the Etobicoke Creek Watershed Report Card (2018).

The Technical Update Report (2010) identified terrestrial natural heritage restoration priority management areas within the Spring Creek subwatershed. The wetland located on the subject property is considered a "Level 4" management priority (on a scale of 1 to 4, with 1 being the highest priority), based on key areas in the watershed that require restoration, enhancement and management.

3.7 Municipal Official Plans

3.7.1 Region of Peel Official Plan

The Region of Peel Official Plan (RPOP) (2024) was consulted to determine regional land use designations and locations of natural heritage features. The subject property falls within the Mayfield West Secondary Plan Area. According to Schedule 'E-1' - Regional Structure, the subject property is identified as part of the Urban System;

Schedule 'E-3' - Growth Plan Policy Areas identifies the subject property as part of the Designated Greenfield Area within the Urban System. Per the RPOP, these are locations where new residential communities and employment areas will be accommodated up to 2051. According to Figure 1 – Areas Subject to Provincial Plans, an Urban River Valley (Greenbelt Plan) is located approximately 856 m west of the subject property. The PSW that traverses through the center of the subject property is designated as Core Areas of the Greenlands System, as depicted on Schedules C-1, C-2 and Figure 7 of the RPOP. The surrounding vegetation in the NHS is designated as Natural Areas and Corridors. Development and site alteration are prohibited within Core Areas of the Greenlands System.

On July 1, 2024, the Town became responsible for the interpretation and implementation of the RPOP as it applies to Caledon. Schedule E-1, Regional Structure, of this Plan shows the 2051 New Urban Area in south Caledon where the majority of the Town's residential and employment growth will be located. Where the Region was previously required to be the approval authority for certain OP reviews and amendments under the *Planning Act*, the Province is now the approval authority where required.

3.7.2 Town of Caledon Official Plan

The Town's OP was consolidated in March 2024 and currently applies town-wide. The OP is proposed to be replaced in phases by the Future Caledon OP. The Future Caledon OP was adopted by Council on March 26, 2024 and is being reviewed for approval by the Province. The next phases of the OP Review will complete the replacement. Future Caledon was prepared to conform with the RPOP.

According to Schedule 'A' – Town of Caledon Land Use Plan and Schedule 'B' - Mayfield West Land Use Plan, the subject property falls within the Mayfield West Study Area Boundary. Outside of the designated Environmental Policy Area (EPA) that is coincident with the PSW that traverses the central portion of the site, the remaining lands are designated as Residential Policy Area "A". According to Section 5.7.3.1.1 of the OP, new development within areas designated EPA is prohibited (with some exceptions as outlined in Section 5.7.3.1.2 and include "essential infrastructure" subject to Town approval). Schedule 'S' – The Greenbelt in Caledon, shows the subject property as a settlement area, with a watercourse traversing through the PSW. The closest Greenbelt Plan NHS is approximately 1.6 km northwest of the subject property. On Figure 1 – Growth Plan Policy Areas in Caledon, the subject property is classified as Designated Greenfield Area. The subject property is within the GTA West Preliminary Route Planning Study Area, as depicted on Figure 19 of the OP.

4.0 Background Environmental Information and Agency Consultation

A comprehensive desktop assessment was completed to compile and review existing natural heritage information available for the subject property. All areas within 120 m of the subject property were reviewed as part of the high-level assessment in order to identify significant natural heritage features located within, or directly adjacent to the subject property, that may be impacted by future development (herein referred to as "adjacent lands").

In addition to the planning and policy considerations described in Section 3.0, Burnside has reviewed the following background environmental resources:

- Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (North-South Environmental Inc. et al., 2009).
- Credit River Watershed and Region of Peel Natural Areas Inventory (NAI) - "Kennedy-Highway 410" NAI #10730, 11676, 11677 (Volume 3, April 2014).
- The Living City Policies (TRCA, 2014).
- Greening our Watersheds: Revitalization Strategies for Etobicoke and Mimico Creeks, Including the Etobicoke-Mimico Report Card (TRCA, 2002).
- Etobicoke and Mimico Creeks Watershed Technical Update Report (TRCA, 2010).
- Etobicoke Creek Watershed Report Card (TRCA, 2018).
- Recent Digital Aerial Photography (Google Earth Pro).
- Natural Heritage Information Centre (NHIC) database to identify records of rare wildlife species on, and in the vicinity of, the subject property.
- The Ontario Breeding Bird Atlas (OBBA) for records of birds breeding in the area (2001-2005).
- Ontario Reptile and Amphibian Atlas (ORAA) for records of reptiles and amphibians in the area.
- DFO Aquatic SAR Mapping.
- Ministry of Natural Resources (MNR) Aquatic Resources Area (ARA) mapping.
- MNR Provincially Significant Heart Lake Wetland Complex evaluation (November 2000).
- *A turtle population study in an isolated urban wetland complex in Ontario reveals a few surprises (Dupuis-Désormeaux et al., 2019).*

The subject property is located within the jurisdiction of TRCA and MNR Aurora District Office. Species protected under the ESA are administered by MECP, Species at Risk Branch.

The MNR was contacted on January 17, 2019, to retrieve information on SAR, fish dot information, PSW and ANSI reports for the subject property. The SAR information was received on January 22, 2019. The PSW and ANSI reports were later received on February 5, 2019 (see Appendix A of this report).

The TOR for the CEISMP was developed by the Town, jointly with the Region and TRCA and was issued on April 8, 2019. Burnside's approved Environmental Field Study and Baseline Monitoring Plan (February 5, 2019; revised April 8, 2019). Final review of these Part A reports (Baseline Conditions, Environmental Monitoring Year 1, and HDF Assessment) was provided on November 12, 2021. A Proposed Fieldwork Plan 2020 in Support of the Natural Heritage Study and Aquatic Resources and Water Quality Study was issued to TRCA on May 5, 2020 (see Appendix A of this report).

5.0 Physical Environment – Baseline Inventory

5.1 Physiography and Topography

The subject property is located on the South Slope physiographic region (part of Lake Simcoe-Rideau Ecoregion 6E), characterized by low-lying ground moraines. The subject property is at the northern tip of the Brampton Buried Esker, which has produced a hilly topography with wetlands in the pockets between the hills. The biologically rich natural area of Heart Lake Conservation Area lies nearby to the southeast across Mayfield Road, providing good opportunity for establishing and maintaining linkage as the surrounding land urbanizes (NAI, 2014; MNR, 2009). The majority of this geological feature is located within the Brampton Buried Esker Earth Science ANSI of the Heart Lake Conservation Area. The Heart Lake Complex PSW is one of the largest wetland complexes remaining on the South Slope and provides the only examples of kettle lakes and kettle peatlands on the South Slope (MNR, 2009).

The subject property features a combination of wetland communities in the lowland and open successional communities recovering from cultivation and grazing on the slopes, with intensive agriculture and several rural properties on the tablelands (NAI, 2014).

5.2 Geology and Hydrogeology

According to the geotechnical investigations, completed by Edward Wong (2017) and Golder (2019), the surficial geology -across the subject property is comprised of silty clay till or silty clay encountered at the surface (or beneath fill materials), underlain by silty clay and silty clay till. Silty sand and sand were found underneath the till. Organic deposits are found along the watercourse and wetland complex.

The bedrock underlying the subject property is the red shale of the Queenston Formation. Glaciolucustrine -derived silty to clayey till materials were laid down over the bedrock by the glaciers that advanced and retreated from this area, leaving a gently undulating till plain after the last retreat. However, the last glacier also deposited the Brampton Esker running from this subject property, southward toward Queen Street, most of which has now been mined away. Depressions in the esker created wetlands where organic muck deposits built up, creating organic soils with poor drainage (NAI, 2014).

A detailed summary of the hydrogeological conditions is provided in Burnside's Hydrogeological Assessment and Water Balance (April 2025) in Appendix B of this report.

5.3 Erosion

5.3.1 Fluvial Geomorphological Assessment

A fluvial geomorphological assessment was undertaken by GEO Morphix and included the completion of rapid and detailed geomorphological assessments, an erosion hazard assessment, and an erosion threshold analysis. A summary is provided in the following sections, with detailed findings included in the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report.

5.3.1.1 Reach Delineation

Reaches are homogeneous segments of channel used in geomorphological investigations. They are studied semi independently as each is expected to function in a manner that is at least slightly different from adjoining reaches. This allows for the meaningful characterization of a watercourse as the aggregate of reaches, or an understanding of a particular reach, for example, as it relates to a proposed activity. Reaches in the study area were delineated first through a desktop assessment using the MNR stream layer and recent digital aerial photography from Google Earth Pro. Refer to Figure 1 of the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report for the location and extent of each reach.

Burnside completed headwater drainage feature (HDF) assessments on the subject property, as described in Section 5.6.3 and Appendix D of this report. Existing conditions documented by GEO Morphix focus on geomorphologic observations but should be considered in conjunction with the HDF assessment.

5.3.1.2 Rapid Field Assessment

A reach based assessment was completed by GEO Morphix on May 10, 2019, and included observations of general riparian conditions, estimates of channel dimensions (where possible), characterization of channel substrates and bank materials and observations of erosion, scour and deposition. Standard geomorphic evaluation tools such as the Rapid Geomorphic Assessment (MOE, 2003) and the Rapid Stream Assessment Technique (Galli, 1996) were not used as these reaches contained low order drainage features that were poorly defined. General reach characteristics are summarized in Table 1 below. For detailed reach descriptions please refer to the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report.

Table 1: General Reach Characteristics

Reach	Average Bankfull Width (m)	Average Bankfull Depth (m)	Substrate		Riparian Vegetation	Notes
			Bed	Bank		
EC-1	17.95	0.32	Organic material, clay, silt, fine sand	Clay, silt, sand	Mature trees	Wetland-like channel; confined valley; wide, shallow channel; no evidence of channel widening.
EC-2	N/A; Pond Feature		N/A		Grasses	Outlets south to steel culvert crossing at Mayfield Road.
EC-2a	6.0	0.4	Clay, silt, sand	Clay, silt, sand	Grasses	Extensive vegetation encroached; large man-made woody debris pile mid reach.
EC-3	N/A; Wetland Feature		N/A		Grasses	Unconfined; no defined channel; cattails, trees, shrubs, grasses present.
EC-3a	1.4	0.3	Clay, silt, sand	Sand, gravel	Grasses	Channelized feature; moderately entrenched.

5.3.1.3 Erosion Hazard Assessment

The TOR for the CEISMP notes that a meander belt width assessment and delineation of the 100 year erosion limit is required to characterize watercourses on the property. When defining the meander belt width for a creek system, the TRCA (2004a) protocol treats watercourses differently based on the degree of valley confinement. Unconfined systems are those with poorly defined valleys or slopes well-outside where the channel could realistically migrate. In unconfined systems, the meander belt boundaries centre along the general valley orientation and are defined as parallel lines drawn tangentially to the outside bends of the most laterally extreme meanders within the reach (2004a). Partially confined systems are those where meander bends are adjacent to only one valley wall and the watercourse is therefore restricted in migration and floodplain occupation on one side of the valley system. Confined systems are those where the

watercourse position is such that meander bends are adjacent to both valley walls and meander migration is restricted on both sides of the valley.

The drainage features assessed by GEO Morphix that outlet to the PSW were generally poorly defined and received run off from agricultural fields on the tablelands. No evidence of active erosion was documented at the time of the assessment. As the drainage features are low order and showed very limited change in position over the period of available historical record, 100 year erosion limits could not be delineated.

Reaches EC-2a and EC-3a are vegetation controlled and have been assessed as headwater drainage features by Burnside. As these drainage features are unlikely to migrate or adjust their channel planform, delineating an erosion hazard specific to these features is not warranted. Furthermore, the slope stability assessment completed by Golder (2019) included a toe erosion allowance (ranging from 2 m to 7 m) and a stable slope allowance. These recommendations adequately address the erosion hazard along the valley from a geomorphological perspective.

5.3.2 Erosion Threshold Analysis

Erosion thresholds are used to determine the magnitude of flow required to potentially entrain and transport bed and / or bank materials. As such, they may be used to inform erosion reduction strategies in channels influenced by conceptual flow management plans. The erosion threshold analysis provides a depth, velocity, or discharge at which sediment of a particular size may potentially be entrained. Due to the variability between bed and bank composition and structure, erosion thresholds are typically determined for both bed and bank materials. Threshold targets are determined using different methods that are dependent on channel and sediment characteristics. For example, thresholds for non cohesive sediments are commonly estimated using a shear stress approach, similar to that of Miller et al. (1977), which is based on a modified Shield's curve. A velocity approach could also be applied. For non cohesive materials, a method such as that described by Komar (1987), or empirically derived values such as those compiled by Fischenich (2001) or Julien (1994), could be applied.

5.3.2.1 Detailed Geomorphological Assessment

A detailed geomorphological assessment was completed on May 6, 2019, within Reach EC-1 as this reach was identified as the most sensitive to erosion. Notably this reach was still considered to be a low risk environment as it was depositional. The specific location within the reach was chosen as it had the most defined section of channel.

A detailed field assessment of Reach ECT-1 was not conducted due to site access constraints. Therefore, an assessment of the morphology and bed and bank characteristics of this reach was undertaken using a remote sensing approach. The key morphological characteristics of the channel were defined using a high resolution LiDAR

derived digital elevation model (DEM; MNR, 2018). A channel centerline was extracted from the DEM and used to calculate the average channel slope. Three representative cross-sections were used to define bankfull channel velocities and discharges. As a remote sensing approach was used to estimate channel dimensions, very conservative estimates of both bankfull and critical discharge were adopted for the channel. Conservative estimates of average bankfull channel velocities (average of 0.5 m/s) were below the estimated critical discharge for the bed materials at this site (i.e., sandy silty compact and cohesive till; 1.1 m/s).

Results from the assessment of Reaches EC-1 and ECT-1 are summarized in Table 2. A complete summary of the detailed assessment of Reach EC-1 is provided in the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report.

Table 2: Measured and Computed Channel Parameters

Channel Parameter	EC-1	ECT-1
Measured		
Average bankfull channel width (m)	17.95	7.7
Average bankfull channel depth (m)	0.32	0.3
Bankfull channel gradient (%)	0.66	2.2
D_{50} (mm)	< 2.0	N/A**
D_{84} (mm)	< 2.0	N/A**
Manning's n roughness coefficient	0.050	0.04
Computed		
Bankfull discharge (m^3/s) *	4.30	1.80
Average bankfull velocity (m/s)*	0.76	0.50
Bankfull shear stress (N/m^2)	20.53	41.10
* Based on Manning's Equation ** Not measured due to limitations of desktop assessments		

5.3.2.2 Methodology

An erosion threshold is quantified based on the bed and bank materials and local channel geometry, in the form of a critical discharge. Theoretically, above this discharge, entrainment and transport of sediment can occur. The velocity, *U* is calculated at various depths, until the average velocity in the cross section slightly exceeds the critical velocity of the bed material. The velocity is determined using a Manning's approach, where the Manning's *n* value is visually estimated through a method described by Arcement and Schneider (1989) or calculated using Limerinos's (1970) approach. The velocity is mathematically represented as:

$$U = \frac{1}{n} d^{2/3} S^{1/2}$$

where, *d* is depth of water, *S* is channel slope, and *n* is the Manning's roughness. The discharge is then calculated using the area of a typical cross-section at that depth.

For the bank materials, following Chow (1959) in a simplified cross-section, 75% of the bed shear stress acts on the channel banks. In a similar approach, the depth of flow is increased until the shear stress acting on the banks exceeds the resisting shear strength of the bank materials.

5.3.2.3 Results

Erosion thresholds were determined for the bed and bank materials within Reach EC-1 of the Unnamed Tributary of Spring Creek in support of SWM Pond 1. Reach EC-1 was deemed to be the most sensitive to erosion of the reaches assessed, although it was still considered to be a low-risk environment as it was depositional. Although erosion sensitivity for Reach ECT-1 was not assessed in the field due to access constraints, an erosion threshold was also determined for the reach as it will receive discharge from Pond 2.

For Reach EC-1, channel bed and bank materials were considered equivalent and conservatively estimated to consist of a fairly compact to loose clay. A critical shear stress approach was taken using the criteria of Chow (1959) for this material, which has a critical shear stress of 6.2 N/m^2. This threshold shear stress was then applied to a representative cross section measured from the detailed assessment to calculate the critical discharge, or the discharge at which it is expected that sediment entrainment will begin to occur. The results of the erosion assessment are provided in Table 3. Using the criteria of Chow (1959), the critical discharge to entrain the bed materials within Reach EC-1, was determined to be 1.25 m^3/s.

Based on the desktop and LiDAR assessment for Reach ECT-1, channel bed and bank materials were determined to be relatively equivalent, both composed of compact and cohesive sandy silty loam. Using criteria from Fischenich (2001) for entrainment of uniform sediments, a critical shear stress of 12.45 N/m^2 was determined for the bed and bank materials. The critical shear stress was applied to the bed and banks to calculate the erosion threshold for each, and the results are provided in Table 4. The limiting critical discharge for Reach ECT-1 was determined to be 0.046 m^3/s based on bed materials.

Table 3: Erosion Thresholds and Average Channel Parameters

Channel Parameter	Reach EC-1	Reach ECT-1
Average bankfull channel width (m)	17.95	7.7
Maximum bankfull channel depth (m)	0.32	0.5

Channel Parameter	Reach EC-1	Reach ECT-1
Average channel gradient (%)	0.66	2.2
Calculated bankfull discharge (m^3/s)	4.3	1.8
Bankfull shear stress (N/m^2)	20.53	41.10
Erosion thresholds for bed and bank materials		
Bed		
Bank materials	Clay to sand	Compact and cohesive sandy silty loam
Critical shear stress (N/m^2)	6.2[1]	12.45[2]
Critical discharge (m^3/s)	1.87	0.065
Bank		
Bed materials	Fairly compact to loose clay	Compact and cohesive sandy silty loam (till)
Critical shear stress (N/m^2)	6.2[1]	12.45[2]
Critical discharge (m^3/s)	1.25	0.046
Limiting critical discharge (m^3/s)	**1.25**	**0.046**

[1]Based on the critical shear stress required to entrain fairly compact to loose clay (Chow, 1959)
[2]Based on the critical shear stress required to entrain sandy silty loam (Fischenich, 2001)

5.4 Water Balance

5.4.1 Pre-Development Water Budget

The subject property is not located within a WHPA-Q1 / Q2 area; however, it is located within a significant groundwater recharge area (SGRA). Therefore, as per TRCA design criteria (August 2012), the subject property requires that post-development infiltration matches existing conditions. An existing conditions water balance was calculated to assess the existing infiltration volume for the Snell's Hollow East Secondary Plan Area. The total precipitation value was based on long-term average annual precipitation data from the Environment Canada Toronto Lester B. Pearson International Airport climate station (Station 6158733 - 43°40'38.000" N, 79°37'50.000" W, elevation 173.40 masl) for the period between 1981 and 2010.

The infiltration factor for pervious areas was determined based on the MOE factors. MOE factors were determined to assume the subject property has tight clay soils, the terrain is hilly to rolling, and land cover varies between agricultural, meadow, and natural feature areas. The existing rooftops were considered impervious areas. Please refer to Burnside's Hydrogeological Assessment and Water Balance in Appendix B of this report for detailed calculations (April 2025). Table 4 summarizes the existing condition water

balance. Overall, the subject property has approximately 42,100 m^3/year of infiltration in existing conditions.

Table 4: Existing Condition Water Balance Summary

	Pre-Development Drainage Area 1	Pre-Development Drainage Area 2	Pre-Development Drainage Area 3	Total Pre-Development
Inputs (Volumes)				
Precipitation (m^3/year)	362,857	98,525	22,637	484,019
Outputs (Volumes)				
Precipitation surplus (m^3/year)	80,868	21,418	5,177	107,463
Evaporation (m^3/year	292	0	35	326
Total Evapotranspiration (m^3/year)	281,697	77,108	17,425	376,229
Total Infiltration (m^3/year)	31,664	8,477	1,925	42,066
Total Runoff (m^3/year)	49,204	12,940	3,253	65,397

A Feature Based Water Balance assessment was completed for the PSW identified on the subject property. Please refer to Section 9.5 and Appendix E of this report.

5.5 Surface Water Resources

5.5.1 Existing Surface Drainage Conditions

The subject property is located within the Spring Creek subwatershed which is part of the Etobicoke Creek watershed. The majority of the subject property west of Heart Lake Road generally drains southeast towards the Unnamed Tributary of Spring Creek located within the subject property, draining to an existing culvert under Mayfield Road. There is a drainage divide located within the subject property, which diverts the flows from the subject property to the east towards another tributary of Etobicoke Creek. Please refer to Figure 3F of DSEL's Functional Servicing and Stormwater Management Report (FSR) (November 2025) included in Appendix F of this report for more details.

Based on the TRCA design criteria (August 2012), the subject property is located within TRCA defined catchment 224. MMM Group Limited completed a Draft Final Report-

Etobicoke Creek Hydrology Update (April 2013), further breaking down the catchment drainage boundaries located within the Etobicoke Creek Spring Creek subwatershed. The subject property was identified as part of three pre-development catchment area IDs. The west portion of the subject property drains southerly and is within Catchment ID Area 41. The easterly portion of the subject property is split between Catchment ID 447 and 24. Please refer to the FSR (2025) attached in Appendix F of this report for additional information.

The pre-development drainage areas located within the subject property boundary were determined based on the available topography data and shown on Figure 3F of the FSR (2025) attached in Appendix F of this report.

5.5.2 Baseline Monitoring

Baseline monitoring was first initiated in 2019 at four locations to characterize water temperature and water quantity. Data collection continued from April to November each year through 2022. A map of monitoring locations is provided for reference on Figure 1 of the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report. Activities at all locations included the following:

- Collect water level and temperature data at 15-minute intervals using a HOBO U20 pressure and temperature logger, with an additional control sensor to measure atmospheric pressure and air temperature on-site
- Collect discrete velocity measurements under a variety of flow conditions using an Acoustic Doppler Velocimeter (ADV) to estimate discharge
- Collect monumented photographs of all sampling activities to verify location and timing

All sampling activities adhere to the Ontario Stream Assessment Protocol outlined by MNR (2017). A GEO Morphix rain gauge was installed on June 19, 2020, within the subject property to provide accurate estimates of rainfall during the monitoring period. Data collected on site is compared to data collected from a Weather Underground weather station (Climate ID: ICALED1) located approximately 1.5 km west of the subject property.

5.5.2.1 Instream Water Quantity Monitoring

Water level loggers recorded continuous pressure between April 1 – November 30 for monitoring years 2019-2022. Discrete stilling well measurements were taken during each site visit to ensure data quality and data verification. A summary of rain conditions during each monitoring season is provided in Table 5. The Years 2020 and 2022 were extremely dry monitoring seasons, with precipitation recorded on 72 and 77 of 244 monitoring days and only 12 occurrences of rainfall >10 m, compared to 25 and 18 in 2019 and 2021.

Table 5: Annual Precipitation Trends During Baseline Monitoring

Monitoring Year	Annual Precipitation			
	Total Monitoring Days	Days of Precipitation	Significant Rainfall Events (≥ 10mm)	Max Daily Rainfall (mm)
2019	244	103	25	35
2020		72	12	67
2021		97	18	44
2022		77	12	158.29

Due to the intermittent/ephemeral nature of these watercourses, all four sites were dry following the spring freshet. During wetter seasons (2019, 2021) during the spring baseflow levels of the W inlet, S inlet, Bridge, and Outlet sites were approximately 0.02 m, 0.13 m, 0.10 m, and 0.03 m, respectively. During dry seasons (2020, 2022) spring baseflow was considerably lower at approximately 0.01 m, 0.04 m, 0.08 m, and 0.02 m, respectively. Following the spring freshet/seasonal flows, all monitoring sites remained dry between rain events, with short responses to precipitation events.

Water level responses are dependent on the magnitude of the rainfall event and antecedent conditions. The maximum water level recorded during four years of baseline monitoring at all four sites was recorded on August 21, 2022, following an isolated, high intensity thunderstorm, accumulating approximately 226 mm of rain. As expected, the recorded values are substantially higher than values observed in the previous years of monitoring. Minimum and maximum water levels recorded by monitoring equipment during each monitoring season are summarized below in Table 6. The full set of continuous water level measurements, as well as discrete measurements, are provided in the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report.

Table 6: Minimum and Maximum Water Depths at Each Sampling Location

Sampling Location	2019 Water Depth (m)		2020 Water Depth (m)		2021 Water Depth (m)		2022 Water Depth (m)	
	Min	Max	Min	Max	Min	Max	Min	Max
W Inlet	0.00	0.09	0.00	0.17	0.00	0.15	0.00	0.31
S Inlet	0.00	0.20	0.00	0.14	0.00	0.17	0.00	0.25
Bridge	0.00	0.19	0.00	0.13	0.00	0.09	0.00	0.15
Outlet	0.00	0.09	0.00	0.05	0.00	0.07	0.00	0.08

5.5.2.2 Velocity and Discharge Monitoring

In addition to continuous water level and temperature monitoring, discrete measurements of velocity (W Inlet, S Inlet, and Bridge sites) were recorded, when

possible. In many cases, water velocities were stagnant, or monitoring sites were dry for prolonged periods through the monitoring season. A map of monitoring locations is provided for reference on Figure 1 of the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report. A summary of measured discharge at each sampling location is summarized below in Table 7.

Table 7: Average Velocity and Measured Discharge at Each Sampling Location

Measurement Date (yyyy-mm-dd)	Location	Average Velocity (m/s)	Discharge (m^3/s)
2019-04-09	W Inlet	0.0114	0.0002
	S Inlet	0	0
	Bridge	0	0
	Outlet	0.2734	0.0150
2019-05-10	W Inlet	0.0538	0.0009
	S Inlet	0	0
	Bridge	0.0400	0.0023
	Outlet	0.3392	0.0180
2019-06-20	W Inlet	0	0
	S Inlet	N/A*	N/A*
	Bridge	N/A*	N/A*
	Outlet	0.0170	0.0004
2021-04-14	W Inlet	N/A*	N/A*
	S Inlet	0	0
	Bridge	0	0
	Outlet	0.1210	0.0071
2021-11-23	W Inlet	0	0
	S Inlet	0	0
	Bridge	0	0
	Outlet	0.0690	0.0033
2022-08-22	W Inlet	N/A*	N/A*
	S Inlet	0	0
	Bridge	0.0760	0.0380
	Outlet	0.6680	0.0246
2022-09-19	W Inlet	N/A*	N/A*
	S Inlet	N/A*	N/A*
	Bridge	0	0
	Outlet	0.073	0.0015
*Channel dry or too shallow for measurement			

Due to the intermittent / ephemeral nature of these sites, there were limited opportunities to collect velocity measurements. A full record of attempted velocity readings is provided in the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report. Velocity measurements were not possible

during monitoring visits at the S Inlet, due to the lack of channel definition and wetland characteristics at the sensor location. Maximum discharges at the W Inlet were 0.0009 m^3/s on May 10, 2019, following 21.59 mm of rainfall in 24 hours. Maximum discharges at the Bridge, and Outlet sites were 0.0380 m^3/s and 0.0246 m^3/s, respectively. These discharges were recorded on August 21, 2022, following a 226 mm event.

As a result of drier conditions during the 2020 monitoring season, velocity measurements were not collected at the four locations during site visits. Low water levels and dense vegetation made conditions unfavourable for accurate acoustic doppler velocimeter measurements.

5.5.2.3 Pond Water Elevation Monitoring

During the 2020 monitoring season, HOBO U20 water level loggers were installed in two ponds, one within the subject property (North Pond) and one south of Mayfield Road (South Pond). Water level was recorded at 15-minute intervals and converted to a geodetic datum. The North Pond stores water between the Bridge and the Outlet instream flow monitoring sites. The South Pond has no discernable inlet or outlet. Pond monitoring locations are provided for reference on Figure 1 of the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report. A summary of minimum, maximum, and average water level elevations for both ponds are summarized below in Table 8.

Table 8: Minimum, Maximum, and Average Pond Water Level Elevations for Each Location

	North Pond Water Level					
	Minimum		**Maximum**		**Average**	
	Depth (m)	**Elevation (masl)**	**Depth (m)**	**Elevation (masl)**	**Depth (m)**	**Elevation (masl)**
2020	0.74	255.020	0.97	255.253	0.84	255.118
2021	0.64	254.923	0.90	255.184	0.73	255.012
2022	0.65	254.933	1.11	255.397	0.88	255.161
	South Pond Water Level					
	Minimum		**Maximum**		**Average**	
	Depth (m)	**Elevation (masl)**	**Depth (m)**	**Elevation (masl)**	**Depth (m)**	**Elevation (masl)**
2020	12.74	252.693	12.83	252.785	12.77	252.721
2021	12.78	252.730	12.63	252.585	12.85	252.802
2022	12.40	252.351	12.83	252.785	12.77	252.721

During the monitoring program (years 2020-2022) the average water depth at the North Pond was approximately 0.82 m with a maximum recorded water depth of 1.11 m

on August 21, 2022, following a 226 mm event. Maximum water depth for the South Pond was consistent in 2020 and 2022. In 2020, maximum water elevation was recorded during sensor installations on June 16, 2020. Data suggests that water levels slowly recede through the year, with limited response to rain events. During 2022, maximum depths were observed on August 21, 2022, following a 226 mm event.

5.5.2.4 Instream Water Temperature Monitoring

Maximum temperatures and calculated summer averages at each monitoring location during are summarized in Table 9. A full record of continuous water temperature data between 2019 and 2022 are provided in the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report.

Table 9: Minimum and Maximum Temperature Measurements During Sampling Events

Monitoring Site	Water Temperature (°C)							
	2019		2020		2021		2022	
	*S. Avg.	Max	*S. Avg.	Max	*S. Avg.	Max	*S. Avg.	Max
W Inlet	Dry		15.1	23.3	16.0	20.1	20.9	28.7
S Inlet	15.5	20.5	17.6	22.7	13.7	22.3	17.0	22.2
Bridge	17.4	26.3	17.6	26.0	17.8	23.1	17.1	22.2
Outlet	Dry		21.5	25.1	Dry		21.5	25.2
*Summer average calculated during warm summer month June-September								

Warm summer months are of interest as they can be stressors on aquatic species. The table above provides insight into instream conditions during the warm summer months between June and September. Throughout the baseline monitoring program 2019-2022, averages were relatively consistent ranging between 15.1-21.5°C while maximum values varied by approximately 2-8 °C, depending on the site. Higher averages observed in 2022 are a result of an extremely warm and dry season. Within the subject site temperatures are commonly influenced by contributions upstream and vegetation coverage. In 2019 and 2021, the W Inlet and Outlet monitoring sites remained dry.

5.5.3 Existing Stormwater Infrastructure

The existing storm infrastructure within the vicinity of the subject property includes existing SWM ponds, culverts, and a storm sewer system on Mayfield Road, collecting road drainage. Please refer to Figure 3F and Section 4.1 of the FSR (2025) attached in Appendix F of this report, which identifies the existing SWM ponds and existing culverts.

There are two existing SWM ponds located near the subject property. One of the existing SWM ponds is located southwest of the subject property in the northeast corner of the Kennedy Road and Mayfield Road intersection. The pond, designed initially by Stantec (2007), was sized to accommodate Mayfield Road's runoff and external area.

GHD (May 2017) completed a facility retrofit report to ensure that the pond was providing adequate quality and quantity control. Based on the tributary drawing, the estate lots along Mayfield Road, which are within the subject property boundary, were accommodated in the Pond as an external area; however, the Stantec (2007) report identifies that any future development of the external lands should provide their own quantity and quality control. The pond was sized to accommodate the Mayfield Road Widening. The pond discharges to the Unnamed Tributary of Spring Creek that runs through the subject property.

The other SWM pond is located south of Mayfield Road and west of Heart Lake Road, as identified on Figure 3F of the FSR (2025) (see Appendix F of this report).

5.5.4 Existing Conditions Hydrologic Model

5.5.4.1 Watershed Hydrologic Model

The existing conditions hydrologic model of record, for the subject property and larger surrounding watershed, was developed by MMM Group Limited (April 2013) on behalf of TRCA as outlined in the Draft Final Report-Etobicoke Creek Hydrology Update. The MMM Group update to the hydrologic model, and the history of the model update is contained in Appendix I of the FSR (20235), in Appendix F of this report.

As discussed in Section 5.5.1, the subject property is located within three catchment areas (ID 41, 24, 447) in the Etobicoke Creek watershed.

The existing conditions hydrologic model and report provides guidance on quantity control criteria for the watershed, and more specifically the unitary target release rates for Catchment ID 41, 24, and 447 used to establish SWM controls in proposed conditions.

5.5.4.2 Property Specific Hydrologic Model

A property specific hydrologic model has not been prepared for the Snell's Hollow Secondary Plan area to evaluate event-based storms. The unitary flows from the Watershed Hydrologic Model discussed in Section 5.5.4.1 were used to establish target flows for the areas of the property that are to be developed.

Existing conditions hydrology model was prepared on a property-specific basis for the purposes of evaluating the feature-based water balance, and continuous erosion analysis. The existing conditions property-specific model runs continuous rainfall data, and not event-based storms. Additional information regarding the continuous modeling is included in Appendix J of the FSR (2025).

5.6 Natural Heritage

5.6.1 Vegetation Communities and Species Inventory

A three-season vegetation inventory and Ecological Land Classification (ELC) survey was undertaken on May 15, 2019, July 11, 2019, and September 10, 2019. Given the time that has elapsed since the 2019 ELC surveys, an additional survey was conducted on August 28, 2024, to verify and / or further refine ELC mapping for the CUM1-1 ecosites. Vegetation communities were assessed and described using the Ecological Land Classification System for Southern Ontario: First Approximation and its Application (Lee et al., 1998), with reference to Second Approximation 2008 codes (Lee, 2008) for communities which could not be accurately described by the First Approximation 1998 codes (see Figure 2).

The subject property is mainly comprised of agricultural row crops, naturalized meadows, shrub thickets and woodland inclusions. A large swamp thicket and marsh wetland associated with an Unnamed Tributary of Spring Creek meanders through the centre of the subject property, before diverting south and crossing Mayfield Road. The wetland is part of the provincially significant Heart Lake PSW Complex which straddles the City of Brampton and the Town, extending about 1 km north of Mayfield Road, south to Bovaird Drive, and centered along Heart Lake Road (see Section 5.2.1).

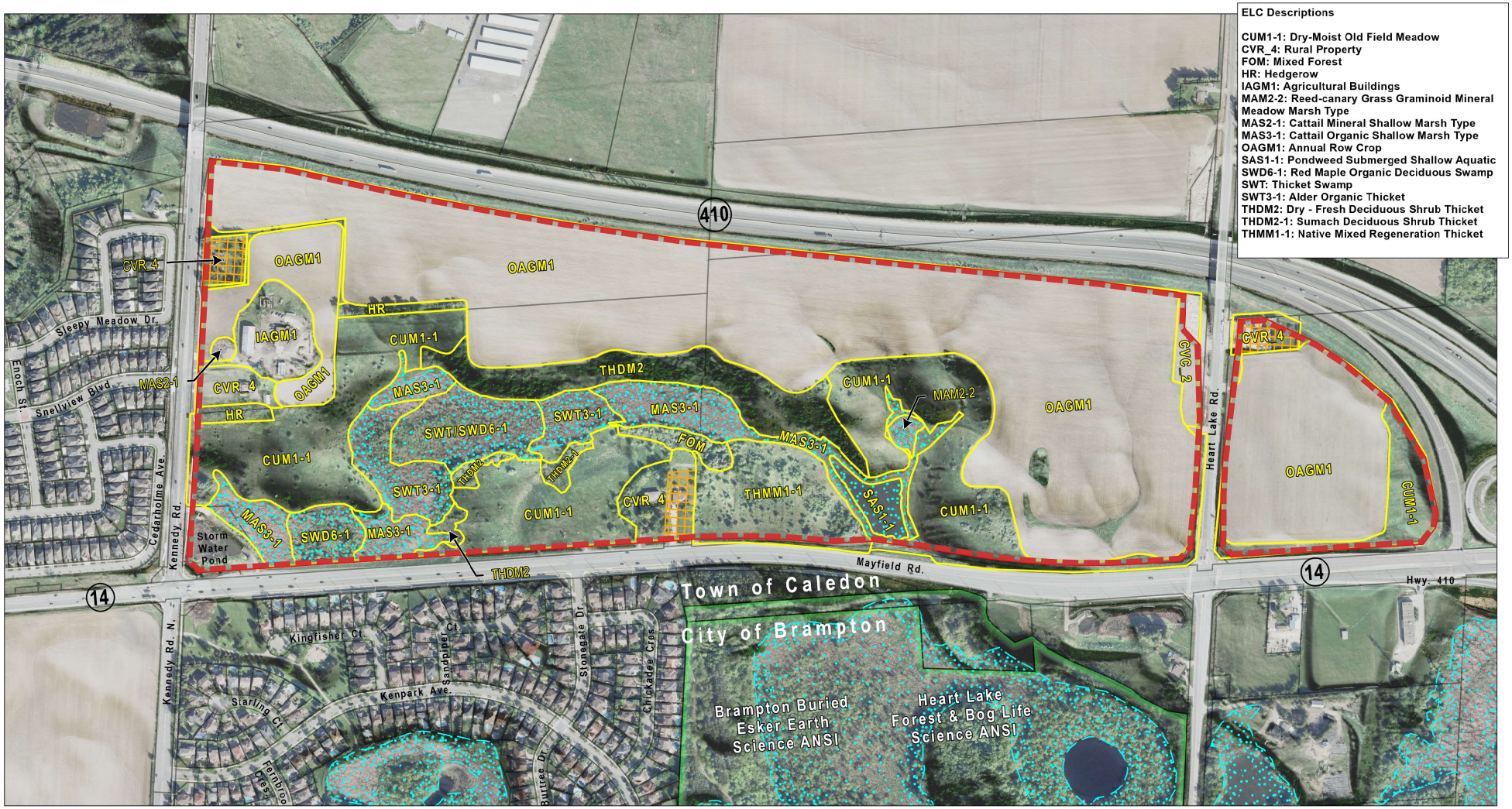
The naturalized meadow surrounding most of the wetland complex contains a patchwork of varying densities of shrubs and regenerating woodland which was previously categorized as one ecosite (CUM1-1). The August 2024 survey verified and / or refined the CUM1-1 ecosite and split it into areas of meadow, shrub thicket (THDM) and regeneration thicket (THMM) to assist with the assessment of SWH (see Section 7.7.5).

Sixteen ELC communities were identified on the subject property, as listed in Table 10. All of them are ranked as S5 (secure; common, widespread, and abundant in the province).

Table 10: ELC Communities on the Subject Property

ELC Classification	S Rank
Cultural / Anthropogenic	
CUM1-1: Dry-Moist Old Field Meadow	N/A
THDM2: Dry-Fresh Deciduous Shrub Thicket	N/A
THDM2-1: Sumac Deciduous Shrub Thicket	N/A
THMM1-1: Native Mixed Regeneration Thicket	N/A
HR: Hedgerow	N/A
Built Up-Pervious	
CVR_4: Rural Property	N/A
Agricultural	
IAGM_1: Agricultural Buildings	N/A

ELC Classification	S Rank
OAGM1: Annual Row Crop	N/A
Forest	
FOM: Mixed Forest	S5
Wetland	
MAM2-2: Reed Canary Grass Graminoid Mineral Marsh	S5
MAS2-1: Cattail Mineral Shallow Marsh	S5
MAS3-1: Cattail Organic Shallow Marsh	S5
SAS1-1: Pondweed Submerged Shallow Aquatic	S5
SWD6-1: Red Maple Organic Deciduous Swamp	S5
SWT: Thicket Swamp	S5
SWT3-1: Alder Organic Swamp	S5



Data provided by the Town of Caledon, Region of Peel, Ministry of Natural Resources, Toronto Region Conservation Authority

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: North American 1983 CSRS	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -48.45°	Scale Factor: 0.99960

Grid North

0 100 200 300 400
Metres

- ELC Boundary
- Area of Natural Scientific Interest (ANSI)
- Provincially Significant Wetland (Heart Lake PSW)
- Non-Participating Property
- Secondary Plan Area

BURNSIDE

Client
SNELL'S HOLLOW DEVELOPERS GROUP

Figure Title
SNELL'S HOLLOW EAST SECONDARY PLAN
ECOLOGICAL LAND CLASSIFICATION

Drawn	Checked	Date	Figure No.
HN	HM	2024/12/19	2
Scale		Project No.	
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The following summarizes the flora observed on the subject property during field studies in 2019, with a focus on the tablelands and species observed during wetland monitoring. A full botanical inventory of the wetland communities within the NHS was not completed for this study, as these communities have been evaluated through the MNR Provincially Significant Heart Lake Wetland Complex evaluation (2000):

- 122 plant taxa were observed. Of those, 109 were identified to species or subspecies level.
- Of those species, 72 (66.1%) were native and 37 (33.9%) were non-native to Ontario.
- Among the native species observed, 72 are considered secure – common or apparently secure – uncommon (S5 or S4) in Ontario.
- Two species observed are considered rare to the Greater Toronto Area (GTA):
  - Foxglove Beardtongue (*Penstemon digitalis*)
  - Red Pine (*Pinus resinosa*)
- Six species observed are considered species of regional conservation concern (L1 to L3):
  - Speckled Alder (*Alnus incana*) (L3)
  - Common Spikerush (*Eleocharis palustris*) (L3)
  - Common Winterberry (*Ilex verticillate*) (L3)
  - Harlequin Blue Flag (*Iris versicolore*) (L3)
  - Red Pine (L1)
  - Swamp Red Currant (*Ribes triste*) (L3).
- Two of the wetland communities have a TRCA local rank of L2 (“community of regional conservation concern”): SWT3-1 and SWD6-1.

A detailed description of the vegetation field methodology and findings is described in Burnside’s Baseline Conditions Report (2020), in Appendix D of this report.

5.6.2 Pre-Construction Wetland Monitoring

Three years of pre-construction wetland monitoring (wetland vegetation and breeding amphibians) have been completed to date (2019, 2020 and 2022).

Wetland Vegetation Monitoring

Methodology for the wetland vegetation monitoring survey was based on the TRCA’s *Wetland Vegetation Monitoring Protocol, Terrestrial Long-term Fixed Plot Monitoring Program* (January 2016). A transect was established within the Alder Organic Thicket Swamp Type (SWT3-1) vegetation community, located within Wetland No. 1 of the Heart Lake Provincially Significant Wetland Complex. Please refer to the Year 1 Report for a detailed description of the methodology (Burnside, 2020) in Appendix D of this report.

Baseline vegetation and soil condition data was collected on July 4, 2019. Monitoring in Year 2 was performed on July 14, 2020. Monitoring in Year 3 was performed on July 15, 2022. Overall, the results of the Year 2 and Year 3 vegetation assessment surveys were comparable to Year 1, with no significant coefficient of wetness (cw) or composition changes. As in Year 1 and 2, Broad-leaved Cattail dominated all subplots in Year 3 except for 1A and 1B, as expected. Composition percentages for Broad-leaved Cattail either remained the same or very low variances (between 2% to 10%) and were recorded with the highest variance in Stations 5B and 6B with a respective decrease and increase of 12%. The number of woody vegetation species increased by two (Cranberry Viburnum and Common Winterberry). Both species are Wetland Indicator species (cw of -3) and have been established over the past three years.

Amphibian Monitoring

Burnside staff conducted amphibian breeding call surveys following the *Marsh Monitoring Program Participant's Handbook for Surveying Amphibians* (Bird Studies Canada, 2008), during the 2019, 2020 and 2022 breeding season to detect potential early, mid and late season amphibian breeding activity in Central Ontario. Survey stations were chosen in Year 1 (2019) to provide information on potential amphibian breeding sites within representative wetland communities, located throughout the subject property. Surveys were carried out at four stations.

Surveys were conducted for the first year of monitoring on April 24, May 15, and June 21, 2019. For the second year of monitoring surveys were conducted on April 6, May 15, and June 17, 2020. For the third year of monitoring surveys were conducted on April 12, May 12, and June 23, 2022.

In the first year, three amphibian species were documented calling within the wetland stations on the first, second and third field visits: Wood Frog (*Lithobates sylvaticus)*, American Toad (*Anaxyrus americanus*) and Green Frog (*Lithobates clamitans*). The same three species of amphibians were documented in the second and third year as well as an additional species, Gray Treefrog (*Hyla versicolor*) in 2020 and Spring Peeper (*Pseudacris crucifer*) in 2022.

Detailed monitoring reports for Year 1, Year 2 and Year 3 can be found in Appendix D of this report. The data collected during these surveys is to be used to assess the impacts of construction on the existing wetland and re-examine mitigation and impact prevention methods during and after development. A fourth year of monitoring is planned in 2025 prior to the commencement of the development phase.

5.6.3 Headwater Drainage Features Assessment

Three HDF surveys were completed in 2019, based on the protocol outlined in the *Evaluation, Classification and Management of Headwater Drainage Features Guideline* (The Guideline) (TRCA and CVC, 2014) and supporting guidance provided in the *Ontario Stream Assessment Protocol* (OSAP) *Section 4: Modules 10 and 11*. Accessibility to sites on the subject property enabled adaptation to a reach-based approach, primarily utilizing OSAP S4:M11. A background review of existing TRCA Hillshade LIDAR, hydrolayer mapping and satellite imagery were utilized to identify potential HDF features from desktop. Each potential HDF location was investigated during the initial site visit on April 9 to 11, 2019, with subsequent monitoring visits completed at sites based on observations from previous visits on May 27 and August 26, 2019. An additional site visit was completed on April 5, 2021. The purpose of the site visit was to observe conditions with respect to flow classification of the HDFs. The investigation was intended to supplement previous observations with respect to hydraulic significance and feature permanency, if preceding investigations were completed during atypical conditions. Through this investigation, all the features were noted as being either dry, or contained standing water, which corroborated previous investigation findings. It is also noted that when fisheries sampling was completed in July 2020 feature H2 was dry.

The majority of features on the subject property were found in actively tilled agricultural fields, with poor definition and lacking natural channel vegetation. Overall, 12 potential drainage networks were investigated (H1 to H12) throughout the subject property (see Figure 3). All the drainage networks, except for H3, flow, partially or wholly, through cultivated agricultural fields. Of the 33 reaches within these networks, 20 were classified as ‘No Management Concern’, 12 as ‘Mitigation’ and one as ‘Conservation’, based on the management decision matrix provided on Figure 2 of The Guideline.

The TRCA agreed in 2021 correspondence that these features can be addressed through site level water balance and SWM design. Through HDF management discussions with TRCA in July 2023, TRCA acknowledged the use of grassed swales is generally acceptable for replicating existing headwater drainage features that flow into the wetland (i.e., H2, H3, H4, H9, H10, H11, H12) and drain from the rear of the lots with clean, overland flow. The Town indicated during a meeting on November 8, 2024 they were supportive of grassed swales in the NHS buffers because they did not require hard infrastructure or require maintenance. Features that do not discharge to the wetland / valley (i.e., H1, H5, H6, H7, H8) do not have to be replicated via swales. Low Impact Development (LID) strategies are discussed in detail in Section 6.0 of the FSR (April 2025) and in Section 9.6 of this report. Potential impacts of grassed swales in select locations are discussed further in Section 11.0.

A detailed description of the HDF field methodology and findings is described in Burnside's Technical Memorandum – 2019 HDF Assessment (March 12, 2020), in Appendix D of this report.

5.7 Identification of Provincially Significant Natural Features

As part of the baseline conditions and characterization, a desktop assessment of provincially significant features was completed based on background natural heritage databases, reports and preliminary data collected during baseline surveys in 2019. These preliminary findings guided targeted field surveys completed in 2020 in support of the EIS. The following features were initially identified on the subject property and are detailed in Burnside's Baseline Conditions Report (2020) found in Appendix D of this report:

- Provincially Significant Wetlands
- Significant Valleylands
- Significant Wildlife Habitat (Confirmed and Candidate)
- Habitat of Endangered and Threatened Species (Candidate)

Confirmation of these features following surveys completed in support of the EIS are summarized in Section 7.7.

Data provided by the Town of Caledon, Region of Peel, Ministry of Natural Resources, Toronto Region Conservation Authority

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: North American 1983 CSRS	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -53°	Scale Factor: 0.99960

Grid North

0 100 200 300 400
Metres

- Reach Break
- HDF Conservation
- HDF: Mitigation
- HDF: No Management Concern
- Thermal Regime: Warm Water Body
- Thermal Regime: Warm Course
- Non-Participating Property
- Secondary Plan Area

BURNSIDE

Client
SNELL'S HOLLOW DEVELOPERS GROUP

Figure Title
SNELL'S HOLLOW EAST SECONDARY PLAN
HEADWATER DRAINAGE FEATURES & AQUATIC HABITAT

Drawn	Checked	Date	Figure No.
PS	HM	2023/10/06	3
Scale		Project No.	
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PART B – LAND USE EVALUATION & IMPACT ASSESSMENT

6.0 Ecological Field Investigations Methodology

Ecological field investigations were completed on the subject property limits except for three non-participating properties where we did not have permission to enter (see Figure 1). For those properties, data was limited to what we could gather from adjacent lands.

6.1 Avifauna

Standard breeding bird surveys were completed by Burnside staff, in combination with targeted surveys for marsh birds and SAR grassland birds (i.e., Eastern Meadowlark (EAME), and Bobolink (BOBO)). Surveys were conducted according to the *Ontario Breeding Bird Atlas (OBBA) Guide for Participants* (Bird Studies Canada March 2001), *Marsh Monitoring Program Participant's Handbook for Surveying Marsh Birds*, (Bird Studies Canada 2009) and the MNR's *Survey Protocol for Eastern Meadowlark in Ontario* (August 2013), tailored to the needs of this project. Surveys were conducted at designated point counts, shown on Figure 4, that captured the different vegetation communities present. The methodology for these surveys is summarized below and in Table 11.

Eastern Meadowlark and Bobolink are listed as Threatened under the ESA. These species were identified as having potential to be on the subject property based on background databases and reports, correspondence with agencies and the presence of suitable grassland / cultural meadow habitat. Both species have similar habitat requirements and were surveyed concurrently.

Marsh bird survey stations were established at certain locations around the perimeter of the wetlands, based on suitable habitat and background records indicating the potential presence of marsh birds.

- Surveys were conducted between May 21 and July 3, which is the recommended date range for surveying for EAME and BOBO (August 2013).
- Surveys for EAME and BOBO were conducted three times and were evenly spaced throughout the survey period, between 7 to 10 days apart. Surveys were completed on May 25, June 8 and June 22, 2020.
- Surveys were completed at a total of 30-point count locations per survey period, including eight targeted EAME and BOBO stations and six targeted Marsh breeding bird stations.
- Surveys were conducted under the following weather condition requirements: counts were not completed if it was raining, there was thick fog, or if winds were greater than 19 km per hour (i.e., >3 on the Beaufort scale). Generally, weather conditions were conducive to auditory and visual surveys, with winds less than 19 km per hour, and no precipitation.

- Each EAME / BOBO point count location was chosen based on good visibility of the surrounding fields / open areas. Per the protocol, the surveyor completed 10 minutes of passive observation and recorded all species observed or heard.
- At each marsh bird survey point count station, the surveyor completed 5 minutes of passive observation (i.e., recorded all species observed or heard), followed by 5 minutes of playback recordings of secretive marsh bird calls, and another 5 minutes of passive observation, for a total of 15 minutes at each marsh monitoring protocol station.
- All birds recorded, including level of breeding evidence, are summarized in Appendix G of this report.
- Field data was collected using a mobile data collection application (Fulcrum) on an iOS device.

Data provided by the Town of Caledon, Region of Peel, Ministry of Natural Resources, Toronto Region Conservation Authority

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: North American 1983 CSRS	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -53°	Scale Factor: 0.99960

Grid North

0 100 200 300 400
Metres

- Standard Breeding Bird Survey Station
- Eastern Meadowlark / Bobolink Survey Station
- Marsh Bird Survey Station
- Area of Natural Scientific Interest (ANSI)
- ELC Boundary
- Non-Participating Property
- Secondary Plan Area

BURNSIDE

Client
SNELL'S HOLLOW DEVELOPERS GROUP

Figure Title
SNELL'S HOLLOW EAST SECONDARY PLAN
BREEDING BIRD SURVEY STATIONS

Drawn	Checked	Date	Figure No.
HN	HM	2024/12/19	4
Scale		Project No.	
1:5,000		300051670	

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Table 11: Summary of Breeding Bird Survey Weather Conditions Conducted by Burnside Staff

Survey Date	Time of Day (Start/End) (24 hours)	Weather Conditions (Air Temp °C/Beaufort Sky Code[1]/Wind Scale[2])
May 25, 2020	05:52 - 10:32	Start: 21°C; End: 26°C
		Sky: 1
		Wind: 1
June 8, 2020	05:47 - 10:07	Start: 10°C; End: 16°C Sky: 0 Wind: 2
June 22, 2020	05:59 - 10:29	Start: 12°C; End: 25°C Sky: 1 Wind: 1

[1]NAAMP/ Beaufort Sky Codes
0 = clear (no cloud cover)
1 = partly cloudy (scattered or broken) or variable
2 = cloudy or overcast
3 = sandstorm, dust storm or blowing snow
4 = fog, smoke, thick dust, or haze
5 = drizzle or light rain
6 = rain
7 = snow or snow/rain mix
8 = showers
9 = thunderstorms

[2]Beaufort Wind Scale
0 = calm, smoke rises vertically (0-2 km/hr)
1 = Light air movement, smoke drifts (3-5)
2 = Slight breeze, wind felt on face; leaves rustle (6-11)
3 = Gentle breeze, leaves & twigs in constant motion (12-19)
4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30)
5 = Fresh breeze, small trees begin to sway (31-39)
6 = Strong breeze, large branches in motion (40-50)

6.1.1 Barn Swallow and Chimney Swift Structure Surveys

At the time of the surveys, Barn Swallow (*Hirundo rustica*) and Chimney Swift (*Chaetura pelagica*) were listed as Threatened under the ESA. Both species are known to nest in anthropogenic structures (i.e., barns, sheds, uncapped brick chimneys). Structure surveys were completed to identify potential habitat for Barn Swallow, Chimney Swift and SAR bats. Barn Swallow was reclassified as Special Concern on January 25, 2023 on the Species at Risk in Ontario List (O.Reg. 230/08). The change in classification means that the prohibitions in subsections 9 (1) and 10 (1) of the ESA that apply in respect of Endangered and Threatened species and their habitats no longer apply to Barn Swallow. However, habitat for Barn Swallow is now considered SWH as discussed in Section 7.7.5. The status of Chimney Swift has not changed.

A site reconnaissance completed on April 24, 2020, identified a total of nine structures present on the subject property located east of Kennedy Road: one residential dwelling (S1), three chimneys (S2, S8, and S9), one garage (S3), two corrugated metal storage sheds (S4 and S5) and one remnant barn foundation (S6), located on the east side of Kennedy Road. One additional structure, an old fallen sign (S7), was also inspected and is located on the north side of Mayfield Road (see Figure 5). Based on the results of this

reconnaissance, inspections of the exterior and interior of structures identified as potential Barn Swallow habitat were surveyed for evidence of nesting during the breeding window on June 22, 2020 (S1, S3, S4, and S5).

If a chimney is determined to be capped or lined, it is considered unsuitable habitat for Chimney Swift and no further investigations are required. If a chimney is uncapped or not lined, or it cannot be determined whether it is capped or lined, further surveys would be required. This may include either a more thorough inspection of the base of the chimney inside the structure, if access is possible, or additional presence / absence survey(s) to confirm evidence of Chimney Swift activity (i.e., roosting / nesting). The three chimneys on S1 (labeled as S2, S8 and S9) were visually inspected at Kennedy Road on April 24, 2020, to determine if habitat suitability was present for Chimney Swift (Figure 5).

6.2 Herpetofauna

6.2.1 Amphibian Breeding Call Surveys

In support of the CEISMP and as part of the ongoing baseline monitoring program, Burnside staff conducted amphibian breeding call surveys, following the *Marsh Monitoring Program Participant's Handbook for Surveying Amphibians* (Bird Studies Canada (BSC), during the 2020 breeding season. Surveys were conducted on April 6, May 16 and June 17, 2020, by Burnside staff to detect potential early, mid, and late season amphibian breeding activity in Central Ontario.

Four survey stations were chosen to provide information on potential amphibian breeding sites within representative wetland communities, located throughout the subject property. While outside of the subject property limits, one of the stations was located at the existing SWM pond as a control site. Stations are depicted on Figure 6.

The Marsh Monitoring Program guidelines state that three call surveys should be completed when nighttime air temperatures are greater than 5°C, 10°C and 17°C, respectively, and when wind strength is less than 19 km/h (≤3 on the Beaufort Scale). Conditions during the surveys are outlined in Table 12.

Data provided by the Town of Caledon, Region of Peel, Ministry of Natural Resources, Toronto Region Conservation Authority

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: North American 1983 CSRS	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -53°	Scale Factor: 0.99960

Grid North

0 100 200 300 400
Metres

Acoustic Survey Point
Structure
Non-Participating Property
Secondary Plan Area

BURNSIDE

Client
SNELL'S HOLLOW DEVELOPERS GROUP

Figure Title
SNELL'S HOLLOW EAST SECONDARY PLAN
EXISTING STRUCTURES AND BAT ACOUSTIC SURVEY STATIONS

Drawn	Checked	Date	Figure No.
PS	HM	2023/10/06	5
Scale		Project No.	
1:5,000		300051670	

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Table 12: Summary of Amphibian Breeding Call Survey Weather Conditions Conducted by Burnside Staff

Survey Date	Time of Day (Start/End) (24 hours)	Weather Conditions (Air Temp °C/Beaufort Sky Code[1]/Wind Scale[2])
April 6, 2020	20:37 - 21:28	Start: 10°C; End: 9.3°C Sky: 2 Wind: 2
May 16, 2020	21:09 - 21:54	Start: 11.5°C; End: 10.7°C Sky: 1 Wind: 2
June 17, 2020	21:34 - 22:10	Start: 20.3°C; End: 18°C Sky: 0 Wind: 1

[1]NAAMP/ Beaufort Sky Codes
0 = clear (no cloud cover)
1 = partly cloudy (scattered or broken) or variable
2 = cloudy or overcast
3 = sandstorm, dust storm or blowing snow
4 = fog, smoke, thick dust, or haze
5 = drizzle or light rain
6 = rain
7 = snow or snow/rain mix
8 = showers
9 = thunderstorms

[2]Beaufort Wind Scale
0 = calm, smoke rises vertically (0-2 km/hr)
1 = Light air movement, smoke drifts (3-5)
2 = Slight breeze, wind felt on face; leaves rustle (6-11)
3 = Gentle breeze, leaves & twigs in constant motion (12-19)
4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30)
5 = Fresh breeze, small trees begin to sway (31-39)
6 = Strong breeze, large branches in motion (40-50)

6.2.2 Basking Turtle Surveys

Visual encounter surveys for turtles were conducted in the spring, based on the MNR's *Survey Protocol for Blanding's Turtle in Ontario* (2015), tailored to the needs of this project. While Blanding's Turtle is not expected for this area, this protocol provides a comprehensive method for surveying generally for turtle overwintering / basking habitat for species expected in this location (i.e., Midland Painted Turtle (*Chrysemys picta marginata*) and Snapping Turtle (*Chelydra serpentina*). Three main survey stations were established where open water was present: Station 1 (SWM pond control site), Station 2 (south side of wetland) and Station 3 (shallow aquatic open water pond). It was assumed that any turtles observed at the control site may also be using the adjacent wetland habitats during their life cycle. Burnside staff also walked the perimeter of the wetlands and pond where suitable. See Figure 6.

ELC Descriptions
CUM1-1: Dry-Moist Old Field Meadow
CVR_4: Rural Property
FOM: Mixed Forest
HR: Hedgerow
IAGM1: Agricultural Buildings
MAM2-2: Reed-canary Grass Graminoid Mineral Meadow Marsh Type
MAS2-1: Cattail Mineral Shallow Marsh Type
MAS3-1: Cattail Organic Shallow Marsh Type
OAGM1: Annual Row Crop
SAS1-1: Pondweed Submerged Shallow Aquatic
SWD6-1: Red Maple Organic Deciduous Swamp
SWT: Thicket Swamp
SWT3-1: Alder Organic Thicket
THDM2: Dry - Fresh Deciduous Shrub Thicket
THDM2-1: Sumach Deciduous Shrub Thicket
THMM1-1: Native Mixed Regeneration Thicket

Data provided by the Town of Caledon, Region of Peel, Ministry of Natural Resources, Toronto Region Conservation Authority

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: North American 1983 CSRS	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -53°	Scale Factor: 0.99960

Grid North

0 100 200 300 400
Metres

- Midland Painted Turtle Nesting Site
- Turtle Nesting Site
- Amphibian Breeding Call Survey Station
- Turtle Basking Routes & Nesting Transects
- Area of Natural Scientific Interest (ANSI)
- ELC Boundary
- Provincially Significant Wetland (Heart Lake Wetland Complex)
- Non-Participating Property
- Secondary Plan Area

BURNSIDE

Client
SNELL'S HOLLOW DEVELOPERS GROUP

Figure Title
SNELL'S HOLLOW EAST SECONDARY PLAN
AMPHIBIAN & REPTILE SURVEYS

Drawn	Checked	Date	Figure No.
HN	HM	2024/12/17	6
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The survey methodology for basking turtles is summarized in Table 13 and in the list below:

- As per the Protocol, a minimum of five surveys were conducted at the wetland communities on the subject property.
- Surveys were spread over five weeks after ice melt between April and June between 08:00 and 17:00 on clear, sunny days with air temperatures above 5°C, or on cloudy or overcast days with air temperatures above 15°C.
- The surveyor used high quality binoculars to ensure that vegetation was surveyed appropriately.

Table 13: Summary of Basking Turtle Survey Weather Conditions Conducted by Burnside Staff

April 4, 2020	**Survey #1**
Time (24-hr): 11:20 to 11:32	Air Temp (°C): 6 to 8
Sky Code[1]: 2	Wind Scale[2]: 3
April 6, 2020	**Survey #2**
Time (24-hr): 12:10 to 13:42	Air Temp (°C): 14.1 to 15.1
Sky Code[1]: 1	Wind Scale[2]: 1
April 25, 2020	**Survey #3**
Time (24-hr): 12:18 to 14:25	Air Temp (°C): 11.6 to 15.0
Sky Code[1]: 1	Wind Scale[2]: 2
April 27, 2020	**Survey #4**
Time (24-hr): 13:45 to 15:20	Air Temp (°C): 13.1 to 14.5
Sky Code[1]: 2	Wind Scale[2]: 1
May 5, 2020	**Survey #5**
Time (24-hr): 11:55 to 14:51	Air Temp (°C): 13.3 to 17.2
Sky Code[1]: 2	Wind Scale[2]: 3
May 13, 2020	**Survey #6**
Time (24-hr): 11:18 to 13:22	Air Temp (°C): 11.2 to 15.5
Sky Code[1]: 0	Wind Scale[2]: 1

[1]NAAMP/ Beaufort Sky Codes
0 = clear (no cloud cover)
1 = partly cloudy (scattered or broken) or variable
2 = cloudy or overcast
3 = sandstorm, dust storm or blowing snow
4 = fog, smoke, thick dust, or haze
5 = drizzle or light rain
6 = rain
7 = snow or snow/rain mix
8 = showers
9 = thunderstorms

[2]Beaufort Wind Scale
0 = calm, smoke rises vertically (0-2 km/hr)
1 = Light air movement, smoke drifts (3-5)
2 = Slight breeze, wind felt on face; leaves rustle (6-11)
3 = Gentle breeze, leaves & twigs in constant motion (12-19)
4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30)
5 = Fresh breeze, small trees begin to sway (31-39)
6 = Strong breeze, large branches in motion (40-50)

6.2.3 Turtle Nesting Surveys

Turtle nesting surveys were based on the Guelph District MNR's *Blanding's Turtle Nest and Nesting Survey Guidelines* (May 2016). The protocol was modified slightly to better suit the needs of the project and increase the likelihood of detecting turtle nesting evidence. These modifications were made in consultation with TRCA.

The survey methodology for nesting turtles is summarized below and in Table 14:

- Surveys were completed within areas suitable for nesting (i.e., friable soils dominated by sand and gravel and exposed to sun and warmth), with a focus on south-facing slopes and areas within proximity to the wetland communities on the subject property, depicted on Figure 6. These areas were surveyed by walking systematic, repetitive transects. The SWM pond was also surveyed as a control site.
- As per the Protocol, nesting surveys are to commence when the first sign of Midland Painted Turtle or Snapping Turtle nesting in the area has begun and must continue for three weeks. The first survey was conducted on June 3, 2020, to search for evidence of nesting. A mailing list for turtle nesting notifications was reviewed daily to determine when surveys should commence (this list was organized by Heather Fotherby, Terrestrial and Wetland Biologist, Natural Resource Solutions Inc.). On June 8, 2020, commencement of Midland Painted Turtle and Snapping Turtle nesting was reported in the Greater Toronto Area.
- Surveys were completed the day after an evening of suitable weather conditions: warm, humid nights with air temperatures above 14°C. It was agreed with TRCA that daytime searches for evidence of nesting can reduce search effort by eliminating the need for further evening surveys once nesting activity is detected.
- All signs of turtle nesting were noted, including test scrapes, tracks and trails made by commuting turtles, freshly laid nests, predated nests, and the presence of turtles laying eggs or commuting to / from nesting sites.

Table 14: Summary of Nesting Turtle Survey Weather Conditions Conducted by Burnside Staff

June 3, 2020	**Survey #1**
Time (24-hr): 19:15 to 21:55	Air Temp (°C): 25 to 21
Sky Code[1]: 1	Wind Scale[2]: 3
June 11, 2020	**Survey #2**
Time (24-hr): 17:22 to 20:03	Air Temp (°C): 24 to 21
Sky Code[1]: 1	Wind Scale[2]: 2
June 12, 2020	**Survey #3**
Time (24-hr): 8:24 to 10:37	Air Temp (°C): 16
Sky Code[1]: 2	Wind Scale[2]: 4
June 17, 2020	**Survey #4**
Time (24-hr): 18:27 to 20:57	Air Temp (°C): 32 to 23
Sky Code[1]: 0	Wind Scale[2]: 0
June 24, 2020	**Survey #5**
Time (24-hr): 10:37 to 12:56	Air Temp (°C): 17 to 23
Sky Code[1]: 5	Wind Scale[2]: 6
June 30, 2020	**Survey #6**
Time (24-hr): 18:17 to 20:30	Air Temp (°C): 31 to 28
Sky Code[1]: 1	Wind Scale[2]: 1

[1]NAAMP/ Beaufort Sky Codes
0 = clear (no cloud cover)
1 = partly cloudy (scattered or broken) or variable
2 = cloudy or overcast
3 = sandstorm, dust storm or blowing snow
4 = fog, smoke, thick dust, or haze
5 = drizzle or light rain
6 = rain
7 = snow or snow/rain mix
8 = showers
9 = thunderstorms

[2]Beaufort Wind Scale
0 = calm, smoke rises vertically (0-2 km/hr)
1 = Light air movement, smoke drifts (3-5)
2 = Slight breeze, wind felt on face; leaves rustle (6-11)
3 = Gentle breeze, leaves & twigs in constant motion (12-19)
4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30)
5 = Fresh breeze, small trees begin to sway (31-39)
6 = Strong breeze, large branches in motion (40-50)

6.3 Bats

6.3.1 Vegetation

In 2020, Burnside biologists conducted a baseline review of candidate bat roosting habitat on the tablelands based on existing vegetation communities following MNR Guelph District's *Survey Protocol for Species at Risk Bats within Treed Habitats - Little Brown Myotis, Northern Myotis & Tri-colored Bat* (April 2017). Updated MECP guidance (2022a) states that the following treed communities in Southern Ontario are most likely to contain bat maternity roosting habitat:

- Deciduous Forest (FOD

- Mixedwood Forest (FOM)
- Coniferous Forest (FOC)
- Deciduous Swamp (SWD)
- Mixedwood Swamp (SWM)
- Coniferous Swamp (SWC)

The results of this review are detailed in Section 7.3.

6.3.2 Structures

The survey protocol used to assess and survey SAR bats in structures was based on MNR Guelph District's *Use of Buildings and Isolated Trees by Species at Risk Bats* (2014).

Seven of the nine existing structures on the subject property were surveyed on April 24, 2020, for candidate bat habitat (excluding S6, an old barn foundation, and S7, a fallen down sign). These structures on the east side of Kennedy Road were surveyed for entry and exit points (holes, cracks, broken windows, etc.) that could be accessed by bats and that may lead to potential roosting sites (see Figure 5).

6.3.3 Exit Surveys

Based on the results of the structure survey on April 24, 2020, the residential dwelling (S1) was the only structure that was considered candidate habitat for roosting bats. Burnside staff completed two acoustic exit surveys, on June 11 and June 30, 2020, at S1 to confirm SAR bat roosting habitat. S1 was surveyed for a total of 90 minutes, from one half hour before sunset to one hour after sunset. Surveys took place during favourable weather conditions (i.e., during periods of low wind and no rain).

Surveyors were positioned within viewing distance of three potential exit points on the structure. If bats were to exit the structure, the number of bats would be recorded. An Echo Meter Touch 2 Pro Bat Call Detector (heterodyne) was used to record calls if bats were detected exiting the structure and foraging within proximity to the survey area. Survey conditions are summarized in Table 15 below.

Table 15: Summary of Bat Acoustic Exit Survey Weather Conditions Conducted by Burnside Staff

Structure ID	Survey	Date	Time Start	Time End	Weather
Structure 1 Heritage House	#1	June 11, 2020	20:30	21:40	Temp: 22°C Wind[1]: 2 Precip: 0 Cloud[2]: 0

Structure ID	Survey	Date	Time Start	Time End	Weather
	#2	June 30, 2020	20:33	22:03	Temp: 24°C Wind[1]: 1 Precip: 0 Cloud[2]: 2

[1]NAAMP/ Beaufort Sky Codes
0 = clear (no cloud cover)
1 = partly cloudy (scattered or broken) or variable
2 = cloudy or overcast
3 = sandstorm, dust storm or blowing snow
4 = fog, smoke, thick dust, or haze
5 = drizzle or light rain
6 = rain
7 = snow or snow/rain mix
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[2]Beaufort Wind Scale
0 = calm, smoke rises vertically (0-2km/hr)
1 = Light air movement, smoke drifts (3-5)
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3 = Gentle breeze, leaves & twigs in constant motion (12-19)
4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30)
5 = Fresh breeze, small trees begin to sway (31-39)
6 = Strong breeze, large branches in motion (40-50)

6.4 Aquatic Habitat Assessment

An aquatic habitat assessment was completed on July 22, 2020, by Burnside staff, utilizing Burnside's Standard Operating Procedure (SOP) for Aquatic Assessment - Waterbodies, based on the Ministry of Transportation Environmental Guide for Fish and Fish Habitat (2009) ('The Guide'). The weather conditions during the site visit were overcast, with some light rain. The ambient temperature was approximately 24°C.

6.5 Incidental Wildlife Observations

General wildlife surveys were conducted concurrently with all field investigations. All observations and signs of species were recorded (e.g., tracks / trails, scat, burrows, dens, browse, vocalizations) and are included within this report.

6.6 Anthropogenic Features

Aside from structures that may be habitat for SAR birds and bats (as discussed above), anthropogenic features could be present on the subject property that might be suitable habitat for other wildlife, such as snakes. Additional searches for man-made features (e.g., rock piles, rock fences or old foundations extending into the ground) were undertaken during field studies conducted for all site investigations and were reviewed for evidence of wildlife use.

7.0 Ecological Existing Conditions

7.1 Avifauna

Fifty (50) resident bird species, exhibiting some level of breeding evidence (possible, probable or confirmed), were observed on the subject property during targeted breeding bird surveys on the subject property in 2020 (see Appendix G of this report).

Eight species were observed on the subject property during the breeding bird window, but no breeding evidence (i.e., suitable breeding habitat or breeding behavior) was recorded: Barn Swallow, Common Raven (*Corvus corax*), Cooper's Hawk (*Accipiter cooperii*), Great Blue Heron (*Ardea herodias*), Herring Gull (*Larus argentatus*), Osprey (*Pandion haliaetus*), Ring-billed Gull (*Larus delawarensis*) and Turkey Vulture (*Cathartes aura*).

According to MNR's Significant Wildlife Habitat Technical Guide (2000), "area-sensitive" species are defined as species that require large areas of suitable habitat for long term population survival. Fragmentation of essential habitats can result in overall declines in populations. Two "area-sensitive" bird species, as defined by MNR, were observed exhibiting breeding evidence on the subject property during the breeding bird surveys: American Redstart (*Setophaga ruticilla*) and Savannah Sparrow (*Passerculus sandwichensis*). Cooper's Hawk is also an "area-sensitive" species; however, no breeding evidence was recorded.

Five species were observed exhibiting breeding evidence on the subject property during the breeding bird surveys that have a TRCA local rarity rank of L3 ("species of Regional Conservation Concern, generally less sensitive and more abundant than L1 and L2 ranked species"): American Woodcock (*Scolopax minor*), Black-billed Cuckoo (*Coccyzus erythropthalmus*), Field Sparrow (*Spizella pusilla*), Sora (*Porzana Carolina*) and Virginia Rail (*Rallus limicola*).

Two bird species, listed as both provincially and federally significant, were observed on the subject property during breeding bird surveys: Barn Swallow (Special Concern) and Eastern Wood-pewee (*Contopus virens*) (Special Concern). Eastern Meadowlark and Bobolink were not recorded during the three breeding surveys. A SAR Screening Table for the subject property is included in Appendix H. Barn Swallow were observed foraging over the subject property, but none were recorded nesting in any of the structures on the subject property (see Figure 5). The FOM ecosite is considered the breeding habitat for Eastern Wood-pewee due to its preference for nesting in deciduous and mixed woods (Cadman et al, 2007); the two ecosites in the southcentral portion of the subject property (THMM1-1 and CVR_4) where Eastern Wood-pewee was recorded are considered part of its larger breeding territory (i.e., singing / foraging perch). SWH for Eastern Wood-pewee is discussed in Section 7.7.5.

The significance of these species is discussed in more detail in Section 7.7.

7.1.1 Barn Swallow and Chimney Swift Structure Surveys

No Barn Swallow nests were observed on the exterior or interior of the structures surveyed on June 22, 2020 (S1, S3, S4, and S5) located on the property east of Kennedy Road (see Figure 5). Additionally, the storage sheds did not feature any exit/entry points for Barn Swallow and are not suitable for nesting habitat (comprised of corrugated sheet metal).

The site reconnaissance on April 24, 2020, revealed that the chimneys (S2, S8, and S9) on the residential dwelling labeled as S1 were not suitable for Chimney Swift. Chimney S2 is brick and is of suitable size for Chimney Swift (i.e., one side is four bricks wide) but is capped with a metal screen. Chimney S8 is also of suitable size (i.e., two bricks wide on all sides) but is capped with a metal screen. Chimney S9 is similar to S2; it is brick and of suitable size (i.e., one side is four bricks wide) but appears to be covered (McIllwraith Field Naturalists, 2007). Additionally, no Chimney Swift were observed during the breeding bird surveys.

Given these findings, Barn Swallow and Chimney Swift will not be discussed further in this report.

7.2 Herpetofauna

7.2.1 Amphibian Breeding Call Surveys

A total of four different species of frogs / toads were recorded during breeding call surveys in 2019, 2020 and 2022: Wood Frog, American Toad, Gray Treefrog, Spring Peeper and Green Frog. These species are ranked as S5 in Ontario (very common and secure). Two species recorded on the subject property have a TRCA local rank of L2 (“species of Regional Conservation Concern, somewhat more abundant and generally slightly less sensitive than L1 species”): Wood Frog and Gray Treefrog. Detailed results of the surveys are provided under separate cover as part of the annual wetland monitoring (see Appendix D of this report). The following is a summary of species recorded at each station in 2019, 2020 and 2022:

- AMPH1 (MAS2-1) – Wood Frog (2019 only)
- AMPH2 (SWM Pond – Control Site) – American Toad, Green Frog, Spring Peeper
- AMPH3 (SWT/SWD) – Wood Frog
- AMPH4 (SAS1-1) – American Toad, Gray Treefrog, Green Frog

7.2.2 Turtle Basking Surveys

Overwintering / basking habitat for one species of turtle, Midland Painted Turtle (*Chrysemys picta)*, was confirmed on the subject property during targeted basking

surveys. The highest number of Midland Painted Turtle recorded at each wetland station was one at Station 1 (SWM pond control site), zero at Station 2 (south side of wetland) and 18 at Station 3 (shallow aquatic open water pond). One Snapping Turtle has observed incidentally on June 30, 2020, at Station 3 shallow basking during turtle nesting surveys (see Section 7.5). Individuals that were observed were either basking on dead vegetation, or shallow basking in the pond itself. One hatchling Midland Painted Turtle was observed at Station 1 on May 2, 2020. See Table 16 below.

Table 16: Summary of Basking Turtle Surveys Conducted by Burnside Staff

Field Survey Date	Station	Species Observed	Number of Individuals
April 3, 2020	1	None	0
	2	None	0
	3	Midland Painted Turtle	1
April 6, 2020	1	None	0
	2	None	0
	3	Midland Painted Turtle	14
April 25, 2020	1	None	0
	2	None	0
	3	Midland Painted Turtle	14
April 27, 2020	1	None	0
	2	None	0
	3	Midland Painted Turtle	18
May 2, 2020	1	Midland Painted Turtle	1
	2	None	0
	3	Midland Painted Turtle	7
May 13, 2020	1	None	0
	2	None	0
	3	Midland Painted Turtle	15

Midland Painted Turtle and Snapping Turtle are ranked as “S4” (Apparently Secure) in Ontario. According to TRCA’s scoring and local ranking of fauna species in their jurisdiction, Midland Painted Turtle and Snapping Turtle are ranked as “L3”. Although the Midland Painted Turtle is not listed under the ESA, it is listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as “Special Concern”. Snapping Turtle is listed as “Special Concern” under the ESA, as well as SARA.

7.2.3 Turtle Nesting Surveys

Turtle nesting was confirmed on the subject property in the cultural meadow (CUM1-1), directly upland from the shallow aquatic pond (SAS1-1) and at the edge of the SWM pond control site. These nesting sites are shown on Figure 6. Nesting turtles typically prefer well-drained soil substrate, usually sand or sand mixed with gravel for oviposition

sites. Most of the habitat along the north side of the wetland and shallow aquatic pond features tall, dense vegetation and shrubs with small pockets of bare soil or sparse vegetation. This made searching these areas challenging. While the south side of the wetland and shallow aquatic pond were also surveyed, no evidence of turtle nesting was observed; this is likely attributed to the fact that turtles typically choose south or southwest facing slopes to lay their eggs. The banks of the SWM pond have been landscaped and feature short herbaceous vegetation with exposed, bare soil interspersed throughout. The SWM pond currently provides suitable nesting habitat; however, this may change over time as the plantings establish and cover more of the exposed soil.

Four predated nests were observed clustered together, adjacent to the shallow aquatic (SAS1-1). The species was not able to be confirmed due to the broken condition of the eggs. Additionally, one Midland Painted Turtle was observed depositing eggs on the bank of the SWM pond, and one hatchling was observed.

Due to the disturbed nature of the site, nest predation and destruction rates of nests are likely to be high due to the presence of numerous predators that are active within the residential areas (i.e., Raccoon (*Procyon lotor*), Striped Skunk (*Mephitis mephitis*), Red Fox (*Vulpes vulpes*) and Coyote (*Canis latrans*)).

7.3 Bats

7.3.1 Vegetation

The following treed vegetation communities are confirmed present on the subject property and represent candidate SAR bat roosting habitat:

- Mixedwood Forest (FOM)
- Red Maple Deciduous Swamp (SWD6-1)

Both these communities are contained in the NHS and within the 30 m PSW setback.

The proposed development limits are comprised almost entirely of anthropogenic, agricultural, and cultural communities (CVR, THDM, THMM, CUM, HR, IAGM1 and OAGM1). None of these represent high quality bat habitat.

7.3.2 Structures

Of the seven structures surveyed on April 24, 2020, the residential dwelling (S1) was the only one considered to have potential to function as maternity roosting habitat, based on the presence of entry and exit points.

7.3.3 Exit Survey Results

No bats were observed or detected by the Echo Meter Touch 2 Pro Bat Call Detector (heterodyne) during the two exit surveys at S1. Given that no SAR bats were observed exiting the structures, and no SAR bat calls were recorded during the surveys, no compensation for bat habitat will be required for the removal of S1.

7.4 Aquatic Habitat Assessment

7.4.1 Background Information Review

An Unnamed Tributary of Spring Creek ("the watercourse") flows generally southwest to northeast through the subject property, entering a waterbody (SAS1-1) approximately 770 m downstream from the origin of the watercourse, as shown on Figure 3. The MNR ARA mapping identifies two tributaries that form a confluence, approximately 520 m upstream of the shallow water aquatic pond (SAS1-1). The thermal regime of the watercourse and pond are classified as warmwater; therefore, it is assumed there is minimal groundwater contribution to these systems.

The drainage system on the subject property is a tributary to Heart Lake, with both the watercourse and waterbody categorized as warm-water thermal regimes. The MNR ARA sampling database and PSW Evaluation (2009) have documented six species of fish, outlined in Table 17, that have historically been observed in the watercourse and pond on the subject property.

The DFO SAR and the NHIC mapping do not indicate the presence of any aquatic SAR on the subject property, or in the immediate vicinity.

Table 17: Fish Species Historically Observed in the Unnamed Tributary of Spring Creek

Species Name	Scientific Name	Thermal Regime
Brook Stickleback	*Culaea inconstans*	Cool
Brown Bullhead	*Ameiurus nebulosus*	Warm
Central Mudminnow	*Umbra limi*	Cool
Golden Shiner	*Notemigonus crysoleucas*	Cool
Pumpkinseed	*Lepomis gibbosus*	Warm
Fathead Minnow	*Pimephales promelas*	Warm

7.4.2 Existing Habitat Conditions

Pond Observations

The open water pond has a maximum depth of 1.5 m and the littoral zone depth ranges from 0.5 m to 1 m deep. The substrate of the pond is primarily comprised of silt and

muck, with subdominant detritus composition noted. The water colour of the pond at the time of observation was yellow-brown.

Flows are conveyed to the pond from overland flows, originating in the southwest and conveyed through the watercourse on the subject property. The lands surrounding the pond are steep and vegetated with trees, meadow vegetation and scrubland.

The entirety of the pond features a combination of submergent, floating and emergent vegetation. Submergent vegetation inundated the pond during the July 2020 site visit, with subdominant presence of duckweed and emergent rushes observed. The pond is large enough that the vegetation on the shore provides limited functional shade or riparian cover.

When water levels permit, the pond discharges through a small Corrugated Steel Pipe (CSP), located at the southeast corner of the feature. The inlet of the small CSP is set at an elevation so that the pond does not discharge during low-flow conditions, fragmenting the feature to downstream habitat. During seasonal flows (i.e., spring freshet) the pond may discharge through the culvert. However, defined bed and banks of the overland flow route were not observed, suggesting discharge from the feature is limited.

Downstream of the outlet culvert, a short length of the flow route conveys discharge to a large smooth wall steel pipe culvert, approximately 1 m in diameter, under Mayfield Road. Seasonal flows are conveyed downstream of Mayfield Road, but limited channelization and scouring were noted during the field investigation, suggesting discharge frequency and velocity is limited. The channel and culverts were dry during the July 2020 site visit. A small amount of substrate material was observed within the Mayfield Road crossing structure, but the culvert was not embedded and does not provide permanent connectivity to the downstream reaches of potential fish habitat. Downstream of Mayfield Road, the channel lacked defined bed and banks, with multiple overland flow routes observed.

Watercourse Observations

The watercourse was dry throughout the assessment area during the July 2020 site visit. Dry conditions were also observed in May and August 2019 during HDF assessments, with interstitial flows observed during the April field investigation. The watercourse flows in a generally linear depressional channel, from southwest to northeast. Catchment flows are conveyed to it from headwater drainage features to the east and from overland flows throughout the adjacent meadows.

The average bankfull width was measured to be 1.1 m and the bankfull depth ranged form 0.6 m to 0.8 m. The substrate was comprised of gravel and sand. The entirety of

the watercourse is covered by overhanging and in-stream grasses, with bank structure typically vertical and slightly unstable.

Anthropogenic modifications have been made at the upstream headwaters, through infilling and agricultural practices. The gradient and limited flow within the watercourse may not allow fish to migrate upstream from the pond downstream. The watercourse is not considered permanent fish habitat and provides limited direct habitat potential during spring conditions. However, it does contribute to fish habitat downstream (e.g., pond) through the transport of sediment, nutrients, and water quality.

Fisheries Sampling

During the July 2020 site visit, Burnside staff completed fisheries sampling to determine the fish community assemblage within the pond and watercourse. Given that dry conditions were present within the watercourse, sampling activities were limited to the pond area at the northeast extent of the subject property. Sampling was completed using dipnets, seine netting and electrofishing. Some fish were captured using seine netting, but due to the dense aquatic vegetation, the methodology was not used throughout the pond. Electrofishing and dip netting were also conducted in the littoral zone of the watercourse, where safe conditions permitted. The locations of the sampling are outlined on Figure 3.

The fish species captured during the sampling included Brook stickleback, Central mudminnow and unidentified young of the year cyprinid species (i.e., <20 mm). These are relatively tolerant species of fish and development of the surrounding lands should not cause Harmful Alteration, Disruption, or Destruction (HADD) of fish habitat or the death of fish, which is prohibited under the federal *Fisheries Act*.

7.5 Incidental Wildlife Observations

Incidental observations of wildlife were collected during field investigations. Observations were documented to provide a general characterization of the habitat functions of the subject property. Examples include tracks, scat, carcasses, live sightings, etc.

Provincial NHIC ranks (i.e., S1 to S5) are used to set protection priorities for rare species and natural communities. With the exception of Monarch (Special Concern) and Chimney (or ‘Terrestrial’) Crayfish (S3), the remaining species observed are not listed as provincially and / or federally significant and are listed as secure or apparently secure in Southern Ontario (in other words, they are ranked as S5 or S4, which is defined by the MNR as species that are common, widespread and abundant in the province or uncommon but not rare). Two species, Bobolink and Chimney Crayfish, have a TRCA local rank of L2; six species (Snapping Turtle, Brown Thrasher, Double-crested Cormorant, Hooded Merganser, White-throated Sparrow and Wild Turkey) have a TRCA

local rank of L3. For one species, Milkweed Leaf Beetle, there is not enough data available to rank this species and is ranked as SNR. One additional species, Seven-spotted Ladybird Beetle, is not native to Ontario and is not ranked. Table 18 provides a summary of incidental observations on the subject property that have been recorded to date.

Table 18: Summary of Incidental Wildlife Observations by Burnside Staff on the Subject Property

Common Name	Scientific Name	Number Observed	TRCA Fauna Rank[1]	S-Rank	Location/Comments
Mammals					
Coyote	*Canis latrans*	2	L5	S5	Two coyotes observed/heard vocalizations; also tracks and scat.
Eastern Chipmunk	*Tamias striatus*	3	L4	S5	Various locations on the subject property.
Eastern Cottontail	*Sylvilagus floridanus*	2	L4	S5	Various locations on the subject property.
Muskrat	*Ondatra zibethicus*	2	L4	S5	Individual observed building a hutch and swimming in SAS1-1 on multiple occasions. Possible den observed.
Beaver	*Castor canadensis*	1	L4	S5	Observed in SAS1-1, slapped tail.
Raccoon	*Procyon lotor*	1	L5	S5	Found dead on side of Mayfield Road.
White-tailed Deer	*Odocoileus virginianus*	1	L4	S5	Buck observed foraging; scat; tracks in mud; browsing observed.
Herpetofauna					
Snapping Turtle	*Chelydra serpentina*	1	L3	S4	Observed in pond during nesting turtle survey (shallow basking) – June 2020.
Avifauna					
Bobolink	*Dolichonyx oryzivorus*	2	L2	S4B	Two males observed incidentally in meadow at west end of site (near Kennedy Rd) on May 13, 2020. Not recorded during breeding bird surveys; assumed migrants.

Common Name	Scientific Name	Number Observed	TRCA Fauna Rank[1]	S-Rank	Location/Comments
Brown Thrasher	*Toxostoma rufum*	1	L3	S4B	Observed in hedgerow during bat habitat survey on April 24, 2020. Not recorded during breeding bird surveys; assumed migrant.
Bufflehead	*Bucephala albeola*	1	-	S4	Observed in SAS1-1 on April 25 and May 2, 2020 – migrant.
Double-crested Cormorant	*Phalacrocorax auritus*	1	L3	S5B	Observed in SAS1-1 on April 24, 2020.
Hooded Merganser	*Lophodytes cucullatus*	1	L3	S5B, S5N	Observed in SAS1-1 on May 2, 2020. Not recorded during breeding bird surveys; assumed migrant.
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	1	L4	S4B	Flew over SAS1-1 on April 27, 2020. Not recorded during breeding bird surveys; assumed migrant.
Trumpeter Swan	*Cygnus buccinator*	1	L+	S4	Observed in SAS1-1 on April 25 and May 13, 2020. Not recorded during breeding bird surveys.
White-throated Sparrow	*Zonotrichia albicollis*	1	L3	S5B	Heard singing near swamp on May 13, 2020. Not recorded during breeding bird surveys; assumed migrant.
Wild Turkey	*Meleagris gallopavo*	2	L3	S5	Foraging in agricultural field on May 13, 2020. Not recorded during breeding bird surveys.
Lepidoptera					
Inornate Ringlet	*Coenonympha tullia*	3	-	S5	-
Monarch	*Danaus plexippus*	2+	-	S2N, S4B	Special Concern, both caterpillars and adults were observed in CUM1-1 ecosites. Host plant also recorded.
Northern Crescent	*Phyciodes cocyta*	1	-	S5	-

Common Name	Scientific Name	Number Observed	TRCA Fauna Rank[1]	S-Rank	Location/Comments
Odonata					
Widow Skimmer	*Libellula luctuosa*	2	-	S5	-
Coleoptera					
Milkweed Leaf Beetle	*Labidomera clivicollis*	2	-	SNR	-
Seven-spotted Ladybird Beetle	*Coccinella septempunctata*	1	-	SNA	-
Crustacean					
"Chimney" (Terrestrial) Crayfish	*Fallicambarus fodiens*	0	L2	S3	More than 10 crayfish burrows recorded near SAS1-1.

[1]TRCA Fauna Ranks and Scores for the TRCA Jurisdiction, 2019
L1 – Species of Regional Conservation Concern, regionally scarce due to either accidental occurrence or extreme sensitivity to human impacts
L2 – Species of Regional Conservation Concern, somewhat more abundant and generally slightly less sensitive than L1 species
L3 – Species of Regional Conservation Concern, generally less sensitive and more abundant than L1 and L2 ranked species
L4 – Species of Urban Concern, occur throughout the region but could show declines if urban impacts are not mitigated effectively
L5 – Species that are considered secure through the region
L+ – Introduced species, not native to the Toronto region
LX – Extirpated species, species not recorded in the region in the past 10 years
LS – Sporadic breeder, species not recorded in the region in the past 10 years

7.6 Anthropogenic Features

Searches for other anthropogenic features were conducted during field studies to determine evidence of wildlife use. While no wildlife use of anthropogenic features was confirmed, it is possible that the old barn foundation (S6), present on the property east of Kennedy Road, may provide potential reptile hibernaculum and refuge for other wildlife (photos are provided in Appendix G of this report). The walls and foundation are crumbling, and numerous piles of rock and cement blocks are piled around the dilapidated structure. A search of this area in early spring to check for evidence of hibernacula should occur during site-specific studies, once impacts to this feature are better understood. Anthropogenic features are discussed as they relate to Significant Wildlife Habitat in Section 7.7.5.

7.7 Provincially Significant Natural Features

7.7.1 Provincially Significant Wetlands

Section 8.0 of the PPS (MMAH, 2024) defines significant wetlands as:

> *an area identified as provincially significant using evaluation criteria and procedures established by the Province, as amended from time to time.*

The Heart Lake PSW Complex consists of 40 wetlands; the largest wetland in the complex as well as 14 other smaller wetlands occur within the Heart Lake Conservation Area. A portion of the Heart Lake PSW Complex (referred to as “Wetland No. 1” in the MNR evaluation) is present on the subject property and is 7.53 ha in size. This wetland is protected and contained within TRCA regulated limits and the NHS. The wetland is located on the headwater reaches of the Spring Creek subwatershed of Etobicoke Creek; most of the wetlands are hydrologically linked by the watercourse within the complex (MNR, 2009). Please refer to Burnside’s Annual Wetland Monitoring Reports - Year 1 (2019), Year 2 (2020), and Year 3 (2022) in Appendix D of this report.

Detailed field surveys have been completed in the past by MNR and TRCA. The Heart Lake PSW Complex was initially evaluated in November 2000 and updated in November 2009. The MNR then attended a site visit at Wetland No. 1, in September 2011, to delineate the eastern portion of the wetland boundary. At the site visit, refinements were made to the wetland boundary, based on a surveyed wetland staking with TRCA staff in attendance. As such, the boundary of Wetland No. 1 was updated.

The Credit River Watershed and Region’sNAI compiled ecological data from various surveys that had been completed in 1996 and 2003 and provided a summary characterization of the subject property, named “Kennedy-Highway 410” NAI #10730, 11676, 11677 (Volume 3, April 2014). This report recognizes the wetland complex supports high biodiversity function and contains provincially rare vegetation communities

but is also challenged by the presence of non-native and invasive species (i.e., Purple Loosestrife, Common Buckthorn, Curly Pondweed). It also recognizes the importance of maintaining a biological linkage between this portion of the PSW Complex and the remainder of the Heart Lake PSW Complex, south of Mayfield Road.

According to Burnside's ELC surveys completed in 2019, there are six ELC communities that comprise the wetland complex located on the subject property:

- Pondweed Submerged Shallow Aquatic (SAS1-1) (S5).
- Cattail Organic Shallow Marsh (MAS3-1) (S5).
- Reed-canary Grass Graminoid Mineral Meadow Marsh Type (MAM2-2) (S5).
- Alder Organic Thicket Swamp Type (SWT3-1) (S5).
- Thicket Swamp (SWT)/Red Maple Organic Deciduous Swamp Ecosite (SWD6-1).
- Red Maple Organic Deciduous Swamp Ecosite (SWD6-1) (S5).

As mentioned in Section 5.6.1, two of the wetland communities have a TRCA local rank of L2 ("community of regional conservation concern"): SWT3-1 and SWD6-1.

7.7.2 Significant Valleylands

The NHRM (MNR, 2010) provides criteria for identifying Significant Valleylands, including a variety of landform related functions and attributes as well as ecological features and functions. A valleyland system associated with an Unnamed Tributary of Spring Creek is present on the subject property and meets the criteria for significant. According to the NHRM a Significant Valleyland is defined as:

> *a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year. Large, well-defined valleylands are often significant landscape features essential to the character of an area.*

Additionally, Section 8.0 of the PPS (2024) recognizes Significant Valleylands as:

> *ecologically important in terms of features, functions, representation, or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system*

The NHRM further defines the recommended Significant Valleyland evaluation criteria and standards for areas with well-defined valley morphology (i.e., floodplains, meander belts, and valley slopes). One of the criteria is that features having an average width of 25 m are considered significant. The valleyland system associated with the Unnamed Tributary of Spring Creek includes a floodplain, meander belt, steep valley slopes greater than 10 m from the top of bank (TOB) to the toe of slope, and a corridor width between 150 m to 300 m. It should also be noted that TRCA staff staked/approved the TOB associated with the creek and valleyland on October 24, 2018. The last

adjustments were made via on-site staking on November 15, 2022, as shown on the NHS Encroachment and Compensation Areas map (dated March 3, 2025) submitted by GSAI in support of the application and is considered final. No further adjustments to the limit of TOB are proposed. Draft Land Use Schedule B-1 depicts an Environmental Policy Area designation that is consistent with the limit of development on the NHS Encroachment and Compensation Areas map.

The Core Area of the Greenlands System, as depicted on Schedule A of the ROP (2022), depicts a significant portion of the subject property located within the Core Area land use designation. The Region's Core Area land use designation is an additional criterion used to determine significance, as it relates to valley corridors. Core Areas represent provincially and regionally significant features and areas and are considered a sub-set of what would be significant under the PPS. Where there is a discrepancy between Schedule A and the identification of Core Areas in the text of the OP, the text shall govern. Section 2.3.2.2 (g) (Core Areas) of the ROP identify Core Areas as being valley and stream corridors, meeting one or more of the criteria in Table 2: Criteria and Thresholds for the Identification of Core Valley and Stream Corridors. It is TRCA's opinion that the valleyland system associated with the Unnamed Tributary of Spring Creek meets the test of Core Areas, as identified in the text of the ROP (TRCA, 2020).

7.7.3 Significant Woodlands

Significant Woodlands are typically identified by the local municipality. According to Section 8.0 of the PPS (MMAH, 2024), significant woodland is defined as:

> *an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history*

The PPS indicates that significant woodland criteria is to be identified using criteria and procedures established by the Province. Significant Woodlands are typically identified by the local municipality by applying the NHRM Evaluation (MNR, 2010) criteria as they apply to that municipality.

The Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (North-South Environmental Inc. et al., 2009) identifies criteria for determining significance in Peel-Caledon as follows:

> *Woodlands outside of the Oak Ridges Moraine planning boundaries satisfying any one of the following criteria should be considered significant:*

1. With respect to woodland size (application of recommended thresholds to the Regional and Town scales may be determined through the policy development phase for the Region's and Town's Official Plan review exercises):

Option 1: Recommendation based on Urban-Rural System Distinction

Woodlands satisfying the following size criteria should be considered significant:

i. Urban System (i.e., within the 2031 urban boundaries for the Cities of Brampton and Mississauga): all woodlands equal to and larger than 4 ha in size.

ii. Rural System (i.e., the Rural System that comprises all of the Town of Caledon): all woodlands equal to and larger than 16 ha.

Option 2: Recommendation based on Physiography/Historical Land Use

Woodlands satisfying the following size criteria should be considered significant:

iii. areas on and above (west of) the Niagara Escarpment: all woodlands equal to and greater than 16 ha in size.

iv. Rural and Urban System below the Niagara Escarpment: all woodlands equal to and greater than 4 ha.

2. Woodlands, or inclusions in woodlands, that are 0.5 ha or greater in size, and older than 90 years should be considered significant.

3. It is recommended that any woodland (>0.5 ha) identified as supporting a linkage function, as determined through a natural heritage study approved by the Region or Town, be considered significant (Regional and Town threshold).

4. Woodlands (>0.5 ha) within 100 m of another significant feature (Regional and Town threshold).

5. Woodlands within 30 m of a watercourse, surface water feature or evaluated wetland (Regional and Town threshold).

6. Woodlands that supports any of the following (Regional and Town threshold):

i. any G1, G2, G3, S1, S2, or S3 plant or animal species, or community as designated by NHIC; or

ii. any species designated by COSEWIC or COSSARO as Threatened, Endangered, or of Special Concern.

iii. The following forest communities:

- *Dry-Fresh White Pine-Red Pine Coniferous Forest Type (FOC1-2)*
- *Dry-Fresh White Pine-Oak Mixed Forest Type (FOM2-1)*
- *Dry-Fresh White Pine-Sugar Maple Mixed Forest Type (FOM 2-2)*
- *Moist-Fresh Hemlock-Sugar Maple Mixed Forest Type (FOM6-1)*
- *Dry-Fresh Red Oak Deciduous Forest Type (FOD1-1)*
- *Dry-Fresh White Oak Deciduous Forest Type (FOD1-2)*
- *Dry-Fresh Mixed Oak Deciduous Forest Type (FOD 1-4)*
- *Dry-Fresh Oak-Hickory Deciduous Forest Type (FOD 2-2)*
- *Dry-Fresh Hickory Deciduous Forest Type (FOD 2-3)*
- *Fresh Sugar Maple-Black Maple Deciduous Forest (FOD 6-2)*

The only woodland community present on the subject property is FOM, with FOC4-1 inclusion. This small woodland (0.37 ha) meets the criteria for significant based on criteria number 5 only: “woodlands within 30 m of a watercourse and evaluated wetland”. This woodland feature is in the central portion of the subject property and abuts the south end of MAS3-1 (evaluated wetland) and the north end of CVR_4 (see Figure 2). Because it is less than 0.5 ha, it does not meet any of the other criteria that otherwise may apply.

7.7.4 Significant Areas of Natural and Scientific Interest (ANSI)

According to the PPS (MMAH, 2024), ANSIs are defined as:

> *areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study, or education*

Provincially significant ANSIs are *identified as provincially significant using evaluation criteria and procedures established by the Province, as amended from time to time.*

The NHRM (MNR, 2010) states that provincially significant ANSIs include some of the most significant and best examples of these features in the province, and only include ANSIs identified as provincially significant.

No significant ANSIs are present on the subject property; however, adjacent lands south of Mayfield Road consist of the Heart Lake Forest and Bog Life Science ANSI and the Brampton Buried Esker Earth Science ANSI.

7.7.5 Significant Wildlife Habitat

The PPS (MMAH, 2024) broadly defines SWH as features and areas in policy 4.1 that are "ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system." Per the Town's OP (2024), Section 6.7, SWH that is located outside of the Oak Ridges Moraine Conservation Plan Area and the NHS of the Greenbelt Plan Protected Countryside, are identified in accordance with established Provincial technical methodologies, or other acceptable methodologies to the satisfaction of the Town.

Determination of SWH is broadly categorized and described in the NHRM (MNR, 2010). Additionally, MNR's SWHTG (2000) and SWH Criteria Schedule for Ecoregion 6E (2015) are further supplemental documents intended to assist in identifying SWH. The Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (North-South Environmental Inc. et al, 2009) is another supplemental document intended to assist in identifying SWH in the Peel-Caledon area, part of Ecoregion 6E. The four categories of SWH are identified as:

1. Habitats of seasonal concentrations of animals.

2. Rare vegetation communities or specialized habitat for wildlife.

3. Habitat of species of conservation concern.

4. Animal movement corridors.

Appendix H includes a screening of the various categories of SWH for the subject property, based on background records review, agency records and aerial photo interpretation as well as Burnside's field investigations for the subject property, completed in 2019 and 2020.

Table 19 summarizes Candidate and Confirmed SWH on the subject property.

Table 19: Candidate and Confirmed SWH on the Subject Property

Seasonal Concentration Areas of Animals
Candidate Bat Maternity Colonies –NHS **Confirmed** Turtle Wintering Areas – NHS Candidate Reptile Hibernaculum - Development Limits and NHS Candidate Colonially Nesting Bird Breeding Habitat (Trees/Shrubs) for Green Heron – NHS
Specialized Habitats for Wildlife Considered Significant Wildlife Habitat
Confirmed Turtle Nesting Areas – NHS
Habitat for Species of Conservation Concern Considered Significant Wildlife Habitat
Confirmed Marsh Bird Breeding Habitat - NHS **Confirmed** Chimney Crayfish - NHS **Confirmed** Special Concern and Rare Wildlife Species – Barn Swallow (foraging only), Eastern Wood-pewee, Monarch, Snapping Turtle, Midland Painted Turtle, Chimney Crayfish - NHS

The majority of Candidate / Confirmed habitat on the subject property is contained in the NHS (i.e., provincially significant wetland, significant valleyland, and riparian corridor). Exceptions to this are Candidate Reptile Hibernaculum and Special Concern and Rare Wildlife Species for Monarch and Eastern Wood-pewee. Impact and mitigation measures to offset possible habitat removal are discussed in Section 11.0.

Monarch

The CUM1-1 ecosites are considered the “significant wildlife” habitat for Monarch based on the presence of larvae, adult caterpillars and abundance of milkweed, the larval host plant. According to COSSARO’s Ontario Species at Risk Evaluation Report for Monarch, Eastern Subpopulation (September 2020), the area of overwintering habitat occupied by Monarchs in Mexico is very small and has continued to decline. This makes the subpopulation susceptible to disturbances and threats such as extreme weather, fire, disease, parasites, predation, and illegal logging in areas outside of Canada. The eastern Monarch is also threatened within its breeding range (i.e., Ontario) by reduced availability of Milkweed host plants, due to increasing herbicide use and agricultural intensification. Monarch habitat is considered SWH and is discussed further in Section 11.0. Mitigation measures are proposed to help offset any long-term negative impacts on the species or its habitat.

It should be noted that TRCA provided comments on the first CEISMP submission (letter dated May 12, 2022), prior to the transition to the Town’s commenting authority on SWH on January 1, 2023 (see Section 3.6.1). TRCA had previously acknowledged a portion of Monarch habitat would be removed within the development limits and an appropriate compensation strategy should be implemented. During a meeting with the Town on September 27, 2024, the Town acknowledged TRCA’s previous acceptance of removal

and compensation for Monarch habitat prior to the transition to the Town's commenting authority on SWH. The Town is willing to honour previous agreements with TRCA, even though it was noted that TRCA did not address the Town's OP policy regarding no development permitted in SWH.

Eastern Wood-pewee

The FOM ecosite is considered the "significant wildlife" breeding habitat for Eastern Wood-pewee (Special Concern) due to its preference for nesting in deciduous and mixed woods (Cadman et al, 2007); the two ecosites in the southcentral portion of the subject property (THMM1-1 and CVR_4) where Eastern Wood-pewee was recorded are considered part of its larger breeding territory (i.e., singing / foraging perch).

Noise disturbance may impact breeding success of avian species, including Special Concern (Eastern Wood-pewee), whose habitat is considered SWH. The THMM1-1 and CVR_4 ecosite are not considered SWH and will be removed within the development limits; therefore, potential indirect effects may include noise disturbance as a result of construction (cut and fill), and/or operations and maintenance activities that will occur directly adjacent to this feature.

The FOM community in the NHS will be preserved, and a 10 m setback will be applied. All buffers within the Clearbrook Development lands will be fully vegetated with trees and shrubs, creating additional breeding habitat for this species. Restoration and mitigation measures are discussed further in Section 8.2 and Section 11.0.

7.7.6 Habitat of Endangered and Threatened Species

Burnside's background database review, consultation with agencies, and field investigations in 2019 and 2020 revealed the potential for species listed as Endangered or Threatened under the ESA on the subject property and adjacent lands (see Appendix D of this report). These are all listed in the SAR and SCC Screening Table located in Appendix H. Table 20 below summarizes Confirmed and Candidate habitat for Endangered and Threatened species.

Table 20: Candidate and Confirmed Habitat for Endangered and Threatened Species on the Subject Property and Adjacent Lands

Confirmed and Candidate Habitat	Subject Property	Adjacent Lands
Confirmed Habitat Present	Butternut	None
Candidate Habitat Present	Little Brown Myotis (roosting) Northern Myotis (roosting Tri-colored Bat (roosting)	Bobolink Eastern Meadowlark Chimney Swift Least Bittern Little Brown Myotis (roosting)

Confirmed and Candidate Habitat	Subject Property	Adjacent Lands
		Northern Myotis (roosting) Tri-colored Bat (roosting) Butternut

The following summarizes the ESA process for candidate and confirmed SAR on the subject property.

7.7.6.1 Butternut

Naturally occurring Butternut trees of any size and age are protected under the ESA due to widespread infection with Butternut Canker, a fungal disease that typically results in tree mortality. Hybrid trees that have a Butternut ancestor are not currently protected under the ESA. By law, what you can do with a Butternut tree depends on its health.

Conditional exemptions for activities that would otherwise be prohibited by the Act are allowed under O. Reg. 830/21. Prior to registering an activity under the conditional exemption, a person who is a Butternut Health Expert (BHE) must assess the health of the Butternut trees that will be impacted using the Ontario government's guidelines for completing a Butternut Health Assessment (BHA) (2021). The report must identify the category of each assessed Butternut tree. In addition, the categorization of a Butternut tree is used to determine the amount of a species conservation charge for Butternut, in accordance with O. Reg. 829/21. The BHE must document the results of the assessment in writing and provide a report that includes the information required by O. Reg. 830/21 to the person who requested the health assessment.

Butternut trees are divided into three categories by O. Reg. 830/21:

Category 1 - The tree is affected by Butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of Butternut trees in the area in which the tree is located.

Category 2 - The tree is not affected by Butternut canker or the Butternut tree is affected by Butternut canker but the degree to which it is affected is not as advanced as a Category 1 Butternut tree and retaining the tree could support the protection or recovery of Butternut trees in the area in which the tree is located.

Category 3 - The tree may be useful in determining sources of resistance to Butternut canker.

The root harm prevention zone for Butternut trees includes suitable areas within a 50 m radius, centered on the trunk or stem of each Butternut tree (regardless of its size).

The BHA report must be sent to the Ministry's office 30 days before the proposed activity. Under the new Regulations,

- Category 1 (non-retainable) and Hybrid trees are not protected.
- Up to 15 Category 2 trees can be registered.
- Up to 5 Category 3 trees can be registered.

Registering a Notice of Butternut Impact also requires a Mitigation Plan, Butternut Planting Plan and Training Authorization from the Ministry may be required under certain conditions via the Registration process. An Overall Benefit Permit is also required if more than the maximum number of trees listed above is impacted.

Three Butternut are confirmed on the subject property: two Category 1 trees and one Category 2 tree. An additional Butternut hybrid was identified. A BHA for all four Butternut was submitted to the Ministry on August 16, 2021, under former O.Reg. 242/08, prior to the updated Regulations described above that apply to any new Butternut identified on the subject property.

Impacts to the Category 2 Butternut will be better understood once detailed grading plans are available. A policy has been added to the Draft Secondary Plan under Section 7.11.6 (Ecosystem Planning and Management) as follows:

> *Prior to Draft Plan Approval, where endangered Butternut trees are impacted, replacement Butternut should be accommodated within the Secondary Plan Area.*

The following summarizes the next steps:

- If it is determined that the Category 2 tree may be impacted, the tree should be reassessed one year prior to construction works commencing. Only the Category 2 Butternut requires registration if it is being removed or if something is occurring in the 0-25 m buffer.
- If there is work in the 25-50 m buffer consultation with MECP is required (assessed on a case-by-case basis).
- If there is no constraint and there is nothing occurring in the 50 m buffer then the tree can remain.
- If replacement Butternut is ultimately required, they will be provided within the Secondary Plan area. Appropriate planting location(s) will be included in future restoration plans in the NHS. Specific locations will be determined during detailed design. Grading in the NHS including buffers will be established as a non-mowing area, with native self-sustaining vegetation. These locations will be restored to existing or better conditions. See Section 8.2 for the Clearbrook Development Lands.
- The Category 1 and Hybrid trees are no longer protected by the ESA now that they have been assessed, and the 30-day wait is over.

7.7.6.2 SAR Bats

Species at Risk bats receive general habitat protection under the ESA. This protection includes maternity roosting habitat used by SAR bat species to raise their young during spring and summer seasons.

As noted in Section 7.3, acoustic surveys of the structures did not identify any SAR bats. Suitable roosting habitat is presumed present in the NHS, given the treed communities present. According to MECP's *Species at Risk Bats Survey Note* (2022b), if a proposed activity can avoid impairing or eliminating the function of habitat for supporting bat life processes (i.e., remove, stub, etc. a proportionally small number of potential maternity or day roost trees in treed habitats which would not result in fragmentation / barriers) and the timing of tree removal will avoid the bat active season (April 1 to September 30 in Southern Ontario), then there is no need to conduct bat surveys of treed habitats. Leaf-on / leaf-off surveys may be required during site-specific studies if trees within the FOM and SWD6-1 communities in the NHS are proposed for removal (i.e., grading, LIDs, outfalls) and harm cannot be avoided. If avoidance measures are implemented to avoid harm, acoustic surveys of treed habitats are not required.

Appropriate mitigation and compensation measures may be required, in consultation with MECP, in support of future development proposals as impacts are assessed on a case-by-case basis.

7.8 Wildlife Linkages and Corridors

The Heart Lake PSW Complex is mainly comprised of a series of small, interconnected wetlands and is characterized by Heart Lake kettle lake, southeast of the subject property. A portion of the Heart Lake PSW Complex ("Wetland No. 1" in the MNR evaluation) is located on the subject property and is at the far northwest extent of this Complex. Wetland No. 1 is surrounded by suburban environments and is bounded by Highway 410 to the north, Mayfield Road to the south (a busy west to east artery), Kennedy Road to the west and Heart Lake Road to the east. Mayfield Road is a barrier between Wetland No. 1 and other wetlands in the Complex that are located south of this artery (mostly contained within Heart Lake Conservation Area). Similarly, Highway 410 prevents wildlife movement north to agricultural lands. The proximity of the subject property to Heart Lake Conservation Area and a large portion of the PSW Complex creates some potential for wildlife movement between the subject property and the natural areas across Mayfield Road.

At the risk of Wetland No. 1 becoming more isolated due to adjacent development, the existing wildlife linkage at the existing culvert crossing described in Section 7.4 at Mayfield Road should be maintained between these two natural areas for safe wildlife movement. As per the NAI (Volume 3, April 2014), this connectivity will help to maintain ecosystem resilience and the health of this natural area, particularly for the wetland

communities. This culvert is a smooth wall steel pipe culvert that is embedded and is 1,050 mm in diameter. Currently, the culvert conveys limited seasonal flow downstream of Mayfield Road and appears to remain mostly dry much of the year. While connectivity with respect to fish passage is not available through this culvert, some native substrate material such as rocks and cobblestone is present (see image below). Based on the size and conditions of the culvert, it is expected that small-sized mammals, as well as amphibians and turtles, may utilize the feature for passage under existing conditions.

One of the goals of the Heart Lake Conservation Area Master Plan (2006) and TRCA's Crossings Guideline for Valley and Stream Corridors (September 2015) and Credit Valley Conservation's (CVC) Fish and Wildlife Crossing Guidelines (2017) includes maintaining and creating natural connections to allow for species movement, such as connections from creeks to wetlands and lakes. In addition, "consideration should also be given to providing connections to natural spaces that border Heart Lake Conservation Area, such as the wetland area north of Mayfield Road" (i.e., the subject property). See Figure 7. The presence of this existing culvert helps to ensure that the movement of reptiles, amphibians and small mammals at the north end of the Complex will be permitted, despite surrounding suburban development pressures, thereby serving to mitigate the negative effects of road mortalities and isolation / fragmentation of communities and species populations.

Data provided by the Town of Caledon, Region of Peel, Ministry of Natural Resources, Toronto Region Conservation Authority

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: North American 1983 CSRS	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -53°	Scale Factor: 0.99960

Grid North

ELC Boundary
Area of Natural Scientific Interest (ANSI)
Provincially Significant Wetland (Heart Lake PSW)
Wildlife Linkage Corridor
Non-Participating Property
Natural Heritage System / Buffers
Secondary Plan Area

BURNSIDE

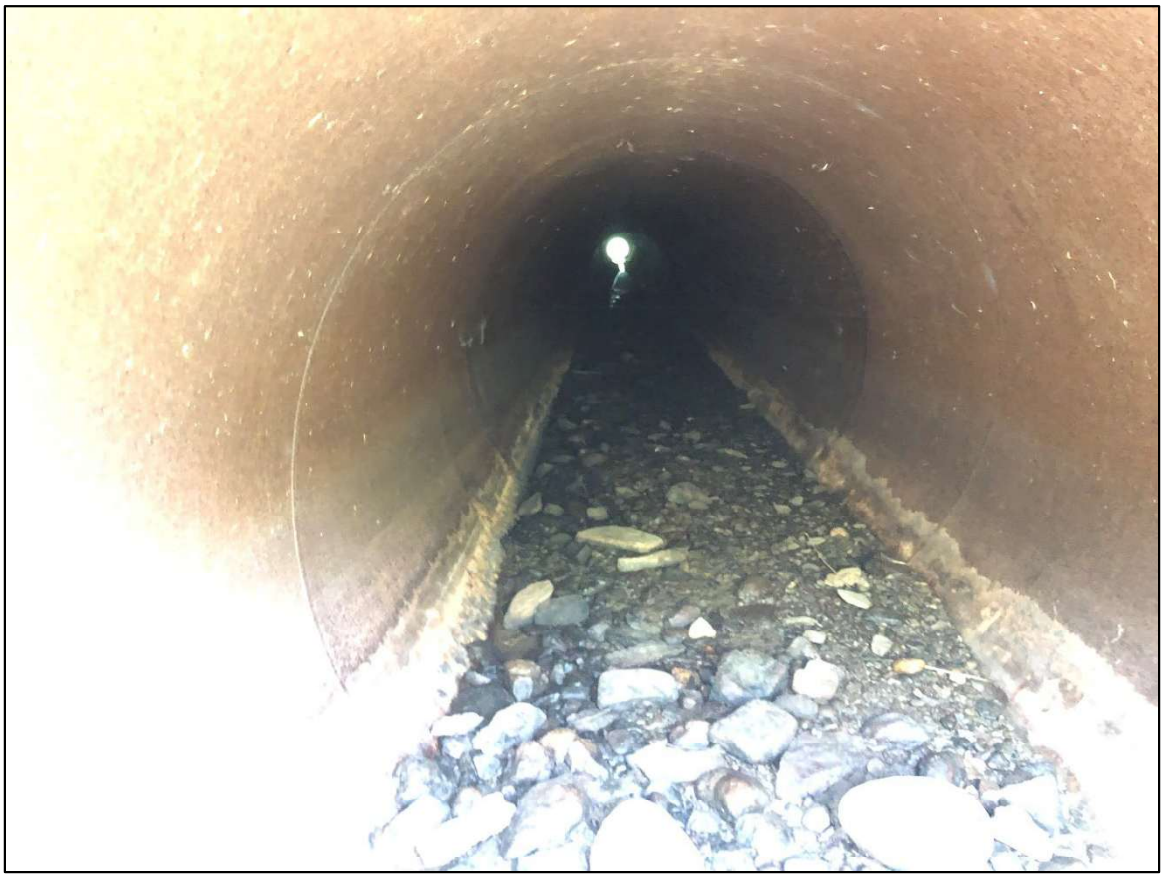
Client
SNELL'S HOLLOW DEVELOPERS GROUP

Figure Title
SNELL'S HOLLOW EAST SECONDARY PLAN
WILDLIFE LINKAGES AND CORRIDORS

Drawn	Checked	Date	Figure No.
HN	HM	2024/12/17	7
Scale		Project No.	
1:5,000		300051670	

File Path: \\eltmo\gis\Project\300\043952 (Snell's Hollow)\043952.aprx Print Date: 2024/12/17 Time: 02:25 PM

Interior View of Crossing Under Mayfield Road (Photo taken July 2020)



8.0 Identification of a Natural Heritage System and Compensation Strategy

As stated in Section 3.7.2, the Town's OP (2018) Schedule 6 depicts a conceptual EPA that includes Natural Core Areas and Natural Corridors (aka the NHS). Using a combination of Biason Surveying staked limits (2011) and TRCA staked limits (2018 and 2022), the NHS is depicted on Figure 8 Draft Concept Plan. The TOB plus 10 m buffer is the most constraining feature. This limit also generally corresponds to the natural cover that exists on the subject property. Figure 9 depicts the Environmental Constraints on the subject property.

The majority of the existing NHS will be retained. Top-of-bank is the greatest constraint on the subject property and is not an ecological feature; natural heritage constraints, such as the wetland and woodland features, are contained within the valleyland. Buffers (or "Vegetated Protection Zones") are defined in the NHRM (2010) as being located between a natural feature and lands subject to development or site alteration, permanently vegetated (preferably with native species) and providing protection to the natural feature against the impacts of the adjacent land use. Revisions to the conceptual 10 m buffer setback from the TRCA staked TOB limits (NHS) are proposed in certain locations to allow for a more efficient development pattern for the surrounding table land (see GSAI's Planning Justification Report, 2021 provided under separate cover). The buffers are to be established as a non-mowing area, with native self-sustaining vegetation, except the Clearbrook Development lands where all buffers will be fully vegetated with trees and shrubs, per TRCA's requirements (see Section 8.2). These buffers provide additional protection to the PSW core habitat in the valleyland and its associated critical function zone, SWH and Significant Woodlands all located in the protected NHS.

8.1 NHS Encroachment and Compensation Areas

Figure 10 provides a summary of proposed NHS encroachment areas, proposed NHS compensation areas and SWM pond encroachment into the NHS based on GSAI's NHS Encroachment and Compensation Areas map (dated March 3, 2025). Grading intrusions are preliminary and will be refined during detailed design. However, the limits of development are considered final at this planning stage.

- Proposed NHS encroachment areas: 1.57 ha.
- Proposed NHS compensation areas: 1.20 ha.
- SWM pond intrusions: 0.27 ha.

Data provided by the Town of Caledon, Region of Peel, Ministry of Natural Resources, Toronto Region Conservation Authority, GSAI

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: North American 1983 CSRS	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -53°	Scale Factor: 0.99960

Grid North

0 100 200 300 400
Metres

- Constraints Limit (Staked by Biason Surveying)
- TRCA Top of Bank 10m Buffer
- Top of Bank (Staked by TRCA, 2018)
- Top of Bank (Staked by TRCA, 2022)
- Conceptual Trail
- Back-to-Back Townhouses
- Detached / Semi-Detached / St. Townhouses
- Dual-Frontage Townhouses
- Medium-High Density Residential
- Medium Density Residential
- Mixed Use
- Open Space / Walkways
- Park
- SWM Pond
- Natural Heritage System / Buffers
- Non-Participating Property
- Secondary Plan Area

BURNSIDE

Client
SNELL'S HOLLOW DEVELOPERS GROUP

Figure Title
SNELL'S HOLLOW EAST SECONDARY PLAN
DRAFT CONCEPT PLAN

Drawn	Checked	Date	Figure No.
PS	HM	2025/04/08	8
Scale		Project No.	
1:5,000		300051670	

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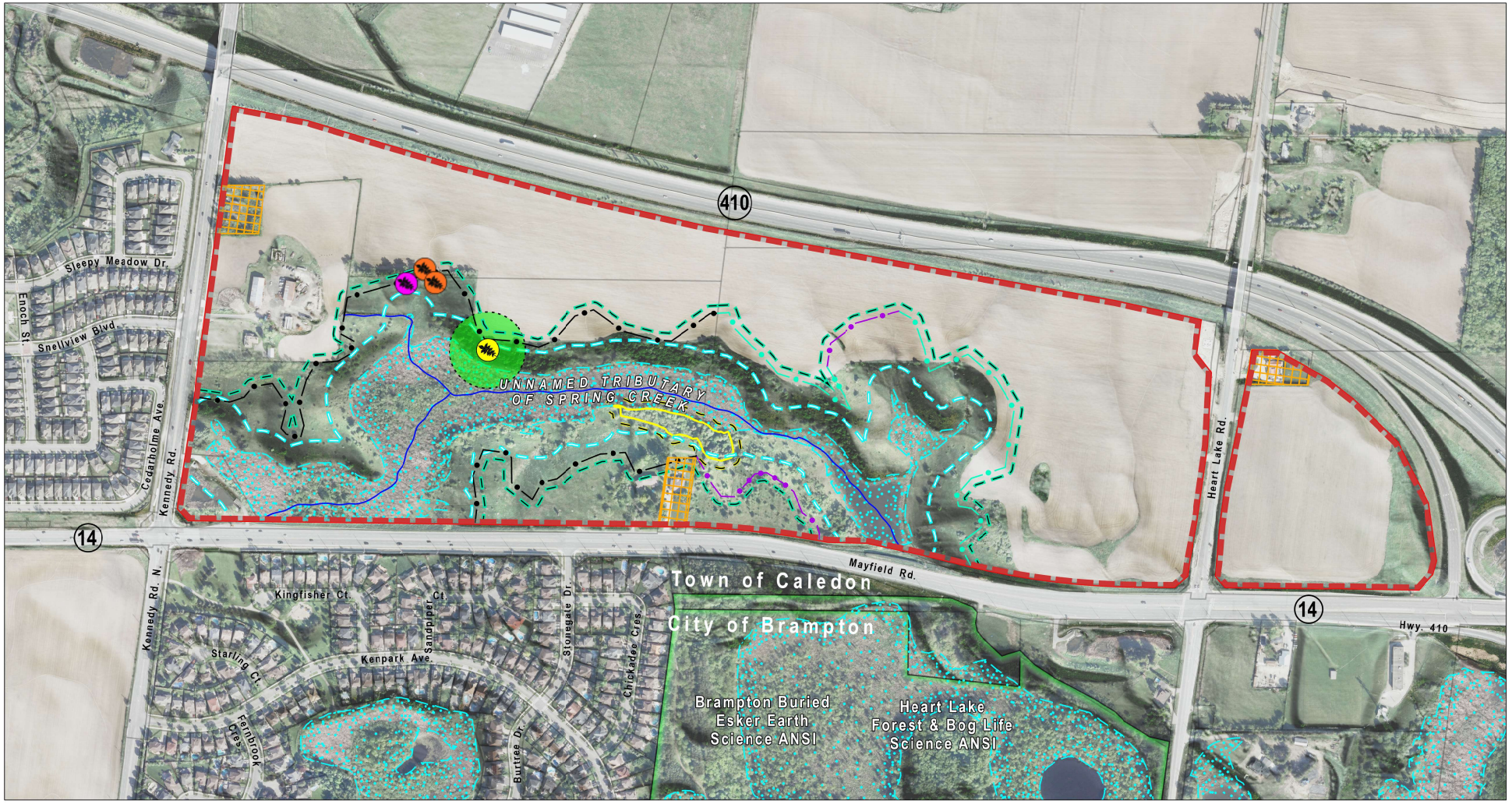

Data provided by the Town of Caledon, Region of Peel, Ministry of Natural Resources, Toronto Region Conservation Authority

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Coord. System: NAD 1983 CSRS UTM Zone 17N	
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Grid North

0 100 200 300 400
Metres

- Watercourse (MNRF)
- Constraints Limit (Staked by Biason Surveying)
- TRCA Top of Bank 10m Buffer
- Top of Bank (Staked by TRCA, 2018)
- Top of Bank (Staked by TRCA, 2022)
- MNRF Provincially Significant Wetland 30m Buffer
- Provincially Significant Wetland (Heart Lake Wetland Complex)
- Area of Natural Scientific Interest (ANSI)
- Butternut: Non-Retainable (Cat. 1)
- Butternut: Retainable (Cat. 2)
- Hybrid
- 50m Buffer Around Cat. 2 Butternut Tree
- Mixed Forest (ELC Code: FOM)
- Mixed Forest 10m Buffer
- Non-Participating Property
- Secondary Plan Area

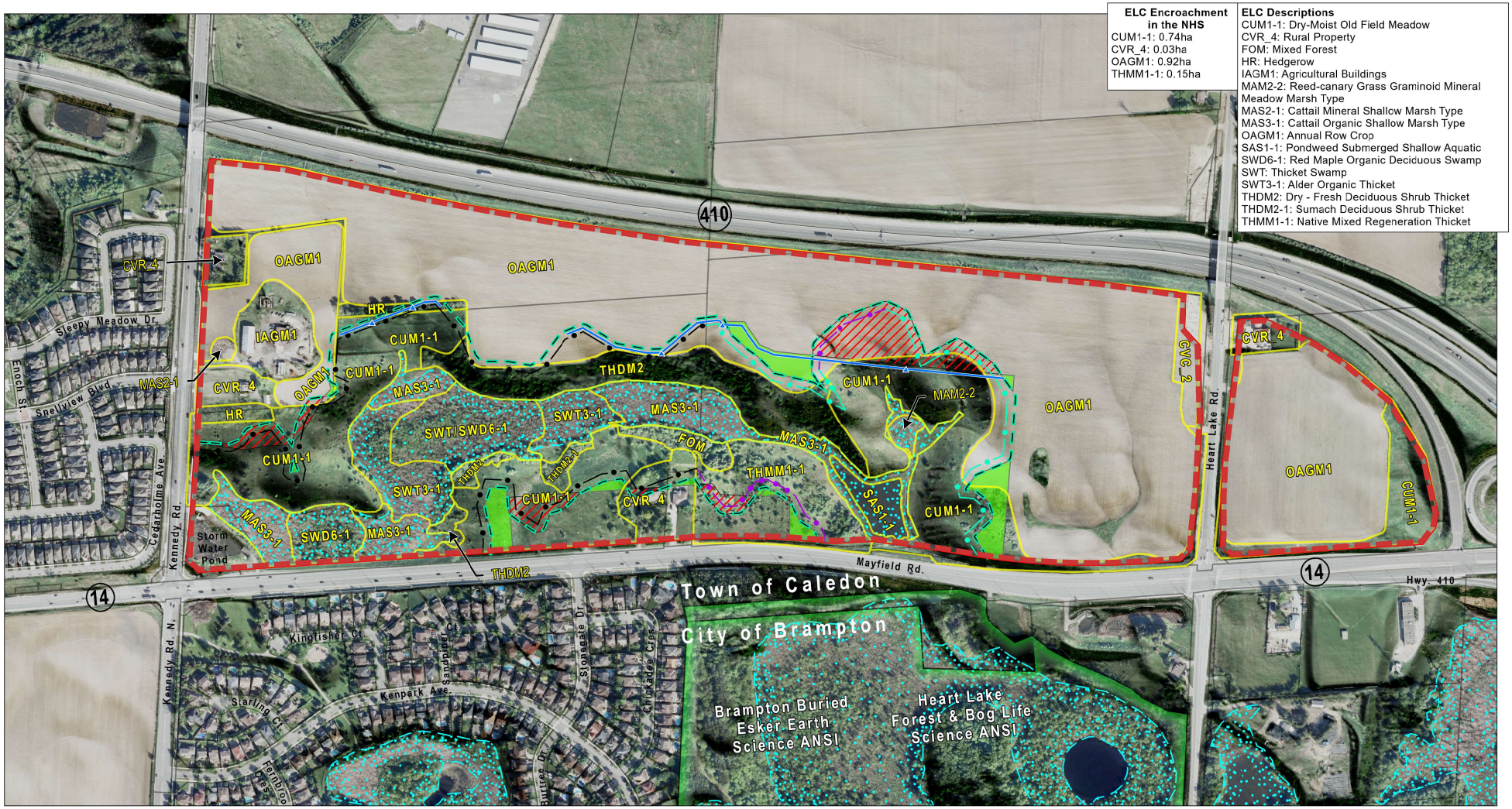
BURNSIDE

Client
SNELL'S HOLLOW DEVELOPERS GROUP

Figure Title
SNELL'S HOLLOW EAST SECONDARY PLAN
ENVIRONMENTAL CONSTRAINTS

Drawn	Checked	Date	Figure No.
HN	HM	2024/12/17	9
Scale		Project No.	
1:5,000		300051670	

File Path: \\eltmo\gis\Project\300\043952 (Snell's Hollow)\043952.aprx Print Date: 2024/12/17 Time: 02:14 PM



Data provided by the Town of Caledon, Region of Peel, Ministry of Natural Resources, Toronto Region Conservation Authority

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: North American 1983 CSRS	
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Grid North

0 100 200 300 400
Metres

- ELC Boundary
- Area of Natural Scientific Interest (ANSI)
- Provincially Significant Wetland (Heart Lake PSW)
- Approximate Location of Culvert
- Approximate Location of Grassed Swale
- Constraints Limit (Staked by Biason Surveying)
- TRCA Top of Bank 10m Buffer
- Top of Bank (Staked by TRCA, 2018)
- Top of Bank (Staked by TRCA, 2022)
- Compensation Area
- Proposed Encroachments in the NHS
- Secondary Plan Area

BURNSIDE

Client
SNELL'S HOLLOW DEVELOPERS GROUP

Figure Title
SNELL'S HOLLOW EAST SECONDARY PLAN
NHS ENCROACHMENTS AND COMPENSATION

Drawn	Checked	Date	Figure No.
HN	HM	2025/04/15	10
Scale		Project No.	
1:5,000		300051670	

File Path: \\elmo\gis\Project\300\043952 (Snell's Hollow)\043952.aprx Print Date: 2025/04/15 Time: 04:15 PM

Table 21 below provides a preliminary summary of communities to be removed in the NHS. It is important to note that encroachments will not remove terrestrial or wetland communities and are limited to highly disturbed cultural portions of the subject property. Communities that will be removed are mostly intensive farmland and cultural.

Table 21: Preliminary Summary of Communities to be Removed in the NHS

ELC Code	Community Type	Total Area (ha) to be Impacted
CUM1-1	Cultural	0.74
THMM1-1	Cultural	0.15
CVR_4	Built Up-Pervious	0.03
OAGM1	Agricultural	0.92
Total Area of Impacted Communities		**1.84**

TRCA has adopted a Regional Terrestrial NHS Strategy (TNHSS) to protect and improve regional biodiversity. The Etobicoke and Mimico Creeks Watersheds Technical Update Report (2010) identifies an expanded targeted terrestrial NHS, as well as priority restoration and management opportunities specific to these watersheds. Figures 8-6 and 8-7 of the Report (2010) depict the existing natural cover present on the subject property associated with the PSW, as well as targets for “potential natural cover”, highlighting opportunities for restoration. Priority management areas were ranked from Level 1 (high) to Level 4 (low). The PSW on the subject property is identified as Level 4; however, the Report states that “all areas identified in the Target System represent excellent potential for restoration / management work if opportunities arise.” The NAI (2014) highlights the need to protect the quality of the wetlands by encouraging the development of forest cover on the successional lands through restoration plantings, using native species and community composition found at the nearby Heart Lake Conservation Area as a guide.

8.2 Restoration on Clearbrook Developments Lands

To offset encroachments on the Clearbrook Development lands specifically, Crozier Consulting Engineers engaged with TRCA regarding restoration opportunities commencing in July 2023 (see Appendix A of this report). Crozier drafted a restoration plan and general specifications in four restoration zones to provide 1:1 or greater encroachment area to offset compensation areas and are intended to comply with TRCA’s Post-Construction Restoration Guidelines (2004b) and the Guideline for Determining Ecosystem Compensation (2023). Additionally, where feasible all buffers within the Clearbrook Development lands will be fully vegetated with trees and shrubs, per TRCA’s requirements. Additional opportunities for restoration are present in the NHS within the currently farmed areas. In emails dated August 11 and November 15, 2023, TRCA stated they are comfortable with Crozier’s plan in-principle with further details around modest increases to overall valleyland restoration area and specific locations to be determined / refined in support of future development proposals.

9.0 Description of Proposed Land Use Change

9.1 Concept Plan

GSAI has developed a Preliminary Development Concept Plan (October 2024). The development on the subject property is generally proposed outside the designated environmental features and buffers, with some exceptions. These features are depicted on Burnside's Draft Concept Plan (Figure 8) and Environmental Constraints (Figure 9).

The development consists of the following land use types:

- Planned residential lots (single detached, townhouses and medium and medium-high density blocks)
- Mixed Use
- Internal residential road network
- Neighbourhood Park
- Open Space Blocks / Buffers
- SWM Ponds (2)
- Natural Heritage System

The Preliminary Development Concept Plan (October 2024) consists of detached houses, semi-detached houses, townhouses, medium-high density residential areas, mixed use, open space and park blocks, two SWM blocks and an internal public road network.

9.2 Preliminary Grading

A FSR and SWM Report were previously prepared by Schaeffers Consulting Engineers (Schaeffers) and submitted as part of the OPA and Secondary Plan process for the subject property. Agency comments on the FSR and SWM Report, prepared by Schaeffers, were received in September 2021. DSEL has since been retained by Snell's Hollow Developers Group to prepare the second and third submission of these reports to respond to agency comments on the first submission reports.

A preliminary grading plan has been prepared for the study area based on the environmental and engineering constraints identified. The proposed road grades range from 0.5% to 5%. The Town's minimum road grade is 0.75%; however, given the site constrains a minimum slope of 0.5% has been used in some locations to minimize elevation change (delta) along NHS and boundary roads, as well as to manage the earthworks requirements for the subject property.

The conceptual grading is illustrated in Drawing 1D of the FSR (2025).

9.2.1 Grading in the Natural Heritage System

As described in Section 10.0 of the FSR (2025) and outlined and depicted on Drawing 1D in Appendix I of the FSR, grading in the NHS and the associated buffers is minimized but required at the following locations:

- Pond and outfalls.
- 3:1 grade transition within maximum of approximately 50% of buffer width.
- Grading may be required to provide emergency spillways for the ponds adjacent to the NHS.
- Grading is required to facilitate trails within the buffers or pedestrian crossings of the NHS.

The proposed grading ensures that an engineered stable TOB is provided. The revised stable TOB +10 m buffer dictated the proposed development limits shown on the Concept Plan. The encroachments onto the TOB south of Pond 1 are proposed due to the limitations on the available area for the proposed pond block. The pond block is limited by the road layout to the north and an existing heritage dwelling limiting the usable space for the pond block. The proposed encroachments ensure that a feasible SWM pond facility is available and that a stable TOB is established.

Grading has been minimized through use of walk-out units and the roads have been lowered to reduce required transition slopes through lots and buffers, to the extent possible. The grading areas within the NHS, including buffers, will be established as a non-mowing area, with native self-sustaining vegetation. These locations will be restored to existing or better conditions. A draft restoration plan for the NHS has been provided by Crozier and approved by TRCA in Appendix A of this report for the Clearbrook Developments Lands. Where feasible, all buffers will be fully vegetated with trees and shrubs, per TRCA's requirements (see Section 8.2).

As shown on Drawing 1D of the FSR (2025), grading will be required within the staked TOB +10 m buffer and NHS to accommodate a future municipal trail system and pedestrian crossing of the creek and wetland. The location of the crossings has been selected to minimize the valley crossing distance. Details for the trail and crossing will be provided in support of future development proposals.

9.3 Stormwater Management Plan

Stormwater management for the subject property will be accommodated in two SWM ponds, with localized use of an on-site control facility in the Medium Density block (north of Mayfield Road west of Heart Lake Road). Each pond services a distinct development area and is proposed as wet ponds.

The ponds will be designed to meet the criteria in Section 4.2.1 of TRCA's Approaches to Manage Regulatory Event Flow Increases resulting from Urban Development (2016) and Appendix E of TRCA's Stormwater Management Criteria (2012), where applicable.

- Pond 1 is located on the west side of the subject property east of Kennedy Road adjacent to the Unnamed Tributary of Spring Creek. A portion of the pond encroaches into the limits of the NHS on the south side into a cultural meadow community (CUM1-1).
- Pond 2 is located at the south-east corner of Mayfield Road and Heart Lake Road on the east side of the subject property in what is currently an agricultural field (OAGM1). It is well outside the limits of the NHS.

The SWM plan is outlined in Section 5.0 of the FSR (2025).

9.3.1 Thermal Mitigation

The typical outlet structure for all SWM facilities will consist of a deep outlet pool, reverse-slope extended detention pipe, and a sub-surface outlet pipe. The thermal mitigation strategy including planting / landscaping details will be further refined during the detailed SWM facility design stage. Potential thermal mitigation measures that can be considered for each facility are outlined in Section 5.4 of the FSR (2025).

9.3.2 Pond Discharge and Outfalls

Pond 1 and 2 as well as the uncontrolled areas within the lands west of Kennedy Road will discharge to the Unnamed Tributary of Spring Creek valley system, given the bank steepness. Outfalls will be generally located as close to the toe of valley slope as possible. Exact outfall locations will be refined through the draft plan approval process. The Pond 2 (west) outfall is proposed to discharge to Spring Creek, north of Mayfield Road. This outfall will maintain flows to the east wetlands and minimize increases in flows to the Heart Lake Wetland. The Pond 2 (east) outfall is proposed to connect to the existing Heart Lake Road storm sewer system, before discharging approximately 150 m south of Mayfield Road on the east side of Heart Lake Road. The preliminary Pond outfall locations are illustrated on Figures 6F and 7F of the FSR (2025). All outfalls to the Creek will be designed to generally meet the criteria in Appendix E2 of TRCA's Stormwater Management Criteria (2012), where feasible. Efforts to limit disturbance to the wetland resulting in outfall installation and plunge pool installation will include the following considerations:

1. **Headwall design**: Energy dissipation designs such as plunge pools can be considered at outfall locations to reduce flow velocity and prevent erosion on the valley floor.

2. **Restoration plan**: Incorporating native plant species and erosion control strategies to stabilize the site post-construction could accompany the plunge pool design.

3. **Erosion and Sediment Control (ESC):** An ESC plan can be refined during detailed design to guide construction and prevent sediment transport into adjacent watercourses. Temporary erosion control strategies include sediment barriers and silt fencing, and construction phasing. stabilizing disturbed areas to minimize transfer of sediment, and decommissioning of the ESC devices after site stabilization

4. **Planning and Monitoring**: A robust monitoring plan that captures requirements for inspection of the ESC devices and maintenance of ESC measures is needed based off inspections. The during-development monitoring plan should follow the Town's Inspection, Maintenance and Monitoring Requirements guide and will be developed during detailed design.

Outfalls will not disturb any natural heritage features such as woodlands and wetlands. Pond 1 outfall is located in the CUM1-1 ecosite in the NHS. Pond 2 outfalls are located adjacent to existing disturbed areas outside the NHS that do not feature any vegetation communities.

Disturbance to vegetation communities (CUM1-1) in the NHS as a result of the Pond 1 construction will be restored following installation to the extent feasible and / or compensated for as required through site-specific studies. See Section 8.0 and Section 11.0.

A detailed description of the pond discharge and outfalls are outlined in Section 5.5 of the FSR (2025).

9.3.3 Erosion Exceedance Analysis

In support of the proposed SWM plan, an erosion exceedance analysis was completed to assess the effectiveness of SWM strategies in mitigating erosion risk within the receiving watercourses. To complete the erosion exceedance analysis DSEL provided the results of pre- and post-development hydrological simulations generated from a continuous hydrologic simulation model for the subject property for two outfall locations (see Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) in Appendix C of this report). The first outfall location captures the flows discharging from the site to the tributary of Etobicoke Creek, which flows south into the Heart Lake Conservation Area. Downstream of the subject property, flows in this tributary are conveyed in the wide, low-gradient open channel that comprises Reach EC-1. Ultimately, this reach discharges downstream into Heart Lake.

A second outfall location is proposed to drain from Pond 2, which is proposed immediately northwest of the Heart Lake Road and Mayfield Road intersection. Outfall 2 will ultimately discharge to an existing open water pond located immediately to the east of Heart Lake Road approximately 150 m south of Mayfield Road. Downstream of this pond, the flow drains into the first of a series of wetlands via a relatively short and narrow stream channel (Reach ECT-1). Downstream of Reach ECT-1 there are no obvious channel reaches connecting wetland features that would be the subject of erosion concern.

The exceedance analysis was completed using our in-house erosion exceedance model. This numerical model generates a series of hydrologic and geomorphic indices that are useful for evaluating how changes in hydrology may alter erosion occurring within a channel. The key metrics used for assessing erosion potential include cumulative time of exceedance, number of exceedance events, cumulative effective discharge, and cumulative effective work index (i.e., cumulative effective stream power). This suite of erosion indices provides an evaluation of the number of potential erosion events, the expected duration of sediment transport events, and the potential magnitude of channel erosion. The most relevant index for assessing potential changes in channel erosion is the cumulative effective work index, which provides a reasonable surrogate for sediment transport. Refer to the Fluvial Geomorphological Assessment and Baseline Monitoring report (April 2025) Appendix C of this report for a detailed description of each index.

Based on the continuous hydrological simulation data, results show an increase in pre-to post-development discharge to both Outfall 1 (Reach EC-1) and Outfall 2 (Reach ECT-1). For Outfall 1, average discharge over the modeling period increased from 1.37 l/s to 2.79 l/s while for Outfall 2 average discharge increased from 2.04 l/s to 4.69 l/s. The maximum peak flow during the hydrological simulation period (i.e., 1991-2007) increased for Outfall 1 from 113.5 l/s for pre-development to 143.6 l/s for post-development. Similarly, maximum peak flows increased for Outfall 2 from 42 l/s pre-development to 51 l/s post-development.

For Reach EC-1 (Outfall 1) over the entire modeling period discharge did not exceed the erosion threshold for either the pre- or post-development conditions. Similarly for Reach ECT-1 (Outfall 2), there were no exceedances of the erosion threshold for the pre-development condition as the maximum modeled discharge at Outfall 2 (i.e., 42 l/s) was less than the estimated erosion threshold for this reach (i.e., 46 l/s). Under proposed conditions there were three exceedances totaling 61 hrs over the 17-year continuous hydrological simulation. The absolute value of the cumulative effective volume (CEV) for these three events totaled 427 m^3 and the value of the cumulative effective work index (CEWI) is 854 N/m. For context, for 15 of the 17 model years there were no erosion exceedances for this site for the post-development condition. Note that the maximum peak flow for this hydrological simulation period (i.e., 51 l/s) exceeds the estimated erosion threshold by 5 l/s. The assessment results indicate that the

magnitude of the increase in post-development flows to Outfall 2 does not significantly increase erosion risk or potential at this location.

Given that our assessment indicates that both assessed reaches have a relatively elevated capacity relative to existing flow conditions we do not advocate for using the assessed erosion thresholds to aid in designing the associated SWM pond and outlet structures. Although the hydrological and geomorphic characteristics of the reaches downstream of those assessed do not suggest areas of potential erosion concern, using the erosion thresholds presented could cause downstream erosion concerns in other reaches that are more sensitive to erosion. Instead, we suggest using the 24 - or 48-hour detention of the 25 mm event to prevent erosion both within the subject property, and downstream within Etobicoke Creek.

In summary, our erosion analysis for the receiving watercourses indicates that the proposed SWM plan is expected to adequately address any potential erosion risks for the receiving watercourses.

9.4 Site-Wide Post-Development Water Balance

As discussed in Section 5.4.1, the subject property is not located within a WHPAQ1 / Q2 area; however, some areas within the subject property are mapped as SGRAs. As per the provincial Source Water Protection policies, the existing conditions infiltration are to be maintained in post-development. A site-wide pre to post-development water balance was completed to establish infiltration targets for the proposed development as reported in Hydrogeological Assessment and Water Balance Report (Burnside, April 2025). Burnside and DSEL worked together to develop a stormwater management strategy implementing LIDs to maintain infiltration in post-development. The LID strategy includes directing runoff to subsurface infiltration facilities located within public spaces resulting in a 194% increase in infiltration compared to existing conditions. The LID strategy is discussed in Section 6.0 of the FSR (2025) and summarized in Section 9.6 below. The post-development water balance with mitigation is described in Sections 4.5 and 4.6 of Burnside's Hydrogeological Assessment and Water Balance (April 2025).

9.5 Feature Based Water Balance

A Feature-Based Water Balance Study has determined that a continuous water balance model is required, per TRCA's Wetland Water Balance Risk Evaluation (2017), to ensure that water balance is maintained for natural features designated for protection within the subject property and immediately downstream. A Wetland Water Balance Risk Evaluation was previously completed by Schaeffers and Burnside that classified the wetlands on the subject property as "High Risk". The pre-and post-development volumetric and flow contributions to the wetlands are summarized in the FSR (2025); the continuous wetland water balance simulation was prepared by J.F. Sabourin and Associates (JFSA), included in Appendix E of this report.

In response to the Town's review of the second CEISMP submission, JFSA evaluated the average monthly, seasonal and annual runoff volumes, flows, and water depths in and downstream of the subject property under existing and proposed conditions (see DSEL's memo dated February 10, 2025 in Appendix E of this report) for three key features:

1. West wetlands (north of Mayfield Road east of Kennedy Road)

2. East wetlands (to which the west wetlands discharge to)

3. Heart Lake Wetland (offsite and located just east of Heart Lake Road, south of Mayfield Road). On the east side of Heart Lake Road, there are several small wetlands that are part of the PSW Complex (not kettles or peatlands). Pond 2 (east outlet) will discharge to Wetland #5; according to MNR's wetland evaluation, this is not a kettle or peatland but is an open water marsh that is hydrologically linked by watercourses within the complex (MNR, 2009).

To conduct the FBWB assessment, JFSA updated the existing and proposed conditions SWMHYMO and PCSWMM models using 2019-2022 monitoring data provided by GEO Morphix. The SWMHYMO-generated hydrographs were then inputted into a PCSWMM model to simulate the hydraulics of the wetland and SWM ponds. Updated existing and proposed conditions drainage areas, including the addition of the SWM pond outfalls, were included in the model. The latest stage-storage-outflow information for external ponds such as the existing South West Pond (Kennedy Pond) and Heart Lake Road Pond (Mayfield Pond) that are described in Section 4.3 of the FSR (April 2025) were also included in the model. Updated stage-storage-outflow relationships for the west and east wetlands were extracted with topographic data. LID measures were included in the model to account for the runoff volume reduction provided by these mitigation measures to maintain the site-wide groundwater balance.

The results of the analysis show that the average flows and volumes in the west, east, and Heart Lake wetlands are 4.2% greater, 6.0% greater, and 1.1% less than existing conditions, respectively. The monthly flows in the west wetland vary between –2.3% and +25.8% relative to existing conditions. The monthly flows in the east wetland vary between –1.3% and +26.2% relative to existing conditions. The monthly flows in the Heart Lake wetland vary between –9.1% and –0.2% relative to existing conditions. The analysis also shows that despite fluctuations in the average flow and volumes to these wetlands, the average water surface elevation does not change between existing and proposed conditions. That is not to say that the water surface elevation in the wetlands does not fluctuate during the continuous simulation; only that the average water surface elevation does not change between pre-development and post-development conditions. A graphical presentation of the water surface elevations in the continuous model is presented in DSEL's memo dated February 10, 2025 in Appendix E of this report. Based on these results, water levels in the wetlands fluctuate between 10 cm and 30 cm

under existing and proposed conditions, but the average water level under post-development is the same as the average water level under existing conditions. In other words, the natural fluctuation between pre- and post-development conditions is the same.

As noted in Burnside's Hydrogeological Assessment and Water Balance (April 2025), the groundwater levels measured in the piezometer nests installed within the wetlands generally show a downward gradient between the shallow and deep piezometers suggesting the wetland recharges the shallow soils and creates a shallow perch beneath the wetland. Seasonal upward gradients observed at the piezometers show potential for seasonal discharge conditions during the spring; however, any discharge would be interpreted as minimal due to the surrounding low permeable silt and clay soils. These conditions suggest that the primary sources of water to the wetland and tributary are direct precipitation and surface water runoff, including discharge from the SWM pond located at the southwest corner of the subject property. The aquatic assessment revealed that the thermal regime of the tributary and open water pond (SAS1-1) is classified as warmwater, supporting the interpretation there is minimal groundwater contribution to these systems.

The west wetlands contain wetland vegetation communities most likely to be impacted by changes in water levels. These shrub and tree dominated swamps are susceptible to flooding with large inundations of water or drying up with not enough water near the surface if surface water inputs were dramatically altered. Conversely, the east wetlands are comprised of much more resilient cattail shallow marsh, shallow aquatic, and meadow marsh communities abundant with hardy species tolerant to fluctuation in wetland levels typical of wetlands maintained by surface water flows. The Heart Lake wetland is located off-site and was not accessible for site-specific surveys but appears to be like the east wetlands on the subject property. Based on the MNR wetland evaluation (2009), this wetland is comprised of more resilient cattail and shallow aquatic communities which are tolerant to fluctuation in wetland levels, similar to the east wetlands on the subject property.

The increase in flow and volume for the more sensitive west wetlands in November and December during post-development are higher than the typical thresholds preferred (i.e., the difference from pre-development is greater than 5%). However, this time of year is when most vegetation goes dormant and is not a critical growth period for plant species. As stated above, the east wetlands are ecologically most tolerant of variation in surface water fluctuations based on species composition and wetland type. The Heart Lake wetland is offsite and is predicted to experience the least impact in flow and volume and resulting surface water fluctuations relative to existing conditions, which is desirable for the nearby sensitive fens and kettles known from the Heart Lake Conservation Area.

In summary, by increasing pre-development infiltration volumes and maintaining the surface water contributions to the wetlands, it is Burnside's opinion that the hydroperiod of these wetlands has been adequately matched to prevent long-term changes in ecological composition and function of the wetlands. As noted above, while seasonal groundwater discharge may occur during the spring, the discharge volume is anticipated to be minimal due to the low permeability of the underlying silt and clay soils.

Stormwater LID infiltration measures required to maintain site-wide infiltration are extensive and are illustrated on Figure 15F of the FSR (2025) and described below in Section 9.6. Further review and refinement of the water balance strategy is expected during detailed design.

9.6 Low Impact Development Strategies

LIDs can help mitigate the effects of development on the water balance, promote at-source retention, and maintain groundwater infiltration volume in the post-development condition.

Several preliminary LIDs are recommended in Section 6.0 of the FSR (2025). These measures are to achieve pre to post-development water balance for the subject property (see Figure 15F of the FSR for the potential LID plan). The LIDs recommended for the development include:

- Where feasible, grassed swales in NHS buffer areas, parks, downstream of SWM outfalls, adjacent to rear lots located within buffers, overland flow easements, and private side yard / rear yard swales.
- Sub-Surface Infiltration LIDs (i.e., infiltration trenches or galleries in roads, parks and parkettes on public property).

A 15-30 cm deep grassed swale is proposed in select locations along the northern portion of the subject property, following the alignment of the conceptual trail shown on Figure 10 of this report. A cross section of the grassed swale is shown in Drawing 6D in Appendix I of the FSR (2025). The approximate location of the swales and culverts is shown conceptually on Figure 8 of this report. The western section of swales is within the NHS buffer between the development limit and the trail; the eastern section of swales traverses the northern edge of a proposed compensation area outside the NHS and also the southern edge of the development where ELC encroachments are proposed in the NHS. The swales serve to replicate the HDFs being removed for the development. Based on discussions with the Town since the last submission of the CEISMP, LIDs are no longer proposed on private property or in the NHS (i.e., bioswales). Culverts are proposed at the low points in the swale, underneath the trail, to discharge flows direction into the NHS. Culvert size will be determined through detailed design but will be approximately 300 mm. Potential impacts of the grassed swales are discussed further in Section 11.0.

Other Best Management Practices (BMPs) will also be provided within the site. These BMPs are not credited for providing infiltration as part of the CLI-ECA but do provide increased infiltration opportunities for stormwater runoff, and include:

- Increased topsoil depths on all conventional detached product and conventional townhouse product (private property).
- Increased topsoil depths in the boulevard (public property.
- Increased topsoil depth in channel / parks / pond (public property).
- Disconnected roof leaders to discharge to rear yards in low and medium density blocks (private property).

Section 6.0 of the FSR (2025) demonstrates that the proposed LID measures meet, and exceeds, the pre-development infiltration targets. The implementation of LIDs will be refined at the draft plan and detailed design stages based on more detailed groundwater information and infiltration testing.

10.0 Floodplain Analysis

A preliminary floodplain assessment was prepared by Schaeffers for the Unnamed Tributary of Spring Creek in the western parcel. The preliminary floodplain assessment was documented in the Stormwater Management Report (Schaeffers, February 2021), previously submitted to the public agencies. A summary of the preliminary floodplain analysis completed by Schaeffers is described below:

- It was determined the floodplain north of Mayfield Road in the Spring Creek tributary of Etobicoke Creek functions in a backwater, caused by the existing 1,050 mm diameter Mayfield Road culvert.
- A conventional 1-D HECRAS modeling approach, which ignores the impacts of storage in the valley system, results in over-topping of Mayfield Road during the Regional storm event.
- A floodplain mapping approach was discussed between Schaeffers and TRCA (meeting on August 7, 2020), and it was concluded that the culvert at Mayfield Road should be assumed as blocked / plugged and assume valley system as a complete storage unit.
- Schaeffers established a proposed conditions Regional storm runoff volume to the valley system and calculated the total available storage in the valley system north of Mayfield Road and below the spill elevation over Mayfield Road.
- The proposed conditions runoff volume (95,454 m^3) and valley storage (183,870 m^3) were used to plot the resulting water level and floodplain.
- The analysis determined that the Regional floodplain is contained in the valley system and does not over-top Mayfield Road under these assumptions.

As part of the FSR update (2025) the development concept and SWM strategy for the development lands have changed. To update the Schaeffers floodplain analysis, the following steps were taken:

- The proposed conditions runoff volume was re-calculated based on the latest Preliminary Development Concept Plan (October 2024) and SWM strategy. The digital PCSWMM model files used to calculate the total regional storm runoff volume (122,540 m^3) are provided in Appendix C of the FSR, included in Appendix F of this report. For conservativism, this volume represents the total uncontrolled regional volume.
- The depth-storage rating curve for the valley system, north of Mayfield Road, and below the elevation of Mayfield Road centerline was calculated, and is provided in Appendix C of the FSR, included in Appendix F of this report.
- The highest water surface elevation determined from the depth-storage curve was used to set the maximum water levels at Mayfield Road in HEC-RAS and depicted as the floodplain limits on Drawing 1D of the FSR, included in Appendix F of this report.
- In reviewing the HEC-RAS model, with the new boundary condition, it was determined that the flood levels would only increase by 0.06 m from Mayfield Road to the upper reaches of the wetland: still well within the valley limits.

The updates described above conclude that the regional storm water surface is contained within the valley system, does not impact the development limit, and does not over-top Mayfield Road.

11.0 Impact Assessment, Avoidance and Mitigation Measures

The following preliminary evaluation of environmental impacts and recommended mitigation measures is based on an assessment of the potential effects that could occur to natural heritage features and functions over the short and long-term, following the implementation of the Preliminary Development Concept Plan (October 2024). This section also identifies planning, design and construction practices that will pinpoint avoidance, mitigation and / or restoration opportunities as well as net effects and monitoring measures, if applicable. Net effects are defined as negative environmental effects of a project and related activities that will remain after mitigation and impact management measures have been applied.

Trails

As mentioned in Section 9.2 and shown on Figure 16F and Drawing 1D of the FSR (2025) and GSAI's Preliminary Development Concept Plan (October 2024) a conceptual municipal trail is proposed with a bridge and pedestrian crossing through the NHS and a footpath within the staked TOB 10 m buffer along the north and east side of the subject property. See also Figure 8 of this report. Grading will be required within the 10 m buffer and NHS to accommodate the trail. A trail impact assessment will be undertaken separately from the CEISMP with the Town and TRCA once a detailed design is provided.

MAS2-1 wetland

The MAS2-1 wetland community is the only wetland on the subject property located outside the NHS. While MAS2-1 is classified as a wetland, it is dominated almost exclusively by a monoculture of cattail (*Typha latifolia*). Per Burnside's Baseline Conditions report (2019), this feature is likely the result of a natural depression in the topography due to the historical impacts of the surrounding industrial and agricultural lands and the associated driveway to the south that acts as a barrier to surface drainage flow (i.e., no culvert is present under the driveway). It was noted during HDF surveys that this feature was wet in April and May but dry by August. Potential channelization or surface conveyance of the wetland to nearby HDFs was not evident during field investigations. This feature has very limited ecological functionality on the landscape and is not hydrologically connected to the Heart Lake PSW Complex or to any other natural-heritage features. Additionally, this feature has not been identified as part of the Town's EPA, the Region's Greenland System, or the Heart Lake PSW Complex boundary evaluation and / or stakings in 2000, 2009 and 2011 with MNR / TRCA and TRCA TOB staking of the NHS in 2018 and 2022. Given this feature is small and isolated from other natural heritage features and is surrounded by a major roadway, cultivated farmland and a driveway, no negative or long-term impacts for removing this feature are expected.

As described in Section 7.2.1, amphibian breeding call surveys were conducted at the wetland in 2019, 2020 and 2022. Two Wood Frogs were recorded during one survey in 2019 and have not been recorded since. No other amphibian species have been recorded at this wetland during breeding call surveys. As a monoculture of dense cattail, this wetland feature does not provide breeding habitat function for Wood Frog or other amphibians, nor does it provide long-term viable habitat for population success given that it is surrounded by urban development and roads that represent significant barriers for dispersal. Based on these results, it can be demonstrated that a significant relationship between the MAS 2-1 community and breeding Wood Frog (or other amphibian species) is absent and that mitigation for removal of this feature is not warranted. Therefore, avoidance and mitigation measures in Table 22 below apply to the PSW wetlands only.

This impact assessment is provided based on field investigations, the Preliminary Development Concept Plan (October 2024) and supporting studies included in the appendices and will need to be refined during site-specific studies in support of future development proposals. Environmental constraints are depicted on Figure 9.

Table 22: Impact Assessment, Avoidance and Mitigation Measures

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
General Impacts				
Vegetation Communities	Direct effects of construction activities will include clearing and loss/injury of both herbaceous and woody vegetation in upland areas within the subject property. Portions, or all of the vegetated ecosites listed under Net Effects, will be removed. Due to the topography on the subject property, grading has been of particular importance when balancing the needs of the development and avoidance of encroachment into the NHS. Grading is limited within the natural heritage features and has been minimized to only what is required to facilitate the proposed development; however, there are specific locations where NHS encroachments are proposed to meet the challenging existing grades, as shown on Figure 10 of this report. As mentioned in Section 9.6, a 15-30 cm deep grassed swale is proposed in select locations along the northern portion of the subject property, following the alignment of the conceptual trail shown on Figure 8 of this report. A cross section of the grassed swale is shown in Drawing 6D in Appendix I of the FSR (2025). The approximate location of the swales and culverts is shown conceptually on Figure 10 of this report. Based on a preliminary review of the location of the swales, the following are expected: • On the west side, trees will likely be removed in the HR (hedgerow) ecosite but are already treated as an ELC encroachment for the development plan that will need to be compensated for. An Arborist Report and Tree Inventory and Preservation Plan (TPP) will be required in future for site-specific development	**General Mitigation** Vegetation loss has been minimized to the extent possible. Native species of plants, including those which support pollinator foraging, should be included when establishing formal planting plans for naturalized areas and erosion and sediment control planting referencing TRCA's Guideline for Determining Ecosystem Restoration (June 2023) and Seed Mix Guideline V. 2.0 (January 2022) for the existing soil and vegetation communities (if available). A 10 m Vegetated Protection Zones (VPZs) from Top-of-Bank has been applied to the NHS limits to provide protection to wetland core habitat in the valleyland and its associated critical function zone (i.e., turtle nesting habitat) as well as the Significant Woodland (FOM ecosite). Because the NHS limits are not set back from wetlands or woodlands, no loss of ecological features will occur. The VPZs present an opportunity to increase forest cover in the Etobicoke Watershed to meet TRCA's Regional Terrestrial NHS Strategy (TNHSS) and to stabilize the TOB. This may also enhance SWH habitat for species such as Eastern Wood-pewee and bats and compensate for some loss of trees on the tablelands. Detailed landscape plans will be provided for site-specific development proposals. Grading in the NHS including buffers will be established as a non-mowing area, with native self-sustaining vegetation. These locations will be restored to existing or better conditions. As discussed in Section 8.2, a draft restoration plan for the NHS has been provided by Crozier and approved by TRCA in Appendix A of this report for the Clearbrook Developments Lands..Where	Permanent effects to the following ELC communities • CUM1-1 (Dry-Moist Old Field Meadow) • THMM1-1 (Native Mixed Regeneration Thicket) • MAS2-1 (Cattail Mineral Shallow Marsh) • CVR_4 (Rural Property) • OAGM1 (Annual Row Crop) • HR (Hedgerow) None of these communities are locally or provincially rare. Most of these represent communities often found on rural residential properties where degradation of natural habitat has occurred due to intensive agricultural practices. No ecological features will be removed (woodlands and wetlands). Wetland vegetation communities present in the Heart Lake PSW Complex and the Significant Woodland (FOM) will not be removed. VPZs do not currently exist between adjacent land use and the NHS; therefore, VPZs will provide a net benefit to these features. Conditions within the VPZs will be enhanced with self-sustaining native vegetation; for the Clearbrook Development Lands they will be fully vegetated with trees and shrubs, where feasible. As such, while the grading is permanent, the impacts are temporary. All natural	Fencing shall be inspected at intervals as recommended in the Erosion and Sediment Control Guide for Urban Construction (the ESC Guide) (TRCA, 2019) to ensure damage is repaired in a timely manner. Monitoring the success of plantings may be required. Tree protection fencing will be erected prior to grading activities. When root cutting and/or pruning occur during grading activities adjacent to the NHS, a qualified arborist is recommended on site to advise and supervise the works and to ensure mitigations are done correctly and without injury to the NHS. Weekly inspections of the protection fencing may be recommended while grading is occurring next to woodland features.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
	proposals (see also Trees below). Temporary impacts to the CUM1-1 ecosite in the NHS will occur but can be revegetated with an appropriate grassed swale seed mix. • In the central portion of the NHS buffer, the swale appears to come close to the dripline of THDM2 (dry-fresh deciduous shrub thicket) and may impact the root zones of some trees. The TPP will map the individual TPZs and will determine if any tree will need removal due to level of impact to it's TPZ. • In the central portion of the subject property outside the NHS, the swale is located along the northern edge of a proposed compensation area within the development limits and may be reduced as a result since trees and shrubs cannot be planted in the grassed swale. However, other potential compensation areas for trees and shrubs within the NHS not depicted on GSAI's NHS Encroachment and Compensation Areas map (dated March 3, 2025) are available that are currently active agricultural fields. Additional compensation areas will be refined during site-specific development proposals. On the eastern side, the swale mostly traverses the CUM1-1 ecosite along the southern edge of an area that is already treated as an ELC encroachment for the development plan that will need to be compensated for. Temporary impacts to the CUM1-1 ecosite in the NHS will occur but can be revegetated with an appropriate grassed swale seed mix. Other direct impacts can be expected during construction and may include soil compaction and changes in soil moisture.	feasible, all buffers will be fully vegetated with trees and shrubs, per TRCA's requirements. Agricultural lands located in the NHS provide potential areas for NHS restoration and overall valleyland restoration area. Specific locations to be determined / refined during future development proposals. For the NHS crossing, a trail impact assessment will be undertaken separately from the EIS with the Town and TRCA once a detailed design is provided. **Construction Mitigation** Where feasible, grading in the NHS is encouraged during the dormant season (i.e., November to February). Construction hoarding should be installed prior to commencement of construction activities to prevent pedestrian access, prevent the unnecessary encroachment / disturbance by humans and machinery into vegetation communities and to prevent wildlife from entering the construction areas. Hoarding should be installed and inspected prior to any land disturbance. Hoarding should be installed at the dripline of any trees to be preserved. Construction activity should be outside of the dripline of any trees that are to remain. To reduce the risk of disturbing breeding birds (and contravening the Migratory Birds Convention Act, 1994), timing constraints shall be applied to avoid vegetation clearing (including grubbing) during the core breeding bird period – broadly from April 1 to August 31 for most species (regardless of the calendar year) (see Avifauna for more details). For treed areas where all trees are to be retained, construction fencing should be installed and inspected prior to commencement of any land disturbance and construction activities (including	features that form the NHS will be protected and preserved. Buffers from these features in the NHS are designed to provide protection from site alteration and / or development.	

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
	Indirect effects include the increase to edge habitats such as windthrow and sunscald, introduction of invasive plant and wildlife species which may outcompete or predate native species, change in soil moisture regime and water availability to plants and plant communities, increases in light penetration (pollution) and noise, soil compaction, equipment and pedestrian "traffic", equipment laydown and spills. See also Wetlands and Provincially Significant Wetlands below.	grading) to prevent pedestrian access, prevent the unnecessary encroachment/disturbance by humans and machinery into vegetation communities, and to prevent wildlife from entering the construction areas. Where possible, fencing should be installed 1 m from the dripline of any trees to be preserved for the protection of tree roots. For treed areas where there is a mix of retainable and non-retainable trees, the required tree removals should be completed first and then the tree protection fence installed. Paige wire farm fencing should be employed with silt screen attached to the fence. The fencing should be erected at least 1 m beyond the dripline of retained trees wherever possible to better protect tree roots and low limbs from construction damage.		
Trees	An Arborist Report, completed by a Qualified Professional, should be completed to identify the scope of potential impacts to trees within and immediately adjacent to the construction area. Municipal guidelines and by-laws should be reviewed to determine the scope of work required. Trees may require removal if it is determined through the completion of an Arborist Report that their locations are in conflict with the proposed design elements of the Secondary Plan, including ditches or grading (cut or fill) or are determined to be in poor condition. Impacts to trees will generally include removal or injury as a result of construction activities (including grading and earthworks). Trees may also be subject to soil compaction, injury from machinery, loss of root zones, change in hydrology, and or pruning as part of the proposed construction. Disturbance extending to the limits of the proposed development may result in impacts to	**General Mitigation** An Arborist Report should delineate the extent of vegetation removal for the vegetation clearing and grubbing contractor. All vegetation must be cut in a way that it stays within the work zone to mitigate for potential impacts to adjacent trees and vegetation. A Tree Inventory and Preservation Plan will be completed for site-specific development proposals. Tree removals will be minimized. Compensation requirements and implementation strategies for tree removal should be identified in the Arborist Report and should be determined based on applicable tree protection by-laws. Edge management may require pruning or selective removal of remaining trees at edges of treed communities if the trees at the exposed edges are not suitable for retention. Trees with poor health (e.g., severe crown dieback) and/or condition (e.g., severe unsupported lean) will require removal if there is a greater risk to cause injury or property damage. Trees exhibiting symptoms of harmful	No net effects are anticipated.	Pre-construction land clearing activities will be monitored by a Qualified Environmental Inspector to confirm that all activities are conducted in accordance with mitigation plans and within specified work zones. Inspection of tree protection measures by the Site Supervisor or Qualified Environmental Inspector to be coordinated with review of ESC measures throughout the construction period. All damaged, sagging or deficient measures must be fixed immediately. An Arborist shall review all trees adjacent to the work zone and prior to opening the road for use by the general public. Branches and trunks damaged during the construction period that may cause damage or injury must be mitigated.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
	trees beyond the subject property where rootzones may extend. See Species at Risk (below) for impacts to Butternut.	pests (i.e., Ash, Beech, and Elm) may require additional vigilance during the review of retained trees if it is determined that infections are causing significant harm to the tree's health. Where pruning and tree removal are required, good arboriculture practices should be used and completed by / supervised under the direction of an ISA Certified Arborist. Culturally significant properties and residential lands that are subject to tree removal may require reinstatement of native woody vegetation to compliment cultural heritage aesthetics and provide privacy. A landscape / streetscaping plan will need to be coordinated with the detailed design for aesthetics and compensation for removals. A detailed mitigation plan that uses a variety of native species suited to the varied site conditions will be required for preparation, in conjunction with detailed design requiring impacts or removal of trees. To reduce the risk of disturbing breeding birds (and contravening the *Migratory Birds Convention Act, 1994*), timing constraints shall be applied to avoid vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the core breeding bird period – broadly from April 1 to August 31 for most species (regardless of the calendar year). See Avifauna (below) for more details. **Construction Mitigation – General Tree Protection Guidelines** Specific construction mitigation for impacts to trees should be addressed in the Arborist Report but		The success of compensation vegetation will be monitored for two years. Success of less than 80% of plantings will require further follow-up planting and monitoring for an additional two years, until an 80% success rate has been achieved. A Qualified Environmental Inspector is required throughout the construction period to ensure that protection measures are implemented, maintained and enforced.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
		should consider the following general mitigation measures: • Determine and illustrate Tree Protection Zones on Tree Preservation Plan. • Tree protection barriers will be installed around Tree Protection Zones. Locations of barriers to be identified in the completed Arborist Report. • No stockpiles, storage or disturbance to grade will occur within the TPZ to minimize soil compaction and root damage. • Install tree protection hoarding based on municipal standards. • Tree removal will be undertaken in accordance with the municipal tree protection by-law.		
Woodlands and Significant Woodlands	The only woodland community present on the subject property is FOM (mixed forest), with FOC4-1 inclusion. This small woodland (0.37 ha) meets the criteria for significant based on "woodlands within 30 m of a watercourse and evaluated wetland". This woodland is located within the 30 m setback of the PSW Complex and is entirely within the Significant Valleyland system. The FOM ecosite is considered "significant wildlife" breeding habitat for Eastern Wood-pewee (Special Concern). Noise disturbance may impact breeding success of avian species, including Eastern Wood-pewee. Other indirect effects may include: • Potential changes in form and function of the woodland due to edge effects associated with removal of surrounding vegetation (i.e., sun scald, windthrow, increased light penetration). • Increase in pedestrian use. • Habitat degradation and increased risk of exotic and invasive species colonizing in the	**General Mitigation** A 10 m VPZ has been applied to FOM to provide protection to core habitat. Grading has been avoided within the 10 m buffer and FOM feature. See Vegetation Communities above for additional details. **Construction Mitigation** Where possible, efforts to avoid and minimize the destruction or injury to trees within woodlands should be made (i.e., reducing grading and construction activities within designated woodlands). To reduce the risk of disturbing breeding birds (and contravening the *Migratory Birds Convention Act, 1994*) and Eastern Wood-pewee breeding habitat, timing constraints shall be applied to avoid vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the core breeding bird period – broadly from April 1	No net effects are anticipated if the 10 m VPZ is respected, and enhancements are applied.	An Arborist should inspect tree protecting barriers prior to vegetation removal. Weekly inspections of the protection fencing may be recommended while grading is occurring next to woodland features. See also Vegetation Communities above for additional details.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
	wetland from adjacent residential development. • Noise and human disturbance to wildlife. • Increased lighting from adjacent residential development.	to August 31 for most species (regardless of the calendar year) (see Avifauna for more details). Trees should be felled so that they fall into the development footprint to avoid damage to retained trees, including both trunks and roots. The FOM to be protected should be clearly delineated by construction hoarding, or Tree Protection Fencing, that should be installed prior to commencement of construction activities. Construction activity should be outside of the dripline of any trees that are to remain. Lighting should be directed away from the woodland ecosite. See also Construction Mitigation measures outlined in the Vegetation Communities section, above.		
Wetlands and Provincially Significant Wetlands (Heart Lake Wetland Complex)	The MAS2-1 (cattail shallow marsh) wetland listed under Net Effects, will be removed. The Heart Lake PSW Complex contained in the NHS will not be removed. Avoidance and mitigation measures apply to the PSW wetlands only. A port of the wetland will be impacted by the NHS crossing (see Vegetation Communities). The wetland communities in the PSW Complex may be impacted by the change in water balance. Indirect impacts to wetland communities in the Heart Lake PSW Complex will occur because of construction activities and the proposed development. These may include: • Erosion and sedimentation during and post construction could impact water quality and vegetation within the wetland. • Sedimentation can bury organic soils and alter vegetation communities.	**General Mitigation** Vegetated protection zones around the PSW wetlands adjacent to the proposed construction area will be established to reduce impacts. Opportunities for other wetland enhancement strategies (i.e., invasive species management, native species plantings, etc.) should be considered. The road type and surfaces will be determined in consultation with the Town, Region and TRCA. Permeable materials are recommended, if possible, but final surface materials will be selected with consideration to maintenance requirements, geotechnical conditions and impacts of flooding in the area and other conditions identified during detailed design. A conceptual Grading Plan has been developed and will be refined during detailed design to ensure the development does not impact surface drainage patterns.	See Vegetation Communities, above. MAS2-1 will be permanently removed. It is located outside the NHS and is 0.08 ha in size. It appears that this wetted feature is present due to the historical development of the adjacent industrial lands and associated driveway that block surface drainage flow, thereby creating a wet pocket. No surface connectivity between this wetland and the downstream network has been identified. Potential channelization or surface conveyance of the wetland to nearby HDFs was not evident during field investigations. This feature has very limited ecological functionality on the landscape, is isolated from the Heart Lake PSW Complex and is not hydrologically connected.	A Qualified Environmental Inspector should be on-site during any dewatering, within 120 m of natural features. The Inspector should ensure that the filter bag is working appropriately and ensure that no sediment is entering significant natural features or watercourse. An Environmental Monitoring Plan (EMP) will be required during construction to confirm that erosion and sediment control measures and spill prevention and response measures are installed and functioning as designed. Remedial measures should be implemented as soon as possible if deficiencies or unanticipated negative effects are identified during monitoring.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
	• Accidental contaminant spills from construction equipment could impact water quality and vegetation with the wetland. • Effects on hydrology due to changes to site grading and decreased permeability (roads, parking, buildings). • Effects on hydrology due to dewatering. • Alterations to surface and/or groundwater inputs to the wetland due to changes in surface/groundwater drainage patterns (i.e., stormwater infiltration and runoff in the catchment area). • Increase in pedestrian use. • Habitat degradation and increased risk of exotic and invasive species colonizing in the wetland from adjacent residential development. • Noise and human disturbance to wildlife. • Increased lighting from adjacent residential development. The PSW Complex includes candidate and confirmed SWH and SAR.	Lighting should be directed away from the PSW. Where possible, pedestrian access to the NHS should be limited in order to ensure that degradation and disturbance of sensitive wetland habitats within this feature are minimized post-development. Rear yards that abut the NHS should be fenced to limit encroachments. A Feature-Based Water Balance Study has determined that a continuous water balance model is required, per TRCA's Wetland Water Balance Risk Evaluation (2017), to ensure that water balance is maintained for natural features designated for protection within the subject property and immediately downstream. The post-development hydroperiod is sufficiently close to the pre-development hydroperiod to achieve protection of the on-site and off-site wetlands with minimal changes to deficit/surplus in post-development conditions. Stormwater LID infiltration measures required to maintain water balance to the wetlands are extensive and are illustrated on Figure 15F of the FSR (2025). Further review and refinement of the water balance strategy is expected during detailed design. A Long-Term Monitoring Plan (LMP) and an Adaptive Management Plan (AMP) will be implemented and will provide direction on appropriate mitigative measures that can be adjusted in response to monitoring results. **Construction Mitigation** Construction within and adjacent to the PSW Complex should be avoided or minimized, where possible. If impacts (i.e., vegetation removal and	Additionally, this feature has not been identified as part of the Town's EPA, Region's Greenland System, or during the Heart Lake PSW Complex boundary evaluation and/or stakings in 2000, 2009 and 2011 with MNR/TRCA and TRCA TOB staking of the NHS in 2018 and 2022. Given this feature is small and isolated from other natural heritage features and is surrounded by a major roadway, cultivated farmland and a driveway, removal of this feature is considered acceptable. The wetlands and other vegetation communities within the Heart Lake PSW Complex will be protected from direct effects, as they are protected within the Significant Valleyland/NHS. Development, including site alteration, will respect the 30 m setback that is applied to the PSW. Therefore, no net effects are expected from the construction phase within the PSW provided mitigation measures are applied. Net effects to the PSW from adjacent development will be reduced, provided stormwater and LID measures are effective in maintaining water balance.	A Qualified Environmental Inspector should be on-site daily during any dewatering, within 120 m of natural features. The Inspector should ensure that the filter bag is working appropriately, and that no sediment is entering significant natural features or watercourse. Long-term monitoring of wetland vegetation communities pre and post-construction is recommended for identifying changes in plant species composition, flow regime and soil moisture content. The plan will be provided with future submissions once detailed designs are finalized.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
		changes to hydrology) are proposed, compensation and protective measures should be discussed with TRCA. A Construction Emergency Response and Communications Plan shall be developed and followed throughout the construction phase (including spill response plans). The Contractor shall develop spill prevention and contingency plans during the construction phase. All requirements under the *Ontario Water Resources Act,* R.S.O. 1990, c. O.40 with respect to the quality of water discharging into natural receivers will be met, including the following mitigation measures and best practices: • Any discharge from dewatering should outlet to a vegetated area at least 30 m from a significant natural feature, or watercourse, utilizing a sediment filter bag. • In the event of sediment discharge, all operations will stop immediately until the problem can be resolved. • If significant changes in water levels/seepage areas are noted, operations will cease until water levels recover. Erosion and sediment control measures will be used during construction to avoid/minimize potential for off-site sedimentation into the PSW. As per standard mitigation measures – storage of excess material, refuelling and equipment storage should be located a minimum of 30 m from the PSW. The storage area should be located outside the PSW buffer.		

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
Significant Valleylands	The Heart Lake PSW Complex and Unnamed Tributary of Spring Creek is located within a Significant Valleyland system. Direct (permanent) impacts are proposed to the form of the Valleyland due to cut and fill proposed for the development within the staked TOB. As shown on Figure 10 of this report, some intrusions are proposed within the TOB limit and 10 m buffer. See also Geotechnical Setback Assessment for Erosion Hazard Limit, Snell's Hollow Secondary Plan (Golder, 2019). Potential alterations to water balance within the valley that may result in erosion. Potential for indirect effects to the function of the Valleyland (see Wetlands and Provincially Significant Wetlands above).	See Wetlands and Provincially Significant Wetlands above for mitigation and restoration measures related to indirect effects of the Valleyland. Erosion and sediment control measures will be used during construction along the TOB to avoid/minimize potential for erosion and soil mobility into the valleyland features and tributary. See also Geotechnical Setback Assessment for Erosion Hazard Limit, Snell's Hollow Secondary Plan (Golder, 2019).	Site alteration (cut/fill) is proposed within the TOB staked limit in support of the proposed development. Development, including site alteration, will respect the 30 m setback that is applied to the PSW located in the Significant Valleyland.	See also Wetlands and Provincially Significant Wetlands (Heart Lake Wetland Complex), above.
Significant Areas of Natural and Scientific Interest (ANSIs)	The subject property does not feature any ANSIs. Adjacent lands south of Mayfield Road consist of the Heart Lake Forest and Bog Life Science ANSI and the Brampton Buried Esker Earth Science ANSI. This ANSI is part of the same Heart Lake Wetland Complex. SWM Pond 2 (east outlet) will discharge to this feature ("southeast wetland"). Therefore, the southeast wetland may be impacted by the change in water balance. From a wildlife perspective, given that Mayfield Road is a busy arterial road that bisects the subject property to the north from the features to the south, no negative long-term environmental effects to wildlife are anticipated from the proposed development if wildlife linkages are enhanced and maintained (see Wildlife Linkages and Corridors).	See also Wetlands and Provincially Significant Wetlands (Heart Lake Wetland Complex), above.	See also Wetlands and Provincially Significant Wetlands (Heart Lake Wetland Complex), above.	See also Wetlands and Provincially Significant Wetlands (Heart Lake Wetland Complex), above.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
Wildlife and General Wildlife Habitat	Provincially common species considered 'habitat generalists' that are known to utilize a mosaic of agricultural, meadow, wetland and woodland habitats were noted incidentally during field investigations. Temporary displacement of, and disturbance to, wildlife and wildlife habitat during the construction phase (i.e., vegetation removals, noise, light trespass), including SAR. Development in these habitats may limit wildlife movement and reduce useable habitat. The development will permanently remove upland agricultural lands that some of these species are known to use as foraging and movement corridors. The majority of higher quality wildlife habitat on the subject property is located within the Heart Lake PSW Complex (NHS) and will be protected. There is one small wetland ecosite (MAS2-1; cattail shallow marsh) that will be directly removed. It is isolated from the Heart Lake PSW Complex and is not hydrologically connected to other natural heritage features. In addition, the CUM1-1 (dry moist old field meadow) vegetation communities in the southern portion of the subject property will be removed, which function as general wildlife habitat. Changes to surface water runoff and infiltration on the subject property has the potential to alter hydrology in the Unnamed Tributary of Spring Creek and PSW Complex. This could affect the functions of the watercourse and wetlands, including the type of wildlife species and habitats this corridor supports.	Construction fencing should be installed prior to commencement of construction activities to prevent wildlife from entering the construction areas. The excluded area shall be searched immediately following fencing installation for any wildlife (including SAR) that may have become trapped. Any wildlife shall be safely relocated, or permitted to escape, to a suitable habitat. All works shall stop immediately in the area and MECP contacted should a SAR be encountered within the construction, or operational area, to ensure compliance with the *ESA*. If an animal is encountered during construction and does not move from the construction zone, the Contract Administrator shall be notified. If the construction activities are such that continuing construction in the area would result in harm to wildlife, construction activities in that location shall temporarily stop and MNR or MECP shall be contacted for direction. Avoid vegetation clearing, or disturbance, during sensitive times of the year for local wildlife (i.e., when many animals bear their young, or migrate between wintering and summer habitats). Specific timing of works should be determined, in consultation with the appropriate Agency. Generally, the following avoidance windows apply if working within any of these habitats: • Breeding birds and/or birds protected under the MBCA, 1994 (trees/shrubs/vegetation): April 1 to August 31. • SAR Bats (trees/structures): April 1 to September 30. • Overwintering reptiles (wetlands/subsurface features such as foundations, bedrock): October to April.	Wildlife may be permanently displaced because of the proposed development, as wildlife linkages and corridors are limited in this area (see below). It should be noted that MAS2-1 provides very limited ecological function and diversity on the landscape due to its small size, isolation, and location; the Heart Lake PSW Complex provides a larger, contiguous wetland community that will continue to support a variety of species, including mammals, birds and herpetofauna.	A Biologist may be required, on an as-needed basis, during construction works if wildlife is trapped within the construction zone and requires removal and relocation to land outside of the construction zone. They may also be required on-site, as needed, should a species that is protected under the *ESA* be identified within, or adjacent to the construction site. The Biologist may be required to confirm the presence and identification of a species prior to contacting MECP for further advice. Fencing should be monitored by a Qualified Environmental Inspector, at intervals, as recommended in the ESC Guide (TRCA, 2019), to ensure there is no damage that may result in a decrease in function, or opportunities for injury or death to wildlife species. An Avian Biologist may be required on-site, as needed, should a nesting migratory bird (or SAR protected under *ESA*) be identified within, or adjacent to the construction site. The Avian Biologist may be required to confirm the presence and identification of an active nest, and/or breeding bird, prior to contacting MECP for further advice.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
	The proposed development will increase road traffic both on the subject property and in the general area. This may increase wildlife road mortalities as wildlife linkages and corridors are limited in this area (see below). SWH and SAR habitat are discussed separately, below.	• Breeding Amphibians (wetlands/open water features): April to June. See Wildlife Linkages and Corridors below, for how to enhance existing features.		
Avifauna and Area-Sensitive Species	Potential for disturbance or destruction of migratory breeding birds and their habitat (prohibitions under the *Migratory Birds Convention Act*, *1994*) during construction, including area-sensitive species. SWH and SAR habitat are discussed separately, below.	**General Mitigation** To reduce the risk of contravening the *Migratory Birds Convention Act, 1994*, timing constraints shall be applied to avoid any limited vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the breeding bird period – broadly from April 1 to August 31 for most species (regardless of the calendar year). Active nests (nests with eggs or young birds) of protected migratory birds, including SAR protected under the *Endangered Species Act (ESA), 2007*, cannot be destroyed at any time of the year. The destruction of inactive nests for some species may also be prohibited. **Construction Mitigation** If a nesting migratory bird (or SAR protected under *ESA*) is identified within or adjacent to the construction Site (or during operations and maintenance activities), and the activities are such that continuing works in that area would result in a contravention of the *Migratory Birds Convention Act, 1994* or *ESA*, all activities will stop and the Contract Administrator (with assistance from an Avian Biologist) shall discuss mitigation measures with the Town. Should SAR be identified, all activities will stop and MECP will be contacted immediately to ensure compliance with the *ESA*. The Contract Administrator shall instruct the Contractor on how to proceed based on the mitigation measures	Savannah Sparrow was recorded in the intensive agricultural fields, where patches of fallow grasses/forbs/legumes are present along the edges. While this species is considered 'area-sensitive', it is often found in smaller patches where larger, more suitable habitat is not as prevalent, particularly in Southern Ontario. Given the lack of high-quality habitat for this species on the subject property, net effects to this species are considered low. These communities listed above are not ecologically diverse, are highly disturbed by current anthropogenic practices, small in nature and currently fragmented by agricultural fields. Impacts to vegetation communities have been minimized and mitigated as described in the sections above. Features within the NHS will be protected. See also Significant Wildlife Habitat below.	An Avian Biologist may be required on site, as needed, should a nesting migratory bird (or SAR protected under *ESA*) be identified within or adjacent to the construction site. The Avian Biologist may be required to confirm the presence and identification of an active nest and/or breeding bird prior to contacting MECP for further advice.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
		established through discussions with the City, the MECP and/or Environment Canada.		
Herpetofauna	See Wildlife and General Wildlife Habitat and SWH.			
Significant Wildlife Habitat	Direct impacts to habitats within the development limits: Candidate Reptile Hibernaculum and Confirmed habitat for Special Concern and Rare Wildlife Species: Monarch and Eastern Wood-pewee. Monarch (Special Concern) - both caterpillars and adults were observed in CUM1-1 ecosites that will be removed. Host plants (milkweed) were also recorded. The FOM ecosite is considered "significant wildlife" breeding habitat Eastern Wood-pewee (Special Concern). Noise disturbance may impact breeding success of avian species, including Eastern Wood-pewee. Indirect impacts to habitats contained within the NHS: Confirmed Turtle Wintering Areas, Candidate Reptile Hibernaculum, Candidate Colonially Nesting Bird Breeding Habitat (Trees/Shrubs) for Green Heron, Confirmed Turtle Nesting Areas, Confirmed Marsh Bird Breeding Habitat, Confirmed Chimney Crayfish, Confirmed Special Concern and Rare Wildlife Species Eastern Wood-pewee, Monarch, Snapping Turtle, Midland Painted Turtle and Chimney Crayfish. See also Wildlife and General Wildlife Habitat and Wetlands and Provincially Significant Wetlands.	**General Mitigation** See also Wildlife and General Wildlife Habitat. MNR published a Significant Wildlife Habitat Mitigation and Support Tool (2014). This document provides advice and recommendations for mitigating development effects in, and adjacent to SWH, and should be used as a guide. Opportunities should be explored to enhance wildlife habitat within the NHS such as the creation of turtle nesting sites and reptile hibernaculum. Where possible, pedestrian access to the PSW within the NHS should be limited to ensure that degradation and disturbance of sensitive habitats within this feature are minimized as much as possible post-development. Avoid vegetation clearing during sensitive times of the year for local wildlife, such as spring and early summer (when many animals bear their young or migrate between wintering and summer habitats). For Candidate habitats within the development limits, detailed site surveys may be required during site-specific development proposals to confirm presence. For Confirmed habitats within the development limits: ***Monarch*** • Update: Based on Burnside's meeting with the Town on September 27, 2024, the Town acknowledged TRCA's previous acceptance of	Net effects to Monarch are considered low. While a small portion of CUM1-1 will be removed, most of it will remain in the NHS. Breeding habitat for Eastern Wood-pewee has been confirmed on adjacent lands in the Heart Lake Conservation Area where higher quality and quantity of habitat is present. Given the lack of high-quality habitat for this species on the subject property, net effects to this species are considered low. Impacts to vegetation communities have been minimized and mitigated. Features within the NHS will be protected, where the majority of Candidate or Confirmed SWH occurs.	See Wildlife and General Wildlife Habitat.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
		removal and compensation for Monarch habitat prior to the transition to the Town's commenting authority on SWH. The Town indicated it is willing to honour previous agreements with TRCA, even though it was noted that TRCA did not address the Town's OP policy regarding no development permitted in SWH. • Milkweed, the larval host plant for Monarch, will be included in all seed mixes where applicable to enhance Monarch breeding habitat on the subject property. • Most of the land in the buffers are currently agricultural fields or degraded communities; these have not been included within the lot framework and (with the exception of the Clearbrook Developments Lands) will be established as non-mowing areas with native self-sustaining vegetation that will provide a net benefit to these features (and indirectly to Monarch). ***Eastern Wood-pewee*** • The FOM and 10 m buffer (SWH) will be maintained. • The avifauna timing constraints for vegetation removal will be applied to ensure that harm to Eastern Wood-pewee (Special Concern) is avoided. • All buffers within the Clearbrook Development Lands will be fully vegetated with trees and shrubs, per TRCA's requirements. This will benefit this species. **Construction Mitigation** Prior to construction works commencing, installation of construction hoarding is recommended along the perimeter to prevent pedestrian access around the limit of construction, which includes all areas required for excavation and spoil stockpile, vehicle		

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
		and worker access and material laydown in order to prevent any wildlife from attempting to access the construction zone during construction works – specifically, fencing shall be installed at the beginning of April or earlier. If designated areas are created during construction for the stockpiling of materials, especially fill, soil and gravel, the Contractor shall install temporary construction hoarding around the perimeter of these areas to prevent any reptile species from entering the area and attempting to nest (reptiles are attracted to these materials for nesting). If temporary construction hoarding is used at a location, it shall be installed to allow wildlife to leave the fenced area during vegetation clearing. Once the work area has been cleared, it can be securely fenced to prevent wildlife from returning. The excluded area should be searched immediately following fencing installation for any wildlife (including SAR) that may have become trapped. Any wildlife should be safely relocated, or permitted to escape, to a suitable habitat no more than 200 m away from the work zone. Wildlife shall be released no more than 200 m away from the work zone in a similar ecosystem type. All works should stop immediately and MECP contacted should a SAR be encountered within a construction or operational area to ensure compliance with the *ESA*.		
Habitat of Endangered and Threatened Species	Sensitive or significant species or their habitat potentially affected (direct or indirect), including Butternut and SAR bats (treed communities). Treed communities identified on the subject property in the NHS that may be suitable bat roosting habitat:	For SAR where specific exemptions under the *ESA* Regulations are detailed (Butternut), all requirements under the *ESA* must be met. For SAR bats, both treed communities are contained entirely in the NHS and within the 30 m PSW setback.	No net effects are anticipated if all requirements under the *ESA* are met.	See Wildlife and General Wildlife Habitat.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
	• Mixedwood Forest (FOM) • Red Maple Deciduous Swamp (SWD6-1) It is assumed that all structures that are present in the development limits will be removed. Structures located on the subject property have been surveyed for Chimney Swift and SAR bats and none have been identified.	If a proposed activity can avoid impairing or eliminating the function of habitat for supporting bat life processes (i.e., remove, stub, etc a proportionally small number of potential maternity or day roost trees in treed habitats which would not result in fragmentation/barriers) and the timing of tree removal will avoid the bat active season (April 1 to September 30 in Southern Ontario), then there is no need to conduct bat surveys of treed habitats. Leaf-on / leaf-off surveys may be required during site-specific studies if trees within the FOM and SWD6-1 communities in the NHS are proposed for removal (i.e., grading, LIDs, outfalls) and harm cannot be avoided. If avoidance measures are implemented to avoid harm, acoustic surveys of treed habitats are not required. See also Wildlife and General Wildlife Habitat.		
Wildlife Linkages and Corridors	Wildlife linkages and corridors are present within the portion of the Heart Lake PSW Complex present on the subject property (Wetland No. 1). This linkage / corridor is at risk for becoming more isolated from the proposed development unless the linkage is maintained.	The existing culvert at Mayfield Road is a wildlife linkage between the subject property (Wetland No. 1) and the other wetlands in the PSW Complex located in the Heart Lake Conservation Area should be maintained.	If the existing wildlife linkage is maintained, no net effects are expected.	N/A
Fish and Fish Habitat	Potential for indirect impacts to downstream fish habitat from water quality and quantity influences (i.e., sediment, pollutants, thermal loading and changes to water balance).	**General Mitigation** Soil Management Plan and ESC Plans shall be developed. Work will be avoided near watercourses and headwater drainage features during periods of excessive precipitation and/or excessive snow melt. Compliance with the *Ontario Water Resources Act, 1990* shall be maintained with respect to the quality of water discharging into natural receivers. Sediment and erosion control measures (such as silt fence barriers, etc.) shall be installed and maintained during the work phase and until the site has been stabilized. If control measures are not functioning properly, no further work shall occur until	In-water works are not required for the proposed works and thus HADD of fish habitat and the death of fish will not occur as a result of direct impacts from the proposed works. The implementation of the SMP and ESC plans will mitigate indirect impacts to downstream fish habitat from the water quality and quantity influences.	A Qualified Environmental Inspector shall regularly monitor construction activities to confirm the requirements outlined in the SMP and ESC plans are followed. Workers shall report any instances of spills or impacts to surface water features.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
		the problem is resolved. All temporary ESC measures shall be installed in accordance with recognized provincial standards. Extra silt fence and ESC control materials shall be stored on-site, should additional sediment mitigation be required. **Construction Mitigation** All disturbed areas of the work site should be stabilized immediately, and re-vegetated as soon as conditions allow. All equipment and personal protective equipment must arrive on-site clean to prevent the potential transfer of invasive species (i.e., phragmites) to the local environment. Any stockpiled material shall be stored and stabilized away from the watercourse. All materials and equipment used for the purpose of site preparation and road construction shall be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) from entering the water. All equipment fueling and maintenance should be done outside of the regulated area to ensure that no deleterious substances enter the watercourse. No equipment refueling should occur within 30 m of a watercourse or NHS feature (e.g., woodland, wetland, valleyland), and all stationary equipment should be outfitted with drip pans (i.e., secondary containment) to prevent/contain oil spills. Spills should be immediately contained and cleaned up, in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit should be on site at all times during the work. Spills should be reported		

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
		to the Ontario Spills Action Center at 1-800-268-6060. TRCA shall be consulted for site-specific development proposals with regard to potential works within, or in close proximity to flood regulated areas, as appropriate.		
Headwater Drainage Features	Potential for loss of hydrologic contribution to watercourses, habitat loss for terrestrial and aquatic species, impacts to groundwater contributions, reduction in sediment control capacity, impacts to downstream water quality and increases in flooding.	**General Mitigation** Potential HDFs were investigated within the subject property with land use recommendations provided in the preceding sections, based on their function to the aquatic network, as outlined on Figure 2 of the HDF Guideline (TRCA/CVC, 2014). HDF's classified as no management concern (i.e., H1, H4-H7, and upstream reaches of H8 to H12) will be addressed through general minor and major SWM systems and do not require specific mitigation efforts, provided water balance within the receiving features are maintained. Features H2 and H3, and the downstream reaches of H8 to 12, are classified as Mitigation. H3 and the downstream reaches of H9 to H12 will not be altered within the proposed design. However, SWM ponds are proposed to be constructed in the vicinity of H2 and H8. To mitigate these impacts, efforts should be made to replicate the existing drainage patterns and locate SWM outfalls or LID structures to feed the lower reaches of H3 and H8. Through these efforts, the H2 and H8 features can be mitigated through stormwater discharge. The management recommendation for Feature H2-R1 is Conservation. This feature will not be directly altered by the proposed design, but changes to hydrology and flow may occur through modifications to drainage patterns from the subject property.	Direct impacts to HDF's within the subject property are anticipated to be minor, given low sensitivity features located within the developable limits. Net effects to the hydraulic function of HDF's, which includes maintaining surface flows to the downgradient PSW complex, can be minimized provided water balance is maintained through SWM and/or LID design strategies.	Monitoring will not be required as per the management recommendations.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
Soils, Erosion and Sediment Control, and Surface Water	Potential for localized surface water or groundwater impacts as a result of spills, discharge or dumping of materials, fluids and other wastes during construction.	**General Mitigation** The Town is required to comply with the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 with respect to the quality of water discharging into natural receivers. The footprint of disturbed areas shall be minimized to the extent possible. For example, vegetated buffers shall be left in place adjacent to natural vegetation features (forested areas) to the maximum extent possible. A plan should be prepared by a Qualified Professional, per O. Reg. 406/19 On-site and Excess Soil Management for managing soil materials on-site (includes excavation, location of stockpiles, reuse and off-site disposal). Given the sensitivity of the receiving features, a redundant ESC plan will be developed and implemented during detailed design, as well as a robust during development monitoring plan in consultation with TRCA and will conform to industry best management practices and recognized standard specifications, such as Ontario Provincial Standards Specification (OPSS) and TRCA's Erosion and Sediment Control Guidelines. Best practices such as silt control fencing, mud mats, temporary cut-off swales, sediment control ponds, and double row silt fencing with straw bales will be incorporated into the ESC Plan. **Construction Mitigation** Any in-water work will be conducted in isolation of flowing water. All work zones will be clearly marked on detailed design drawings and the ESC Plan to indicate that no work should occur outside the work zone.	No net effects are expected provided all avoidance, mitigation and/or restoration measures are adhered to for the entire duration of the project.	A Qualified Environmental Inspector shall regularly monitor construction activities to confirm the requirements outlined in the SMP and ESC are being followed. An ESC monitoring plan will be developed during detailed design to ensure that the ESC measures are functioning as intended during construction. A Qualified Environmental Inspector shall inspect, suggest and confirm the repair of ESC measures as needed. Workers shall report any instances of spills to their supervisors.

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and / or Restoration Measures	Net Effects	Recommended Monitoring Activities
		ESC measures shall be installed and maintained during the construction phase and until all areas of the construction site have been stabilized. ESC measures shall be inspected daily to confirm they are functioning and maintained as required. If ESC measures are not functioning properly, no further work in the affected areas will occur until the sediment and/or erosion problem is resolved. All disturbed areas of the construction site will be stabilized and re-vegetated as soon as conditions allow. Wet weather restrictions shall be applied during site preparation and excavation. Any construction works within TRCA regulated areas will require a permit under O. Reg. 41/24. Refueling and maintenance of construction equipment should occur within designated areas only. Any hazardous materials used for construction will be handled in accordance with appropriate regulations. A Construction Emergency Response and Communications Plan shall be developed and followed throughout the construction phase (including spill response plans). The Contractor shall develop spill prevention and contingency plans during the construction phase. Personnel shall be trained in how to apply the plans and the plans shall be reviewed to strengthen their effectiveness and continuous improvement. Spills or depositions into watercourses shall be immediately contained and cleaned up, in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit will always be on site during the work. Spills will be reported to the Ontario Spills Action Centre at 1-800-268-6060.		

12.0 Future Environmental Permits and Approvals in Support of Development Proposals

Based on Burnside's field investigations for the subject property, we anticipate the project will require the following environmental permits and approvals in support of site-specific development proposals. See Table 23 below.

Table 23: Summary of Anticipated Environmental Permits and Approvals

Permits/Approvals	Rationale	Approval Mechanism
Provincial *Endangered Species Act*	**SAR Bats** If activities in the FOM or SWD6-1 communities are proposed during detailed design (i.e., grading, LIDs, outfalls) that cannot avoid impairing or eliminating the function of habitat for supporting bat life processes and the timing of tree removal cannot avoid the bat active season, scoped leaf-on, leaf-off and / or acoustic surveys may be required.	Subject to proposed works and consultation with MECP.
	Butternut • Impacts to the Category 2 Butternut tree will be better understood once detailed grading plans are available, as described in Section 7.7.6. • Additional Butternut trees that may be identified during site-specific studies for individual parcels (i.e., EIS).	O.Reg. 830/21 of the ESA, Part V and O.Reg. 829/21.
O.Reg. 41/24	Any development, interference with wetlands and alterations to shorelines and watercourses and associated hazard lands.	A permit will be required for development within all lands regulated through Section 28 of the *Conservation Authorities Act*.
Town of Caledon Tree Removal By-law (No. 2000-100)	To regulate and/or prohibit destruction of trees in woodlands. This pertains to trees in the NHS that are proposed for removal during detailed design (i.e., grading, LIDs, outfalls).	A permit may be required for the removal of trees in woodland communities in the NHS.

13.0 Guidelines for Environmental Studies in Support of Site-specific Development Proposals

Per the requirements of the TOR (2019), guidelines are required for carrying out future site-specific studies, including Environmental Impact Studies and LMPs and AMPs, to be prepared by individual applicants in support of development applications on the subject

property. These site-specific studies will assess the merits of the application and will apply findings, recommendations and strategies contained in the CEISMP. Establishing guidelines for the preparation of site-specific environmental studies will assist future applicants in determining the scope and content of such studies.

The TRCA has published Environmental Impact Statement Guidelines (2014) that provide a comprehensive outline of the consultation and review process and the key components of an EIS report. These guidelines should be referenced prior to any future studies that are completed.

Site-specific environmental studies that may be required include:

- **Bats:** Suitable roosting habitat is presumed present in the NHS, given the treed communities present. According to MECP's *Species at Risk Bats Survey Note* (2022b), if a proposed activity can avoid impairing or eliminating the function of habitat for supporting bat life processes (i.e., remove, stub, etc. a proportionally small number of potential maternity or day roost trees in treed habitats which would not result in fragmentation / barriers) and the timing of tree removal will avoid the bat active season (April 1 to September 30 in Southern Ontario), then there is no need to conduct bat surveys of treed habitats. Leaf-on / leaf-off surveys may be required during site-specific studies if trees within the FOM and SWD6-1 communities in the NHS are proposed for removal (i.e., grading, LIDs, outfalls) and harm cannot be avoided. If avoidance measures are implemented to avoid harm, acoustic surveys of treed habitats are not required. Acoustic surveys can only be completed in June and early July.
- **Butternut:** Surveys should be completed for intrusions into the NHS (i.e., grading, LIDs, outfalls), once specific impacts are better understood.
- **Significant Wildlife Habitat:** Additional consultation with the Town may be required to discuss the need to complete surveys for any Candidate or Confirmed SWH identified on the subject property for site-specific development proposals once impacts are better understood (Candidate Bat Maternity Colonies and Candidate Reptile Hibernaculum (old barn foundation). Section 11.0 outlines mitigation measures to avoid negative impacts to these features; it is Burnside's opinion that if these measures are implemented, no long-term negative effects to SWH are expected to occur.
- **Non-participating Landowners:** Scoped surveys may be required on these parcels at future stages of the Secondary Plan once access has been obtained.

As per Part C of the TOR (2019), LMPs and AMPs are required after baseline conditions are established. The following summary is borrowed from the TOR (2019) and provides a general framework for the Snell's Hollow East Secondary Plan. Future consultation with TRCA will be required to refine the Plans specific to the subject property.

The LMP should be designed in such a way that impacts can be distinguished from natural trends at an early stage. This plan will be included in the final study report; the costs and responsibilities for long-term monitoring must be addressed. Items to be monitored over the long-term may include but is not limited to:

- Water quality and quantity, including stormwater system performance (including any best management practice measures and / or designs used).
- Fisheries and aquatic resources.
- Hydrology and hydraulics.
- Groundwater quality and quantity.
- Stream morphology and slope stability.
- Terrestrial resources – woodlots, wetlands, flora and fauna, terrestrial linkages, buffer areas, invasive species, natural system encroachments, natural system edge management.
- Water balance and the effectiveness of groundwater recharge enhancement measures.

The broad objective of the AMP is to provide direction for monitoring the performance of the recommended aquatic and terrestrial resource mitigation strategies, and to provide a flexible mitigation system that can be adjusted in response to monitoring results. For the AMP to be effective, flexible measures must be accommodated at the initial stages of all aspects of the community design (i.e., SWM infrastructure, open space system, transportation network, landscaping, etc.) to allow for an adaptive system that can react to required change.

The AMP is a management framework that encompasses and provides for the following:

- Identify key features and functions and associated protection goals and objectives.
- Management targets required to meet goals and objectives.
- Mitigation measures to address the performance targets.
- Monitoring requirements to monitor the success of the mitigation measures in relation to the targets.
- Evaluation of the monitoring results in relation to the management targets.
- Long-term adjustment of the overall Plan / AMP as needed.

The AMP will include a framework for long-term environmental monitoring to measure the performance of the recommended mitigation / management strategies. Recommendations for long-term monitoring of surface water, groundwater, water quality, fisheries, stream morphology and terrestrial / wetland resources will be provided. The data collected as part of the CEISMP will form a baseline for monitoring change over time and for evaluating proposed management practices. Monitoring frequency, parameters and responsibility will also be addressed. The monitoring program will be designed in a way that will help to distinguish between natural variation in ecosystem function and potential land use development impacts.

The AMP will discuss responses to changing conditions, or anticipated impacts. This might include more aggressive monitoring necessary to determine the cause-and-effect relationship associated with the change or anticipated impact, as well as providing general directions for consideration of impact contingency measures where necessary, after taking into account monitoring results.

The AMP will address mitigation and monitoring plans, as well as enhancement and restoration, to ensure they are consistent and integrated and address the identified resource protection targets.

14.0 Summary

The Team was retained by the Snell's Hollow Developers Group to undertake a CEISMP for a development, located at the northeast corner of Kennedy Road and Mayfield Road. The subject property is situated in the proposed Snell's Hollow East Secondary Plan area and contains a portion of the Heart Lake PSW Complex and an Unnamed Tributary of Spring Creek, which drains beneath Mayfield Road towards Heart Lake Conservation Area to the south. This report contains Part A and Part B of the CEISMP, per the TOR (2019).

The main body of this report provides a summary of existing baseline conditions and characterization of the natural environment (Part A), as well as a land use evaluation and impact assessment (Part B). Existing natural heritage constraints and features are assessed in the context of applicable planning and policy considerations and the planned urban development proposed (i.e., SWM, water supply analysis, feature-based water balance and wetland risk evaluation, sanitary servicing strategy, functional servicing). It is intended that the findings of each component study and analysis are integrated throughout the report. Environmental permits, approvals and guidelines for environmental studies have been summarized for site-specific proposals during future stages of development.

Part C Implementation will be part of a future report submission and will include details pertaining to the Long-Term Monitoring Plan and Adaptive Management Plan. These Plans will ensure that the principle of adaptive management and an appropriate level of flexibility will be incorporated into the design in consultation with TRCA. The full CEISMP inclusive of Part A, Part B and Part C for the entire Secondary Plan Area will be submitted prior to draft plan approval.

The most significant constraint to development is the Heart Lake PSW and associated Unnamed Tributary of Spring Creek that is contained within the Significant Valleyland system that traverses through the centre of the subject property. The NHS has been identified as all of the features contained within this system, based on TRCA's staked TOB limits (2018 and 2022). The tablelands are mostly comprised of rural properties and intensive agriculture and generally the proposed development is contained to the

tablelands, outside of the NHS. Portions of the proposed development which encroach beyond the TOB have been discussed with TRCA and will be addressed by way of an appropriate restoration plan at the detailed design stage. Specific restoration locations will be determined / refined in support of future development proposals.

Significant features are contained within the NHS and include Butternut, Candidate SAR bat habitat, Confirmed Turtle Wintering and Nesting Areas, Confirmed Chimney Crayfish habitat, Candidate Colonially Nesting Bird Breeding Habitat (Trees / Shrubs) for Green Heron, Confirmed Marsh Bird Breeding Habitat, and Confirmed Special Concern and Rare Wildlife Species for Eastern Wood-pewee, Monarch, Snapping Turtle, Midland Painted Turtle and Chimney Crayfish.

A Wetland Water Balance Risk Evaluation classified the wetlands on the subject property as “High Risk”. In response to the Town’s review of the second CEISMP submission, JFSA evaluated the average monthly, seasonal and annual runoff volumes, flows, and water depths in and downstream of the subject property under existing and proposed conditions for the three key wetland features. By increasing pre-development infiltration volumes and maintaining the surface water contributions to the wetlands, it is Burnside’s opinion that the hydroperiod of these wetlands has been adequately matched to prevent long-term changes in ecological composition and function of the wetlands. While seasonal groundwater discharge may occur during the spring, the discharge volume is anticipated to be minimal due to the low permeability of the underlying silt and clay soils.

An evaluation of potential environmental impacts and recommended mitigation measures has been completed in consideration of the proposed development activities. Overall, the Preliminary Development Concept Plan (October 2024) is in general agreement with applicable natural heritage legislation and policies, with additional refinement of the design and supporting mitigation measures anticipated during the development stage and through consultation with regulatory agencies.

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