575 Quaker Road

Environmental Impact Study

City of Welland, Ontario

Submi ed to:
Metro-Mountainview Developments Inc.
1-3340 Schmon Parkway
Thorold, ON L2V 4Y6

Submi ed by:
GEI Consultants Canada Ltd.
1266 South Service Road, Unit C31
Hamilton, ON L8E 5R9

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Sean K. Male, M.Sc.
Senior Ecologist

Noel Boucher
Senior Ecologist

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1. Introduction

GEI Consultants Canada Ltd. (GEI) has been retained by Metro-Mountainview Developments Ltd., to complete an Environmental Impact Study (EIS), for their landholdings at 575 Quaker Road, within the City of Welland, Ontario (the Subject Lands, **Figure 1**).

The Subject Lands consist en rely of ac ve agricultural lands, with natural vegeta on limited to the hedgerows along the property boundary. To the east of the Subject Lands, are open spaces and an administra ve building and associated parking lot. To the south of the Subject Lands, are residen al areas, and to the west are lands that have been recently cleared. North of Quaker Road is a mix of residen al and agricultural lands.

An EIS is required for the Subject Lands, to address poten al impacts of the proposed development. An EIS is a requirement of the municipal planning process and is intended to address the policies of the City of Welland, Region of Niagara, and the NPCA.

This EIS considers applicable policies of the Province of Ontario's Provincial Policy Statement (PPS; Ministry of Municipal Affairs and Housing; MMAH 2020), and associated provincial implementa on guidance contained in the Natural Heritage Reference Manual (NHRM; MNR 2010), as well as the Region of Niagara Official Plan (2022), City of Welland Official Plan (2010), City of Thorold Official Plan (2016) for adjacent lands within 120m, and the Niagara Peninsula Conserva on Authority (NPCA) regula ons and policies.

Study components completed to date and included in this EIS consist of the following:

- A review of exis ng background informa on, policies and legisla on applicable to the Subject Lands in its regional context;
- A field review and descrip on of the natural environmental features and func ons on, and immediately adjacent within 120 m of the Subject Lands, through the comple on of ecological site inves ga ons;
- An evalua on of the sensi vity of the natural heritage features, and their func ons on the Subject Lands;
- A descrip on of the proposed development;
- Iden fica on and discussion of the impacts that could affect the natural heritage features, as a result of the proposed development; and
- Recommenda ons for mi ga on to avoid or minimize impacts and suggested restora on efforts.

2. Natural Heritage Planning Considerations

An assessment of the quality and extent of natural heritage features found on, and within 120 m of the Subject Lands and the poten al impacts to these features from the proposed development was undertaken to comply with requirements of the following regulatory agencies, local municipality, and/or legisla on:

- Provincial Policy Statement (2020);
- *Endangered Species Act, 2007;*
- *Fisheries Act* (2019);
- *Migratory Birds Conven on Act* (1994);
- City of Welland Official Plan (2019);
- Niagara Region Official Plan (2022);
- Niagara Peninsula Conserva on Authority; and
- Watershed planning documents.

2.1. Provincial Policy Statement

The PPS (MMAH 2020) provides direction on matters of provincial interest related to land use planning and development. It "supports a comprehensive, integrated and long-term approach to planning…" The PPS is to be read in its entirety and land use planners and decision-makers need to consider all relevant policies and how they work together. This report addresses those policies that are specific to Natural Heritage (Section 2.1) with some reference to other policies with relevance to Natural Heritage and impact assessment consideration.

Eight types of significant natural heritage features are defined in the PPS, as follows:

- Significant wetlands;
- Significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat (SWH);
- Fish habitat;
- Habitat of endangered and threatened species; and
- Significant areas of natural and scien fic interest (ANSIs).

Development and site altera on shall not be permi ed in significant wetlands, or in significant coastal wetlands. Development and site altera on shall not be permi ed in significant woodlands, significant valleylands, SWH or significant ANSIs, unless it is demonstrated that there will be no nega ve impacts on the natural features or their ecological func ons.

Development and site altera on shall not be permi ed in the habitat of endangered and threatened species or in fish habitat, except in accordance with provincial and federal requirements. Development and site altera on may be permi ed on lands adjacent to fish habitat provided it has been demonstrated that there will be no nega ve impacts on the natural feature or its ecological func ons.

On October 20, 2024, the PPS is being replaced by the Provincial Planning Statement, 2024. The policies rela ng to natural heritage features within the Provincial Planning Statement, 2024, are consistent with those in the PPS described above.

2.2. Endangered Species Act, 2007

The provincial *Endangered Species Act, 2007* (ESA) was developed to:

- Iden fy species at risk (SAR), based upon best available science;
- Protect SAR and their habitats and to promote the recovery of SAR; and
- Promote stewardship ac vi es that would support those protec on and recovery efforts.

The ESA protects all Threatened, Endangered, and Ex rpated species listed on the Species at Risk in Ontario List (SARO; Ontario Regula on 230/08). These species are legally protected from harm or harassment and their associated habitats are legally protected from damage or destruc on, as defined under the ESA.

It should be noted that for the purposes of this EIS, SAR will be considered for those species designated as either Endangered or Threatened on the SARO list. Habitats for species with a designa on of Special Concern on the SARO list are treated as a Species of Conserva on Concern (SOCC) and are protected under the PPS as a type of SWH.

2.3. Federal Fisheries Act

Fisheries and Oceans Canada (DFO) administers the federal *Fisheries Act* (1985) which defines fish habitat as “spawning grounds and other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes” [subsection (2)1]. The *Fisheries Act* prohibits the death of fish by means other than fishing [subsection 34.4 (1)] and the harmful alteration, disruption or destruction of fish habitat [HADD; subsection 35. (1)]. A HADD is defined as “any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat’s capacity to support one or more life processes”.

Some projects may be eligible for exemp on from the DFO review process, as specified under Step 3 of the DFO Fish and Fish Habitat Protec on Program review process, such as clear-span bridges and bridge maintenance projects where DFO mi ga on measures are applied, ar ficial waterbodies with no hydrological connec on to occupied fish habitat, and projects that follow the Standards and Codes of Prac ce defined by DFO. All other projects or ac vi es that have the poten al to impact fish or fish habitat should be submi ed to DFO through the “Request for Review” process. DFO will review the proposed project to determine whether there is poten al to (1) impact an aqua c species at risk, (2) cause the death of fish or (3) result in HADD of fish habitat. The death of fish by means other than fishing

or a HADD of fish habitat can be authorized by DFO under paragraphs 34.4(2)(b) or 35(2)(b) of the *Fisheries Act*. Authorizations require the preparation and submission of an application identifying the impacts on fish and fish habitat as well as the avoidance, mitigation and offsetting measures that will be implemented as well as any monitoring that is proposed.

2.4. Migratory Birds Convention Act

The *Migratory Birds Convention Act* (1994) provides protection to migratory birds, their habitats and nests at the federal level by prohibiting the destruction of active migratory bird nests. Currently, 700 migratory bird species are protected under this Act, including songbirds, woodland birds, waterfowl, shorebirds and seabirds. Although no permit is required by the legislation, appropriate timing constraints on potentially disruptive activities such as vegetation clearing (e.g., tree removal) where migratory birds may be nesting are required to avoid contravention of this Act. The requirement to ensure that there are no bird nests present within the work area rests with the proponent of the activity.

2.5. City of Welland Official Plan

The Subject Lands are in the City of Welland (**Figure 1**). The City of Welland Official Plan (OP; 2019) was adopted by the Welland City Council on May 4, 2010, by By-law 2010-55, and approved by the Niagara Regional Council on September 15, 2011.

The components of the Core Natural Heritage System consist of Core Natural Areas within four categories; Environmental Protection Areas, Environmental Conservation Areas, Natural Heritage Corridors and Fish Habitat. Schedule C1 illustrates the specific components of the Environmental Protection Area and Environmental Conservation Area based on available information, with w a watercourse identified to the east of the Subject Lands, and two significant woodlots identified to the west along Quaker Road. The Subject Lands are designated as Agricultural in accordance with Schedule B ("Land Use Plan") in the City of Welland OP (2019).

Within the City of Welland OP, the Core Natural Heritage System is made up of Core Natural Areas classified as either Environmental Protection Area or Environmental Conservation Area, Natural Heritage Corridors connecting these Core Natural Areas and fish habitat. The Core Natural Heritage System provides "protection, maintenance, restoration, and where possible enhancements of Welland's natural systems, ecological health and biodiversity." Opportunities for major development and site alteration is limited within the Core Natural Heritage System designation and includes existing agricultural and small-scale recreational uses, dependent on permitting from the NPCA.

Environmental Protection Areas are defined within the OP as provincially significant wetlands (PSWs), provincially significant Life Science ANSI, and Significant Habitat of Threatened or Endangered species. Development within Environmental Protection Areas is not permitted. Minor boundary adjustments of identified Environmental Protection Areas do not require amendment of the OP.

Environmental Conservation Areas are defined within the OP as Significant Woodlands, SWH, Significant Habitat of Species of Special Concern, regionally significant Life Science ANSI, evaluated wetlands, Significant Valleylands, Savannahs and Tallgrass Prairie, Alvars, and publicly owned Conservation Lands. Minor development and site alteration may be permitted within Environmental Conservation Areas if no negative impacts to the features can be shown through an EIS.

The Subject Lands are also situated within the Northwest Secondary Plan area. Schedule G shows the Subject Lands as Low Density Greenfield Residen al with an area for open and recrea on. Appendix 1, Map 4 of the secondary plan shows a conceptual poten al natural heritage corridor which traverses the Subject Lands from a PSW to the northeast to the significant woodlands to the west. The Secondary Plan indicates that corridors follow natural features whenever possible. An EIS is required to assess whether the development can be located, designed and constructed to maintain the ecological func ons of the poten al corridors.

The City of Welland is currently upda ng this OP, with a dra dated May 2024 currently available for review. Schedule B – Land Use of the Dra OP shows the Subject Lands as Low Density Residen al with an open space and recrea on block. Schedule C1 – Components of the Core Natural Heritage System shows there are no features present on the Subject Lands, with a significant woodland iden fied to the west, and two other woodlots iden fied to the south within the exis ng residen al development. The mapping and policies rela ng to the poten al corridors is incorporated into the Dra OP in Appendix 5 and sec on 12.4.8, respec vely.

2.6. Niagara Region Official Plan

Similar to the City of Welland OP (2019), the Niagara Region Official Plan (ROP; 2022) also outlines policies and plans to provide direc on to future growth and development within the Region. Schedule C1 ("Natural Environment System Overlay and Provincial Natural Heritage Systems") designates the Subject Lands as Urban Area, with Schedule C2 ("Natural Environment System-Individual Components and Features") showing a significant woodland west of the Subject Lands. The Region's natural environment system also includes the Provincial Natural Heritage System which is made up of the Natural Heritage System for the Growth Plan and the Greenbelt Natural Heritage System. The Subject Lands are outside of the Provincial Natural Heritage System.

Schedule C3 of the Plan ("Key Hydrologic Areas") illustrates that there are significant groundwater recharge areas present within the Subject Lands.

The ROP notes that where a development is located within a secondary plan area that was approved a er July 1, 2012, that the por ons that are not subject to a dra approved plan of subdivision (such as the Subject Lands) shall be approved in accordance with the approved mapping and policies of the secondary plan (Sec on 3.1.30.4). As the Northwest Secondary Plan was approved a er that date, the Secondary Plan will apply.

2.7. Niagara Peninsula Conservation Authority

Effec ve April 1, 2024, Ontario Regula on (O. Reg.) 41/24: Prohibited Ac vi es, Exemp ons and Permits has come into force, replacing the former O.Reg. 99/01: NPCA: Development, Interference with Wetlands, Altera ons to Shorelines and Watercourses Regula on.

O. Reg. 41/24 allows Conservation Authorities to implement Section 28 *Conservation Authorities Act, 1990* (amended 2024), which states under Sec on 28(1) that:

> 28 (1) No person shall carry on the following ac vi es, or permit another person to carry on the following ac vi es, in the area of jurisdic on of an authority:
>
> 1. Ac vi es to straighten, change, divert or interfere in any way with the exis ng channel of a river, creek, stream or watercourse or to change or interfere in any way with a wetland.
> 2. Development ac vi es in areas that are within the authority's area of jurisdic on and are,
>   i. hazardous lands,
>   ii. wetlands,
>   iii. river or stream valleys the limits of which shall be determined in accordance with the regula ons,
>   iv. areas that are adjacent or close to the shoreline of the Great Lakes-St. Lawrence River system or to an inland lake and that may be affected by flooding, erosion or dynamic beach hazards, such areas to be further determined or specified in accordance with the regula ons, or
>   v. other areas in which development should be prohibited or regulated, as may be determined by the regula ons. 2017, c. 23, Sched. 4, s. 25.

Pursuant to O. Reg. 41/24, any interference with or development in or on areas stated in the *Conserva on Authori es Act* (e.g., hazardous lands, wetlands, river or stream valleys) requires permission from the Conserva on Authority. The Conserva on Authority may issue permits under Sec on 28.1 and may a ach condi ons on the permits per Sec on 9(1) of the Regula on.

A review of the NPCA watershed explorer mapping tool was completed to understand whether hazardous lands, wetlands, shorelines and areas suscep ble to flooding, and associated allowances were found within, or adjacent to, the boundaries of the Subject Lands. The nearest iden fied regulated area is a mapped watercourse more than 100 m east of the Subject Lands.

2.8. City of Welland Northwest Area Planning and Servicing Study – Municipal Class Environmental Assessment

The Municipal Class Environmental Assessment (Earth Tech 2008) that was prepared in support of the City of Welland's Northwest Secondary Plan was reviewed for any addi onal informa on.

The EA iden fies an Environmentally Sensi ve Area, a swamp white oak community associated with the previously iden fied Significant Woodland to the west of the Subject Lands. The woodlot was the subject of field inves ga ons in late fall 2003 where Ecological Land Classifica on was completed. The Environmental Impact Study included within the Municipal Class Environmental Assessment describes the woodland as being comprised of two dis nct communi es, a Fresh-Moist Shagbark Hickory Deciduous Forest Type (FOD 9-4) and a Swamp White Oak Mineral Deciduous Swamp Type (SWD 1-1). The forest community is described as dominated by shagbark hickory, white elm, pignut hickory and

sugar maple with an average diameter at breast height (dbh) of 35 cm. The swamp community is dominated by swamp white oak, silver maple, white ash, and black walnut with an average dbh of 40 cm. Water is present at the surface in areas (up to 20% of the ground surface). The EIS does not a show the watercourse crossing Rice Road south of Quaker Road.

3. Summary of Data Collection Approaches and Methods

3.1. Background Information Review

GEI has relied, in part, upon suppor ng background informa on to provide addi onal insight into the overall character of the Subject Lands. These resources included:

- MNRF Land Informa on Ontario (LIO) Natural Features Mapping (2024);
- Natural Heritage Informa on Centre (NHIC) database (2024);
- Provincial wildlife atlases:
  - Ontario Breeding Bird Atlas (OBBA; BSC et al. 2007);
  - Ontario Rep le and Amphibian Atlas (2020);
  - Toronto Entomologists' Associa on's (TEA) Ontario Bu erfly and Moth Atlases (2024 a,b);
- DFO Aqua c Species at Risk Distribu on Mapping (2024); and
- Ci zen Science Databases (i.e., iNaturalist and eBird).

The results of these background reviews are discussed in the following sec ons. Any addi onal background materials made available to GEI by reviewing agencies will be reviewed and incorporated into the Scoped EIS, as appropriate.

3.1.1. Land Information Ontario Natural Features Summary

Based on MNRF's LIO geographic database, the following features were found within and adjacent to the Subject Lands (**Figure 1**):

- Woodlands are mapped west of the Subject Lands, while hedgerows are iden fied along the eastern and western property boundaries; and
- There are no watercourses mapped on the Subject Lands.

No other known natural heritage features were iden fied within or adjacent to the Subject Lands.

3.1.2. NHIC Database Results

The NHIC database (MNRF 2024) was searched for records of provincially significant plants, vegeta on communi es and wildlife on and in the vicinity of the Subject Lands. The database provides occurrence data by 1 km^2 area squares; however, no data is available for the square which overlaps the Subject Lands.

3.1.3. Ontario Breeding Bird Atlas

The Ontario Breeding Bird Atlas (OBBA) contains detailed informa on on the popula on and distribu on status of Ontario birds (BSC et al. 2007). The data is presented on 100 km^2 area squares with one square overlapping the Subject Lands (17PH46). It should be noted that the Subject Lands are a small component of the overall bird atlas square, and therefore it is unlikely that all bird species are found within the Subject Lands. Habitat type, availability and size are all contribu ng factors in bird species presence and use.

A total of 102 bird species were recorded in atlas square, with the following species of interest noted:

- Species listed as Threatened or Endangered on the SARO List:
  - Acadian Flycatcher (*Empidonax virescens*) – Endangered;
  - Northern Bobwhite (*Colinus virginianus*) – Endangered;
  - Red-headed Woodpecker (*Melanerpes erythrocephalus*) – Endangered;
  - Bank Swallow (*Riparia riparia*) – Threatened;
  - Bobolink (*Dolichonyx oryzivorus*) – Threatened;
  - Cerulean Warbler (*Setophaga cerulea*) – Threatened;
  - Chimney Swi (*Chaetura pelagica*) – Threatened;
  - Eastern Meadowlark (*Sturnella magna*) – Threatened;
  - Eastern Whip-poor-will (*Antrostomus vociferus*) – Threatened; and
  - Least Bi ern (*Ixobrychus exilis*) – Threatened.
- Species of Conserva on Concern (i.e., listed as Special Concern on the SARO List or iden fied as an S1–S3 species; B= breeding popula on, N=non-breeding popula on, M= migrant popula on):
  - American Coot (*Fulica americana*) – S3B, S4N;
  - Bald Eagle (*Haliaeetus leucocephalus*) – Special Concern;
  - Barn Swallow (*Hirundo rus ca*) – Special Concern;
  - Blue-winged Teal (*Anas discors*) – S3B, S4M;
  - Common Gallinule (*Gallinula galeata*) – S3B;
  - Common Nighthawk (*Chordeiles minor*)– Special Concern;
  - Eastern Wood-Pewee (*Contopus virens*) – Special Concern;
  - Grasshopper Sparrow (*Ammodramus savannarum*) – Special Concern;
  - Peregrine Falcon (*Falco peregrinus*) – Special Concern;
  - Purple Mar n (*Progne subis*) – S3B;
  - Short-eared Owl (*Asio flammeus*) – Special Concern
  - Upland Sandpiper (*Bartramia longicauda*) – S2B; and
  - Wood Thrush (*Hylocichla mustelina*) – Special Concern.

3.1.4. Ontario Reptile and Amphibian Atlas

The Ontario Rep le and Amphibian Atlas contains detailed informa on on the popula on and distribu on status of Ontario herpetofauna (Ontario Nature 2020). The data is presented on 100 km^2 area squares with one square overlapping the Subject Lands (17PH46). It should be noted that the Subject Lands are a small component of the overall atlas square, and therefore it is unlikely that all herpetofauna species are found within the Subject Lands. Habitat type, availability and size are all contribu ng factors in herpetofauna species presence and use.

A total of 19 species were recorded in the atlas square, that overlaps with the Subject Lands.

Of these species, the following species of interest are noted: Eastern Hog-nosed Snake (*Heterodon pla rhinos*) – Threatened and Snapping Turtle (*Chelydra serpen na*) – Special Concern.

It should be noted that the last observa on of the Eastern Hog-nose Snake was in 1988 and is considered to be a historical observa on.

3.1.5. Ontario Butterfly and Moth Atlas

The Ontario Bu erfly and Moth Atlases (Toronto Entomologists' Associa on 2024 a,b), contain detailed informa on on the popula on and distribu on status of bu erflies and moths in Ontario. The database provides occurrence data by 10 km x 10 km squares. The Subject Lands are located within the atlas square (17PH46), which was used to determine a poten al bu erfly and moth species list for the area. The Subject Lands are a small component of the overall atlas square, and therefore all the bu erfly and moth species listed for this atlas square may not be found within the Subject Lands. Habitat type, availability, and size are all contribu ng factors to rep le and amphibian species presence and use.

A total of 81 species including 47 bu erfly species and 17 moth species were recorded in atlas square. Of these reported species, the following species of interest is noted: Monarch (*Danaus plexippus*) – Special Concern.

3.1.6. Fisheries and Oceans Canada Aquatic Species at Risk Distribution Mapping

Aqua c species at risk distribu on mapping (DFO 2024) was reviewed to iden fy any known occurrences of aqua c SAR, including fish and mussels, within the subwatershed where the Subject Lands are located. No SAR were iden fied within the Subject Lands.

3.1.7. Citizen Science Databases (eBird and iNaturalist)

The iNaturalist (2024) database is a large ci zen science-based iden fica on and data collec on app. It allows any ci zen to submit observa ons to be reviewed and iden fied by other naturalists and scien sts to help provide accurate species observa ons. As the observa ons can be submi ed by anyone, and the records are not officially ve ed, the data obtained from this tool should not be used as a clear indicator of species presence, and species may be filtered out based on habitat and target survey efforts.

The eBird (2024) database is a large ci zen science-based project with a goal to gather bird diversity informa on in the form of checklists of birds, archive it, and share it to power new data-driven approaches to science, conserva on and educa on. As the observa ons can be submi ed by anyone, and the records are not officially ve ed, the data obtained from this tool should not be used as a clear indicator of species presence, and species may be filtered out based on habitat and target survey efforts.

These online databases were examined to iden fy observa ons made within the Subject Lands that were research grade. However, no significant species were found on the Subject Lands or within 120 meters of its boundaries.

3.2. Ecological Field Investigations Methods

The following ecological field investigations have been undertaken within the Subject Lands to understand potential ecological constraints to development:

- Ecological Land Classifica on (ELC) and Summer Botanical Inventory; and
- Headwater Drainage Feature inves ga on.

3.2.1. Ecological Land Classification and Botanical Inventory

Vegetation communities were first identified on aerial imagery and then verified in the field on September 3, 2024. Vegetation community types were confirmed, sampled and revised, if necessary, using the sampling protocol of the ELC for Southern Ontario (Lee at al. 1998). Generally, vegetation communities of at least 0.5 ha in size were mapped; however, distinct communities smaller than this were also mapped where appropriate. Scientific names primarily follow nomenclature from the Database of Vascular Plants of Canada (Brouillet et al. 2010+). The provincial status of all plant taxa and vegetation communities is based on NHIC (2024).

3.2.2. Headwater Drainage Feature Investigation

Potential headwater drainage features (HDFs) on the Subject Lands were assessed generally using the Credit Valley Conservation/Toronto Region and Conservation Authority (CVC/TRCA) 2014 “Evaluation, Classification and Management of Headwater Drainage Features Guidelines” (herein referred to as the HDFA Guidelines). These guidelines provide a standardized means of identifying and assessing the value of headwater drainage features and identifying long-term management recommendations to protect or maintain the important ecological or biophysical functions provided by headwater drainage features in a developing landscape.

Due to the timing of project commencement, it was not possible to do the first HDF assessment in the early spring window (typically late March to mid-April). Accordingly, a site visit was completed in the late spring window (late April to May) on May 28, 2024, after a precipitation event to approximate early spring weather conditions.

During the site visit, all areas of the Subject Lands were assessed to identify potential HDFs. Each HDF observed was separated into specific reaches, per the guidance on reach delineation in the HDFA Guidelines, and data collection was completed for each reach based on Ontario Stream Assessment Protocols (OSAP) for Unconstrained Headwater Sampling, Section 4: Module 11 (Stanfield, ed. 2017).

Sampling of each reach was then completed in accordance with OSAP protocols. A photographic record of each headwater drainage feature was collected during the site visit.

Based on the nature of the HDFs present (essentially poorly defined swales in an agricultural field that were nearly dry after a late spring precipitation event), no summer site visit was deemed necessary. Based on the experience of the GEI investigator, it is our opinion that all HDFs on the Subject Lands would have been dry if the late spring HDF assessment was completed after at least 48 hours with no precipitation.

4. Environmental Setting and Characteristics

4.1. Physical Environment

The following physiographic, geological and soil maps were reviewed as part of this EIS:

- Ontario MENDM website, Surficial Geology of Southern Ontario, 2010 (KML format);
- Ontario MENDM website, Physiography of Southern Ontario 2007; and

The topography of the Subject Lands consists of relatively flat lands, sloping generally west to east. The bedrock geology of the Subject Lands comprises of the Guelph Formation which was formed in the Upper Silurian period and is composed primarily of sandstone, shale, dolostone and siltstone. The physiography of the Subject Lands is sand plains.

4.2. Biological Environment

The Subject Lands occur within the Carolinian or Deciduous Forest Zone (also referred to as the mixed wood plains), an area characterized by a relatively warmer climate that supports plant species typical of more southern areas. This zone is referred to by the Province as Ecoregion 7E. Broadleaved trees, including American Beech (Fagus grandifolia), Sugar Maple (Acer saccharum), Basswood (Tilia americana), Red Maple (Acer rubrum), White Oak (Quercus alba) and Bur Oak (Quercus marcrocarpa), dominate natural upland forest cover in this region (Rowe 1972). This region also contains Canada's main distribution of Black Walnut (Juglans nigra), Sycamore (Platanus occidentalis), Swamp White Oak (Quercus bicolor) and Shagbark Hickory (Carya ovata).

4.3. Landscape Connectivity

As described previously, the Northwest Welland Secondary Plan identified a potential corridor which traverses the Subject Lands. This corridor was proposed as a connection between the woodland approximately 200 m west of the Subject Lands and the PSW approximately 850 m east of the Subject Lands (along the proposed corridor).

In accordance with the Environmental Conservation Area section of Policy 7.3.1.6 of the Northwest Welland Secondary Plan, this EIS assesses whether this corridor is necessary to support the functionality and sustainability of the Natural Heritage System within the City of Welland.

Though no information is presently available on how the identified potential corridor was determined, it is believed to have been planned along a mapped watercourse which flows northeast towards the PSW. Based on the results of the site investigation, and review of aerial imagery, the following observations of this corridor are noted:

- There does not appear to be a watercourse in this loca on; with evidence of the feature being ploughed through along the en rety of its length, therefore it would not have defined bed and banks. As a result, it is discussed within the remainder of this sec on as a drainage feature.

- Though previously mapped as a con nuous feature which flows from the Subject Lands to the PSW along a con nuous flow path, the feature is discon nuous, with the lands west of Rice Road captured within a drainage ditch at Rice Road. In addi on, lands immediately east of Rice Road also drain westwardly towards Rice Road and are captured in drainage ditches. Therefore, there is no con nuous feature that would provide safe wildlife passage opportuni es at the regional roads crossing the corridor (e.g., through larger culvert structures that may facilitate wildlife movements).
- There is limited natural vegeta on along this corridor at present, with the majority of lands in ac ve agricultural produc on. Where natural vegeta on is present, the vegeta on consists of predominantly of agricultural hedgerows which do not follow the proposed corridor.
- Neither feature is isolated on the landscape, with other proposed linkages mapped within the Northwest Welland Secondary Plan, as well as broader natural areas outside of the municipal boundary.

Given the current state of this proposed linkage, it is anticipated that at present, there is no functional or ecological exchange occurring between the identified woodland west of the Subject Lands and the PSW east of the Subject Lands along the proposed corridor. Though some broad movement of large mammals (deer, coyote) may occur across the open fields in this area between the two features, this movement is not considered to be important to the functionality and sustainability of the natural heritage system and its associated wildlife populations given broader landscape connections.

As a result, it is determined that the identified conceptual potential corridor is not required to support the natural heritage system and should be removed from the planning requirements. The identified potential corridor function is adequately preserved within the remainder of the Natural Heritage System and proposed potential corridors mapped within the Northwest Welland Secondary Plan, and an alternative corridor is not required.

4.4. Vegetation

The Subject Lands consist predominantly of active agricultural fields planted with row crops. A small area of disturbance is present along the northern limits adjacent to Quaker Road to support ongoing construction work in the area. Immediately east of the Subject Lands a narrow hedgerow feature exists. West of the Subject Lands are a cultural meadow community and a cultural thicket community, and east of the Subject Lands is predominantly a manicured landscape associated with the school board property, though a small shallow marsh wetland and a cultural woodland community are identified in that area. The small shallow marsh wetland is associated with a circular feature that appears to have been constructed at the same time as the school board offices at the intersection of Rice Road and Quaker Road, apparently for the purposes of managing stormwater on the property. GEI understands that water levels in this feature are artificially regulated through the pumping of water from this feature to the roadside ditch along Quaker Road. A small cultural meadow community is present in the southwestern corner of the Subject Lands.

The vegetation inventory identified several species within the hedgerow and cultural meadow (**Table 1**). None of the species are Species at Risk or species of conservation concern.

4.5. Headwater Drainage Features

Three HDFs were observed on the Subject Lands during the May 28, 2024, site inves ga on as shown on **Figure 2**.

4.5.1. Reach Descriptions

HDF H1, comprised of one reach on the Subject Lands (H1-S1) appears to originate on the upstream property, although no defined drainage feature was observed on that property. The HDF runs through the property in a general east-west direc on before flowing into the grassed field to the south. The feature was also reviewed where it intersects with Quaker Road downstream from the Subject Lands. Due to road disturbance from construc on at the me of the survey, although a ditch was present that appeared to convey flows from HDF H1, there was no outlet as the ditch terminates at Quaker Road with no apparent culvert.

On the Subject Lands, HDF H1 was poorly defined with only a slight depression evident along the HDF's path from east to the west. During the site visit, there was one isolated patch of standing water in a re rut at the upstream end of the reach and a 0.30 m wide patch of standing water at the downstream end where the agricultural field transi ons into the hedgerow at the property boundary. Except for the downstream hedgerow, the en re reach on the Subject Lands was subject to normal agricultural prac ces (ploughing and plan ng). The feature does not appear to have any direct fish habitat value, nor provide any terrestrial habitat func on.

HDF H2, comprised of one reach on the Subject Lands (H2-S1) appears to originate on the upstream property, although no defined drainage feature was observed on that property (some limited wetland vegeta on was observed). The HDF runs through the property in a general east-west direc on before flowing into the grassed field to the south, although no defined feature was present based on a visual assessment from the property line. Based on aerial photo analysis, the HDF appears to flow through a culvert beneath the driveway on the adjacent property. Based on observa ons from Quaker Road; a er flowing through the culvert, it runs within a grassed swale before flowing into the Quaker Road ditch and con nuing eastward.

On the Subject Lands HDF H2 was poorly defined with only a slight depression evident along the HDF's path from east to the west. During the site visit, there was one isolated patch of standing water at the downstream end where the agricultural field transi ons into the hedgerow at the property boundary. The remainder of the reach on the Subject Lands was dry. Except for the downstream hedgerow, the en re reach on the Subject Lands was subject to normal agricultural prac ces (ploughing and plan ng). The feature does not appear to have any direct fish habitat value, nor provide any terrestrial habitat func on.

HDF H3, comprised of two reaches on the Subject Lands (H3-S1 and H3-S2) appears to originate on the upstream property, although no defined drainage feature was observed on that property (some limited wetland vegeta on was observed). The HDF runs through the property in a general east-west direc on before flowing into the grassed field to the south, although no defined feature was present based on a visual assessment from the property line. NPCA online mapping iden fies that the feature transi ons into a mapped watercourse on the downstream property, however based on iden fied drainage pa erns

this mapping is incorrect and the drainage feature does not connect to the drainage feature east of Quaker Road. Rather there is a drainage divide further east of Quaker Road and all flows travel north along the Rice Road to Quaker Road, before crossing east beneath Rice Road.

On the Subject Lands, reach H3-S1 consisted of an approximately 15-m long, 2-m wide swale within the hedgerow east of the Subject property. During the site visit, a por on of the swale contained standing water (up to 1.7-m wide and 0.08-m deep). Reach H3-S2 consisted of the remainder of the feature upstream from the hedgerow. It was poorly defined with only a slight depression evident along the HDF's path from east to the west. This reach was generally dry except for several small areas of standing water within re ruts in the agricultural field. The en re reach was subject to normal agricultural prac ces (ploughing and plan ng). Overall HDF H3 does not appear to have any direct fish habitat value, nor provide any terrestrial habitat func on.

4.5.2. HDF Classifications and Management Recommendations

Part 2 of the HDFA Guidelines provides an approach to classify headwater drainage features by providing a step-by-step characteriza on of specific func ons that may be associated with the features assessed, including hydrology, riparian func on and provision of fish or terrestrial habitat. **Table 2** highlights the key components of this analysis. Given the ming of the inves ga on, no early spring flow observa ons were completed. However, based on the late spring observa ons, it appears likely that these HDFs do flow in the early spring and would be dry under typical late spring condi ons (at least 48 hours a er a precipita on event). The assessment has been based on these assump ons.

Part 3 of the HDFA Guidelines provides guidance on linking the characteris cs and func ons of features to specific management recommenda ons that may be applied to those features. To assist, the HDFA Guidelines include Figure 2: "Flowing Chart Providing Direc on on Management Op ons". The flow chart depicts various decision points associated with hydrology, fish habitat, riparian vegeta on and terrestrial habitat, and ul mately leads the user to an appropriate management recommenda on for each headwater drainage feature segment. Management recommenda ons can include the following:

- Protec on;
- Conserva on;
- Mi ga on;
- Maintain Recharge;
- Maintain/Replicate Terrestrial Linkage; or
- No Management Required.

The flow chart was used to determine the management recommenda on for the headwater drainage features on the Subject Lands (as iden fied in the final column of **Table 2**. The resul ng management recommenda on for each reach was Mi ga on, as depicted in **Figure 2**. The results of the assessment indicated that mi ga on is warranted to address the ephemeral hydrological func ons (flow conveyance) that all three HDFs on the Subject Lands provide and which may be important to sustain downstream (off-site) features and func ons. These features may be removed from the landscape

provided their hydrological func on is maintained through conven onal stormwater management or Low Impact Development (LID) techniques.

5. Analysis of Ecological and Natural Heritage Significance

Eight types of significant natural heritage features are defined in the PPS, as follows:

- Significant wetlands;
- Significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;
- SWH;
- Fish habitat;
- Habitat of endangered and threatened species; and
- Significant ANSIs.

The presence/absence of these elements on or adjacent to the Subject Lands is discussed in detail in the following sections. The NHRM (MNR 2010) was referenced to assess the potential significance of natural areas and associated functions. Where significant natural heritage features are present, the sensitivity of those features is also discussed.

5.1. Significant Wetlands

Within Ontario, significant wetlands have been previously iden fied by the MNRF or by their designates. Other evaluated or unevaluated wetlands may be iden fied for conserva on by the municipality or the conserva on authority. MNRF's database was consulted, and no provincially significant wetlands are present within 120 m of the Subject Lands (**Figure 1**).

5.1.1. Other Wetlands

One wetland community is identified within 120 m of the Subject Lands, a small 0.3 ha shallow marsh community. This wetland was not present in historical imagery and is of anthropogenic origin. As discussed in section 4.4, it is believed to have been installed around the same time as the school board administrative building to receive stormwater runoff. Further, GEI understands that water levels within this feature are artificially maintained with water pumped from the feature to

5.2. Significant Coastal Wetlands

No Significant coastal wetlands are iden fied on the Subject Lands.

5.3. Significant Woodlands

Significant woodlands are identified by the planning authority in consideration of criteria established by the MNRF. Under the NHRM (2010), woodlands are defined as:

"...treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion preven on, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recrea onal opportuni es, and the

sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels."

The Niagara Region Official Plan (2022) defines a significant woodland as an area that is:

"ecologically important in terms of features such as species composi on, age of trees and stand history; func onally important due to its contribu on to the broader landscape because of its loca on, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composi on, or past management history."

Further, Niagara Region iden fies that the only ELC communi es that are considered for iden fica on as significant woodlands are those mee ng the Forest (FO) or Treed Agriculture (TAG) classifica on as ELC. Given this, there are no candidate significant woodland communi es present on or within 120 m of the Subject Lands.

5.4. Other Woodlands

The Niagara Region Official Plan defines other woodlands as

"Woodlands determined to be ecologically important in terms of features, func ons, representa on, or amount, and contribu ng to the quality and diversity of an iden fiable geographic area or natural heritage system. Other woodlands include all terrestrial treed vegeta on communi es where the percent tree cover is greater than 25 per cent. Other woodlands would not include woodlands mee ng the criteria as significant woodlands."

The Niagara Region Official Plan provides criteria for iden fica on of Other Woodlands as a terrestrial treed area with ≥ 25 per cent tree cover and mee ng one or more of the following criteria:

- an average minimum width of 40 m and is ≥ 0.3 ha, measured to crown edges; or
- any size abu ng a significant woodland, wetland or permanent stream.

Treed areas that "abut" a significant woodland, wetland or permanent stream are considered adjacent when located within 20 m of each other. Other woodlands are iden fied based on the Ecological Land Classifica on methodology, with several communi es poten ally mee ng the 25% threshold.

Terrestrial vegetation communities that would meet the ≥ 25 per cent tree cover include Forest, Cultural Woodland and Cultural Savannah communities. One cultural woodland community is present within 120 m east of the Subject Lands. As this feature surrounds the small wetland community, it is determined to meet the test of an other woodland.

5.5. Significant Valleylands

No significant valleylands or valleylands are iden fied on or within 120 m of the Subject Lands.

5.6. Significant Wildlife Habitat

SWH is one of the more complex natural heritage features to iden fy and evaluate. There are several provincial documents that discuss iden fying and evalua ng SWH including the NHRM (MNR 2010), the SWH Technical Guide (MNR 2000), and the SWH Eco-Region Criterion Schedule (MNRF 2015). The

Subject Lands are in Eco-Region 7E and were therefore assessed using the 7E Criterion Schedule (MNRF 2015).

There are four general types of SWH:

- Seasonal concentra on areas;
- Rare or specialized habitats;
- Habitat for species of conserva on concern; and
- Animal movement corridors.

Seasonal Concentra on Areas

Seasonal concentration areas are those sites where large numbers of a species gather at one time of the year, or where several species congregate. Seasonal concentration areas include: deer yards; wintering sites for snakes, bats, raptors and turtles; waterfowl staging and molting areas, bird nesting colonies, shorebird staging areas, and migratory stopover areas for passerines or butterflies. Only the best examples of these concentration areas are usually designated as SWH.

Rare or Specialized Habitats

Rare and specialized habitat are two separate components. Rare habitats are those with vegetation communities that are considered rare in the province. SRANKS are rarity rankings applied to species at the 'state', or in Canada at the provincial level, and are part of a system developed under the auspices of the Nature Conservancy (Arlington, VA). Generally, community types with SRANKS of S1 to S3 (extremely rare to rare-uncommon in Ontario), as defined by the NHIC (2023), could qualify. It is to be assumed that these habitats are at risk and that they are also likely to support additional wildlife species that are considered significant. Specialized habitats are microhabitats that are critical to some wildlife species. The NHRM (MNR 2010) defines specialized habitats as those that provide for species with highly specific habitat requirements, areas with exceptionally high species diversity or community diversity, and areas that provide habitat that greatly enhances species' survival.

Habitat for Species of Conserva on Concern

Species of conservation concern include those that are provincially rare (S1 to S3), provincially historic records (SH) and Special Concern species. Several specialized wildlife habitats are also included in this SWH category, including Terrestrial Crayfish habitat, and significant breeding bird habitats for marsh, open country and early successional bird species.

Habitats of species of conservation concern do not include habitats of endangered or threatened species as identified by the ESA (2019 Consolidation). Endangered and threatened species are discussed in **section 5.8**.

Animal Movement Corridors

Animal movement corridors are areas that are traditionally used by wildlife to move from one habitat to another. This is usually in response to different seasonal habitat requirements, including areas used by

amphibians between breeding and summer/over-wintering habitats, called amphibian movement corridors.

Given that the Subject Lands exist in an active agricultural state, it is determined that there is no potential SWH present on the Subject Lands as suitable habitat features are not present. Considering the surrounding 120 m, the only potential SWH habitat types would be those associated with the wetland/ cultural woodland on the property to the east. As detailed investigations of those features have not been completed as they are on an adjacent land holding, they will be assessed as generalized candidate SWH.

5.7. Fish Habitat

Fish habitat, as defined in the federal *Fisheries Act*, c. F-14, means, "spawning grounds and any other areas including nursery, rearing, food supply, and migra on areas on which fish depend directly or indirectly in order to carry out their life processes". Fish, as defined in S.2 of the *Fisheries Act*, c. F-14, includes "parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals".

The headwater drainage features on the Subject Lands were determined to not provide any direct fish habitat but they could have poten al for contribu ng fish habitat associated with ephemeral flow conveyance to downstream watercourses that may directly support fish. All headwater drainage features on the Subject Lands flow ul mately into the roadside ditches along Rice and Quaker Road. These features are an cipated to provide limited to no func on for fish beyond the conveyance of flows further downstream, given their ac ve use for agricultural purposes (e.g., regular ploughing and plan ng with agricultural crops).

5.8. Habitat for Endangered and Threatened Species

No threatened or endangered species or their suitable habitat were identified on the Subject Lands.

5.9. Significant ANSIs

No Significant ANSIs are iden fied on or within 120 m of the Subject Lands.

5.10. NPCA Regulated Features

Pursuant of O. Reg. 41/24, the NPCA has the authority to regulate development within its regulated areas. The NPCA regulates the following features:

- Lands adjacent to or close to the shoreline of the Great Lakes-St. Lawrence River System that may be affected by flooding, erosion or dynamic beaches;
- River or stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse;
- Hazardous lands;

- Wetlands; and
- Other areas where development could interfere with the hydrologic func on of a wetland, including areas within 30 m of wetlands.

The wetland east of the Subject Lands, and areas within 30 m of that feature, would likely be regulated by the NPCA. No other regulated features are present on or within 120 m of the Subject Lands.

5.11. Summary of Ecological Components Subject to Impact Assessment

Given the summary above, there are no iden fied natural heritage features present on the Subject Lands. However, the following natural heritage features within 120 m of the Subject Lands, or the ecological contribu ons from the Subject Lands, will be assessed:

- MAS2 wetland community (Other wetland);
- CUW1 woodland community (Other woodland);
- Generalized candidate SWH associated with the other woodland and other wetland; and
- Contribu ng fish habitat associated with flow conveyance across the Subject Lands.

6. Description of the Proposed Development

The proposed development for the Subject Lands will be comprised of a mix of residential forms (i.e., single- detached homes, townhouses, multi-unit blocks, etc.), a SWM facility, a park, and associated road connections to the north, south and west. The proposed draft plan is shown on **Figure 3**.

Though a Functional Servicing Report was not available at the time of report preparation, it is understood that a stormwater management block is proposed in the northwest corner of the Subject Lands adjacent to Quaker Road that will receive existing stormwater runoff and drain into the drainage ditch, ultimately flowing in an easterly direction towards Rice Road. Based on discussions with the Project Team, GEI understands that the stormwater management facility will provide both quality and quantity control.

No further information on the proposed development plan was available at the time of the preparation of this report.

7. Impact Assessment and Ecological Monitoring

This section of the scoped EIS assesses the potential effects on the natural heritage functions that could occur over the short term and long-term following implementation of the development plan. It also identifies appropriate mitigation measures to limit negative impacts.

Impacts from a proposed land development application can generally be considered in two broad categories: direct and indirect. Direct impacts are normally associated with the physical removal or alteration of natural features that could occur based upon a land use application, and indirect impacts may be changes or impacts (these could be minor or more significant) to less visible functions or pathways that could cause negative impacts to natural heritage features over time.

7.1. Direct Effects

This section assesses the potential direct impacts associated with the proposed development on the Subject Lands. As no natural heritage features are present on the Subject Lands, the only potential direct impact would be the ephemeral flow contributions to downstream fish habitat from the HDFs on the Subject Lands.

7.1.1. Fish Habitat

The headwater drainage features are identified as providing indirect fish habitat through provision of ephemeral flows to receiving watercourses that may provide direct fish habitat. These features are proposed to be removed in support of the development. As previously discussed, the roadside ditches along Quaker Road and Rice Road are not expected to provide any potential for direct fish habitat, and so it is determined that the diversion of flows from the existing outlets from the Subject Lands into the adjacent headwater drainage features, to the roadside ditch along Quaker Road would have no impact on fish communities in watercourses further downstream, provided that the flow regime downstream of the intersection of Quaker Road and Rice Road is maintained through appropriate stormwater management practices on the Subject Lands.

7.2. Indirect Effects

This sec on assesses the poten al indirect impacts associated with the proposed development on the Subject Lands.

7.2.1. Fish Habitat

Indirect impacts to fish habitat make occur as a result of erosion and sedimenta on or accidental spills during construc on.

<u>Erosion and Sedimenta on</u>

Erosion and sedimenta on from the disturbed work area associated with the proposed development could poten ally result in adverse effects to water quality to the downstream watercourses, although due to the distance from the proposed development, the poten al for this to occur is limited.

A detailed ESC Plan is recommended to be provided with the submission of the final design drawings for development applica ons. The implementa on of an effec ve ESC Plan, incorpora ng both erosion and sediment controls, coupled with regular inspec on and performance monitoring and implementa on of any remedial ac ons necessary to ensure effec ve performance, are an cipated to be largely effec ve in preven ng the movement of eroded soil par cles towards downstream features.

Overall, no adverse effects are an cipated as a result of erosion and sedimenta on during construc on, provided that an effec ve ESC Plan, including monitoring and adap ve management, is implemented.

Accidental Spills

Accidental spills of poten ally hazardous materials (e.g., fuel and oil from heavy equipment), could cause stress or injury to the surrounding fauna and flora including fish downstream in the receiving watercourses. In order to mi gate the poten al for adverse effects on aqua c habitats due to poten al accidental spills during construc on, it is recommended that a spill preven on and response plan be prepared to outline the material handling and storage protocols, mi ga on measures (e.g., spill kits on-site), monitoring measures and spill response plans (i.e., emergency contact procedures, including the Spills Ac on Centre, and response measures including containment and clean-up). Implementa on of an effec ve spill preven on and response plan is an cipated to be largely effec ve in preven ng adverse effects on natural heritage features.

Overall, no adverse effects are expected to fish habitat from the proposed development and indirect impacts will be mi gated through appropriate mi ga on construc on measures.

7.2.2. Other Woodland/Generalized Candidate Significant Wildlife Habitat

The other woodland/generalized candidate SWH is separated from the Subject Lands by more than 20 m. The largest block of trees associated with the cultural woodland is located more than 60 m east of the Subject Lands. Given the exis ng separa on from this feature, and its generally low an cipated ecological func on, no further measures are warranted, and there will be no impact on this feature.

7.2.3. Other Wetland/Generalized Candidate SWH

As with the other woodland, the primary measures to prevent impacts to the other wetland/generalized candidate SWH is the exis ng separa on from the Subject Lands, which is more than 30 m. As GEI understands that water levels within this feature are managed, with water being ac vely pumped from the feature to the roadside ditches, maintenance of water balance is not required.

Given the exis ng separa on from this feature, its func on for stormwater management, and its generally presumed low ecological func on, no further measures are warranted and there will be no impact on this feature.

7.3. Ecological Monitoring

Given the absence of iden fied natural heritage features on the Subject Lands and the impact assessment iden fied above, ecological monitoring is not recommended.

8. Conclusions and Recommendations

This EIS was prepared as part of the planning process for the proposed development at 575 Quaker Road in Welland, Ontario.

Through this EIS, the following natural heritage features have been identified on or in the vicinity of the Subject Lands:

- Another wetland and generalized candidate SWH;
- Other woodland and generalized candidate SWH; and
- Indirect fish habitat.

An assessment of impacts on the natural heritage features iden fied above and their associated func ons has been conducted and discussed.

There will be no direct impact to any of the identified features, and given existing separations from these features, the potential for indirect impacts is also considered to be minimal.

The following mitigation measures have been recommended to minimize any impacts on these features:

- Maintenance of water flows to exis ng levels at the downstream point at Quaker Road and Rice Road; and,
- Implementa on of an erosion and sediment control and emergency spill response plan; and

Considering the above, development of the Subject Lands can be completed without negative impacts on the natural heritage features and associated functions.

Prepared By:

GEI Consultants

Sean Male
Senior Ecologist
smale@geiconsultants.com

Noel Boucher
Senior Ecologist
nboucher@geiconsultants.com

9. References

Bird Studies Canada, Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists and Ontario Ministry of Natural Resources 2006. Ontario Breeding Bird Atlas Website. h p://www.birdsontario.org/atlas/index.jsp

Brouillet, L., F. Coursol, S.J. Meades, M. Favreau, M. Anions, P. Bélisle & P. Desmet 2010+. VASCAN, the Database of Vascular Plants of Canada. h p://data.canadensys.net/vascan/

Credit Valley Conserva on and Toronto and Region Conserva on Authority (CVC/TRCA) 2014. Evalua on, Classifica on and Management of Headwater Drainage Features Guidelines. January 2014. 26 pp.

Department of Fisheries and Oceans (DFO) 2024. Aqua c Species at Risk Distribu on Mapping. Available online at h p://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html

Earth Tech (2008) "City of Welland Northwest Area Planning and Servicing Study Municipal Class Environmental Assessment" prepared for City of Welland, June 2008. Available online at h ps://www.welland.ca/Planning/NorthWestStudy/NorthwestAreaPlanningServicingStudyJune2008.pdf

eBird 2024. eBird: An online database of bird distribu on and abundance. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: h p://www.ebird.org.

iNaturalist 2022. Available from h ps://www.inaturalist.org.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray 1998. Ecological land classifica on for Southern Ontario: first approxima on and its applica on. Ontario Ministry of Natural Resources, South Central Region, Science Development and Transfer Branch. Technical Manual ELC-005.

Ministry of Municipal Affairs and Housing (MMAH) 2020. Provincial Policy Statement, 2020: Under the Planning Act. Ministry of Municipal Affairs and Housing. Queen's Printer for Ontario. 57 pp.

Ministry of Natural Resources (MNR) 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edi on. Ontario Ministry of Natural Resources. Queen's Printer for Ontario. 248 pp.

Ontario Ministry of Natural Resources and Forestry (MNRF) 2015. Significant Wildlife Habitat Ecoregion 6E Criterion Schedule. Available online at h ps://dr6j45jk9xcmk.cloudfront.net/documents/4775/schedule-6e-jan-2015-access-ver-final-s.pdf

Ontario Ministry of Natural Resources and Forestry (MNRF) 2024. Land Informa on Ontario (LIO).

Ontario Ministry of Natural Resources and Forestry (MNRF) 2024. Natural Heritage Informa on Centre database. Available online at h ps://www.ontario.ca/page/get-natural-heritage-informa on

Ontario Nature 2020. Ontario Rep le and Amphibian Atlas. Available online at h ps://ontarionature.org/programs/ci zen-science/rep le-amphibian-atlas

Rowe, JS 1972. Forest Regions of Canada.

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

Toronto Entomologists' Associa on 2024a. Ontario Bu erfly Atlas [Database]. Available online: h ps://www.ontarioinsects.org/atlas/index.html (Accessed May 2024).

Toronto Entomologists' Associa on 2024b. Ontario Moth Atlas [Database]. Available online: h ps://www.ontarioinsects.org/moth/index.html (Accessed May 2024).

Tables

Table 1: Master Plant List

ORDER	FAMILY	LATIN NAME	COMMON NAME	COEFFICIENT OF CONSERVATISM (NHIC SEP 19 2023)	WETNESS INDEX (NHIC SEP 19 2023)	OWES WETLAND SPECIES	WEEDINESS INDEX	INVASIVE EXOTIC RANK (Urban Forest Associates 2002)	PROVINCIALLY TRACKED (NHIC) (NHIC FEB 6 2024)	PROVINCIAL STATUS (S-RANK) (NHIC FEB 6 2024)	GLOBAL STATUS (G-RANK) (NHIC FEB 6 2024)	SARO (MNRF) (NHIC FEB 6 2024)	COSEWIC STATUS (NHIC FEB 6 2024)	NIAGARA (Oldham 2010)	SPECIES CODE	AUTHORITY
DICOTYLEDONS	Anacardiaceae	Toxicodendron radicans var. radicans	Eastern Poison Ivy	2	0	T			N	S5	G5T5			C	TOXRARA	(L.) Kuntze
DICOTYLEDONS	Apiaceae	Daucus carota	Wild Carrot		5		-2		N	SNA	GNR			IC	DAUCARO	L.
DICOTYLEDONS	Asteraceae	Ambrosia artemisiifolia	Common Ragweed	0	3				N	S5	G5			C	AMBARTE	L.
DICOTYLEDONS	Asteraceae	Bidens frondosa	Devil's Beggarticks	3	-3	I			N	S5	G5			C	BIDFRON	L.
DICOTYLEDONS	Asteraceae	Cichorium intybus	Wild Chicory		5		-1		N	SNA	GNR			IC	CICINTY	L.
DICOTYLEDONS	Asteraceae	Cirsium arvense	Canada Thistle		3		-1	1	N	SNA	G5			IC	CIRARVE	(L.) Scop.
DICOTYLEDONS	Asteraceae	Cirsium vulgare	Bull Thistle		3		-1		N	SNA	GNR			IC	CIRVULG	(Savi) Tenore
DICOTYLEDONS	Asteraceae	Erigeron annuus	Annual Fleabane	0	3				N	S5	G5			C	ERIANNU	(L.) Pers.
DICOTYLEDONS	Asteraceae	Euthamia graminifolia	Grass-Leaved Goldenrod	2	0				N	S5	G5			C	EUTGRAM	(L.) Nutt.
DICOTYLEDONS	Asteraceae	Lactuca serriola	Prickly Lettuce		3		-1		N	SNA	GNR			IC	LACSERR	L.
DICOTYLEDONS	Asteraceae	Solidago canadensis	Canada Goldenrod	1	3				N	S5	G5			C	SOLCANA	L.
DICOTYLEDONS	Asteraceae	Symphyotrichum lateriflorum var. late	Calico Aster	3	0	T			N	S5	G5T5			C	SYMLATE	(L.) Á. & D. Löve
DICOTYLEDONS	Asteraceae	Symphyotrichum novae-angliae	New England Aster	2	-3				N	S5	G5			C	SYMNOVA	(L.) G.L. Nesom
DICOTYLEDONS	Convolvulaceae	Convolvulus arvensis	Field Bindweed		5		-1	3	N	SNA	GNR			IC	CONARVE	L.
DICOTYLEDONS	Cornaceae	Cornus obliqua	Silky Dogwood	2	-3	I			N	S5	G5			C	COROBLI	Rafinesque
DICOTYLEDONS	Cornaceae	Cornus racemosa	Grey Dogwood	2	0	T			N	S5	G5			C	CORRACE	Lamarck
DICOTYLEDONS	Euphorbiaceae	Euphorbia maculata	Spotted Spurge		3		-1		N	SNA	G5?			IU	EUPMACU	L.
DICOTYLEDONS	Fabaceae	Melilotus albus	White Sweet-Clover		3		-3	2	N	SNA	G5			IC	MELALBU	Medik.
DICOTYLEDONS	Fabaceae	Trifolium hybridum	Alsike Clover		3		-1		N	SNA	GNR			IC	TRIHYBR	L.
DICOTYLEDONS	Fabaceae	Vicia cracca	Tufted Vetch		5		-1	2	N	SNA	GNR			IC	VICCRAC	L.
DICOTYLEDONS	Fagaceae	Quercus macrocarpa	Bur Oak	5	3	T			N	S5	G5			U	QUEMACR	Michaux
DICOTYLEDONS	Fagaceae	Quercus rubra	Northern Red Oak	6	3				N	S5	G5			C	QUERUBR	L.
DICOTYLEDONS	Hypericaceae	Hypericum perforatum ssp. perforatun	Common St. John's-Wort		5		-3	4	N	SNA	GNR			IC	HYPPERF	L.
DICOTYLEDONS	Lythraceae	Lythrum salicaria	Purple Loosestrife		-5	I	-3	1	N	SNA	G5			IC	LYTSALI	L.
DICOTYLEDONS	Oleaceae	Fraxinus pennsylvanica	Red Ash	3	-3	T			N	S4	G4			C	FRAPENN	Marshall
DICOTYLEDONS	Oleaceae	Ligustrum vulgare	European Privet		3		-2	4	N	SNA	GNR			IC	LIGVULG	L.
DICOTYLEDONS	Onagraceae	Oenothera biennis	Common Evening Primrose	0	3				N	S5	G5			C	OENBIEN	L.
DICOTYLEDONS	Rhamnaceae	Endotropis alnifolia	Alder-Leaved Buckthorn	7	-5	I			N	S5	G5			R	ENDALNI	(L'Héritier) Haeuschild
DICOTYLEDONS	Rhamnaceae	Rhamnus cathartica	European Buckthorn		0	T	-3	1	N	SNA	GNR			IC	RHACATH	L.
DICOTYLEDONS	Rosaceae	Crataegus monogyna var. monogyna	English Hawthorn		3		-1	3	N	SNA	G5TNR			IC	CRAMONO	Jacquin
DICOTYLEDONS	Rosaceae	Fragaria virginiana	Wild Strawberry	2	3				N	S5	G5			C	FRAVIRG	Miller
DICOTYLEDONS	Rosaceae	Geum aleppicum	Yellow Avens	2	0	T			N	S5	G5			C	GEUALEP	Jacquin
DICOTYLEDONS	Rosaceae	Pyrus communis	Common Pear		5		-1		N	SNA	G5			IC	PYRCOMM	L.
DICOTYLEDONS	Salicaceae	Populus deltoides ssp. deltoides	Eastern Cottonwood	4	0	T			N	S5	G5T5			C	POPDEDE	Bartram ex Marshall
DICOTYLEDONS	Solanaceae	Solanum dulcamara	Bittersweet Nightshade		0	T	-2	3	N	SNA	GNR			IC	SOLDULC	L.
DICOTYLEDONS	Vitaceae	Parthenocissus vitacea	Thicket Creeper	4	3				N	S5	G5			C	PARVITA	(Knerr) Hitchcock
GYMNOSPERMS	Pinaceae	Pinus strobus	Eastern White Pine	4	3	T			N	S5	G5			C	PINSTRO	L.
MONOCOTYLEDONS	Poaceae	Dactylis glomerata	Orchard Grass		3		-1	3	N	SNA	GNR			IC	DACGLOM	L.
MONOCOTYLEDONS	Poaceae	Echinochloa crus-galli	Large Barnyard Grass		-3	T	-1		N	SNA	GNR			IC	ECHCRUS	(L.) Palisot de Beauvois
MONOCOTYLEDONS	Poaceae	Phalaris arundinacea var. arundinacea	Reed Canary Grass	0	-3	T		P	N	S5	G5TNR			C	PHAARAR	L.
MONOCOTYLEDONS	Poaceae	Poa pratensis	Kentucky Bluegrass	0	3			2	P	S5	G5			IC	POAPRAT	L.

STATISTICS		
Species Diversity		
Total Number of Species:	41	
Native Species:	22	54%
Exotic Species:	19	46%
S1-S3 Species:	0	0%
S4 Species:	1	5%
S5 Species:	21	95%

EXPLANATION OF TERMINOLOGY *(See the following pages for addition detailed information on terms.)*

Botanical and Common Name: From Newmaster et. al, 1998. Species requiring confirmation noted (cf).

Co-efficient of Conservatism: This value, ranging from 0 (low) to 10 (high), is based on a species tolerance of disturbance and fidelity to a specific habitat integrity.

Wetness Index: This value, ranging from -5 (obligate wetland) to 5 (upland) provides the probability of a species occurring in wetland or upland habitats.

Weediness Index: This value, ranging from -1 (low) to -3 (high) quantifies the potential invasiveness of non-native plants. In combination with the percentage of non-native plants, it can be used as an indicator of disturbance.

Invasive Exotic Rank (Urban Forest Associates 2002)

Category 1: Aggressive invasive exotic species that can dominate a site to exclude all other species and remain dominant on the site indefinitely.

Categroy 2: Exotic species that are highly invasive but tend to only dominate certain niches or do not spread rapidly from major concentrations.

Category 3: Exotic species that are moderately invasive but can become locally dominant when the proper conditions exist.

Categroy 4: Exotic species that do not pose a serious threat to natural areas unless they are competing directly with more desirable vegetation.

Potentially Invasive (P): Have potential to become invasive. Some of these species have the potential to become invasive exotics in Ontario. They can reproduce aggressively on occasion but have not been shown to be a serious threat to natural areas in Ontario.

Provincial Status: Provincial ranks are used by the NHIC to set protection priorities for rare species and natural communities. These ranks are not legal designations. S4 and S5 species are generally uncommon to common in the province. Species ranked S1-S3 are considered to be rare in Ontario.

Status in Niagara Regional Municipality (Oldham 2010)

R: Rare, 10 or fewer post 1980 records

RH: Rare Historic, no records post 1980

U: Uncommon, 11-20 post 1980 records

C: Common, more than 20 post 1980 records

DD: Data deficient, further work needed to determine status

I: Introduced

hyb: hybrid, no Niagara status assigned

Table 2: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS				
H1-S1	FT – 4 FC – 4* (Round 1) FC – 1* (Round 2) **Contributing** – HDF assumed to flow ephemerally	None	**Limited** – Riparian vegetation consists of cropped land.	**Contributing** – HDF does not appear to provide direct fish habitat. May provide contributing functions associated with ephemeral flow conveyance.	**Limited** – As per Table 7 of the HDFA Guidelines, features with no defined channel provide limited terrestrial habitat function. HDF does not appear to provide a wildlife movement function.	**Mitigation** – Feature provides ephemeral flow contributions that may assist in maintaining downstream (off-site) features and functions. Hydrological functions should be maintained through SWM or LID approaches.
H2-S1	FT – 4 FC – 4* (Round 1) FC – 1* (Round 2) **Contributing** – HDF assumed to flow ephemerally	None	**Limited** – Riparian vegetation consists of cropped land.	**Contributing** – HDF does not appear to provide direct fish habitat. May provide contributing functions associated with ephemeral flow conveyance.	**Limited** – As per Table 7 of the HDFA Guidelines, features with no defined channel provide limited terrestrial habitat function. HDF does not appear to provide a wildlife movement function.	**Mitigation** – Feature provides ephemeral flow contributions that may assist in maintaining downstream (off-site) features and functions. Hydrological functions should be maintained through SWM or LID approaches.
H3-S1	FT – 7 FC – 4* (Round 1) FC – 1* (Round 2) **Contributing** – HDF assumed to flow ephemerally	None	**Contributing** – Riparian vegetation consists of hedgerow, cropped land (on Subject Lands) and meadow. Hedgerow is not a defined riparian vegetation type in HDFA Guidelines.	**Contributing** – HDF does not appear to provide direct fish habitat. May provide contributing functions associated with ephemeral flow conveyance.	**Limited** – As per Table 7 of the HDFA Guidelines, swales provide limited terrestrial habitat function. HDF does not appear to provide a wildlife movement function.	**Mitigation** – Feature provides ephemeral flow contributions that may assist in maintaining downstream (off-site) features and functions. Hydrological functions should be maintained through SWM or LID approaches.

Table 2: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS				
H3-S2	FT – 4 FC – 4* (Round 1) FC – 1* (Round 2) **Contributing** – HDF assumed to flow ephemerally	None	**Limited** – Riparian vegetation consists of cropped land.	**Contributing** – HDF does not appear to provide direct fish habitat. May provide contributing functions associated with ephemeral flow conveyance.	**Limited** – As per Table 7 of the HDFA Guidelines, features with no defined channel provide limited terrestrial habitat function. HDF does not appear to provide a wildlife movement function.	**Mitigation** – Feature provides ephemeral flow contributions that may assist in maintaining downstream (off-site) features and functions. Hydrological functions should be maintained through SWM or LID approaches.

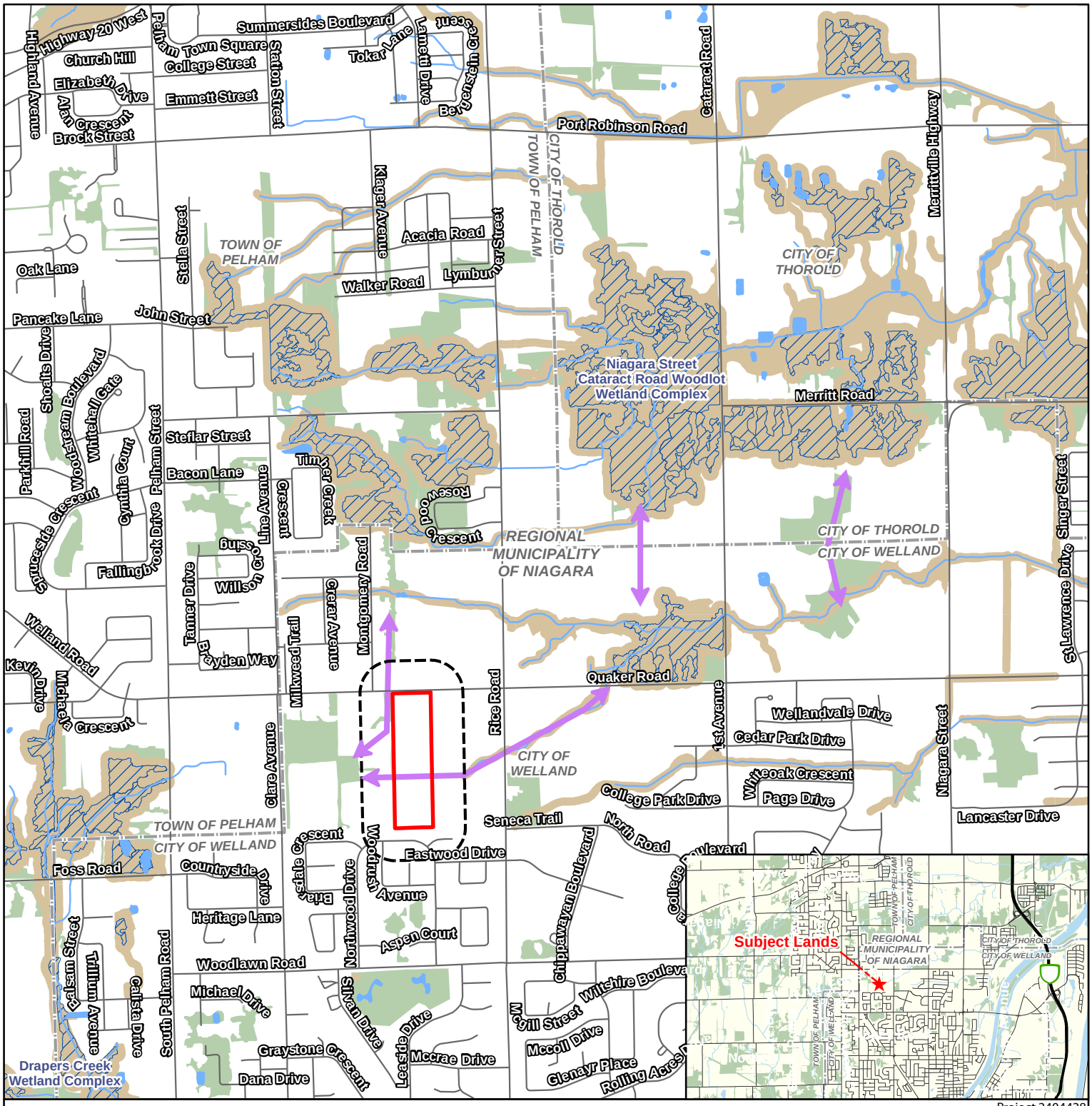
Notes
* HDFs are assumed to flow in early spring and be dry by late spring (after at least 48 hours following precipitation events)

LEGEND:

FT	Feature Types (1-defined natural channel, 2-channelized, 3-multi-thread, 4-no defined feature, 5-tiled drainage, 6-wetland, 7-swale, 8-roadside ditch, 9-online pond outlet)
FC	Flow Conditions (1-no surface water, 2-standing water, 3-interstitial flow, 4-surface flow minimal, 5-surface flow substantial)

Note: Codes correspond with Ontario Stream Assessment Protocol (OSAP) guidelines

Figures



Project 2404428

NOTES:
1. Coordinate System: NAD 1983 UTM Zone 17N.
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2024.

Legend

- Subject Lands
- Municipal Boundary, Lower/Single Tier
- Municipal Boundary, Upper Tier
- Watercourse (LIO)
- Waterbody (LIO)
- Wooded Area (LIO)
- Provincially Significant Wetland
- Potential Natural Corridor (Northwest Welland Secondary Plan)
- Regulation Limit (NPCA)

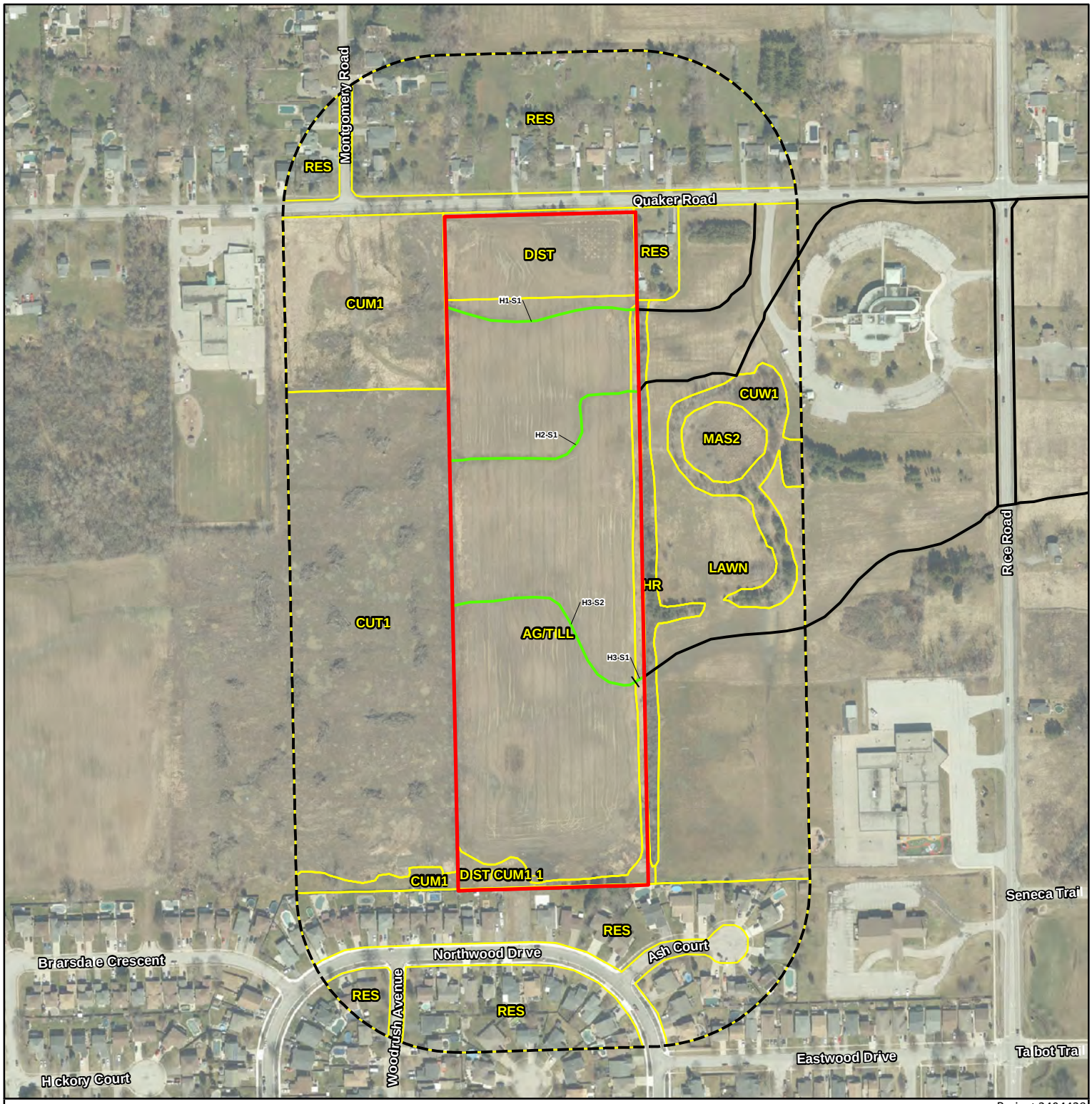
575 Quaker Rd, Welland
Metro - Mountainview Dev.

Figure 1
Subject Lands and Regional Context

0 200 m
1:20,000

N

GEI Consultants



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Legend

- Subject Lands
- Ecological Land Classification
- Offsite Drainage Feature (Not Assessed)

HDFA Management Recommendation

- Mitigation
- Reach Breaks

ELC Legend

AG, Agricultural
CUM1, Mineral Cultural Meadow
CUT1, Mineral Cultural Thicket
CUW1, Mineral Cultural Woodland
DIST, Disturbed
CUM1-1, Dry - Moist Old Field Meadow
HR, Hedgerow
MAS2, Mineral Shallow Marsh
RES, Residential

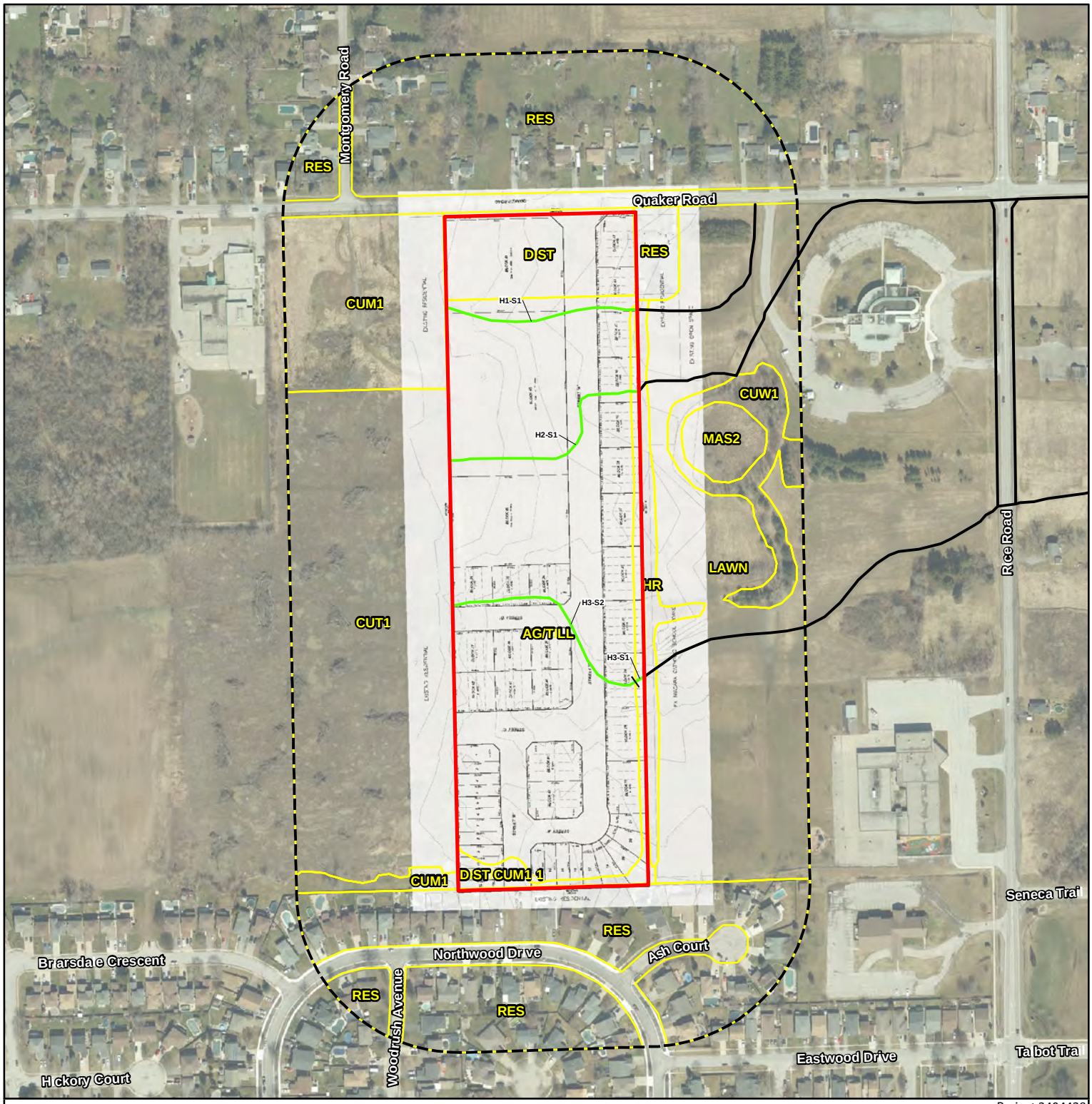
575 Quaker Rd, Welland
Metro - Mountainview Dev.

Figure 2
Ecological Land Classification and Headwater Drainage Features

0 50 m
1:4,000

N

GEI Consultants



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Legend

- Subject Lands
- Ecological Land Classification
- Offsite Drainage Feature (Not Assessed)

HDFA Management Recommendation

- Mitigation
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RES, Residential

575 Quaker Rd, Welland
Metro - Mountainview Dev.

Figure 3
Proposed Draft Plan

0 50 m
1:4,000

N

GEI Consultants