DILLON CONSULTING

EMPIRE (GRAND NIAGARA) PROJECT GP INC.

Environmental Impact Study Addendum

Grand Niagara Golf Course, Niagara Falls, Ontario

February 2023 – 21-2364

Table of Contents

Figures

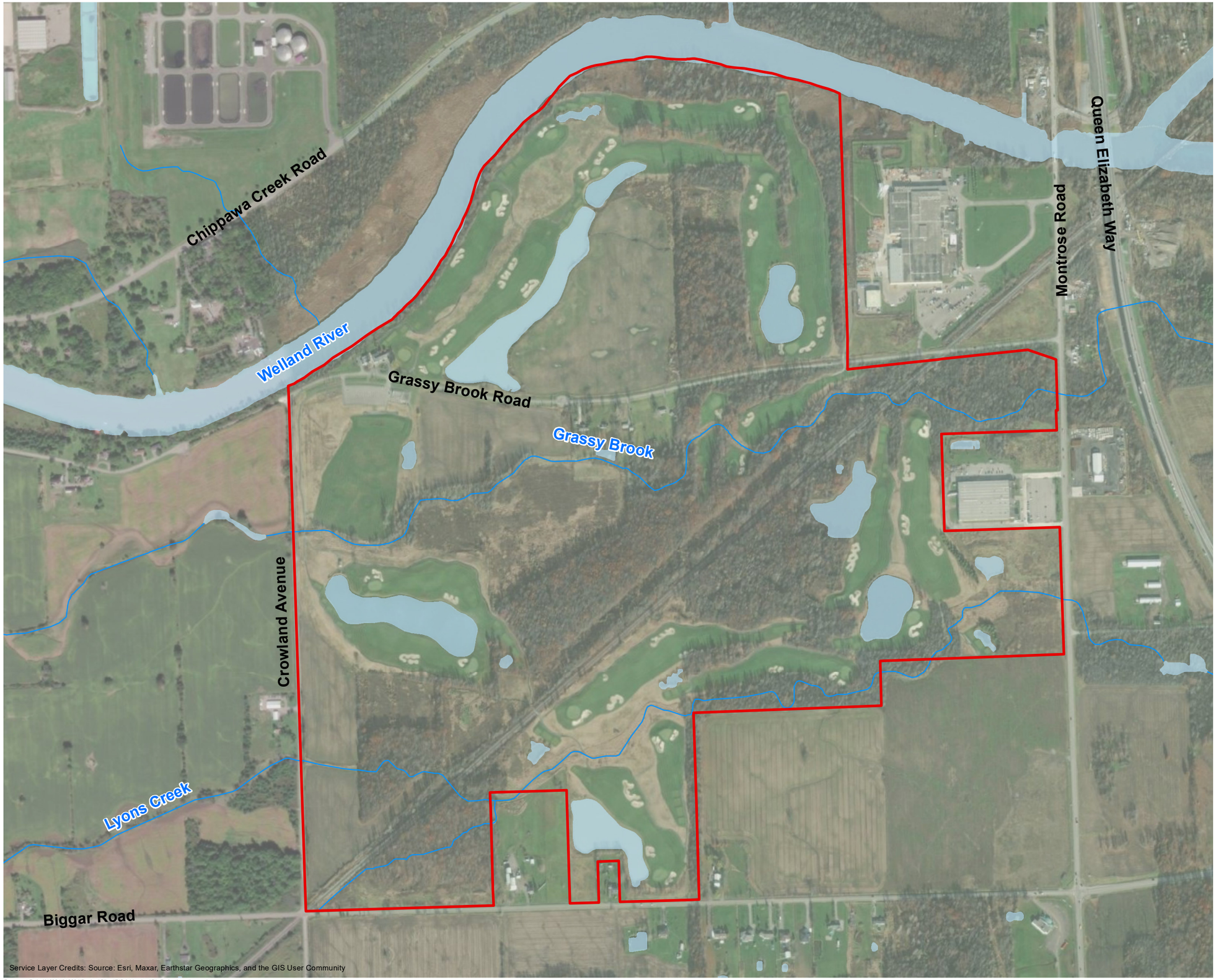
Tables

Appendices

1.0 Introduction

Dillon Consulting Limited (Dillon) has been retained by Empire (Grand Niagara) Project GP Inc. to undertake environmental consulting services in support of the proposed development for the Grand Niagara property located south of Welland River, north of Biggar Road, west of Queen Elizabeth Way (QEW) and east of Crowland Avenue (the "Study Area"), in the City of Niagara Falls (herein referred to as the "City"), Region of Niagara (herein referred to as the "Region" (**Figure 1**). The site has undergone natural environment investigations since the late 1990's to establish baseline conditions in support of future development. An Environmental Impact Study (EIS) was most recently prepared by Savanta Inc. in 2017 for the Grand Niagara property, which included extensive investigations and data collection. The studies were primarily conducted in 2015 and 2016 and relied on supplementary natural heritage investigations that were previously completed. The EIS identified a preliminary Natural Heritage System (NHS) limit, which included the required setbacks/buffers that were determined in consultation with the City and the Niagara Peninsula Conservation Authority (NPCA). Following public consultation, the Grand Niagara Secondary Plan was adopted and approved by the City in 2018, with minor refinements to the preliminary NHS identified by Savanta.

The purpose of the EIS Addendum is to provide additional information to the City, Region and NPCA regarding the extent of natural heritage features, identify presence/absence of Species-at-Risk (SAR) birds, and identify potential development impacts and related mitigation measures. This EIS addendum was prepared through the use of desktop methods, including review of the Grand Niagara EIS (Savanta, 2017) and the Grand Niagara Secondary Plan, and was supplemented through additional field surveys in 2022. This EIS addendum has been prepared in general accordance with the Niagara Region EIS Guidelines (2018), following the Terms of Reference (TOR) established in consultation with the City and NPCA (**Appendix A**).



EMPIRE GRAND NIAGARA
EIS ADDENDUM

PROJECT LOCATION
FIGURE 1

Legend

- Study Area (Development Lands)
- Watercourse
- Waterbody

0 50 100 200 Metres

SCALE 1:8000

N
W E
S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNDMNRF, NPCA

MAP CREATED BY: ZJB / LK
MAP CHECKED BY: KM / AM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 21-2364
STATUS: DRAFT
DATE: 2023-01-17

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2.0 Planning Context

Various regulatory agencies and legislative authorities have established a number of policies with the purpose of protecting ecological features and functions. The following section lists the relevant policies and legislation that apply to the protection of natural heritage features within the Niagara area that have been amended or updated since the publication of the Grand Niagara EIS (Savanta, 2017). This section also discusses supporting guidance documents and resources consulted respective to each policy. This section is not intended to constitute a complete land use planning assessment as it focuses on the relevant environmental policies and regulations. The documents referenced below can be read in their entirety for a more detailed understanding of the land use policy framework applicable to the Study Area.

2.1 Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS; 2020) provides overall policy direction on matters of provincial interest related to land use planning and development in Ontario. The PPS sets forth a vision for Ontario's land use planning system by managing and directing land use to achieve efficient development and land use patterns, wise use and management of resources, and protecting public health and safety. This report deals specifically with Policy 2.1: Natural Heritage, and Policy 2.2: Water, which provides for the protection and management of natural heritage and water resources, which include the following:

- Significant wetlands;
- Significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Significant areas of natural and scientific interest (ANSIs);
- Fish habitat;
- Sensitive surface water features; and,
- Sensitive ground water features.

The PPS defines "significant" to mean:

- In regard to wetlands, coastal wetlands and areas of natural and scientific interest, an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time;

- In regard to woodlands, 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. These are to be identified using criteria established by the Ontario Ministry of Natural Resources; and,
- In regard to other features and areas in policy in 2.1, 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 PPS defines "sensitive" to mean:

- In regard to surface water features and groundwater features, means areas that are particularly susceptible to impacts from activities or events, including, but not limited to, water withdrawals, and additions of pollutants.

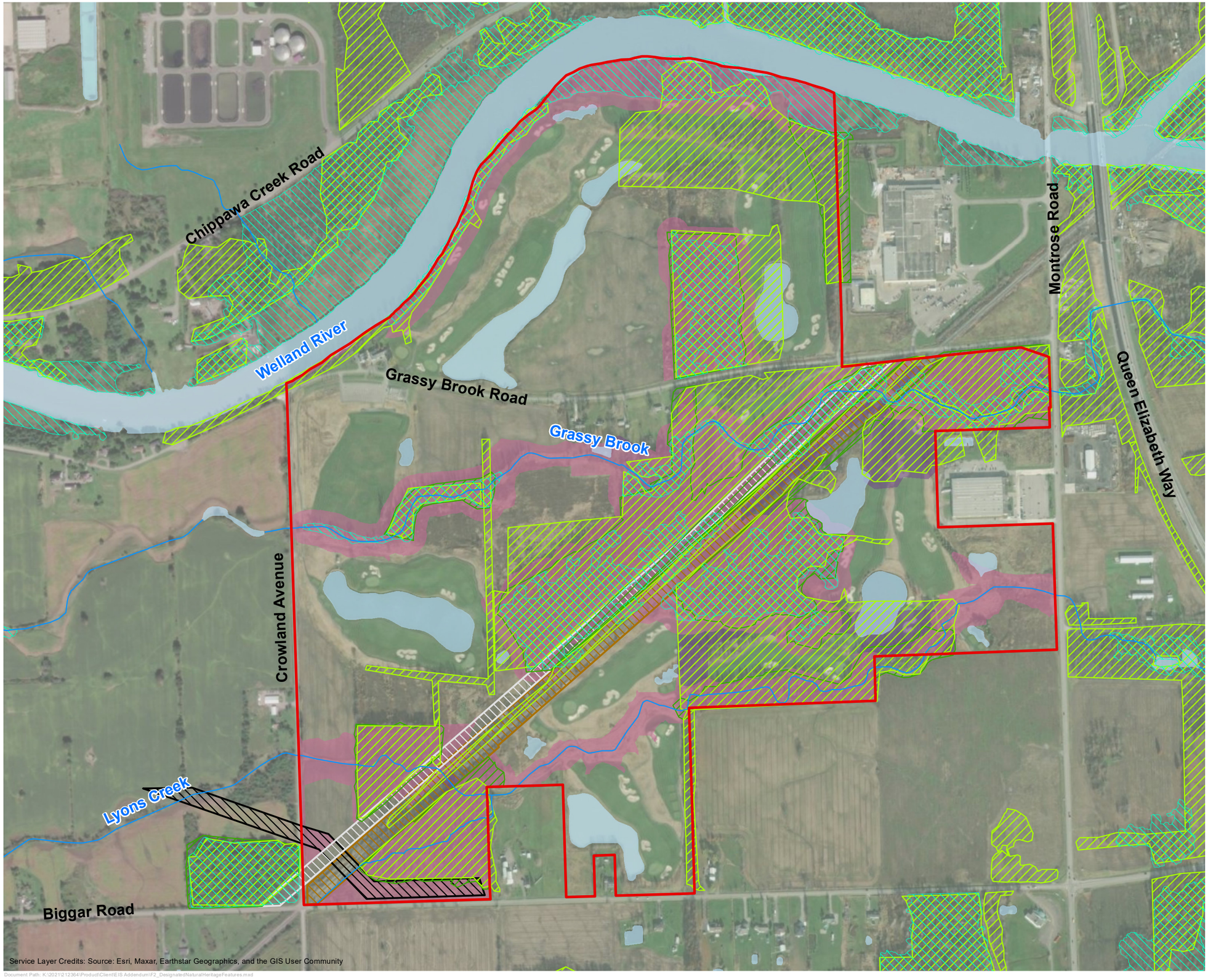
Potential significance of natural heritage features may be evaluated based on size, age, presence of rare or sensitive species, species diversity, and linkage functions, taking into consideration factors such as adjacent land use and degree of disturbance. Criteria for determining significance follow the guidance outlined in the Significant Wildlife Habitat Technical Guide (MNRF, 2000), Natural Heritage Reference Manual (MNRF, 2010) and the Significant Wildlife Habitat Technical Guide Eco-Region 7E Criterion Schedules (MNRF, 2015), where applicable.

2.2 City of Niagara Falls Official Plan, 2019

The City's OP (2019) outlines the long term objectives and policies of the City with respect to the growth and development of urban lands, as well as the conservation of natural heritage areas. Future Land Use is illustrated on Schedule A (**Appendix B-1**), which identifies the entire Study Area as the Grand Niagara Secondary Plan Area. Natural Heritage Features and Adjacent Lands are illustrated on Schedule A1 (**Appendix B-2**), which identifies Environmental Protection Areas (EPA), Environmental Conservation Areas (ECA), wetland buffer areas and creeks within the Study Area (**Figure 2**).

Schedule A-4 (**Appendix B-3**) illustrates the newly adopted Grand Niagara Secondary Plan which identifies the following future land uses and natural heritage features within the Study Area boundaries:

- Hospital Employment
- Residential Low/Medium Density
- Mixed Use
- Neighbourhood Park
- Proposed Collector Roads
- Open Space
- Environmental Protection Area (EPA)
- Environmental Conservation Area (ECA).



EMPIRE GRAND NIAGARA
EIS ADDENDUM

DESIGNATED NATURAL HERITAGE FEATURES
FIGURE 2

Legend

- Study Area (Development Lands)
- Pipeline Easement
- Rail Line
- Utility Corridor

MNRF (2022)

- Provincially Significant Wetland- Welland River East Wetland Complex, Lower Grassy Brook Wetland Complex and Lyons Creek North Wetland Complex
- Woodlands
- Watercourse
- Waterbody

City of Niagara (2019)*

- Environmental Protection
- Environmental Conservation

* Schedule A-1 approximation

0 50 100 200 Metres SCALE 1:8000

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNDMNRF, NPCA

MAP CREATED BY: ZJB / LK
MAP CHECKED BY: KM / AM
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EPAs and ECAs together make up the City's Natural Heritage System. The EPA designation includes the following components located within the Study Area:

- Lower Grassy Brook Wetland Complex (Provincially Significant Wetland) (PSW)
- Welland River East Wetland Complex (PSW)
- Lyons Creek North Wetland Complex (PSW)
- NPCA regulated wetlands
- Hazard lands.

The ECA designation includes the following components located within the Study Area:

- Significant wildlife habitat (SWH)
- Significant woodlands
- Significant valleylands
- Fish habitat
- NPCA wetlands less than 2 ha.

Policies for Grand Niagara Secondary Plan are provided in Section 3 of the City's OP. The purpose of the Secondary Plan is to "*provide a detailed land use and policy framework for the regulation of development within the Grand Niagara Secondary Plan Area."* The Defined Natural Heritage System for the Grand Niagara Secondary Plan is detailed on Appendix IX-C of the City OP (**Appendix B-4**). Appendix IX-C shows the preliminary NHS and the preliminary development area based on Savanta's vegetation communities. Through the development of the Secondary Plan, changes have been made to the NHS, which are noted on Appendix IX-C. Some "non-significant" features and anthropogenic features are proposed to be removed, but will be compensated for (City OP, 2019). The proposed compensation is detailed in the Ecological Restoration Plan attached to the EIS (Savanta, 2017).

The Features and Function for the Grand Niagara Secondary Plan are detailed on Appendix IX-D of the City OP (**Appendix B-5**). Appendix IX-D shows some of the features that make up the refined EPA and ECA boundaries which include, PSWs, floodplains and wetland buffers.

"*Where there is a conflict, the principles, objectives and/or policies of this Secondary Plan shall prevail*."

As the Grand Niagara Secondary Plan as detailed in the City OP takes precedence in regard to the Grand Niagara Study Area, policies from the Region have not been considered.

3.0 Summary of Grand Niagara EIS (2017)

In preparation of this EIS Addendum the Grand Niagara EIS (Savanta, 2017) was reviewed. The following sections provide a brief summary of the existing environmental conditions within the Study Area based on information provided in the Grand Niagara EIS (Savanta, 2017).

3.1 Headwater Drainage Feature Assessment

Thirty-four headwater drainage features (HDFs) were identified during field studies in 2015. All features occurred in cultivated agricultural fields and received a recommendation of "No Management Required", which indicated that all features are generally characterized by minimal flow, no fish or fish habitat, little to no riparian vegetation and no terrestrial habitat (i.e., amphibian breeding).

3.2 Aquatic Habitat Assessment

3.2.1 Grassy Brook

A watercourse and fish habitat assessment was conducted by Savanta in 2012 and reassessed in 2015. Fisheries data for Grassy Brook was also obtained from the Niagara River Watershed Fish Community Assessment (2012). Species captured at stations along this creek are representative of warmwater communities and depending on the station, were inclusive of a variety of cyprinids (minnows), as well as predators such as Largemouth Bass (*Micropterus salmoides*). Grass Pickerel (*Esox americanus*) were also identified in Grassy Brook and is designated as a species of Special Concern, both provincially and federally. Fisheries and Oceans Canada (DFO) has identified Grassy Brook as habitat for Grass Pickerel (DFO, 2022). The Niagara River Watershed Fish Community Assessment indicated that Grass Pickerel and Northern Pike (*Esox Lucius*), which have similar spawning requirements, have been found upstream of the Study Area (2012).

Given that Grassy Brook is an intermittent/discontinuously flowing watercourse it is likely that species such as Grass Pickerel and Northern Pike move into the watercourse from the Welland River in the spring and move upstream during high flow periods. Conditions within the Study Area suggest that spawning likely occurs upstream before fish recede downstream towards the Welland River. Use of the creek likely tapers off as the summer season progresses. Many portions of the channel were surrounded by dense vegetation and the shade prevents instream vegetation growth. Therefore, the reaches of Grassy Brook downstream from Crowland Avenue would be considered to provide migration habitat for Grass Pickerel and Northern Pike, while upstream reaches would provide spawning and early season nursery habitat prior to flows becoming intermittent.

3.2.2 Lyon's Creek

This tributary has been identified as an intermittent warmwater watercourse (Savanta, 2017). A total of 21 fish species have been reported in Lyon's Creek, including within and outside of the Study Area. Black (*Ameiurus melas*) and Brown Bullhead (*Ameiurus nebulosus*), Tadpole Madtom (*Noturus gyrinus*), Grass Pickerel, Northern Pike, Central Mudminnow (*Umbra limi*), Rock Bass (*Ambloplites rupestris*), Pumpkinseed (*Lepomis gibbosus*), Black Crappie (*Pomoxis nigromaculatus*) and Yellow Perch (*Perca flavescens*) have been documented in addition to sucker and minnow species (Savanta, 2017). Surveys conducted in 2001 identified two species of fish within the Study Area: Pumpkinseed and Golden Shiner. Spawning of Northern Pike has been documented in sections of Lyon's Creek. Observations of habitat conditions by Savanta in reaches upstream of Crowland Avenue suggest that seasonal flooding conditions and instream vegetation provide potentially suitable spawning habitat for Grass Pickerel.

The tributary was found to exhibit discontinuous pockets of standing water, with evidence of previous flooding and overbank flow conditions. It was a predominantly shallow watercourse flowing through pockets of mineral meadow marsh and the occasional deciduous swamp pockets and agricultural fields. Riparian vegetation is limited to narrow meadow marsh communities.

3.3 Ecological Land Classification

A total of 35 vegetation communities were delineated and surveyed by Savanta in 2017. The Study Area was identified to contain a variety of tableland, wetland and riparian natural communities and also contains anthropogenic communities such as hedgerows, ponds and golf course lands. Three of the identified vegetation communities are considered provincially and/or globally rare (NHIC 2022):

- Pin Oak Mineral Deciduous Swamp SWD1-3: G2, S2S3
- Two other pin oak swamp communities (SWD1-5* and SWD1-6*) are not listed in the southern Ontario ELC manual. The dominance of Pin Oak in these communities suggests they may reasonably be considered in a manner that is similar to SWD1-3
- Buttonbush Mineral Thicket Swamp SWT2-4: G4, S3.

3.4 Vegetation

A total of 226 plant species were documented in the Grand Niagara EIS (Savanta, 2017). Seven regionally rare and ten regionally uncommon species were observed. These species are not considered rare in Ontario. Two plant species with high coefficients of conservation were identified within the Study Area: Black Gum and Pin Oak. Black Gum is the only identified provincially rare species within the Study Area and is expected to be retained within the PSW north of Grassy Brook Road. Pin Oak is widespread within the Study Area and is expected to persist within many retained vegetation communities and within restoration areas. No SAR vegetation species were observed within the Study Area. Five locally rare plant species were identified within the Study Area:

- Fennel-leaved Pondweed (*Stuckenia pectinate*);
- Greater Duckweed (*Spirodela polurhize*);
- Water-meal (*Wolffia columbiana*);
- Hispid Hedge-nettle (*Stachys hispida*); and,
- Cardinal Flower (*Lobelia cardinalis*).

3.5 Breeding Bird Surveys

A total of 61 bird species were observed during breeding bird surveys conducted by Savanta. Of the 61 species observed, two SAR, Barn Swallow* (*Hirundo rustica*) (Threatened) and Bobolink (*Dolichonyux oryzivorous*) (Threatened) and two Species of Conservation Concern, Eastern Wood-pewee (*Contopus virens*) (Special Concern) and Wood Thrush (*Hylocichla mustelina*) (Special Concern) were identified.

**Since the time of drafting this report, Barn Swallow has been downlisted provincially to* Special Concern.

A total of 31 bird species were observed during crepuscular and nocturnal bird surveys conducted by Savanta in 2016. No SAR species were observed.

Savanta also conducted targeted surveys for grassland bird SAR, which monitored point count stations in cultural meadows and disturbed/fallow areas. No evidence of SAR birds breeding, post breeding, staging/flocking were observed and no monitored polygons provided suitable breeding habitat for grassland SAR birds. Two male Bobolink were observed in flight, however as no suitable habitat was present it was anticipated that these individuals were wanderers from off-site breeding habitat nearby. Barn Swallows were observed foraging over the Study Area, however no nesting sites were observed. Probable breeding evidence was recorded for both Eastern Wood-Pewee and Wood Thrush within the Study Area.

Additionally, a Bank Swallow (*Riparia riparia*) was recorded within the wildlife species list of the EIS. This species was not referred to within the body of the report; however, as no exposed banks are present within the Study Area, there is no habitat for Bank Swallow.

Four locally uncommon or rare bird species were recorded within the Study Area:

- American Woodcock (*Scolopax minor*);
- Virginia Rail (*Rallus limicola*);
- Eastern Screech-Owl (*Otus asio*); and,
- Orchard Oriole (*Icterus spurius*).

One provincially rare species, Great Egret was observed foraging along the edges of the golf course water bunkers within the Study Area. It was presumed that these adults were from nesting colonies in the Niagara River. No breeding evidence for these species was recorded within the Study Area.

3.6 Amphibian Breeding Surveys

Six amphibian species were heard calling within the Study Area. The recorded species are provincially ranked S5 (common and secure) or S4 (apparently common and secure). No SAR or provincially rare amphibians were recorded within the Study Area. These species are considered widespread in the Niagara Region.

3.7 Reptile Surveys

Between 2015 and 2016 three reptile surveys were conducted within the Study Area: turtle basking surveys, turtle nesting surveys and snake surveys. During the 2015 surveys, one Midland Painted Turtle (*Chryemys picta marginata*) was observed within the Study Area. This species is considered widespread in the Niagara region (NPCA, 2010) and is provincially ranked S4. One additional species was recorded during 2016: a deceased young Snapping Turtle (*Chelydra serpentina*), which is a species of Special Concern, both provincially and federally (NHIC, 2022). No adult Snapping Turtles were observed within the Study Area. No turtle nesting evidence was recorded within the Study Area.

Three snake species were recorded within the Study Area between 2015 and 2016: Eastern Gartersnake (*Thamnophis sirtalis sirtalis*), Northern Watersnake (*Nerodia sipedon*), and Brownsnake (*Stoeria dekayi*). These species are common and have a provincial ranking of S5 (NHIC 2021). No suitable snake hibernacula or congregations of snakes were observed.

3.7.1 Insect Surveys

Insect surveys were conducted during the spring and summer of 2015 and 2016 to identify the presence and abundance of butterflies and dragonflies. A total 26 dragonfly and 23 butterfly species were observed. Most species are provincially ranked S5 (common and secure), S4 (apparently common and secure) or SNA (species not native to Ontario) with the exception of those listed below.

The following provincially rare insect species (S1-S3; NHIC, 2022) were observed in the Study Area:

- Monarch (*Danaus plexippus*) (S2N, S4B) (SC in Ontario and END in Canada);
- Slender Bluet (*Enallagma traviatum*) (S2S3);
- Unicorn Clubtail (*Arigomphus villosipes*) (S3);
- Swamp Darner (*Epiasechna heros*) (S3S4);
- Double-Striped Bluet (*Enallagma basidens*) (S3); and,
- Terrestrial Crayfish (*Fallicambarus sp.*).

It is assumed that the Terrestrial Crayfish was observed incidentally within a Cultural Meadow adjacent to the golf green.

3.8 Bat Habitat Assessment and Acoustic Surveys

Nineteen areas were searched for bat habitat within the Study Area. None of the treed areas proposed for removal met bat maternity colony SWH criteria (i.e., ≥10 snags/ha).

Acoustic monitoring was conducted by Savanta at nine-point count stations and along nine transects in 2017. Four bat species were identified within the Study Area: Big Brown Bat (*Eptesicus fuscus*), Silver-haired Bat (*Lasionycteris noctivagans*), Eastern Red Bat (*Lasiurus borealis*), and Hoary Bat (*Lasiurus cinereus*). No SAR bats were identified.

3.9 Natural Heritage Features

3.9.1 Areas of Natural and Scientific Interest

No life science or earth science Areas of Natural and Scientific Interest exist within or adjacent to the Study Area.

3.9.2 Wetlands

Within Ontario, Significant Wetlands are identified by the planning authority (prior to January 1, 2023, significance was determined by MNRF). Other evaluated or unevaluated wetlands may be identified for conservation by the municipality. The Study Area contains portions of two evaluated PSWs, the Lower Grassy Brook PSW complex and the Welland River East PSW complex, as identified through both review of Land Information Ontario Mapping (LIO) and the Grand Niagara EIS (Savanta, 2017).

3.9.3 Woodlands

The City OP (2019) defines "Significant Woodlands" as "treed areas identified by the City, Region or the province, as contributing to the health of the environment based on their provision of wildlife habitat, species diversity, hydrological value and identified significant species. Publically owned woodlands are also considered significant since they provide an excellent opportunity for the protection of the wooded area and its natural function". Significant Woodlands were identified through the Grand Niagara EIS (Savanta, 2017). Significance of these features was determined through a review of the Region's criteria and woodlands were determined to be significant if they met one or more of the following criteria:

- Contain threatened or endangered species or species of concern;
- In size, be equal to or greater than:
  - 2 ha, if located within or overlapping Urban Area Boundaries;
- Contain interior woodland habitat at least 100 m in from the woodland boundaries;
- Contain older growth forest and be 2 ha or greater in area;
- Overlap or contain one or more of the other significant natural heritage features listed in Policies 7.B.1.3 or 7.B.1.4 (Region's 2015 OP); or,
- Abut or be crossed by a watercourse or waterbody and be 2 or more ha in area.

3.9.4 Significant Valleyland

The City OP defines "Significant Valleylands" as "*natural areas in a valley or other landform depression that contains flowing or standing water for some period of the year identified as significant under the PPS through an approved environmental study*". Guidelines for determining significance of valleylands as per the PPS is presented in the Natural Heritage Reference Manual.

As identified in the Grand Niagara EIS (Savanta, 2017) the Welland River is a Significant Valleyland.

3.9.5 Significant Wildlife Habitat

The Grand Niagara EIS and this addendum have assessed SWH using the 7E Criterion Schedule (MNRF, 2015). There are four general types of SWH:

- Seasonal concentration areas;
- Rare or specialized habitats;
- Habitat for species of conservation concern; and,
- Animal movement corridors.

The Grand Niagara EIS identified a variety of SWH types within the Study Area. Identified SWH includes:

- Rare vegetation communities including Pin Oak deciduous swamp and a small inclusion of Buttonbush ticket swamp;
- Wetland amphibian breeding habitat is present east of Crowland Avenue at four golf course ponds and one natural pond (primarily due to low numbers of Bullfrog);

- Woodland amphibian breeding habitat is present east of Crowland Avenue in the PSW north of Grassy Brook Road;
- Habitat of Special Concern and provincially rare (S1-S3) species, including Wood Thrush, Eastern Wood-Pewee, Grass Pickerel, Black Gum, Slender Bluet, Double striped Bluet, Unicorn Clubtail, and Swamp Darner. Monarch was also observed by both Savanta and Dillon; however, this species is required in large concentrations and within 5 km of Lake Ontario or Lake Erie for SWH to be present; and,
- Terrestrial Crayfish SWH present within one cultural meadow.

3.9.6 Fish Habitat

Fish habitat as defined in the federal *Fisheries Act*, c F-14, means areas that "fish depend directly or indirectly [on] to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas". Fish, as defined in S.2 of the *Fisheries Act*, c. F-14, includes any part of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals. The Aquatic SAR map identifies portions of Grassy Brook and Lyon's Creek as containing Grass Pickerel.

As identified in the Grand Niagara EIS (Savanta, 2017), both Grassy Brook and Lyon's creek act as migration corridors within the Study Area they are both classified as fish habitat.

None of the headwater drainage features within the Study Area provide fish habitat.

3.9.7 Species at Risk

No Endangered (END) species were recorded within the Study Area during Savanta's studies. As discussed above, two Threatened (THR) species were identified.

Barn Swallows were observed in low numbers foraging over the Study Area during the breeding bird surveys. Barn Swallow nest almost exclusively on human-made structures such as open barns, under bridges, and in culverts (MECP, 2021). No suitable nesting habitat for this species exists within the Study Area; however, nesting activity was observed incidentally at a private, non-participating residence west of Crowland Avenue. As mentioned, since that time, Barn Swallow has been downlisted provincially to SC and is no longer protected under the ESA.

Two male Bobolink were also observed in flight over the Study Area; however, no suitable habitat was present within the Study Area.

4.0 2022 Field Surveys

Review of the Grand Niagara EIS (Savanta 2017), results of Dillon's 2021 site reconnaissance, and discussions with the Region, the City and NPCA were used to assist in scoping the 2022 field program. In accordance with the ToR, the 2022 field program included aquatic habitat assessments, SAR bird surveys and feature staking. Fieldwork conducted for the EIS addendum occurred between June and July 2022 when weather conditions and timing were deemed suitable based on the survey protocols being implemented (**Table 1**). Incidental wildlife observations made during site reconnaissance in 2021 and surveys conducted in 2022 were also documented and used to identify potential updates to SWH. These studies were undertaken to confirm the results of Savanta's EIS and help to identify potential impacts and/or mitigation measures. Field notes are included in **Appendix D**.

Table 1: Dates and Weather Conditions of 2022 Field Surveys

DATE	SURVEY	AIR TEMP (°C)	WEATHER CONDITIONS
July 25, 2022	Aquatic Habitat Assessment	22	5% cloud cover, gentle breeze[2], no precipitation
June 3, 2022	Eastern Meadowlark Survey #1	18	60% cloud dover, light air[1], no precipitation
June 10, 2022	Eastern Meadowlark Survey #2	18	0% cloud cover, gentle breeze, no precipitation
June 16, 2022	Eastern Meadowlark Survey #3	26	10% cloud cover, moderate breeze[3], no precipitation

[1]Light air = Beaufort Scale 1
[2]Gentle breeze = Beaufort Scale 3
[3]Moderate breeze = Beaufort Scale 4

The following sub-sections outline the survey methodologies that were implemented during the 2022 field program.

4.1 Aquatic Assessments

4.1.1 Aquatic Habitat Assessment

A fisheries habitat assessment was completed at the three proposed road crossings of Grassy Brook and Lyons Creek on July 25, 2022. Information collected during the assessments included (where applicable): channel form, presence/absence of flow, substrate type, channel dimensions (e.g., width and depth), and riparian vegetation.

4.1.1.1 Grassy Brook

At the proposed crossing (GB1), Grassy Brook was observed to be an intermittent watercourse that contained standing water with no flow which dried out downstream. There were areas of flat and pool habitat due to the presence of debris jams. Where water was present, the mean wetted width was 2.5 m, the mean feature width was 7 m while the mean wetted depth was 0.1 m and the mean feature depth was 0.35 m. Silt and clay were the dominant and subdominant substrate, respectively. The banks were observed to be protected and well vegetated. In-stream cover consisted of mainly emergent vascular macrophytes with minimal cover provided by in-stream and overhanging woody debris, organic debris and overhanging vascular macrophytes. Reed Canary Grass (*Phalaris arundinacea*) and Smartweed species (*Persicaria sp.*) were the dominant in-stream vegetation. There were also areas where emergent woody vegetation consisting of Buttonbush (*Cephalanthus occidentalis*) was dominant. At the crossing, Grassy Brook is within a forested community that transitions to meadow and cultivated communities beyond 10 m to 30 m. As a result, 60% to 90% of the watercourse was shaded. No fish were observed during the assessment.

4.1.1.2 Lyon's Creek Tributary

There are two proposed crossings along Lyons Creek. The upstream crossing (LC1) contained standing water at the existing crossing structure (part of the golf course pathway), but was dry further upstream and downstream. Silt and clay were observed to be the dominant and sub-dominant substrates. The mean wetted width of the standing pool at the crossing was approximately 6 m and the mean feature width was approximately 9 m. The mean wetted depth was 0.4 m while the mean feature depth was approximately 1.5 m. Downstream of the crossing, the watercourse narrows to approximately 4 m in width and 1 m in depth. Prior to drying out, the mean wetted width of the channel at the time of the assessment was 0.35 m and the mean wetted depth was 0.01 m. The banks were vegetated and protected from erosion. In-stream habitat cover consisted of prominently emergent Reed Canary Grass with minimal organic debris and overhanging vascular macrophytes. The riparian zone consisted of meadow habitat before transitioning to a maintained golf course beyond 10 m. As a result, the watercourse was minimally shaded (1%- 30%).

The conditions at the downstream crossing (LC2) along Lyons Creek were similar to LC1. Standing water was observed at the existing golf course pathway crossing structure, while the watercourse was dry upstream and downstream. The dominant substrate was silt and the subdominant was clay and the banks were protected with vegetation. At the crossing, the feature width was approximately 7 m and the wetted width was approximately 5 m while the feature depth was approximately 1.5 m and the wetted depth was approximately 0.2 m. Downstream of the forested community, the watercourse narrows in the Reed Canary Grass meadow. In this area, the mean feature width was approximately 0.45 m and the mean wetted width was approximately 0.30 m while the mean feature depth was approximately 0.20 m and the mean wetted depth was approximately 0.02 m. The in-stream habitat was dominated by emergent Reed Canary Grass, Smartweed species and Buttonbush. Other cover habitat

included organic debris, overhanging vascular macrophytes and woody debris, both in-stream and overhanging. Approximately 30% to 60% of the watercourse was shaded as the riparian habitat transitioned from a forest community upstream to a meadow community downstream. The habitat transitioned to an active golf course beyond 10 m. No fish were observed within Lyons Creek at either crossings during the time of the assessment.

4.2 Terrestrial Assessments

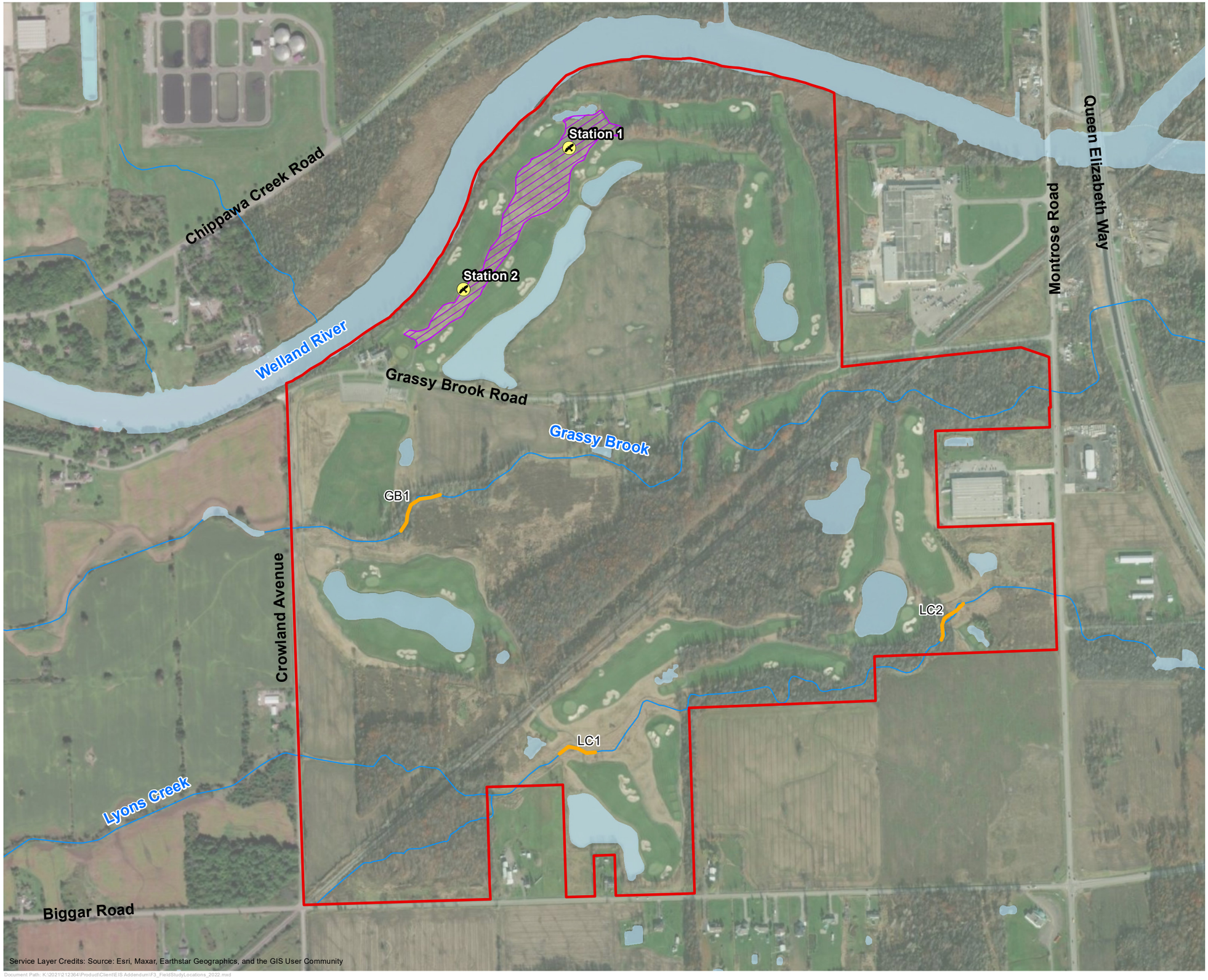
4.2.1 Eastern Meadowlark Survey

During the 2021 site reconnaissance visit, Eastern Meadowlark were heard calling from the golf rough/ meadow community in the northwestern portion of the Study Area. As such, three surveys to identify the presence/absence of suitable habitat for Eastern Meadowlark were conducted within the Study Area.

Specifically, surveys consisted of monitoring two point counts between sunrise and four hours after sunrise to establish quantitative estimates of Eastern Meadowlark abundance in suitable habitat types within the Study Area. Two point-count survey locations were established in areas with potentially suitable habitat within the Study Area, with approximately 400 m between locations. During the surveys, each station was monitored for 10 minutes and evidence of breeding behaviour was recorded which generally includes, but is not limited to, males singing, nest building, egg incubation, territorial defence, carrying food, and feeding young.

To supplement the surveys, area searches of the habitat were completed using binoculars to observe species presence and breeding activity between point counts. Area searches involved noting presence of Eastern Meadowlark and corresponding breeding evidence while traversing the edge of potential habitat on foot. Point count locations are shown on **Figure 3**.

These surveys identified two individuals within the meadow community in the northwest corner of the Study Area around station 1 (maximum of two individuals noted during each surveys). No Eastern Meadowlark were observed around station 2. The general minimum area requirements associated with suitable habitat for this species is estimated to be 5 ha (COSEWIC 2011; MNRF 2013). The surveyed potentially suitable habitat is ~3.5 ha and as such does not meet the minimum size requirements for Eastern Meadowlark habitat. The area is also fragmented by the presence of a golf course road and manicured golf course greens. Finally, the linear shape of the habitat creates limited presence of interior habitat.



EMPIRE GRAND NIAGARA
EIS ADDENDUM

FIELD STUDY LOCATIONS (2022)
FIGURE 3

Legend

- Study Area (Development Lands)
- Potential Eastern Meadowlark Breeding Habitat (SAR) (Dillon 2021)
- Eastern Meadowlark Monitoring Stations
- Aquatic Habitat Assessment at Proposed Crossing Location
- Watercourse
- Waterbody

0 50 100 200 Metres

SCALE 1:8000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNDMNRF, NPCA

MAP CREATED BY: ZJB / LK
MAP CHECKED BY: KM / AM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 21-2364
STATUS: DRAFT
DATE: 2023-01-24

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4.2.2 Staking of Wetlands and Woodlands

The boundaries of wetland and woodland features within the Study Area were determined by the Grand Niagara EIS (Savanta, 2017). Further refinement and confirmation of these boundaries occurred through a series of staking exercises conducted with both NPCA and the Region. The boundaries of wetlands were staked with the NPCA on June 21, 2022, and the dripline of woodlands was staked with the Region on June 17, 2022. The furthest extent of these features was staked with agencies to determine size of features to be removed from the landscape, determine where to apply buffers and to determine the limit of development.

4.2.3 Incidental Wildfire

Incidental wildlife species (including other wildlife evidence such as dens, tracks, and scat) observed in the Study Area during 2021 site reconnaissance and during 2022 studies are listed below in **Table 2**.

The majority of incidental species observed are considered common and secure in Ontario (S4 or S5), with the exception of two observations (Monarch [SC] and Great Egret) which are considered imperiled in Ontario. In addition, one threatened species (Eastern Meadowlark) and one additional SC species (Eastern Wood-pewee) were observed. As detailed in **Section 4.2.1**, no suitable habitat is present for Eastern Meadowlark within the Study Area.

Table 2: Incidental Wildlife Observations

SCIENTIFIC NAME	COMMON NAME	SARA[1]	ESA[2]	SRANK[3]
BIRDS				
Buteo jamaicensis [b]	Red-tailed Hawk	---	---	S5
Charadrius vociferous [a]	Killdeer	---	---	S5B, S5N
Branta canadensis [a]	Canada Goose	---	---	S5
Stelgidopteryx serripennis [a]	Northern Rough-winged Swallow	---	---	S4B
Melospiza melodia [a]	Song Sparrow	---	---	S5
Corvus brachyrhynchos [a]	American Crow	---	---	S5B
Carduelis tristis [a]	American Goldfinch	---	---	S5B
Geothlypis trichas [a]	Common Yellowthroat	---	---	S5B
Ardea alba [a]	Great Egret	---	---	S2B
Turdus migratorius [a]	American Robin	---	---	S5B
Cardinalis cardinalis [a]	Northern Cardinal	---	---	S5
Contopus virens [a]	Eastern Wood-pewee	SC	SC	S4B
Colaptes auratus [a]	Northern Flicker	---	---	S4B
Sturnella magna [a]	Eastern Meadowlark	THR	THR	S4B

SCIENTIFIC NAME	COMMON NAME	SARA[1]	ESA[2]	SRANK[3]
AMPHIBIANS				
Lithobates clamitans [b]	Green Frog	---	---	S5
INSECTS				
Danaus plexippus [a]	Monarch	SC	SC	S2N, S4B
REPTILES				
Chrysemys picta marginata [a]	Midland Painted Turtle	---	---	S4

a Observed during 2021 site visit
b Observed during 2022 field work
1 Federal *Species at Risk Act* (SARA) Registry Status
2 Ontario Endangered Species Act (ESA) Species at Risk List Status
3 Provincial Conservation Rank (Srank)

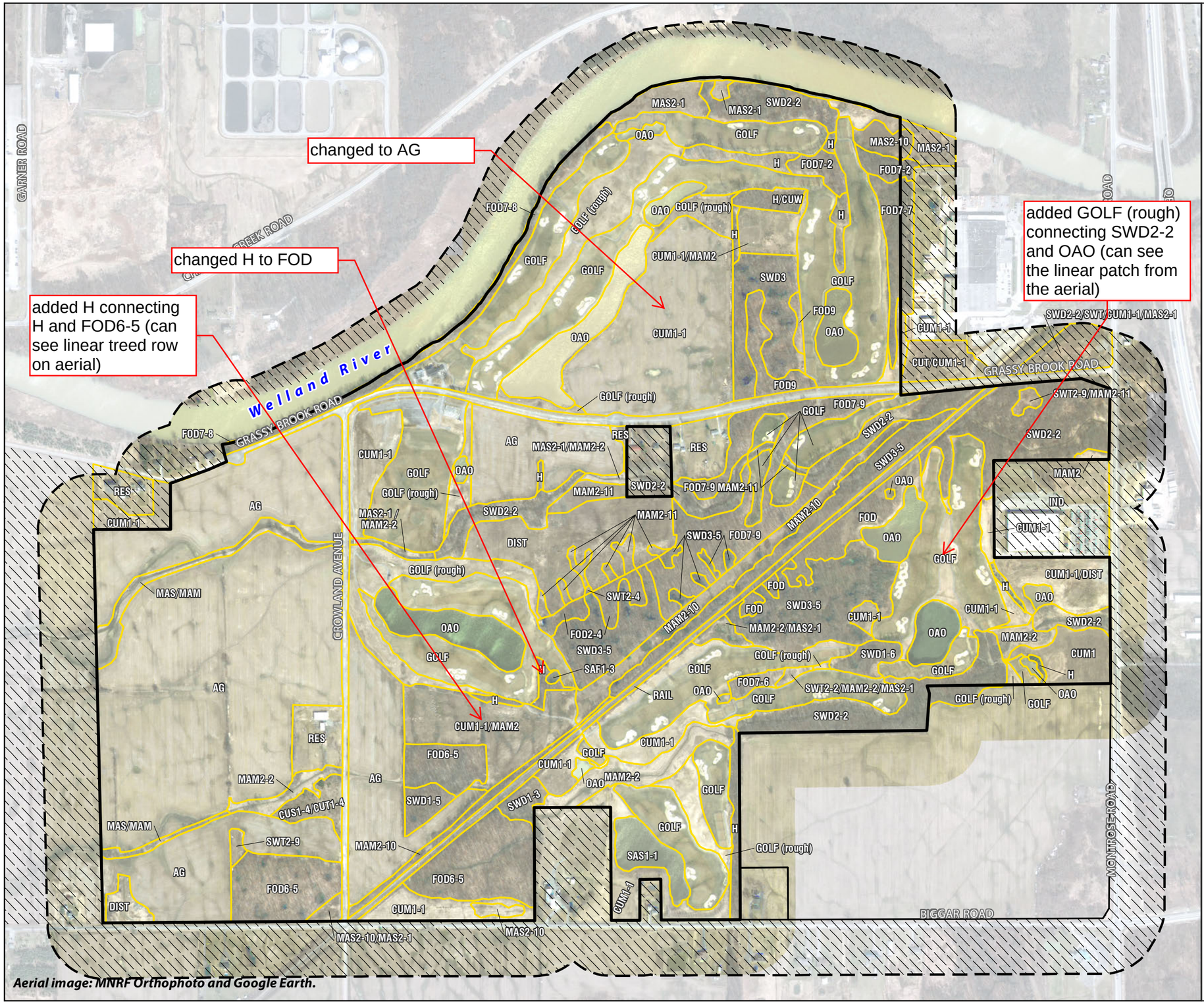
4.2.4 Ecological Land Classification

During Dillon's field reconnaissance site visit, the boundaries and the classification of the vegetation communities within the Study Area were reviewed for consistency with Savanta's EIS (2017). The majority of the vegetation community boundaries and classifications were confirmed to be consistent with the Grand Niagara EIS; however, a few minor changes were noted (shown on **Figure 4**). These include:

- The addition of a hedgerow community connecting FOD6-5 and another hedgerow north of this feature;
- The reclassification of the CUM1-1 to Agricultural in the north of the Study Area;
- The addition of a GOLF (rough) community connecting SWD2-2 and OAO on the southeast portion of the Study Area; and,
- The reclassification of a hedgerow community to a FOD community.

4.2.5 Natural Heritage Features

Three areas previously identified as woodlands were determined to not meet woodland criteria during the site walk with the Region on June 17, 2022 (**Figure 5**). The woodland directly west of Montrose Road and north of Grassy Brook Road has been removed from the landscape since the 2015 and 2016 field surveys. This area is now agricultural field. This area is outside of the Study Area and, therefore, will not be discussed further. Additionally, three areas of woodland (one isolated woodland and two sections of larger woodlands) are no longer considered woodland (**Figure 5**). These three areas were mapped as woodland in 2015 and 2016 containing a high percentage of Ash species (*Fraxinus sp.*). Between 2016 and 2022, the majority of the trees within these areas died and therefore the woodland no longer meet the criteria to be considered woodlands.



Aerial image: MNRF Orthophoto and Google Earth.

0 200 Meters

N

SAVANTA

- Grand Niagara Holdings
- Non-participating land
- 120m adjacent lands
- Ecological Land Classification

ELC Legend

FOREST

FOD	Deciduous Forest
FOD2-4	Dry-Fresh Oak-Hardwood Deciduous Forest
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest
FOD7-6*	Fresh-Moist Red Maple Lowland Deciduous Forest
FOD7-7*	Fresh-Moist Ash-Elm Lowland Deciduous Forest
FOD7-8*	Fresh-Moist Walnut-Ash-Willow Lowland Deciduous Forest
FOD7-9*	Fresh-Moist Pin Oak-Green Ash Lowland Deciduous Forest
FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest

SWAMP

SWD1-3	Pin Oak Mineral Deciduous Swamp
SWD1-5*	Green Ash-Pin Oak Mineral Deciduous Swamp
SWD1-6*	Pin Oak-Ash-Maple Mineral Deciduous Swamp
SWD2-2	Green Ash Mineral Deciduous Swamp
SWD3	Maple Mineral Deciduous Swamp
SWD3-5*	Maple Mineral Deciduous Swamp
SWT	Thicket Swamp
SWT2-2	Willow Mineral Thicket Swamp
SWT2-4	Buttonbush Mineral Thicket Swamp
SWT2-9	Grey Dogwood Mineral Thicket Swamp

MARSH

MAM	Meadow Marsh
MAM2	Mineral Meadow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-10	Forb Mineral Meadow Marsh
MAM2-11*	Mixed Mineral Meadow Marsh
MAS	Shallow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
MAS2-10*	Common Reed Mineral Shallow Marsh

OPEN WATER

OAO	Open Aquatic

SHALLOW WATER

SAS1-1	Pondweed Submerged Shallow Aquatic
SAF1-3	Duckweed Floating-leaved Shallow Aquatic

CULTURAL

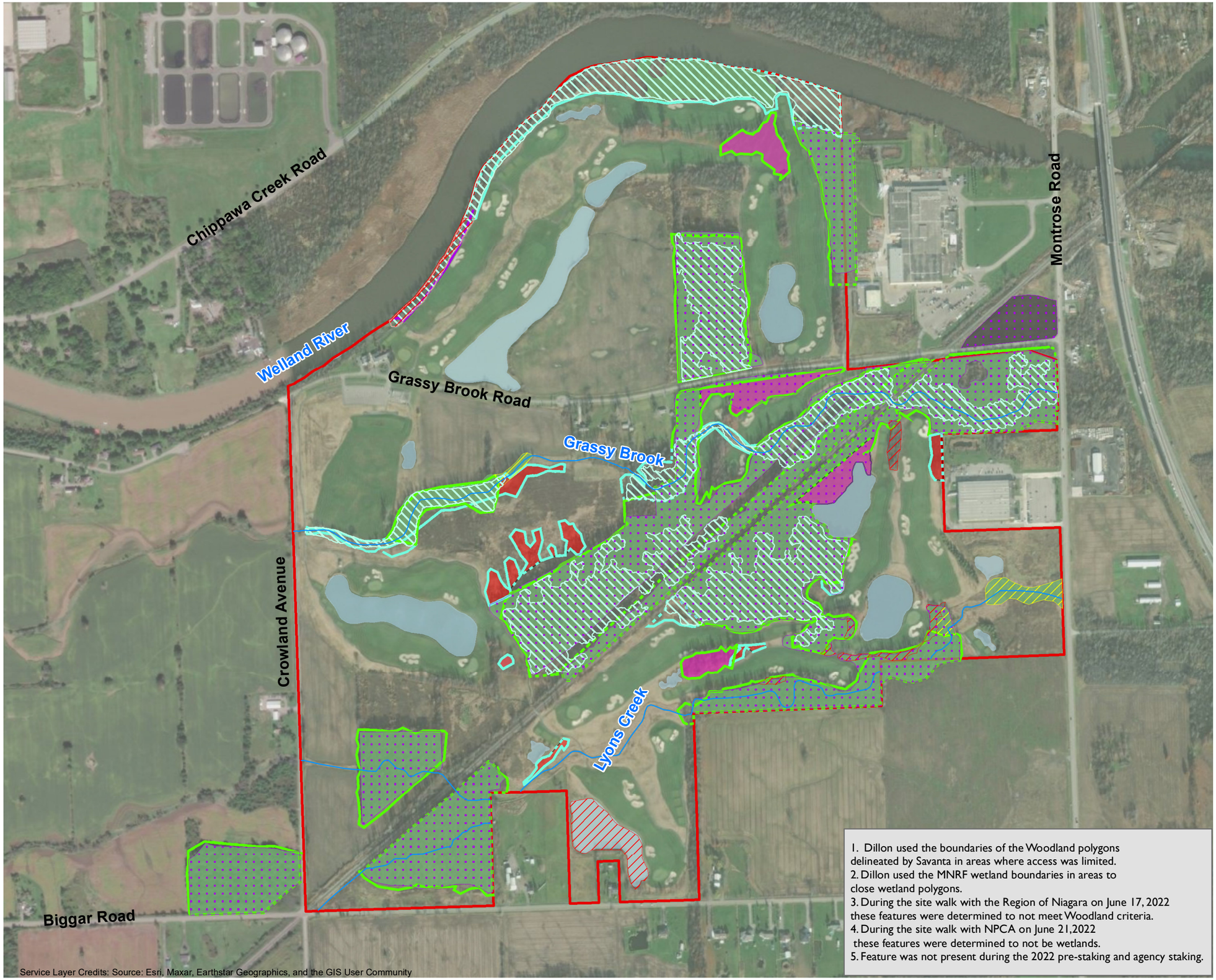
CUW	Cultural Woodland
CUS1-4*	White Pine Cultural Savanna
CUT	Cultural Thicket
CUT1-4	Grey Dogwood Cultural Thicket
CUM1-1	Fresh-Moist Old Field Meadow

**not listed in Southern Ontario ELC Guide*

RES	Residence
H	Hedgerow

Grand Niagara

Figure 4 - Savanta ELC communities with Dillon updates noted



1. Dillon used the boundaries of the Woodland polygons delineated by Savanta in areas where access was limited.
2. Dillon used the MNRF wetland boundaries in areas to close wetland polygons.
3. During the site walk with the Region of Niagara on June 17, 2022 these features were determined to not meet Woodland criteria.
4. During the site walk with NPCA on June 21,2022 these features were determined to not be wetlands.
5. Feature was not present during the 2022 pre-staking and agency staking.

EMPIRE GRAND NIAGARA
EIS ADDENDUM

ENVIRONMENTAL FEATURES (2022)
FIGURE 5

Legend

- Study Area (Development Lands)
- Provincially Significant Wetlands, MNRF
- Watercourse
- Waterbody

Savanta EIS 2017:

- Significant Woodlands
- Wetland Boundaries Determined by Savanta EIS [1]
- Woodland Boundaries Determined by Savanta [2]
- Woodlands Proposed for Removal
- Wetlands Proposed for Removal
- Significant Wildlife Habitat

Constraint Boundary Determination 2022:

- Wetland (staked with NPCA June 21, 2022)
- Dripline (staked with Region of Niagara June 17, 2022)
- Top of Bank (staked June 17, 2022)

Constraint Boundary Assessment 2022:

- Determined Not a Woodland [3]
- Determined Not a Wetland [4]
- Removed From Landscape [5]

0 50 100 200 Metres SCALE 1:8000

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF

MAP CREATED BY: ZJB
MAP CHECKED BY: KM
MAP PROJECTION: NAD 1983 UTM Zone 17N

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DATE: 2023-02-09

Five areas previously identified as wetlands were determined to not meet the requirements of wetlands during the June 21, 2022, feature staking with NPCA (**Figure 5**). These areas were investigated for both floral composition and in some instances soils. The results of these investigations showed that these features no longer met the criteria to be considered wetlands.

No additional natural heritage features or updates to natural heritage features identified in the Grand Niagara EIS (Savanta, 2017) have been identified through 2022 field work.

5.0 Description of Proposed Development

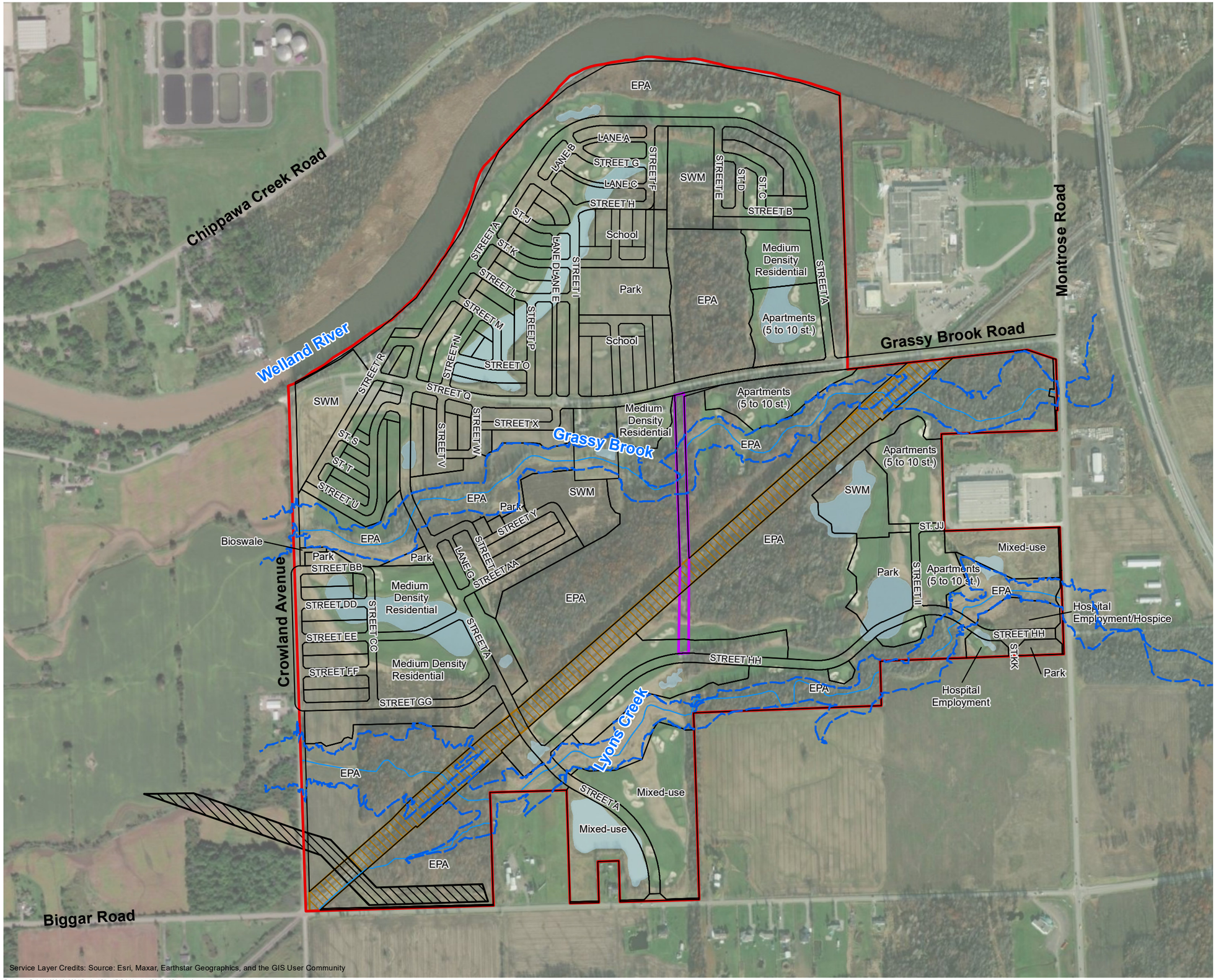
The proposed Grand Niagara development is approximately 455.8 acres (184.47 ha) and is currently under active use as a golf course and agriculture. The overall proposed development will include (**Figure 6**):

- Mixed density residential (60.30 hectares);
- Schools (5.78 hectares);
- Parks (5.23 hectares);
- Hospital (0.85 hectares);
- SWM features (8.78 hectares);
- Environmental Protection Areas (79.94 hectares);
- Bioswales (0.09 hectares);
- Roads (23.00 hectares); and,
- Road widening (0.49 hectares).

In addition to the above-mentioned proposed development features, a boat launch may also be included in the northwest corner of the Study Area, within the parkland adjacent to the stormwater management (SWM) feature and the Welland River, in consideration of the City's request. It is our understanding that the City has requested a boat launch for personal watercrafts such as canoes, kayaks etc., and will not allow for larger motorized watercrafts. As the exact design of this feature has not been finalized, this is not currently shown on the development plan. This boat launch will be reviewed by Dillon staff as part of the detail design phase to assess potential environmental impacts and develop appropriate mitigation measures for implementation during construction.

Trails are proposed both along the roads as well as within the buffers of the natural features as requested by the City, and as illustrated in a conceptual plan (**Appendix E**). It is our understanding that these trails will consist of a permeable surface to support infiltration of the surface water into the underlying aquifer to support water balance to the wetlands. The exact location will be determined during the detail design phase and efforts will be made to ensure the exact location of trails will result in minimal impacts to the natural heritage features. Specifically, the trail proposed through the centre of the NHS has potential to impact the PSW and will need to be carefully reviewed by Dillon staff. Its alignment will likely be adjusted to avoid footprint impacts within the PSW, and minimize vegetation removals to the extent feasible.

Vehicle access points into the development are proposed via Grassy Brook Road, Montrose Road, and Biggar Road. An internal road network has been proposed to provide access to the interior portions of the Study Area. There are three proposed watercourse crossing associated with the development. Two proposed crossings of Lyon's Creek and one proposed crossing of Grassy Brook (**Figure 6**).



EMPIRE GRAND NIAGARA
EIS ADDENDUM

DRAFT PLAN
FIGURE 6

Legend

- Study Area (Development Lands)
- Conceptual Trail - Permeable Surface
- Proposed Development (WSP, 2023)
- Proposed Floodplain (WSP, 2023)
- Watercourse
- Waterbody
- Pipeline Easement
- Rail Line

0 50 100 200 Metres SCALE 1:8000

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNDMNRF, NPCA

MAP CREATED BY: ZJB / LK
MAP CHECKED BY: KM / AM
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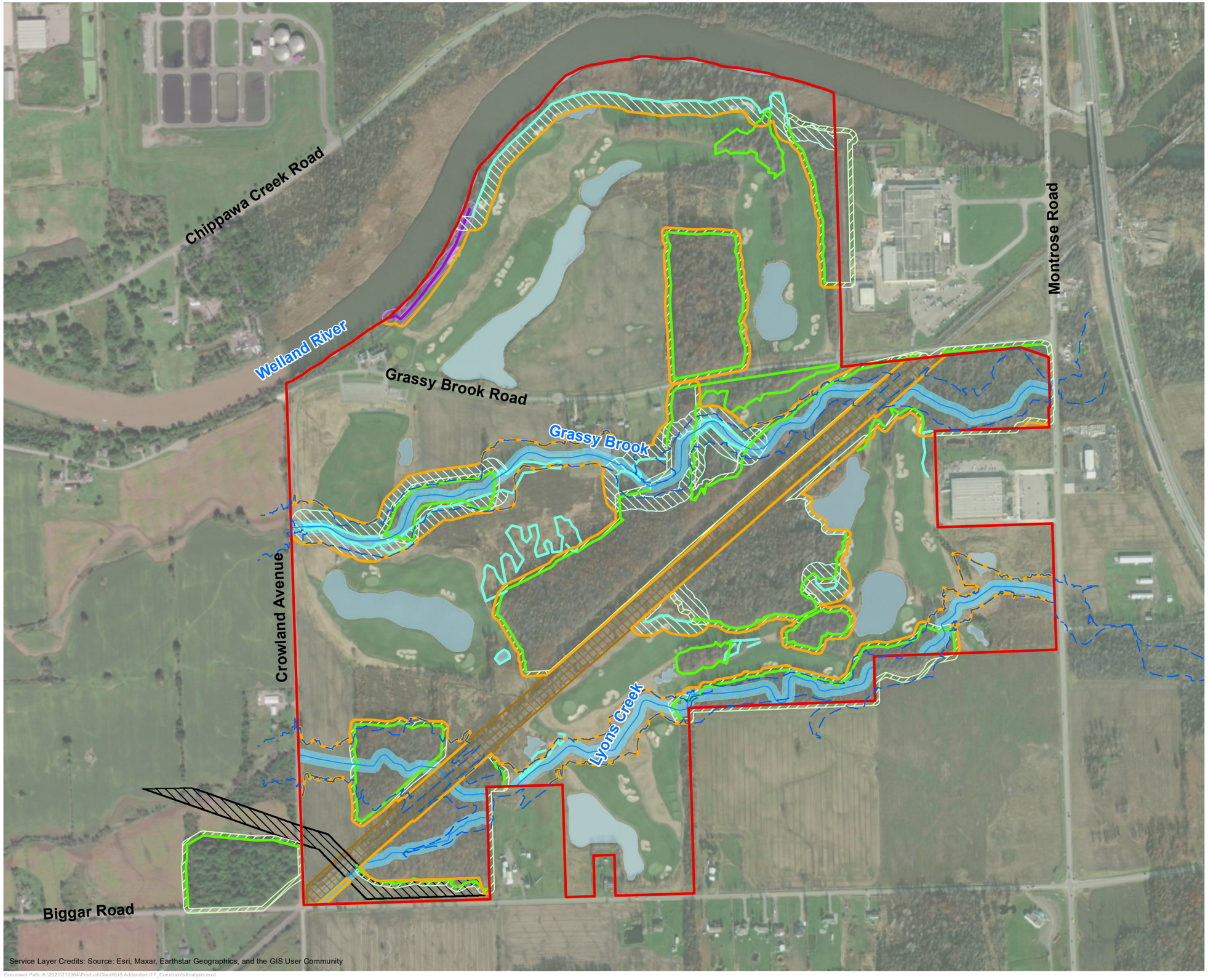
The Draft Plan also depicts the proposed NHS which includes retained features and associated buffers (which have been applied to the greatest extent of features) and have been labelled as Environmental Protection Areas. Buffer widths were determined through a review of the Grand Niagara Secondary Plan and the Grand Niagara EIS (Savanta, 2017). Buffers widths include:

- Provincially significant wetlands (30 m);
- Unevaluated wetland (15 m);
- Lyon's Creek and Grassy Brook watercourse (15 m buffer; however, due to overlap with other retained features/buffers the average setback is 50 m for Grassy Brook and 40 m from Lyon's Creek);
- Top of Bank (15 m); and,
- Retained woodlands (10 m buffer).

The implementation of buffers is discussed below in **Section 7.4** and are shown on **Figure 7**.



EMPIRE GRAND NIAGARA
EIS ADDENDUM

CONSTRAINT ANALYSIS
FIGURE 7

Legend

- Study Area (Development Lands)
- Proposed Development Limit
- Proposed Floodplain (WSP, 2023)
- Wetland (staked with NPCA June 21, 2022)
- Dripline (staked with Region of Niagara June 17, 2022)
- Top of Bank (staked June 17, 2022)
- Watercourse
- Waterbody
- Pipeline Easement
- Rail Line

Setbacks

- Top of Bank 15m Buffer
- Wetlands 30m Buffer
- Woodlands 10m Buffer
- Watercourse 15m Buffer

0 50 100 200 Metres SCALE 1:8000

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNDMNRF, NPCA

MAP CREATED BY: ZJB / LK
MAP CHECKED BY: KM / AM
MAP PROJECTION: NAD 1983 UTM Zone 17N

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PROJECT: 21-2364
STATUS: DRAFT
DATE: 2023-02-09

Document Path: K:\2021\212364\Product\Client\EIS Addendum\F7_ConstraintsAnalysis.mxd

6.0 Impact Assessment

The Grand Niagara EIS (Savanta, 2017) identified and discussed potential impacts to the features and functions of the natural areas within the Study Area. The refinement of the Draft Plan has led to an updated impact assessment for the Study Area. The Natural Heritage System (NHS) is consistent with the Savanta EIS and the Secondary Plan, and was been refined based on feature staking with the agencies. The Proposed Development Limit shown on **Figure 8** reflects the NHS (features and setbacks) within the Study Area.

As some details of the proposed development have not been finalized, the full impacts of the construction and use of these features cannot be completed at this time; however, will be confirmed during detail design.

6.1 Potential Direct Impacts

The Grand Niagara EIS (Savanta, 2017) identified and discussed potential impacts to the features and functions of the natural areas within the Study Area. The refinement of the Draft Plan has led to an updated impact assessment for the Study Area.

6.1.1 Impacts to Fish and Fish Habitat

The three proposed watercourse crossings of Lyon's Creek and Grassy Brook (**Figure 6**), and the personal watercraft boat launch have potential to impact fish and fish habitat. Further specifics of these designs will be determined during detail design to confirm the extent of in-water impacts. A review of the impacts to the associated watercourses and recommended measures to reduce, avoid or mitigate these impacts, will be communicated at that time. As some in water works may be required DFO will be consulted to meet the requirements of the *Fisheries Act*. It is anticiapted that impacts could be minimized through the implementation of in-water timing windows and robust erosion and sediment control measures.

6.1.2 Diversion of Surface Water Flows

The potential impacts of changes to land use and land cover on the health of a watershed have been well documented and can include changes to groundwater infiltration, run off, stream flow regime, water quality, stream channel erosion, and wildlife habitat (TRCA, 2008). More specifically, changes may include:

- Direct "footprint" effects such as the loss of natural land cover;
- Indirect "flow related" effects such as increased frequency of high stream flows, accelerated stream channel erosion and deterioration of water quality; and,
- Cumulative effects such as changes in aquatic community composition that may arise from a combination of changes affecting upstream areas.

EMPIRE GRAND NIAGARA
EIS ADDENDUM

IMPACT ASSESSMENT
FIGURE 8

Legend

- Study Area (Development Lands)
- Proposed Development Limit
- Conceptual Trail - Permeable Surface
- Proposed Development (WSP, 2023)
- Woodlands Proposed for Removal (2.9 ha)
- Wetlands Proposed for Removal (1.52 ha)
- Watercourse
- Waterbody

0 50 100 200 Metres SCALE 1:8000

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNDMNRF, NPCA

MAP CREATED BY: ZJB / LK
MAP CHECKED BY: KM / AM
MAP PROJECTION: NAD 1983 UTM Zone 17N

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PROJECT: 21-2364
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The most notable difference is the addition of impervious surfaces (i.e., roads, parking lots, driveways, rooftops, etc.). Impervious surfaces prevent infiltration of water into the soils and the removal of the vegetation removed the evapotranspiration component of the natural water balance. These changes affect the watersheds capacity to infiltrate precipitation and detain run off and, therefore, to attenuate stream flow (TRCA, 2008).

Alterations to changes in flow and/or water quality regimes within the Study Area as a result of development activities have potential to impact the PSWs and downstream reaches of Grassy Brook, Lyon's Creek, and Welland River if left unmitigated. To ensure that wetland functions are maintained, it is therefore, important to maintain water quality, quantity and seasonal duration to the wetlands.

Refer to the SWM Plan (WSP, 2023b) and **Section 7.1** of this report for mitigation measures relating to surface flows and Terra-Dynamics Preliminary Hydrogeologic Water Balance (2023) for further details.

6.1.3 Erosion and Sedimentation of Natural Heritage Features

Construction activity, especially operations involving the handling of earthen material, increases the availability of sediment for erosion and transport via surface drainage. In order to mitigate the adverse environmental impacts caused by the release of sediment-laden runoff into drainage ditches, measures for erosion and sediment control (ESC) are recommended for the construction site.

Potential impacts to these features may include, but are not limited to:

- Reduced water quality and degradation of downstream aquatic habitat (e.g., surface water flow into PSWs and Creeks); and,
- Disturbance to or loss of vegetation, due to the deposition of dust and/or overland mobilization of soil.

Refer to **Section 7.3** for mitigation relating to erosion and sedimentation.

6.1.4 Tree and Vegetation Removal

The proposed development plan indicates tree and ground vegetation removal limited to the development area as shown on **Figure 8** and as detailed in the Tree Inventory and Preservation Plan (Phase 1) (Dillon, 2023), with the exception of some minor feature removals for the development of a trail systems within feature buffers, and potentially more significant removals for a trail requested by the City through the centre of the property. While the location of the trail netowrk is conceptual at this time, further refinements to the exact placement will be investigated at detail design. Efforts will be made to ensure the location of the trail will minimize impacts while providing a connection to nature for the residents.

Minor grading into feature buffers (as required related to the development) may be required. As detailed in the Tree Inventory and Preservation Plan (Phase 1) (Dillon, 2023) 356 inventoried trees and an estimated 1,134 trees within wooded features are anticipated for removal to facilitate Phase 1 of the proposed development (north of Grassy Brook Road). The impacts to vegetation within buffer areas is expected to be temporary, as these areas are proposed to be planted and restored.

Tree removal is anticipated to result in a reduction of tree cover, marginal wildlife habitat loss, and alteration of soil conditions. On a site level, the impacts of tree and vegetation removal may include:

- Direct loss of trees;
- Decreased floral species richness and abundance;
- Negative edge effects, include altered soil conditions and water availability;
- Alteration of microclimate;
- Loss of native seed banks; and,
- Physical injury, root damage, and compaction of trees not intended for removal that may result from construction operations.

Refer to **Section 7.4** and **Section 7.5** for mitigation and enhancement opportunities related to vegetation.

6.1.5 Loss and/or Disturbance to Wildlife and Wildlife Habitat

Although feature removal within the Study Area will occur (**Figure 8**), the majority of the significant natural heritage features of the Study Area (including PSW, Significant Woodlands and SWH) will be protected within the NHS. SWH that is being protected includes:

- Woodland amphibian breeding SWH;
- Rare vegetation community SWH; and,
- Habitat of several rare flora/fauna species (Eastern Wood-Pewee, Wood Thrush, Grass Pickerel, Black Gum and Swamp Darner).

Three of the four areas of woodland requiring removal are considered Significant Woodland according to Savanta's EIS (2017). All of these woodlands are located within the development limit of the Grand Niagara Secondary Plan. The removal of these features will result in a decrease in vegetation within the Study Area as well as a reduction in wildlife habitat, and therefore the impacts will be required to be compensated to not have lasting effects on wildlife.

In addition, the golf course ponds are proposed for removal, some of which contain provincially rare odonates (Slender Bluet, Double-striped Bluet and Unicorn Clubtail), and wetland amphibians (a low number of Bullfrog). Additionally, a cultural meadow where Terrestrial Crayfish are assumed to have been identified is anticipated to be impacted. As these features are anthropogenic, the intent of these features is not to provide habitat, but rather to benefit recreational users. These cultural communities

do not meet the habitat requirements as detailed in the SWH Criteria Schedules for Ecoregion 7E. As such Dillon has not considered these communities as SWH.

Habitat for common fauna may be impacted by construction in the following ways:

- Displacement, injury, or death resulting from contact with heavy equipment during clearing and grading activities;
- Disturbance to wildlife as a result of noise associated with construction activities, particularly during breeding periods;
- Loss of general wildlife habitat; and,
- Disturbance to fish and aquatic habitat during installation of crossing structures;
    - Temporary loss of habitat during the installation process;
    - Impacts on fish movement (through dewatering or barriers related to improper installation); and,
    - Loss or alteration of fish habitat within the footprint of the structure.

Wildlife impact mitigation measures have been recommended for the development area and are included in **Section 7.6**.

6.2 Potential Indirect Impacts

Potential indirect impacts are those that do not always manifest in the core development area, but in lands adjacent to the development. Indirect impacts can begin in the construction phase; however, they can continue post-construction.

6.2.1 Anthropogenic Disturbance

Disturbance to local wildlife communities due to indirect impacts on the lands adjacent to the proposed development could result if left unmitigated. Noise, light, vibration and human presence are indirect impacts that can adversely influence the population size and breeding success of local wildlife. As the proposed development plan includes trails within and adjacent to natural heritage features it is anticipated that some level of disturbance will occur. Trails within features may result in an increase in public presence within other areas of the feature resulting in trampled vegetation and an increase in litter. Additionally, an increase in off leash dogs within features may result in disturbance to wildlife. Although lands within the proposed development area are already disturbed with agricultural and anthropogenic activity, these impacts will be greater and therefore mitigation measures that further address potential disturbance have been included in **Section 7.0.**

6.2.2 Colonization of Non-native and/or Invasive Species

Physical site disturbance may increase the likelihood that non-native and/or invasive flora species will be introduced to the surrounding vegetation communities. Invasive flora can establish in disturbed sites more efficiently than native flora and can then encroach into adjacent undisturbed areas.

As the buffer area surrounding the NHS currently consist of a combination of agricultural fields and other golf course lands, colonization of invasive species areas is possible if left in their current state.

Impacts due to the colonization of invasive and exotic species can be largely mitigated through the use of native species in landscaping plans.

Mitigation measures related to the management of invasive species are addressed in **Section 7.0.**

7.0 Mitigation and Opportunities for Enhancement

Mitigation involves the avoidance or minimization of developmental impacts through good design, construction practices and/or restoration and enhancement activities. The feasibility of mitigation options has been evaluated based on the natural heritage features within and adjacent to the Study Area. The impact assessment highlighted potential direct impacts: impacts to fish and fish habitat related to newly proposed crossings of Lyon's Creek and Grassy Brook, ground water impacts, diversion of surface water flows, erosion and sedimentation of natural heritage features, tree and vegetation removal, and loss of and/or disturbance to wildlife and wildlife habitat.

A variety of mitigation techniques can be used to minimize or eliminate the above-mentioned impacts. These measures include implementation of the Functional Servicing Report, Stormwater Management (SWM) Plan, Erosion and Sediment Control Plan, Landscaping and Planting Plan, and an Environmental Monitoring Plan. Mitigation measures and compensation recommended for the proposed development are introduced below. Detailed mitigation measures will be refined during detail design and finalized in consultation with the NPCA and City.

7.1 Stormwater Management

A SWM Report was prepared by WSP (2023b) to address the maintenance of storm water flows pre and post development. This plan has been developed to be undertaken in accordance with the Stormwater Management Plan for Grand Niagara Secondary Plan (2016), the MECP's Stormwater Management Planning and Design Manual (2003), The City of Niagara Falls Engineering Design Guidelines Manual (2016) and NPCA's Stormwater Management Guidelines (2010).

The recommended SWM plan aims to provide satisfactory storm drainage from the Study Area and ensure the long-term sustainability of the watercourses. The SWM plan recommends four SWM wet ponds, a grassed swale, and an Oil/Grit Separator (OGS). These may be combined with a variety of low impact development (LID) practices to address water quality and water balance including:

- Reduced lot grading;
- Downspout disconnection and direct roof leader to pervious areas;
- Rain Barrels;
- Absorbent soils;
- Bioswales;
- Settling Basins; and,
- Vegetated wetland features at storm outfalls.

The four SWM wet ponds are proposed to provide water quality and erosion control (Enhance Level of Protection and Extended Detention of runoff from 25 mm rainfall event for minimum 24-hours). Quantity control is not required for the Study Area (WSP, 2023b). Similarly, the grassed swale is proposed to provide water quality treatment for runoff from the Study Area. Finally, an OGS designed to provide a minimum of 60% TSS removal and 90% annual runoff treatment for the Study area combined with LID measures is proposed to provide water quality treatment.

7.2 Wetland Water Balance

As detailed in the Preliminary Hydrogeologic Water Balance (Terra-Dynamics, 2023) portions of four riverine wetlands were identified to potentially require runoff to maintain their hydroperiods: Forested portions of the Welland River Riverine Wetland, Grassy Brook Riverine East Catchment 9, Lyons Creek Riverine Central and Lyons Creek Riverine East. One of these wetlands, Lyons Creek Riverine Central, was determined to require no additional mitigation measures to maintain pre-development conditions. This wetland feature under pre-development conditions does not experience saturated conditions during the summer deficit period. The remaining three wetland communities deficits are anticipated to be addressed through the implementation of buffers (to increase filtration area) and clean roof runoff directed towards the wetland areas.

No impacts to wetlands related to construction dewatering are anticipated, as the wetlands on site are either perched systems or fed by surface water. No impacts related to wetland recharge areas are anticipated.

It is recommended that rear yard and roof lot drainage be directed towards wetlands for lots adjacent to wetlands, and that buffers be implemented for wetlands, woodlands, top of slope and floodplains.

Refer to the Preliminary Hydrogeologic Water Balance (Terra-Dynamics, 2023) for further details.

7.3 Erosion and Sediment Control (ESC) Plan

In order to mitigate the adverse environmental impacts caused by the release of sediment-laden runoff into receiving watercourses, measures for erosion and sediment control are required for construction sites. This is an important component of land development that plays a large role in the protection of downstream watercourses and aquatic habitat. Control measures must be selected that are appropriate for the erosion potential of the site and it is important that they be implemented and modified on a staged basis to reflect the site activities. Furthermore, their effectiveness decreases with sediment loading and therefore, inspection and maintenance is required.

As a result, an Erosion and Sediment Control Plan has been drafted for the proposed development. As detailed in the FSR and SWM Plan (WSP, 2023a; WSP, 2023b) the following actions are recommended:

- Developing sediment and erosion control works for each phase of development prior to the commencement of construction;
- Minimizing the extent and period to which disturbed soils are exposed to weathering. Disturbed areas will be stabilized within 45 days of commencing work at that location. Stabilization may include works such as seeding, mulching, hydroseeding and planting. Temporary measures of stabilization may include use of geotextile mats and nets;
- Access to the site during construction will be limited to a maximum of two locations at any time. It is recommended that the entrances of access road be paved to promote the loosening and dislodgement of soil attached to construction vehicles;
- Silt fencing will be placed and maintained around disturbed areas and around natural heritage features to be retained on the landscape;
- Silt traps or temporary sedimentation basins will be implemented for overland flow routes. Basin sizing will be determined using the TRCA's Erosion and Sediment Control Guidelines for Urban Construction. Perforated riser pipes will be used in the temporary sedimentation basins to retain stormwater flows for 24-48 hours before allowing discharge into drainage ways; and,
- Rock flow check dams will be used at sedimentation basin and temporary swale outlets to act as fail-safe controls to trap any sediment that circumvents the other ESC measures. Erosion protection measures will also be provided at outfall locations.

For further details please refer to the SWM Report (WSP, 2023b).

7.4 Natural Heritage Feature Buffers

Buffers to the natural heritage features of the Study Area will be implemented to protect the features from impacts caused by adjacent construction and future development. As discussed in **Section 5.0**, buffer widths were determined through review of the Grand Niagara Secondary Plan and the Grand Niagara EIS (Savanta, 2017). As there is overlap between many of the natural heritage features, many of the buffers also overlap. In order to provide a clear buffer width to establish a limit of development, the feature extending the closest to the future development was staked with the applicable agency and the buffer established from there. This methodology was approved by both NPCA and the Region (Dillon, 2022; **Appendix F**).

The outer buffer areas primarily consist of active agricultural and cultural communities and contain no natural vegetation communities. As described in **Section 6.2.2**, to prevent the colonization of invasive species and improve ecological function within the buffer area, planting of native species is recommended. Plantings is also planned to increase the quality of habitat within the buffer and provide better protection to plants and wildlife utilizing the natural heritage features. Details of the buffer plantings are to be included in the Ecological Restoration Plan, outlined in **Section 7.5**, below. Lastly it is recommended that permanent fencing be installed along the back of lots in some areas to prevent entry

of humans and household pets into the buffer areas and significant natural heritage features after occupancy. In areas where trails are established in the buffers, or within the natural heritage features themselves, it is recommended that signage be provided at all trail access points to communicate the importance of staying on the marked trail, keeping pets leashed and not littering.

7.5 Ecological Restoration Plan

The proposed development plan will require the removal of trees, shrubs, wildflowers and wild grasses within the Study Area. As a result, an Ecological Restoration Plan will be prepared for the proposed development to off-set vegetation removal. The Ecological Restoration Plan will outline the restoration within the buffers of natural heritage features within the Study Area as well as compensation habitat on the lands west of the Study Area. The Ecological Restoration Plan will generally follow the Map 5 to the City's Official Plan Amendment No. 118 Schedule A-4(b) Natural Heritage Rehabilitation Plan (**Appendix G**) and includes construction of an engineered wetland area that mimics the natural function of the area proposed for removal, watercourse restoration/realignment in several segments of Grassy Brook and Lyons Creek, and forest/thicket restoration plantings. The Plan will outline details of habitat creation, as well as the species to be planted.

7.6 Wildlife Impact Mitigation Plan

The establishment of the buffers from the woodland and wetland units is expected to reduce potential impacts to wildlife, including SWH within the Study Area. By planting these buffers with native species the natural heritage features will be enhanced and benefits to the habitats will be provided.

In addition to providing benefits from buffers, the creation of ecopassages within the Study Area will facilitate the movement of small amphibians and reptiles as well as mammals between habitats. Culverts proposed at the three watercourse crossings will initially be sized to provide hydraulic conveyance of water under the road but will be further designed to allow for wildlife movement to reduce potential road mortalities. The openness ratio required of the target species will be met in addition to allowing movement both through the watercourse feature as well as along a dry bench. Additionally, an ecopassage will also be installed under Grassy Brook Road for the sole purposes of terrestrial wildlife movement. As this ecopassage will connect woodland and wetlands, criteria for small amphibian, reptile and mammal species will be implemented. The details of these ecopassages will be completed during detail design.

Habitat compensation will be completed west of Crowland Avenue to offset impacts to the wildlife habitat within the Study Area. Woodlands, wetlands and riparian areas will be created to compensate for impacted or removed habitat within the Study Area. Details of this habitat creation will be included in the Ecological Restoration Plan to be completed under separate cover. Other mitigation measures detailed in the Preliminary Hydrogeologic Assessment and Water Balance Study (Terra-Dynamics, 2023)

are expected to reduce impacts to general habitat within the PSWs, by maintaining surface flows to the wetland (refer to **Section 7.2**).

Strategies to mitigate potential impacts to general wildlife prior to and during construction are proposed. These may include (but are not limited to):

- Clearing trees and vegetation outside the breeding bird season (April 1st to August 31st). Should clearing be required during the breeding bird season, nest searches conducted by a qualified person must be completed 48 hours prior to clearing activities. If nests are found, work within 10 m of the tree should cease until the nest has fledged. If no nests are present, clearing may occur. This is in accordance with the federal *Migratory Birds Convention Act*;
- Clearing trees outside of the bat active season (May 1st – October 31st);
- Schedule vegetation clearing and grading activities to avoid disturbance to breeding amphibians and other sensitive wildlife species where possible;
- Where possible, maximize the distance of construction equipment used from the woodland/wetland edge to avoid disturbing wildlife;
- Limit the use of lighting where possible. Avoid light effects entering the woodland/wetland (eliminate light trespass) where possible;
- Installation of wildlife exclusion fencing and escape routes, which direct wildlife away from the construction area and to more suitable habitat (e.g., woodland/wetland);
- All in-work at watercourse crossings will occur between July 15 and March 15 to protect warmwater fish during spawning. Following this timing window is expected to prevent negative impacts to critical fish reproductive success;
- Should work be required within the watercourses, they may need to be temporarily dewatered at the crossing locations. It is recommended that in-water work be limited and timing windows be followed resulting in a temporary habitat disturbance. Methods of dewatering may include bypass systems, and it is recommended that a fish salvage (under license by a qualified biologist) occur before work site isolation to ensure fish are safely transported to suitable habitats in the vicinity of the work area;
- Visual monitoring for wildlife species and avoidance where encountered if possible;
- If necessary, have a qualified biologist monitor construction in the areas of potential wildlife habitat. If wildlife are found within the construction area they will be re-located to an area outside of the development into an area of appropriate habitat, as necessary;
- Construction crews working on site should be educated on local wildlife and take appropriate measures for avoiding wildlife; and,
- Should an animal be injured or found injured during construction they should be transported to an appropriate wildlife rehabilitation centre.

7.7 Environmental Monitoring Plan

The Environmental Monitoring Plan (EMP) may be carried out through the duration of construction activities on-site to ensure that the erosion and sediment control measures operate effectively and to monitor the potential impact, if any, upon the natural environment. The duration of construction is defined as the period of time from the beginning of earthworks until the site is stabilized. Site stabilization is defined as the point in time when the roads have been paved, buildings have been built, lawns have been sodded and restoration plantings have been completed.

The EMP should consist of monitoring the erosion and sediment measures and the restoration/compensation plantings. Erosion and sediment control measures would be regularly monitored and they will require periodic cleaning (e.g., removal of accumulated silt), maintenance and/or re-construction. Inspections of the erosion and sediment controls on the construction site should be undertaken by a certified sediment and erosion control monitor. If damaged control measures are found they should be repaired and/or replaced promptly. Site inspection staff and construction managers should refer to the *Erosion and Sediment Control Inspection Guide* (TRCA, 2008) prepared for the Greater Golden Horseshoe Area Conservation Authorities. This guide provides information related to the inspection reporting, problem response and proper installation techniques.

Restoration planting, compensation planting and protected vegetation areas may require periodic monitoring to ensure that they are not impacted by adjacent development. Should impacts be observed, necessary steps will be taken to check that the impacted vegetation is either restored or replaced. It is recommended that restoration plantings be monitored annually for a period of three years to determine success.

8.0 Summary

This addendum to the Grand Niagara EIS (Savanta, 2017) was prepared to review and update potential changes to existing conditions, anticipated impacts and mitigation measures associated with a Draft Plan within the Study Area located south of Welland River, north of Biggar Road, west of the QEW and east of Crowland Avenue, in the City of Niagara Falls.

The majority of land within the Study Area consisted of anthropogenic uses (golfing and agriculture). Within the Study Area there are Provincially Significant Wetlands, Significant Woodlands, and Significant Wildlife Habitat, along with two watercourses. Development limits have been established to avoid encroachment into the majority of these features and mitigation measures have been considered to further reduce potential impacts. For areas where encroachment or removal of features is required to facilitate the proposed development, an Ecological Restoration Plan is being created to compensate for these areas. Avoidance, mitigation and compensation measures outlined in this report and to be outlined in the Ecological Restoration Plan are expected to result in no overall net negative impact to the woodlands or wetlands.

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Appendix A

Term of Reference

Memo

To: Erik Nickel, City of Niagara Falls (City)
Nick Golia, City
Julie Hannah, City
Adam Boudens, Niagara Region (Region)
Sarah Mastroianni, Niagara Peninsula Conservation Authority (NPCA)

From: Megan Leedham, Dillon Consulting Limited (Dillon)
Grace Bolton, Biologist, Dillon
Adele Mochrie, Project Manager, Dillon

cc: Jeffery Swartz, VP Land Development, Empire (Grand Niagara) LP
John Castro, Project Manager Land Development, Empire (Grand Niagara) LP
Michael Auduong, Senior Planner, Armstrong Planning & Project Management

Date: December 1, 2022

Subject: Terms of Reference for an Environmental Impact Study Addendum **(Final)**
Grand Niagara Property, Niagara Falls, Ontario

Our File: 21-2364

1.0 Introduction

Dillon Consulting Limited (Dillon) has been retained by Empire (Grand Niagara) LP to undertake environmental consulting services for the Grand Niagara property located south of Welland River, north of Biggar Road, west of the QEW and east of Crowland Avenue (the "Property"), in the City of Niagara Falls (herein referred to as the "City") (**Figure 1**). An Environmental Impact Study (EIS) was prepared by Savanta Inc. in 2017 for the Grand Niagara property (Savanta, 2017), which included extensive investigations and data collection in 2015 and 2016. The EIS identified a preliminary Natural Heritage System (NHS) limit, which included the required setbacks/buffers that were determined in consultation with the City and the Niagara Peninsula Conservation Authority (NPCA). Following public consultation, the Grand Niagara Secondary Plan was adopted and approved by the City in 2018, with minor refinements to the preliminary NHS identified by Savanta.

In 2021, Dillon completed an environmental opportunities and constraints assessment to assess changes in the existing environmental conditions from 2017 as well as identification of new environmental constraints that could affect the net developable area within the Property. As a result of our assessment, the Property conditions were documented to be very similar to those presented in the Grand Niagara EIS (2017). Slight changes to the Natural Heritage System documented in the Grand Niagara EIS (2017) include:

- Addition of a small hedgerow (proposed for removal)
- Hedgerow changed to a deciduous forest (FOD) (proposed for removal)
- Cultural meadow changed to an agricultural field (proposed for removal)

- Potential Eastern Meadowlark (*Sturella magna*) (Threatened) habitat within golf rough/cultural meadow adjacent to Welland River (individual heard calling) (proposed for removal).

Due to the presence of an Eastern Meadowlark calling in the breeding season, further targeted studies were included during the 2022 field season to determine presence/absence of suitable habitat characteristics as well as potential ESA permitting requirements.

The Grand Niagara EIS (2017) characterized natural heritage impacts and mitigation measures associated with the concept for the Secondary Plan including direct effects such as the two road crossings and natural heritage features proposed for removal, as well as indirect effects to the retained NHS. In addition, the Grand Niagara EIS (2017) included an Ecological Restoration Plan to offset impacts associated with the proposed removal of natural features. The draft development plan proposed by Empire (Grand Niagara) LP includes a new road crossing over Lyons Creek near Montrose Road, as requested by the City to support the adjacent hospital development, two new pedestrian bridges over Grassy Brook. Due to these additional crossings, further environmental investigation were conducted at these location to assess potential impacts and mitigation measures.

The approved Grand Niagara EIS (2017) by the City and NPCA included extensive field investigations, as well as an assessment of impacts and mitigation measures that are still applicable to the Empire (Grand Niagara) LP development plan. Additional field verification confirming wetland and woodland boundaries, and investigations of watercourse crossings occurred during the summer of 2022. Location of studies conducted in 2022 are identified in **Figure 2**. The data presented in the 2017 EIS will be referenced in the EIS Addendum, with all field sheets included in an appendix.

The EIS Addendum is proposed to be a two phase approach with the first submission in winter of 2022/2023, which will include the characterization of the new road crossing, proposed pedestrian crossings, non-motorized boat launch and will use available engineering reports to confirm details of the proposed development. Following the additional review of watercourse conditions of the proposed crossings in spring 2023, the EIS Addendum will be updated.

2.0 Terms of Reference

The goal of these Terms of Reference (TOR) is to confirm the natural heritage investigation surveys and feature staking required to characterize the extent of natural features and their applicable buffers, assess anticipated development impacts, recommend appropriate mitigation measures and inform potential permitting applications for potential impacts to SAR birds and potential impacts associated with the single road crossing of Lyon's Creek and two pedestrian bridge crossings over Grassy Brook. We acknowledge that this TOR will act as a work plan used towards the evaluation of the EIS Addendum. To aid in this evaluation, the approved updated TOR will be appended to the submitted EIS Addendum report.

2.1 General Policies

☒ The EIS Addendum must be undertaken by a qualified professional in environmental or related sciences to provincial standards and/or the satisfaction of the City and/or the NPCA.

☒ A formal staking of the valley, woodlands and wetlands within the Property with the City, as well as the NPCA, if requested, will be required. Staking will generally occur between the end of May and the end of October.

Formal staking of the Welland River valley top of bank, woodland dripline and wetland edges within the Property was completed between the end of May and the end of July 2022 so that the survey could be completed and incorporated into the design submission. As agreed during Dillon's meeting with NPCA and the Region on May 13, 2022, only the greatest extent of features were staked. Applicable buffers will be applied to the staked features with the understanding that the interior features will be protected and retained within the greater feature.

☒ A visit to the site may be required by the City and/or NPCA prior to, during, or upon receipt of the EIS Addendum.

2.2 Existing Conditions

☒ The existing conditions of the Property must be clearly described in the EIS Addendum and mapped on aerial photographs where it differentiates from that described in the Grand Niagara EIS (2017).

Note: Existing conditions will be defined through an updated review of background information in combination with data gathered through 2022 on-site field surveys, and a review of Grand Niagara EIS (2017).

☒ The description of the Property generally includes the zoning and designations of Official Plan(s) (OP) associated with the Property. This includes any land use designations from other municipal planning documents, such as Secondary Plans.

☒ Land use designations from any other applicable planning documents will be described and the limits identified in the mapping.

☒ The EIS Addendum will identify the components of the NHS (should it be located on the Property). The boundaries of the NHS will be confirmed in the field by the City and/or NPCA.

Note: Dillon assessed boundaries of the NHS during the site reconnaissance visit for the environmental opportunities and constraints assessment in 2021 and confirmed it's generally still consistent with the NHS identified in the Secondary Plan. A formal staking of the NHS on-site was conducted in 2022 as mentioned above.

☒ All designated environmental features must be identified in the mapping and described in the report. These features include provincial or regional Areas of Natural and Scientific Interest (ANSIs), Provincially and Locally Significant Wetlands (PSWs and LSWs), Environmentally Significant Areas (ESAs), etc.

☒ A description of the soils, landforms and surficial geology based on a review of available mapping and literature will be generally described in the report.

☒ Hydrological and hydrogeological resources and issues, including surface water features, recharge/discharge zones, groundwater quality and quantity, groundwater elevations and flow directions, and connections between groundwater and surface water features will be identified based on the information available from past reports and through the consulting team.

☐ A Headwater Drainage Features (HDF) Assessment will be completed for potential HDFs within the Property, as per the *Evaluation, Classification, and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority & Credit Valley Conservation, 2014).

Note: A headwater drainage feature assessment within the Property was conducted as part of the approved Grand Niagara EIS (2017).

☒ A fisheries assessment must be provided due to the presence of potential suitable fish habitat. Existing data regarding fish species must be obtained from NPCA and/or the Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF) and used for the fisheries assessment. The assessment must include a description of watercourses or other fish habitat on and/or adjacent to the Property (where site access is permitted).

Note: An aquatic habitat assessment within the Property was conducted as part of the approved Grand Niagara EIS (2017). A site visit to assess the new proposed road crossing at Lyons Creek was conducted in 2022. Results will be included in the Winter 2022/2023 submission of the EIS Addendum. A site visit to the proposed pedestrian crossings of Lyons Creek and the non-motorized boat launch into the Welland River will be conducted in the spring of 2023. Results of these visits will be included in the spring 2023 addendum update.

☐ The fisheries assessment will include community sampling through electrofishing and/or netting during the appropriate season, under a collection permit issued by the MNDMNRF.

Note: fish community sampling is not proposed in 2022 or 2023 as there is sufficient data available from existing background data to be used to characterize the fish community.

☐ The vegetation communities on the Property will be identified using the Ecological Land Classification (ELC) system to vegetation type, where possible. The communities will be identified in the mapping, using the appropriate ELC codes, as well as described in the text. As a component of the ELC, a plant list will be included in the report. The list will include an analysis for the presence of federal and provincial threatened or endangered species. Local status rankings are generally determined in conjunction with NPCA.

Note: A vegetation community assessment within the Property was completed as part of the approved Grand Niagara EIS (2017) and no significant changes were noted during the environmental opportunities and constraints assessment in 2021.

☐ A three-season plant inventory is required and must be included in the report. The surveys are to be undertaken in the spring (May-early June), summer (July-August), and fall (September-October). The lists must include an analysis for the presence of federal and provincial threatened or endangered species. Local status rankings are generally determined in conjunction with NPCA.

Note: Plant surveys were completed within the Property as part of the approved Grand Niagara EIS (2017).

☐ The EIS requires a breeding bird survey. The survey will be conducted during the breeding bird season at an appropriate time of day in appropriate weather conditions and by a qualified professional. A minimum of two surveys are required and they will follow generally accepted scientific protocols (i.e., the 2001 Ontario Breeding Bird Survey Guide for Participants). A list of the breeding birds will be included in the report. The list must include an analysis for the presence of federal or provincial rare, threatened or endangered species.

Note: Breeding bird surveys were completed within the Property as part of the approved Grand Niagara EIS (2017). As noted above, targeted surveys for Eastern Meadowlark were completed in 2022.

☐ The EIS requires a breeding amphibian surveys. The surveys must be conducted during the breeding amphibian season and by a qualified professional. A list of the breeding amphibians will be included in the report. The list must include an analysis for the presence of federal, provincial, threatened or endangered species.

Note: Amphibian breeding surveys were completed within the Property as part of the approved Grand Niagara EIS (2017).

☐ Reptile (turtles and snakes) visual encounter or “basking” surveys may be required. A list of the observed reptile species will be included in the report. The list is to include an analysis for the presence of federal, provincial, threatened or endangered species.

Note: Turtle basking surveys, turtle nesting surveys, and visual encounter snake surveys were completed within the Property as part of the approved Grand Niagara EIS (2017).

☐ Lepidoptera and Odonata (Butterflies & moths, dragonflies & damselflies) surveys may be required. A list of the observed Lepidoptera and Odonata species will be included in the report. The list is to include an analysis for the presence of federal, provincial, threatened or endangered species. Local status rankings are generally determined in conjunction with NPCA.

Note: Lepidoptera and odonata surveys were completed within the Property as part of the approved Grand Niagara EIS (2017).

☒ Incidental wildlife observed will be reported on and listed in the report. The list is to include an analysis for the presence of federal or provincial rare, threatened or endangered species. Local status rankings are generally determined in conjunction with NPCA.

Note: A list of all wildlife species observed within the Property was included as part of the approved Grand Niagara EIS (2017). This list will be updated with all species observed during 2022 field studies and will include updated conservation rankings. Any changes to species rankings will be discussed in the report.

☐ An initial screening for Species at Risk (SAR) and SAR habitat will be conducted for the Property using relevant background materials, information requests, and correspondence with relevant agency contacts.

Note: The Grand Niagara EIS (2017) screened for Species at Risk (SAR) and SAR habitat within the Property. Targeted surveys conducted include:

- Targeted acoustic monitoring surveys for SAR bats
- Botanical surveys
- Targeted botanical surveys for SAR and rare plant species
- Visual encounter snake survey
- Turtle basking surveys
- Turtle nesting surveys
- Breeding bird surveys
- Crepuscular and nocturnal bird surveys
- Amphibian surveys
- Aquatic habitat assessment
- Lepidoptera and odonata surveys.

No SAR or SAR habitat was identified within the Grand Niagara EIS (2017). Dillon identified potential Eastern Meadowlark (SAR) breeding habitat during the site reconnaissance visit for the environmental opportunities and constraints assessment in 2021. Further targeted surveys were conducted in 2022 to determine presence/absence and determine potential ESA permitting requirements. The results will be detailed in the EIS Addendum submission in winter 2022/2023.

☐ An initial screening for candidate Significant Wildlife Habitat (SWH) will be conducted for the Property using the MNDMNRF 2015 SWH Criteria Schedules for EcoRegion 7E. Candidate SWH will be ruled out or confirmed based on the results from applicable field surveys.

Note: SHW was identified and evaluated within the Property as part of the approved Grand Niagara EIS (2017).

☒ If applicable, natural hazards (hazard lands, floodplains, flood and erosion hazards of streams and valleylands, etc.) will be identified and delineated with assistance from relevant engineering teams. Limits for hazard constraints will be incorporated into mapping for the Property and appropriate buffers will be applied in accordance with relevant planning policies and guidelines.

If relevant the limits of features including the watercourse top of bank or wetland boundary will be delineated during a staking exercise with the NPCA and the City, as required.

Note: The Grand Niagara EIS (2017) discussed the appropriate buffers to each natural heritage feature and applied them to all relevant mapping. These buffers will be used and applied to the EIS Addendum. A formal staking exercise was completed in 2022 to confirm the NHS limits on-site.

2.3 Evaluation of the Ecological Impacts

☒ Mapping (at a minimum) shall consist of the following:

a) All mapping must have a title, figure number, north arrow, legend and scale or scale bar.
b) A site location map that provides the regional or watershed context of the subject property.
c) The extent of the Greenlands System and its components must be clearly demarcated on an air photo base, if applicable.
d) The locations of all watercourses and waterbodies
e) Vegetation communities must be delineated and identified using ELC.
f) The location of any rare, threatened or endangered species and/or populations shall be identified, if appropriate.
g) The location of any important wildlife features (i.e., hibernacula, den, stick nest, etc.) shall be identified.
h) A conceptual site plan will be shown with orthoimagery as the base layer.

☒ The potential impacts to the features and functions of natural areas (within and adjacent to the property) shall be identified and discussed.

Note: The Grand Niagara EIS (2017) identified and discussed potential impacts to the features and functions of the natural areas within the Property. These will be summarized in the EIS Addendum. The EIS Addendum will also provide impacts and mitigation measures for the new road crossing over Lyons Creek near Montrose Road and discuss updated details associated with the proposed development.

☐ An assessment of the potential impact on wildlife at a local, watershed and provincial (if applicable) level shall be provided.

Note: The Grand Niagara EIS (2017) identified and discussed potential impacts to wildlife within the Property and includes ecopassages to provide for wildlife movement.

☒ In the case of significant natural features (as confirmed through field studies), the EIS must demonstrate that there is no development or site alteration within the feature with the exception of uses as specified in the OP and/or prior approvals. The EIS must determine appropriate buffers from significant natural features.

Note: The Grand Niagara EIS (2017) discussed the appropriate buffers to each natural heritage feature and applied them to all relevant mapping. These buffers will be used and applied to the EIS Addendum.

☒ If applicable, a description and justification of the natural features proposed for removal shall be provided. The quantity of removal shall also be included.

Note: The Grand Niagara EIS (2017) identified the natural features proposed for removal and provided recommendations for compensation in the Ecological Restoration Plan. Any additional feature impacts will be documented in the EIS Addendum along with recommended mitigation and compensation measures.

☒ A brief summary of supporting studies, including but not limited to the Functional Servicing Report, Stormwater Management Report, Grading, Hydrogeological Report, detailed water balance, etc.

2.4 Recommendations and Mitigation Measures

☒ Determine adequate buffers through the identification of the critical function and protection zones of any identified natural areas, in accordance with municipal and NPCA requirements.

Note: The Grand Niagara EIS (2017) discussed the appropriate buffers to each natural heritage feature and applied them to all relevant mapping. These buffers will be applied to the EIS Addendum.

☒ Where avoidance of a feature is not feasible or possible, mitigation approaches/techniques must be provided. These may include edge management plans, buffer plantings, fencing, low impact designs (LID), etc.

Note: The Grand Niagara EIS (2017) discussed avoidance, as well as mitigation measures and potential enhancements, and identified the natural features proposed for removal along with recommendations for compensation in the Ecological Restoration Plan. Any additional feature impacts (i.e., new road crossing over Lyons Creek) will be documented in the EIS Addendum along with recommended mitigation and compensation measures.

☒ In cases where a Linkage area has been identified on a property, the EIS Addendum must demonstrate how it will be integrated into the proposed development plan.

Note: The Grand Niagara EIS (2017) identified and discussed potential impacts to wildlife within the Property and includes ecopassages to provide for wildlife movement. The EIS Addendum will discuss location and details of linkages and Ecopassages proposed on-site.

☒ Recommendations for Best Management Practices during pre-, during and post-construction should be provided. This may include silt fencing, tree protection, fencing, identification of timing or seasonal constraints to construction or restoration, etc.

☒ Mitigation for negative impacts on the natural features or their ecological functions (or to achieve no net negative impact) may include, at the discretion of the planning authority in conjunction with the NPCA, approaches to replace lost areas or functions. If acceptable, replacement shall, to the extent possible, occur within the same subwatershed as the proposed development or site alteration. The appropriate amount of replacement will be determined

through discussions with the NPCA and the planning authority and will be agreed to by all parties in writing.

☒ A detailed monitoring program will be developed as part of the EIS Addendum to ensure that mitigation strategies and actions are effectively implemented. The details of a monitoring program must be agreed to in writing by the Conservation Authority, planning authority and other parties (as necessary).

2.5 Conclusions

The EIS Addendum will have consideration for the following:

☒ Policies and requirements of the City and the Region OPs

☒ Other applicable planning documents

☒ Policies and requirements of NPCA

☒ Fisheries data.

3.0 Species at Risk

Should any Species at Risk or their habitat be identified during the EIS Addendum process and confirmed in the field, the MECP will be notified and we will address any Species at Risk requirements as outlined in the *Endangered Species Act, 2007*, under separate cover with the MECP. The NPCA and the City will be informed of MECP approvals that are acquired, where necessary.

4.0 Information Request

At this time, we are requesting any of the following background information, if available:

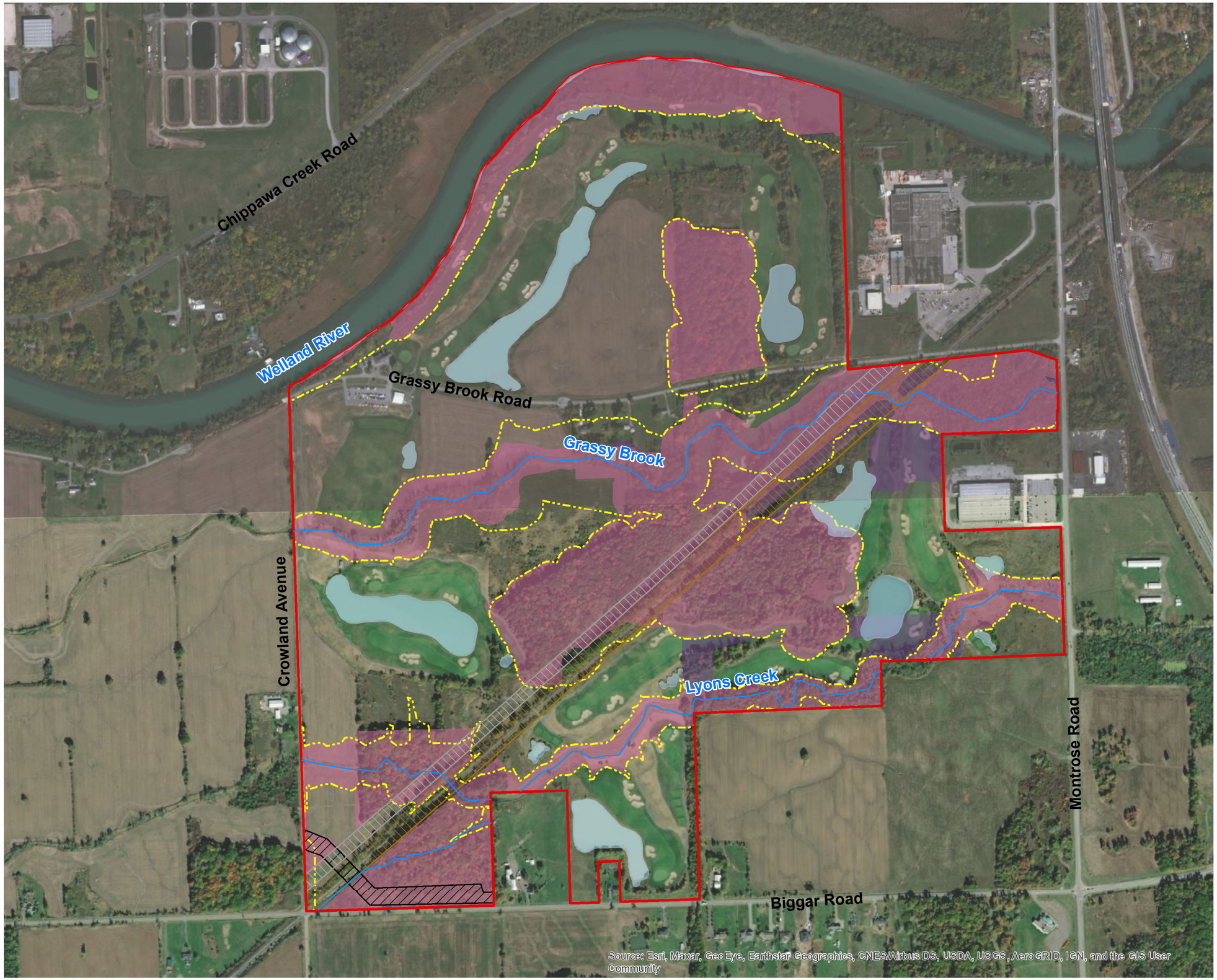
- Natural environment studies in and/or adjacent to the subject property
- Regionally or locally significant/rare flora, fauna, vegetation communities
- Any natural environment data you may have for the indicated area
- GIS Mapping
  - Natural Heritage System boundary
  - regulation limits
  - floodplain mapping.

5.0 Closing

We would like to thank you for your time in establishing these TOR with us and look forward to working together with you on this and other projects as we move forward.

Please let us know if you have any questions.

DILLON CONSULTING LIMITED



GRAND NIAGARA
Terms of Reference

Project Location
FIGURE 1

Legend

- Property Boundary
- Pipeline Easement
- Rail Line
- Utility Corridor
- Watercourse
- Waterbody

Niagara Penninsula Conservation Authority

- NPCA Regulation Limit

City of Niagara Falls

- Environmental Protection Areas
- Environmental Conservation Area

0 50 100 200 Metres SCALE 1:8000

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF

MAP CREATED BY: ZJB
MAP CHECKED BY: KM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

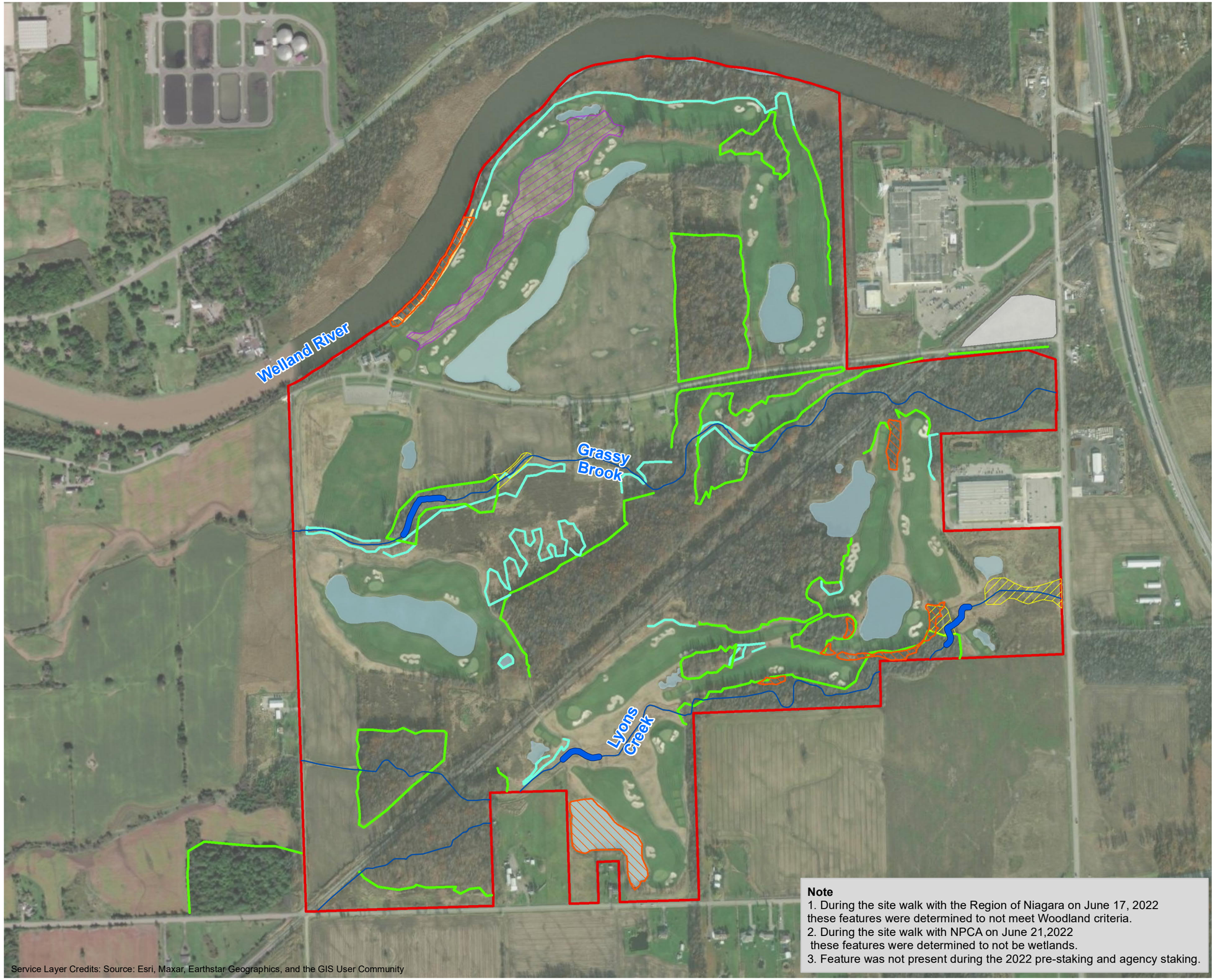
PROJECT: 21-2364
STATUS: DRAFT
DATE: 2021-08-23

EMPIRE GRAND NIAGARA

TERMS OF REFERENCE

LOCATION OF 2022 SURVEYS

FIGURE 2



Legend

- Study Area (Development Lands)
- Watercourse
- Aquatic Assessment Area
- Waterbody
- Eastern Meadowlark Survey Area

Features Staked by Dillon

- Wetland (staked with NPCA June 21, 2022)
- Dripline (staked with Region of Niagara June 17, 2022)
- Top of Bank (staked June 17, 2022)

Re-evaluated Features

- Area Determined Not a Woodland[1]
- Area Determined Not a Wetland[2]
- Area Removed From Landscape[3]

Note

1. During the site walk with the Region of Niagara on June 17, 2022 these features were determined to not meet Woodland criteria.
2. During the site walk with NPCA on June 21,2022 these features were determined to not be wetlands.
3. Feature was not present during the 2022 pre-staking and agency staking.

0 50 100 200 Metres

SCALE 1:8,000

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF

MAP CREATED BY: ZJB / LK
MAP CHECKED BY: GB
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 21-2364
STATUS: DRAFT
DATE: 2022-11-29

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Document Path: G:\GIS\212364 Empire Grand Niagara\Product\Client\TOR\F2 2022 Surveys.mxd

Appendix B

Policy Schedules

Schedule A
to the Official Plan
FUTURE LAND USE

NiagaraFalls CANADA

Legend

- Environmental Conservation Area
- Environmental Protection Area
- Extractive Industrial
- Good General Agriculture
- Industrial
- Major Commercial
- Minor Commercial
- Niagara Escarpment Plan Area
- Open Space
- Parkway Residential
- Residential
- Resort Commercial
- Theme Park Marineland
- Tourist Commercial
- Intake Protection Zone IPZ-1
- Secondary Plan Area
- Special Policy Area
- Urban Area Boundary

Transit Station Secondary Plan see Schedule A-5

Garner South Secondary Plan see Schedule A-3

Riverfront Secondary Plan see Schedule A-6

Grand Niagara Secondary Plan see Schedule A-4

TOWN OF NIAGARA-ON-THE-LAKE

CITY OF THOROLD

CITY OF WELLAND

TOWN OF FORT ERIE

CITY OF PORT COLBORNE

UNITED STATES OF AMERICA
CANADA

Niagara River

Welland River

MOUNTAIN RD, MEWBURN RD, QUEEN ELIZABETH WY, TAYLOR RD, GARNER RD, KALAR RD, DORCHESTER RD, ST PAUL AV, STANLEY AV, NIAGARA RIVER PY, THOROLD STONE RD, PORTAGE RD, RIVER RD, MONTROSE RD, MORRISON ST, VICTORIA AV, BEAVERDAMS RD, 420 HY, THOROLD TOWNLINE RD, BEECHWOOD RD, LUNDY'S LN, DRUMMOND RD, DUNN ST, MCLEOD RD, OAKWOOD DR, BROWN RD, CHIPPAWA CREEK RD, LYONS CREEK RD, CHIPPAWA PY, LEGENDS WY, WEAVER RD, MILLER RD, MARSHALL RD, WILLOUGHBY DR, DETENBECK RD, BIGGAR RD, CARL RD, MORRIS RD, MCKENNEY RD, YOUNG RD, WILLODELL RD, BECK RD, SCHISLER RD, CROWLAND AV, MISENER RD, RIDGE RD, NETHERBY RD, ORT RD, SODOM RD, KING RD, SAUER RD, MORNINGSTAR RD, SHERK RD, SOMERVILLE RD, QUEEN ELIZABETH WY, PORTAGE RD, GRT RD

NOTE: THIS MAP MUST BE READ IN CONJUNCTION WITH THE WRITTEN TEXT OF THE OFFICIAL PLAN APPROVED OCTOBER 1993 UPDATED TO November 2019

0 3 Km

N W E S

PLANNING & DEVELOPMENT DIVISION
Updated to: January 2020
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Scale 1:55,000

Schedule A-1
to the Official Plan

NATURAL HERITAGE FEATURES AND ADJACENT LANDS

Legend

- Environmental Protection Area
- Environmental Conservation Area
- Wetland Buffer Area*
- Adjacent Land
- Area of further study FOD7-3 - see Part 5, Section 2
- Creek

* The Wetland Buffer Area has been illustrated as 30 metres. The actual extent of this buffer may increase or decrease as a result of detailed studies through this Plan.

TOWN OF NIAGARA-ON-THE-LAKE

Subject to NEC Plan Policies

CITY OF THOROLD

CITY OF WELLAND

TOWN OF FORT ERIE

CITY OF PORT COLBORNE

NOTE: THIS MAP MUST BE READ IN CONJUNCTION WITH THE WRITTEN TEXT OF THE OFFICIAL PLAN APPROVED OCTOBER 1993 UPDATED TO November 2019

0 3 Km

N W E S

PLANNING & DEVELOPMENT DIVISION
Updated to: January 2020
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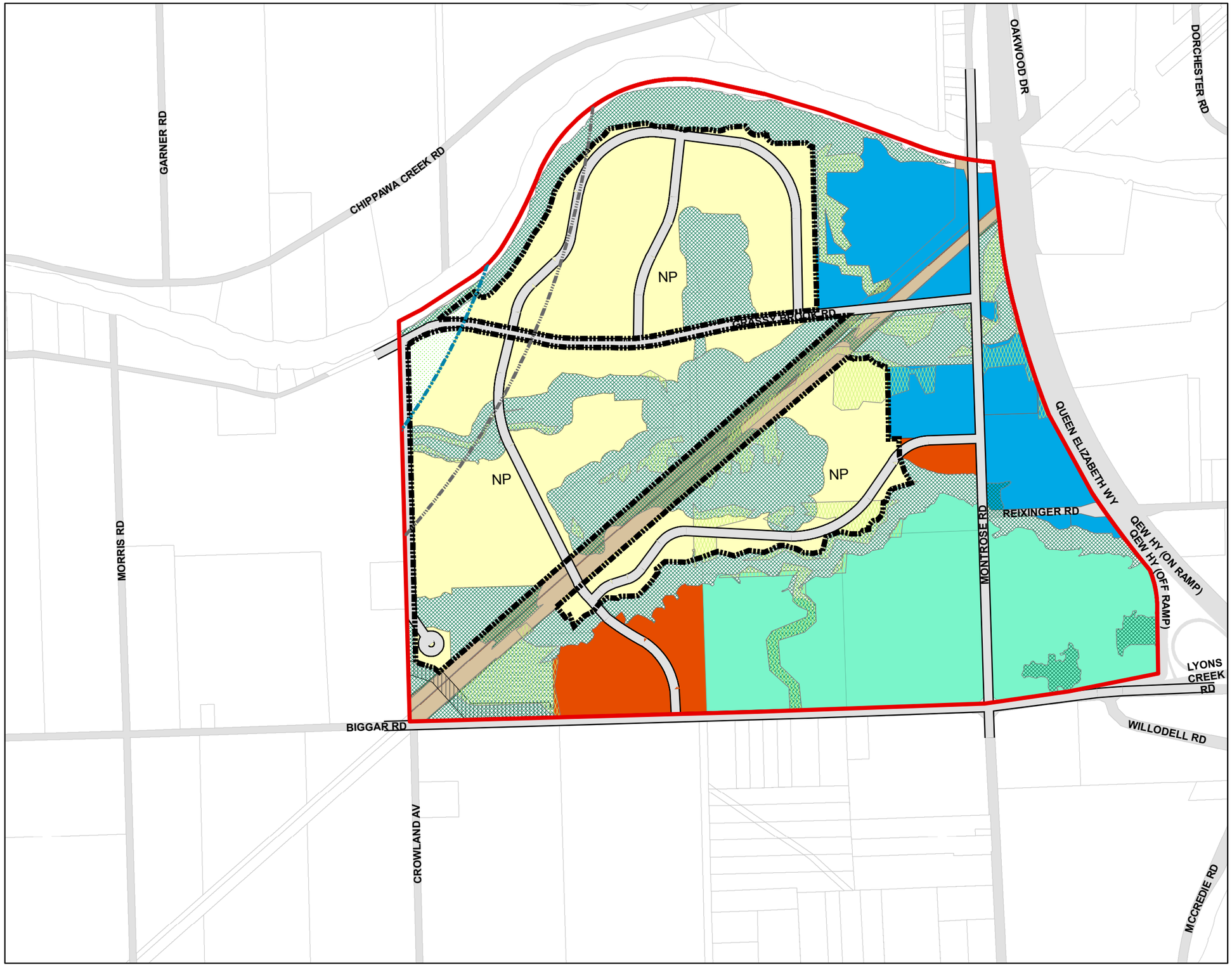
Scale 1:55,000



NiagaraFalls CANADA

Schedule A4 to the Official Plan Grand Niagara Secondary Plan

Grand Niagara Secondary Plan
Neighbourhoods
Proposed Collector Roads
Cytec Arc (2 Km)
200m Setback Arc

Schedule A-4 Land Use

Hospital Employment
Residential Low/Medium Density
Mixed Use
Prestige Employment
Environmental Conservation Area
Environmental Protection Area
Open Space
NP Neighbourhood Park

NOTE: For Outside Plan Area see Schedule for Land Use Designations

N
W E
S

Scale 1:11,000

0 520 m

Updated to: January 2020

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NOTE: The Natural Heritage areas located outside of the Grand Niagara Secondary Plan Area have not been included for illustration purposes only and should not be interpreted as a land use designation.

ELC Legend

FOREST

FOD	Deciduous Forest
FOD2-4	Dry-Fresh Oak-Hardwood Deciduous Forest
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest
FOD7-6*	Fresh-Moist Red Maple Lowland Deciduous Forest
FOD7-7*	Fresh-Moist Ash-Elm Lowland Deciduous Forest
FOD7-8*	Fresh-Moist Walnut-Ash-Willow Lowland Deciduous Forest
FOD7-9*	Fresh-Moist Pin Oak-Green Ash Lowland Deciduous Forest
FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest

SWAMP

SWD1-3	Pin Oak Mineral Deciduous Swamp
SWD1-5*	Green Ash-Pin Oak Mineral Deciduous Swamp
SWD1-6*	Pin Oak-Ash-Maple Mineral Deciduous Swamp
SWD2-2	Green Ash Mineral Deciduous Swamp
SWD3	Maple Mineral Deciduous Swamp
SWD3-5*	Maple Mineral Deciduous Swamp
SWT	Thicket Swamp
SWT2-2	Willow Mineral Thicket Swamp
SWT2-4	Buttonbush Mineral Thicket Swamp
SWT2-9	Grey Dogwood Mineral Thicket Swamp

MARSH

MAM	Meadow Marsh
MAM2	Mineral Meadow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-10	Forb Mineral Meadow Marsh
MAM2-11*	Mixed Mineral Meadow Marsh
MAS	Shallow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
MAS2-10*	Common Reed Mineral Shallow Marsh

OPEN WATER

OAO	Open Aquatic

SHALLOW WATER

SAS1-1	Pondweed Submerged Shallow Aquatic
SAF1-3	Duckweed Floating-leaved Shallow Aquatic

CULTURAL

CUW	Cultural Woodland
CUS1-4*	White Pine Cultural Savanna
CUT	Cultural Thicket
CUT1-4	Grey Dogwood Cultural Thicket
CUM1	Mineral Cultural Thicket
CUM1-1	Fresh-Moist Old Field Meadow

**not listed in Southern Ontario ELC Guide*

AG	Agricultural
DIST	Disturbed
IND	Industrial
GOLF	Golf

Dark green area added to NHS (0.97 ha).

Blue area (3.82 ha), which includes 3.33 ha of forest, removed from Secondary Plan Area

0 200 Meters N

NiagaraFalls CANADA

Appendix IX-C to the Official Plan

Defined Natural Heritage System

GRAND NIAGARA SECONDARY PLAN

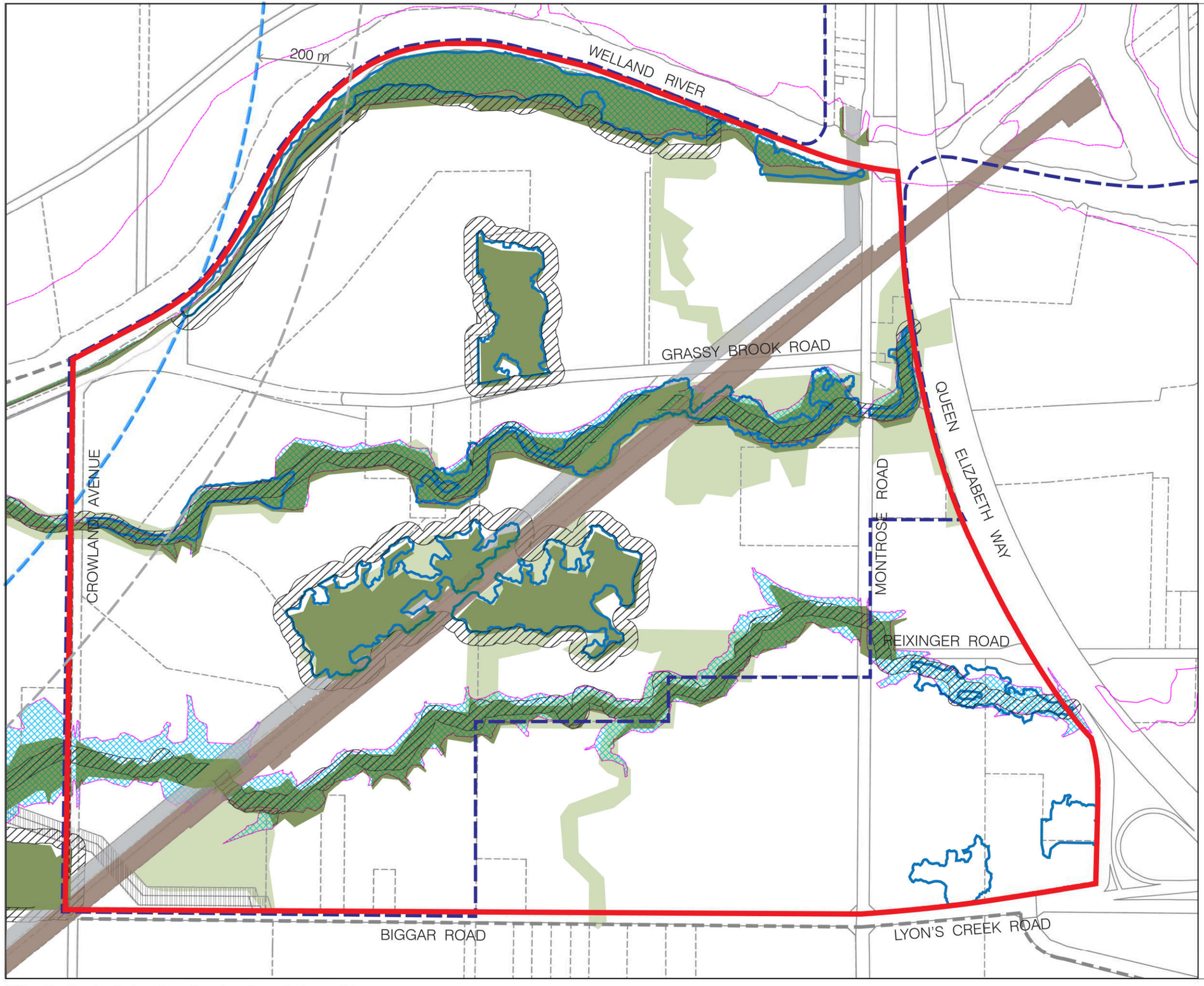
- Study Area
- Ecological Land Classification
- Pipeline Easement
- Rail Line
- Utility Corridor
- Woodlands proposed for removal
- Unevaluated wetlands (non-PSW) proposed for removal approved by MNRF Vineland

Preliminary Natural Heritage System

- Preliminary NHS (includes greater of wetland, watercourse and woodland buffers and 100 year floodline) 64.6 ha
- Preliminary Development Area
- Enhanced Wildlife Crossing

Note:
All provincially significant wetlands within the Study Area are retained with a 30 m buffer.

SAVANTA



NiagaraFalls CANADA

Appendix IX-D to the Official Plan Natural Heritage System

GRAND NIAGARA SECONDARY PLAN

Features and Functions

Legend

- Grand Niagara Secondary Plan
- Environmental Protection Area (EPA)
- Environmental Conservation Area (ECA)
- Evaluated Provincially Significant Wetland
- Floodplain (100 year)
- 30m Wetland Buffer
- rail line
- utility corridor
- pipeline easement
- Cytec Canada Inc. - 2km setback

Scale 1:8,000

0 100 200 300 400 500m

Appendix C

Updated Flora and Fauna Observation List

Table 1: Updated Vegetation Observations

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (SRank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Equisetum arvense	Field Horsetail	---	---	S5	●	
Pteridium aquilinum	Bracken Fern	---	---	S5	●	
Athyrium filix-femina var. *angustum*	Northeastern Lady Fern	---	---	S5	●	
Dryopteris carthusiana	Spinulose Wood Fern	---	---	S5	●	
Onoclea sensibilis	Sensitive Fern	---	---	S5	●	
Polystichum acrostichoides	Christmas Fern	---	---	S5	●	
Thelypteris palustris	Eastern Marsh Fern	---	---	S5	●	
Thuja occidentalis	Eastern White Cedar	---	---	S5	●	
Pinus nigra	Black Pine	---	---	SNA	●	
Pinus strobus	Eastern White Pine	---	---	S5	●	
Pinus sylvestris	Scotch Pine	---	---	SNA	●	
Alisma triviale	Northern Water-plantain	---	---	S5	●	
Sagittaria latifolia	Broad-leaved Arrowhead	---	---	S5	●	
Arisaema triphyllum	Jack-in-the-pulpit	---	---	S5	●	
Lemna minor	Lesser Duckweed	---	---	S5	●	
Spirodela polyrrhiza	Great Duckweed	---	---	S5	●	
Wolffia columbiana	Columbia Watermeal	---	---	S4S5	●	
Carex bebbii	Bebb's Sedge	---	---	S5	●	
Carex crinita	Fringed Sedge	---	---	S5	●	
Carex hystericina	Porcupine Sedge	---	---	S5	●	
Carex intumescens	Bladder Sedge	---	---	S5	●	
Carex lacustris	Lake-bank Sedge	---	---	S5	●	
Carex lupulina	Hop Sedge	---	---	S5	●	
Carex lurida	Sallow Sedge	---	---	S5	●	
Carex pensylvanica	Pennsylvania Sedge	---	---	S5	●	
Carex spicata	Spiked Sedge	---	---	SNA	●	
Carex stipata	Awl-fruited Sedge	---	---	S5	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (SRank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Carex vulpinoidea	Fox Sedge	---	---	S5	●	
Scirpus atrovirens	Dark-green Bulrush	---	---	S5	●	
Scirpus cyperinus	Cottongrass Bulrush	---	---	S5	●	
Agrostis gigantea	Redtop	---	---	SNA	●	
Agrostis stolonifera	Creeping Bentgrass	---	---	SNA	●	
Bromus inermis	Awnless Brome	---	---	SNA	●	
Dactylis glomerata	Orchard Grass	---	---	SNA	●	
Echinochloa crus-galli	Large Barnyard Grass	---	---	SNA	●	
Elymus repens	Creeping Wildrye	---	---	SNA	●	
Elymus virginicus var. *virginicus*	Virginia Wildrye	---	---	S5	●	
Festuca rubra ssp. *rubra*	Red Fescue	---	---	SNA	●	
Glyceria striata	Fowl Mannagrass	---	---	S5	●	
Leersia oryzoides	Rice Cutgrass	---	---	S5	●	
Leersia virginica	Virginia Cutgrass	---	---	S4	●	
Phalaris arundinacea	Reed Canary Grass	---	---	S5	●	●
Phleum pratense	Common Timothy	---	---	SNA	●	
Phragmites australis ssp. *australis*	European Common Reed	---	---	SNA	●	
Poa compressa	Canada Bluegrass	---	---	SNA	●	
Poa palustris	Fowl Bluegrass	---	---	S5	●	
Poa pratensis ssp. *pratensis*	Kentucky Bluegrass	---	---	S5	●	
Juncus dudleyi	Dudley's Rush	---	---	S5	●	
Juncus effusus	Soft Rush	---	---	S5	●	
Juncus tenuis	Path Rush	---	---	S5	●	
Dioscorea villosa	Wild Yam	---	---	S4	●	
Iris virginica	Southern Blue Flag	---	---	S5	●	
Asparagus officinalis	Garden Asparagus	---	---	SNA	●	
Maianthemum racemosum	False Solomon's-seal	---	---	S5	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (SRank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Polygonatum pubescens	Hairy Solomon's Seal	---	---	S5	●	
Stuckenia pectinata	Sago Pondweed	---	---	S5	●	
Sparganium eurycarpum	Broad-fruited Burreed	---	---	S5	●	
Typha angustifolia	Narrow-leaved Cattail	---	---	SNA	●	
Typha latifolia	Broad-leaved Cattail	---	---	S5	●	
Typha x glauca	(Typha angustifolia X Typha latifolia)	---	---	SNA	●	
Cicuta maculata var. *maculata*	Spotted Water-hemlock	---	---	S5	●	
Daucus carota	Wild Carrot	---	---	SNA	●	
Sium suave	Hemlock Water-parsnip	---	---	S5	●	
Aralia nudicaulis	Wild Sarsaparilla	---	---	S5	●	
Achillea millefolium	Common Yarrow	---	---	SE	●	
Ambrosia artemisiifolia	Annual Ragweed	---	---	S5	●	
Arctium minus	Common Burdock	---	---	SNA	●	
Bidens cernuus	Nodding Beggarticks	---	---	S5	●	
Bidens comosa	Three-parted Beggarticks	---	---	S5	●	
Bidens frondosa	Devil's Beggarticks	---	---	S5	●	
Carduus nutans ssp. *nutans*	Nodding Thistle	---	---	SNA	●	
Centaurea maculosa	Spotted Knapweed	---	---	SE5	●	
Cichorium intybus	Chicory	---	---	SNA	●	
Cirsium arvense	Canada Thistle	---	---	SNA	●	
Cirsium vulgare	Bull Thistle	---	---	SNA	●	
Erigeron annuus	Annual Fleabane	---	---	S5	●	
Erigeron hyssopifolius	Daisy Fleabane	---	---	S5	●	
Eupatorium perfoliatum	Common Boneset	---	---	S5	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (SRank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Eurybia macrophylla	Large-leaved Aster	---	---	S5	●	
Euthamia graminifolia	Grass-leaved Goldenrod	---	---	S5	●	
Eutrochium maculatum var. *maculatum*	Spotted Joe Pye Weed	---	---	S5	●	
Hieracium caespitosum ssp. *caespitosum*	Yellow or Field Hawkweed	---	---	SE5	●	
Lactuca serriola	Prickly Lettuce	---	---	SNA	●	
Leucanthemum vulgare	Oxeye Daisy	---	---	SNA	●	
Rudbeckia hirta var. *pulcherrima*	Black-eyed Susan	---	---	S5	●	
Solidago altissima ssp. *altissima*	Eastern Late Goldenrod	---	---	S5	●	
Solidago caesia	Blue-stemmed Goldenrod	---	---	S5	●	
Solidago canadensis var. *canadensis*	Canada Goldenrod	---	---	S5	●	
Solidago flexicaulis	Zigzag Goldenrod	---	---	S5	●	
Solidago juncea	Early Goldenrod	---	---	S5	●	
Solidago rugosa var. *rugosa*	Northern Rough-leaved Goldenrod	---	---	S5	●	
Sonchus arvensis ssp. *arvensis*	Field Sow-thistle	---	---	SNA	●	
Sonchus asper	Prickly Sow-thistle	---	---	SNA	●	
Symphyotrichum cordifolium	Heart-leaved Aster	---	---	S5	●	
Symphyotrichum ericoides var. *ericoides*	White Heath Aster	---	---	S5	●	
Symphyotrichum lanceolatum ssp. *lanceolatum*	Panicled Aster	---	---	S5	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (SRank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Symphyotrichum lateriflorum	Starved Aster	---	---	S5	●	
Symphyotrichum novae-angliae	New England Aster	---	---	S5	●	
Symphyotrichum pilosum var. *pilosum*	Old Field Aster	---	---	S5	●	
Symphyotrichum puniceum var. *puniceum*	Swamp Aster	---	---	S5	●	
Tragopogon dubius	Yellow Goat's-beard	---	---	SNA	●	
Lobelia cardinalis	Cardinalflower	---	---	S5	●	
Alliaria petiolata	Garlic Mustard	---	---	SNA	●	
Hesperis matronalis	Dame's Rocket	---	---	SNA	●	
Lepidium campestre	Field Peppergrass	---	---	SNA	●	
Atriplex patula	Spear Saltbush	---	---	SNA	●	
Chenopodium album	White Goosefoot	---	---	SNA	●	
Euonymus obovata	Running Strawberry Bush	---	---	S5	●	
Cornus alternifolia	Alternate-leaved Dogwood	---	---	S5	●	
Cornus racemosa	Gray Dogwood	---	---	S5	●	
Cornus sericea ssp sericea	Red-osier Dogwood	---	---	S5	●	
Nyssa sylvatica	Black Gum	---	---	S3	●	
Lonicera tatarica	Tartarian Honeysuckle	---	---	SNA	●	
Sambucus canadensis	Common Elderberry	---	---	S5	●	
Viburnum opulus ssp. *trilobum*	Highbush Cranberry	---	---	S5	●	
Dipsacus fullonum	Fuller's Teasel	---	---	SE5	●	
Lotus corniculatus	Garden Bird's-foot Trefoil	---	---	SNA	●	
Melilotus albus	White Sweet-clover	---	---	SNA	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (SRank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Trifolium pratense	Red Clover	---	---	SNA	●	
Vicia cracca	Tufted Vetch	---	---	SNA	●	
Vicia tetrasperma	Lentil Vetch	---	---	SNA	●	
Betula alleghaniensis	Yellow Birch	---	---	S5	●	
Betula papyrifera	Paper Birch	---	---	S5	●	
Carpinus caroliniana	Blue-beech	---	---	S5	●	
Ostrya virginiana	Eastern Hop-hornbeam	---	---	S5	●	
Fagus grandifolia	American Beech	---	---	S4	●	
Quercus alba	White Oak	---	---	S5	●	
Quercus bicolor	Swamp White Oak	---	---	S4	●	
Quercus macrocarpa	Bur Oak	---	---	S5	●	
Quercus palustris	Pin Oak	---	---	S4	●	
Quercus rubra	Northern Red Oak	---	---	S5	●	
Apocynum androsaemifolium	Spreading Dogbane	---	---	S5	●	
Asclepias incarnata	Swamp Milkweed	---	---	S5	●	
Asclepias syriaca	Common Milkweed	---	---	S5	●	
Impatiens capensis	Spotted Jewelweed	---	---	S5	●	
Geranium maculatum	Spotted Geranium	---	---	S5	●	
Geranium robertianum	Herb-Robert	---	---	S5	●	
Oxalis stricta	European Wood-sorrel	---	---	S5	●	
Carya cordiformis	Bitternut Hickory	---	---	S5	●	
Carya ovata	Shagbark Hickory	---	---	S5	●	
Juglans nigra	Black Walnut	---	---	S4	●	
Echium vulgare	Common Viper's-bugloss	---	---	SNA	●	
Lycopus uniflorus	Northern Water-horehound	---	---	S5	●	
Mentha arvensis	Wild Mint	---	---	S5	●	
Prunella vulgaris ssp. *lanceolata*	Self-heal	---	---	S5	●	
Stachys hispida	Hispid Hedge-nettle	---	---	S4S5	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (SRank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Verbena hastata	Blue Vervain	---	---	S5	●	
Verbena urticifolia	White Vervain	---	---	S5	●	
Tilia americana	American Basswood	---	---	S5	●	
Lythrum salicaria	Purple Loosestrife	---	---	SNA	●	
Circaea canadensis	Broad-leaved Enchanter's Nightshade	---	---	S5	●	
Epilobium ciliatum ssp. *ciliatum*	Hairy Willowherb or Sticky Willowherb	---	---	S5	●	
Ludwigia palustris	Marsh Seedbox	---	---	S5	●	
Oenothera parviflora	Small-flowered Evening Primrose	---	---	S5	●	
Nuphar variegata	Variegated Pond-lily	---	---	S5	●	
Plantago lanceolata	English Plantain	---	---	SNA	●	
Plantago major	Common Plantain	---	---	S5	●	
Persicaria amphibia var. *emersa*	Scarlet Smartweed	---	---	S5?	●	
Persicaria hydropiper	Marshpepper Smartweed	---	---	SNA	●	
Persicaria pensylvanica	Pennsylvania Smartweed	---	---	S5	●	
Persicaria sagittata	Arrow-leaved Smartweed	---	---	S4	●	
Persicaria virginiana	Virginia Smartweed	---	---	S4	●	
Rumex crispus	Curly Dock	---	---	SNA	●	
Lysimachia ciliata	Fringed Loosestrife	---	---	S5	●	
Lysimachia nummularia	Creeping Jennie	---	---	SNA	●	
Podophyllum peltatum	May-apple	---	---	S5	●	
Ranunculus abortivus	Kidney-leaved Buttercup	---	---	S5	●	
Ranunculus acris	Tall Buttercup	---	---	SNA	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (SRank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Ranunculus pensylvanicus	Pennsylvania Buttercup	---	---	S5	●	
Ranunculus recurvatus	Hooked Buttercup	---	---	S5	●	
Ranunculus sceleratus var. *sceleratus*	Cursed Buttercup	---	---	SNA	●	
Frangula alnus	Glossy Buckthorn	---	---	SNA	●	
Rhamnus cathartica	Common Buckthorn	---	---	SNA	●	
Parthenocissus inserta	Thicket Creeper	---	---	S5	●	
Vitis riparia	Riverbank Grape	---	---	S5	●	
Ribes americanum	Wild Black Currant	---	---	S5	●	
Ribes cynosbati	Prickly Gooseberry	---	---	S5	●	
Ribes rubrum	Northern Red Currant	---	---	SNA	●	
Ribes triste	Swamp Red Currant	---	---	S5	●	
Agrimonia gryposepala	Hooked Agrimony	---	---	S5	●	
Crataegus punctata	Dotted Hawthorn	---	---	S5	●	
Fragaria virginiana	Wild Strawberry	---	---	S5	●	
Geum aleppicum	Yellow Avens	---	---	S5	●	
Geum canadense	White Avens	---	---	S5	●	
Geum laciniatum	Rough Avens	---	---	S4	●	
Potentilla recta	Sulphur Cinquefoil	---	---	SNA	●	
Potentilla simplex	Old-field Cinquefoil	---	---	S5	●	
Prunus avium	Sweet Cherry	---	---	SNA	●	
Prunus serotina	Wild Black Cherry	---	---	S5	●	
Prunus virginiana	Choke Cherry	---	---	S5	●	
Rosa multiflora	Multiflora Rose	---	---	SNA	●	
Rubus allegheniensis	Alleghany Blackberry or Common Blackberry	---	---	S5	●	
Rubus hispidus	Bristly Dewberry	---	---	S4S5	●	
Rubus idaeus ssp. *idaeus*	Common Red Raspberry	---	---	SNA	●	
Rubus occidentalis	Black Raspberry	---	---	S5	●	
Spiraea alba	White Meadowsweet	---	---	S5	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (SRank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Cephalanthus occidentalis	Common Buttonbush	---	---	S5	●	●
Galium palustre	Marsh Bedstraw	---	---	S5	●	
Populus deltoides ssp. *deltoides*	Eastern Cottonwood	---	---	S5	●	
Populus tremuloides	Trembling Aspen	---	---	S5	●	
Salix bebbiana	Bebb's Willow	---	---	S5	●	
Salix eriocephala	Heart-leaved Willow	---	---	S5	●	
Salix x rubens	(Salix alba X Salix fragilis)	---	---	SE4	●	
Acer negundo	Manitoba Maple	---	---	S5	●	
Acer rubrum	Red Maple	---	---	S5	●	
Acer saccharum	Sugar Maple	---	---	S5	●	
Acer x freemanii	Freeman's Maple	---	---	SNA	●	
Rhus hirta	Staghorn Sumac	---	---	S5	●	
Toxicodendron rydbergii	Rydberg's Poison Ivy	---	---	S5	●	
Fraxinus pennsylvanica	Green Ash	---	---	S4	●	
Epifagus virginiana	Beechdrops	---	---	S5	●	
Linaria vulgaris	Butter-and-eggs	---	---	SNA	●	
Verbascum thapsus	Common Mullein	---	---	SNA	●	
Veronica officinalis	Common Speedwell	---	---	SNA	●	
Veronica scutellata	Marsh Speedwell	---	---	S5	●	
Calystegia sepium	Hedge False Bindweed	---	---	S5	●	
Convolvulus arvensis	Field Bindweed	---	---	SNA	●	
Hydrophyllum virginianum	Virginia Waterleaf	---	---	S5	●	
Solanum dulcamara	Climbing Nightshade or Bittersweet Nightshade	---	---	SNA	●	
Hypericum mutilum	Slender St. John's-wort	---	---	S5	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (SRank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Hypericum perforatum	Common St. John's-wort	---	---	SNA	●	
Ulmus americana	American Elm	---	---	S5	●	
Boehmeria cylindrica	False Nettle	---	---	S5	●	
Pilea pumila	Canada Clearweed	---	---	S5	●	
Urtica dioica ssp. *gracilis*	Slender Stinging Nettle	---	---	S5	●	
Echinocystis lobata	Wild Mock-cucumber	---	---	S5	●	

[1] *Federal Species at Risk Act (Source: SARA Public Registry, 2007).*

[2] *Provincial Endangered Species Act (Source: MNRF website, 2007).*

[3] *SRank is an indicator of commonness in the province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common. S5 = Secure, S4 = Apparently Secure, S3 = Vulnerable, S2 = Imperiled, S1 = Critically Imperiled, SX = extirpated, SNA = unsuitable target for conservation activities, B = within the Species breeding range in Ontario.*

Table 2: Updated Wildlife Observations

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (Srank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Anas platyrhynchos	Mallard	---	---	S5	●	
Branta canadensis	Canada Goose	---	---	S5	●	●
Ardea alba	Great Egret	---	---	S2B	●	●
Ardea herodias	Great Blue Heron	---	---	S4	●	
Butorides virescens	Green Heron	---	---	S4B	●	
Cathartes aura	Turkey Vulture	---	---	S5B	●	
Pandion haliaetus	Osprey	---	---	S5B	●	
Buteo jamaicensis	Red-tailed Hawk	---	---	S5	●	●
Rallus limicola	Virginia Rail	---	---	S5B	●	
Charadrius vociferus	Killdeer	---	---	S5B,S5N	●	●
Actitis macularius	Spotted Sandpiper	---	---	S5	●	
Calidris minutilla	Least Sandpiper	---	---	S4B,S5N	●	
Scolopax minor	American Woodcock	---	---	S4B	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (Srank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Hydroprogne caspia	Caspian Tern	---	---	S3B	●	
Larus argentatus	Herring Gull	---	---	S5B,S5N	●	
Larus delawarensis	Ring-billed Gull	---	---	S5B,S4N	●	
Sterna hirundo	Common Tern	---	---	S4B	●	
Zenaida macroura	Mourning Dove	---	---	S5	●	
Coccyzus americanus	Yellow-billed Cuckoo	---	---	S4B	●	
Bubo virginianus	Great Horned Owl	---	---	S4	●	
Megascops asio	Eastern Screech-Owl	---	---	S4	●	
Archilochus colubris	Ruby-throated Hummingbird	---	---	S5B	●	
Megaceryle alcyon	Belted Kingfisher	---	---	S4B	●	
Colaptes auratus	Northern Flicker	---	---	S4B	●	●
Melanerpes carolinus	Red-bellied Woodpecker	---	---	S4	●	
Picoides pubescens	Downy Woodpecker	---	---	S5	●	
Picoides villosus	Hairy Woodpecker	---	---	S5	●	
Contopus virens	Eastern Wood-pewee	SC	SC	S4B	●	●
Empidonax traillii	Willow Flycatcher	---	---	S5B	●	
Myiarchus crinitus	Great Crested Flycatcher	---	---	S4B	●	
Sayornis phoebe	Eastern Phoebe	---	---	S5B	●	
Tyrannus tyrannus	Eastern Kingbird	---	---	S4B	●	
Vireo flavifrons	Yellow-throated Vireo	---	---	S4B	●	
Vireo gilvus	Warbling Vireo	---	---	S5B	●	
Vireo olivaceus	Red-eyed Vireo	---	---	S5B	●	
Vireo solitarius	Blue-headed Vireo	---	---	S5B	●	
Corvus brachyrhynchos	American Crow	---	---	S5B		●
Cyanocitta cristata	Blue Jay	---	---	S5	●	
Eremophila alpestris	Horned Lark	---	---	S5B	●	
Hirundo rustica	Barn Swallow	THR	THR	S4B	●	
Petrochelidon pyrrhonota	Cliff Swallow	---	---	S4B	●	
Progne subis	Purple Martin	---	---	S4B	●	
Riparia riparia	Bank Swallow	THR	THR	S4B	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (Srank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Stelgidopteryx serripennis	Northern Rough-winged Swallow	---	---	S4B		●
Tachycineta bicolor	Tree Swallow	---	---	S4B	●	
Baeolophus bicolor	Tufted Titmouse	---	---	S4	●	
Poecile atricapillus	Black-capped Chickadee	---	---	S5	●	
Sitta carolinensis	White-breasted Nuthatch	---	---	S5	●	
Troglodytes aedon	House Wren	---	---	S5B	●	
Polioptila caerulea	Blue-gray Gnatcatcher	---	---	S4B	●	
Hylocichla mustelina	Wood Thrush	THR	SC	S4B	●	
Sialia sialis	Eastern Bluebird	---	---	S5B	●	
Turdus migratorius	American Robin	---	---	S5B	●	●
Dumetella carolinensis	Gray Catbird	---	---	S4B	●	
Sturnus vulgaris	European Starling	---	---	SNA	●	
Bombycilla cedrorum	Cedar Waxwing	---	---	S5B	●	
Geothlypis philadelphia	Mourning Warbler	---	---	S4B	●	
Geothlypis trichas	Common Yellowthroat	---	---	S5B	●	●
Oreothlypis peregrina	Tennessee Warbler	---	---	S5B	●	
Oreothlypis ruficapilla	Nashville Warbler	---	---	S5B	●	
Setophaga caerulescens	Black-throated Blue Warbler	---	---	S5B	●	
Setophaga coronata	Yellow-rumped Warbler	---	---	S5B	●	
Setophaga fusca	Blackburnian Warbler	---	---	S5B	●	
Setophaga magnolia	Magnolia Warbler	---	---	S5B	●	
Setophaga petechia	Yellow Warbler	---	---	S5B	●	
Setophaga ruticilla	American Redstart	---	---	S5B	●	
Setophaga striata	Blackpoll Warbler	---	---	S4B	●	
Setophaga virens	Black-throated Green Warbler	---	---	S5B	●	
Vermivora cyanoptera	Blue-winged Warbler	---	---	S4B	●	
Melospiza georgiana	Swamp Sparrow	---	---	S5B	●	
Melospiza lincolnii	Lincoln's Sparrow	---	---	S5B	●	
Melospiza melodia	Song Sparrow	---	---	S5B	●	●

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (Srank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Passerculus sandwichensis	Savannah Sparrow	---	---	S4B	●	
Pipilo erythrophthalmus	Eastern Towhee	---	---	S4B	●	
Spizella passerina	Chipping Sparrow	---	---	S5B	●	
Zonotrichia albicollis	White-throated Sparrow	---	---	S5B	●	
Cardinalis cardinalis	Northern Cardinal	---	---	S5	●	●
Passerina cyanea	Indigo Bunting	---	---	S4B	●	
Pheucticus ludovicianus	Rose-breasted Grosbeak	---	---	S4B	●	
Piranga olivacea	Scarlet Tanager	---	---	S4B	●	
Agelaius phoeniceus	Red-winged Blackbird	---	---	S4	●	
Euphagus carolinus	Rusty Blackbird	SC	SC	S4B	●	
Icterus galbula	Baltimore Oriole	---	---	S4B	●	
Icterus spurius	Orchard Oriole	---	---	S4B	●	
Molothrus ater	Brown-headed Cowbird	---	---	S4B	●	
Quiscalus quiscula	Common Grackle	---	---	S5B	●	
Sturnella magna	Eastern Meadowlark	THR	THR	S4B		●
Mammals						
Eptesicus fuscus	Big Brown Bat	---	---	S5	●	
Lasionycteris noctivagans	Silver-haired Bat	---	---	S4	●	
Lasiurus borealis	Eastern Red Bat	---	---	S4	●	
Lasiurus cinereus	Hoary Bat	---	---	S4	●	
Sciurus carolinensis	Eastern Gray Squirrel	---	---	S5	●	
Tamiasciurus hudsonicus	Red Squirrel	---	---	S5	●	
Procyon lotor	Northern Raccoon	---	---	S5	●	
Odocoileus virginianus	White-tailed Deer	---	---	S5	●	
Reptiles						
Chelydra serpentina	Snapping Turtle	SC	SC	S3	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (Srank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Chrysemys picta marginata	Midland Painted Turtle	---	---	S4	●	●
Anaxyrus americanus	American Toad	---	---	S5	●	
Lithobates catesbeianus	American Bullfrog	---	---	S4	●	
Lithobates clamitans	Green Frog	---	---	S5	●	●
Lithobates pipiens	Northern Leopard Frog	---	---	S5	●	
Pseudacris crucifer	Spring Peeper	---	---	S5	●	
Pseudacris triseriata pop. 2	Western Chorus Frog (Carolinian Population)	---	---	S4	●	
Nerodia sipedon sipedon	Northern Watersnake	---	---	S5	●	
Storeria dekayi	DeKay's Brownsnake	---	---	S5	●	
Thamnophis sirtalis sirtalis	Eastern Gartersnake	---	---	S5	●	
Insects						
Ancyloxypha numitor	Least Skipper	---	---	S5	●	
Erynnis juvenalis	Juvenal's Duskywing	---	---	S5	●	
Erynnis lucilius	Columbine Duskywing	---	---	S4	●	
Poanes hobomok	Hobomok Skipper	---	---	S5	●	
Polites peckius	Peck's Skipper	---	---	S5	●	
Pompeius verna	Little Glassywing	---	---	S4	●	
Thymelicus lineola	European Skipper	---	---	SNA	●	
Wallengrenia egeremet	Northern Broken-Dash	---	---	S5	●	
Celastrina neglecta	Summer Azure	---	---	S5	●	
Lycaena hyllus	Bronze Copper	---	---	S5	●	
Cercyonis pegala	Common Wood-Nymph	---	---	S5	●	
Coenonympha tullia	Common Ringlet	---	---	S5	●	
Danaus plexippus	Monarch	SC	SC	S2N,S4B		●
Lethe eurydice	Eyed Brown	---	---	S5	●	
Limenitis archippus	Viceroy	---	---	S5	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (Srank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Limenitis arthemis astyanax	Red-spotted Purple	---	---	S5	●	
Megisto cymela	Little Wood-Satyr	---	---	S5	●	
Phyciodes tharos	Pearl Crescent	---	---	S4	●	
Polygonia comma	Eastern Comma	---	---	S5	●	
Vanessa atalanta	Red Admiral	---	---	S5	●	
Papilio glaucus	Eastern Tiger Swallowtail	---	---	S5	●	
Papilio polyxenes	Black Swallowtail	---	---	S5	●	
Pieris rapae	Cabbage White	---	---	SNA	●	
Satyrium spp	Hairstreak spp.	---	---	---	●	
Anax junius	Common Green Darner	---	---	S5	●	
Enallagma antennatum	Rainbow Bluet	---	---	S4	●	
Enallagma basidens	Double-striped Bluet	---	---	S3	●	
Enallagma carunculatum	Tule Bluet	---	---	S5	●	
Enallagma civile	Familiar Bluet	---	---	S5	●	
Enallagma exsulans	Stream Bluet	---	---	S5	●	
Enallagma geminatum	Skimming Bluet	---	---	S4	●	
Enallagma signatum	Orange Bluet	---	---	S4	●	
Enallagma traviatum	Slender Bluet	---	---	S1	●	
Ischnura posita	Fragile Forktail	---	---	S4	●	
Ischnura verticalis	Eastern Forktail	---	---	S5	●	
Epitheca cynosura	Common Baskettail	---	---	S5	●	
Epitheca princeps	Prince Baskettail	---	---	S5	●	
Arigomphus villosipes	Unicorn Clubtail	---	---	S2S3	●	
Dromogomphus spinosus	Black-shouldered Spinyleg	---	---	S5	●	
Lestes dryas	Emerald Spreadwing	---	---	S5	●	
Celithemis elisa	Calico Pennant	---	---	S5	●	
Celithemis eponina	Halloween Pennant	---	---	S4	●	
Erythemis simplicicollis	Eastern Pondhawk	---	---	S5	●	

Scientific Name	Common Name	Federal SARA Registry Status[1]	Ontario ESA Species At Risk List Status[2]	Provincial Conservation Rank (Srank)[3]	Observed in the field by Savanta	Observed in the field by Dillon
Leucorrhinia intacta	Dot-tailed Whiteface	---	---	S5	●	
Libellula luctuosa	Widow Skimmer	---	---	S5	●	
Libellula pulchella	Twelve-spotted Skimmer	---	---	S5	●	
Pantala flavescens	Wandering Glider	---	---	S4	●	
Perithemis tenera	Eastern Amberwing	---	---	S4	●	
Plathemis lydia	Common Whitetail	---	---	S5	●	
Sympetrum rubicundulum	Ruby Meadowhawk	---	---	S5	●	

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[2] *Provincial Endangered Species Act (Source: MNRF website, 2007).*

[3] *SRank is an indicator of commonness in the province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common. S5 = Secure, S4 = Apparently Secure, S3 = Vulnerable, S2 = Imperiled, S1 = Critically Imperiled, SX = extirpated, SNA = unsuitable target for conservation activities, B = within the Species breeding range in Ontario.*

Appendix D

Field Notes

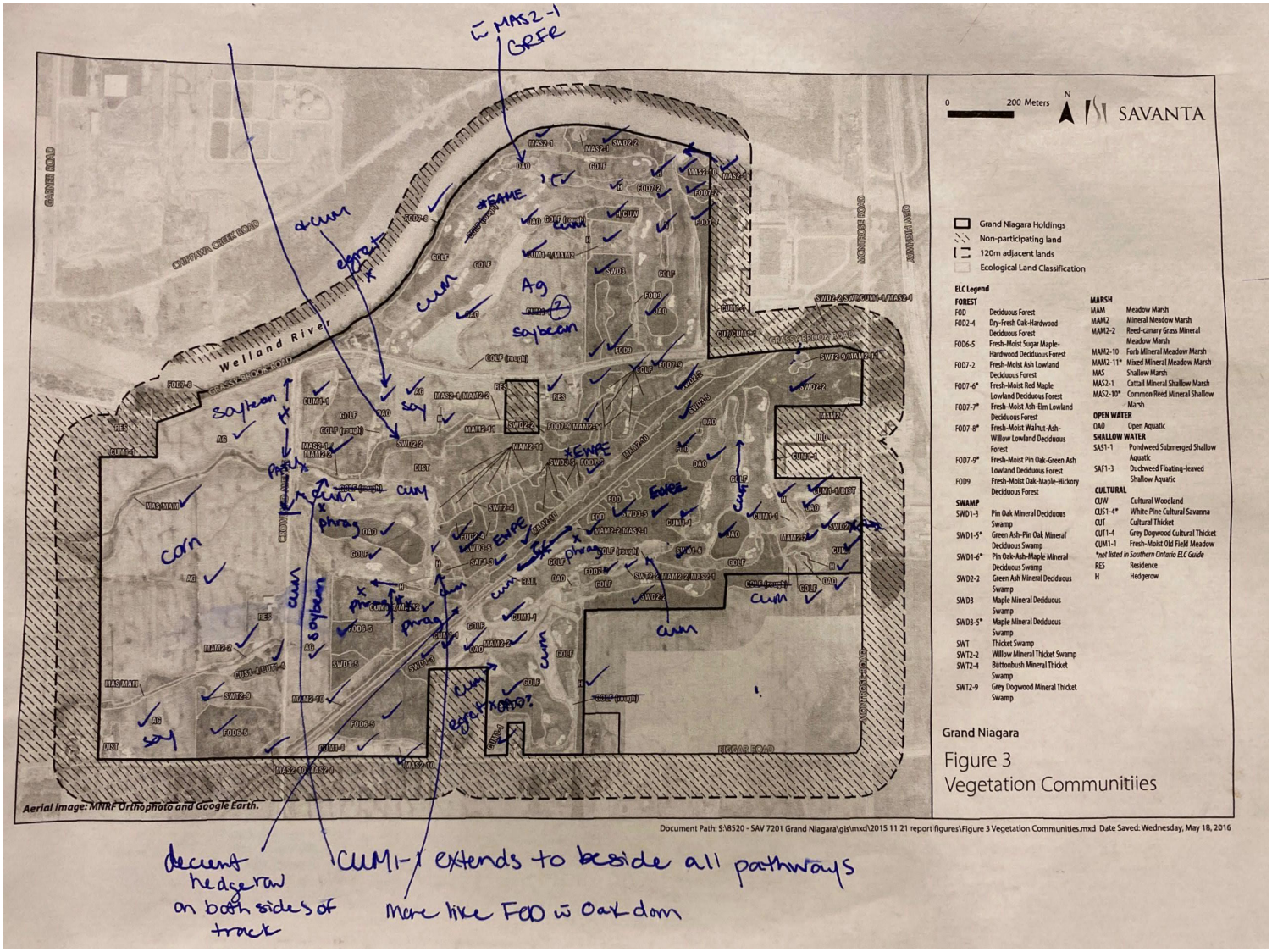
Due Diligence

21-2364 Grand Niagara — July 27/21

23°c, slight breeze, partly cloudy, precipitation from 11:30-1pm

Incidental Wildlife

KILL + young → parking lot
CAGO (20+)
NRSW (30+)
Gull sp
SOSP
AMCR
Monarch (10+)
AMGO + nest w eggs
GRFR → SAF1-3
COYE
Great Egret → OAO southend
AMRO (20+)
NOCA
* EWPE → SWD3-5 + FAD7-9
Great Egret → Welland River
Painted Turtle → Grassy Brook, MAS2-1/MAM2-2
NOFL
* EAME → calling from golf rough/CUM1-1
GRFR → OAO adjacent to river



DETAILED STREAM ASSESSMENT

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #:	NAME OF PROJECT:	TIME STARTED:	TIME FINISHED:
21-2364	Grand Niagara	10:30	11:15
COLLECTORS: Bo Lam		**STREAM ID #:** GB1	**DATE:** 2022/07/25
WEATHER: b3 22°C 5% C.C.			

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:
Grassy Brook	Grand Niagara Golf Course

CHAINAGE OR OTHER IDENTIFYING ATTRIBUTE:

GPS COORDINATES (UTM): U/S WP: 317 D/S WP: 323

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
Golf Course, agriculture	Pesticides, fertilizer

EXISTING STRUCTURE TYPE (IF ANY)

Bridge O	Box Culvert O	Open Foot Culvert O	CSP O	N/A ✓

Other O Describe:

Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	O	O	O	✓	O	

HYDRAULIC HEAD (mm):

Habitat Type Run, Pool, Riffle, Flat?	Substrate	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Other
Flat, Pool	~~Si~~ Si - dominant					

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	~~Silt~~ Si	~~Clay~~ Cl	Muck Mu	Detritus D
					✓	✓		

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	O	O	O ✓	O
Right Upstream Bank	O	O	O ✓	O

HABITAT

IN-STREAM COVER (check all that apply; D is for dominant cover):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	/	/	/	Instream 5%	1%	Instream ~~2%~~ 8%	5%
				Overhanging 1%		Overhanging 1%	

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	O	O	O	O	O

VEGETATION TYPE (D for dominant):	Submergent	Floating	Emergent	None
Predominant Species			RCG, Smartweed	

MIGRATORY OBSTRUCTIONS:	None	Seasonal/Temporary: low flows/dry in summer	Permanent
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning: None	Evidence of Groundwater: None	Other

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m					✓					✓
10-30 m	✓		✓			✓				✓
30+ m	✓	✓	✓			✓	✓			

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #:

DOWNSTREAM PHOTO #:

OTHER PHOTO #S:

LEFT UPSTREAM BANK PHOTO #:

RIGHT UPSTREAM BANK PHOTO #:

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

WP317 – P1 – 3 – U/S, D/S, water
↳ Densely vegetated, standing water, no flow
– WW = 1.5m WD = 0.05m
FW = 7m FD = 0.2m
↳ smartweed, RCG

WP318 = P4-6 – U/S, D/S
piezometer
– standing water
– WW = 3.5m WD = 0.15m
FW = 7m FD = 0.5m

WP319 – P7-~~8~~ – debris jam
P9 D/S, U/S

WP320 – P10-11 – U/S, D/S
– minor jam

WP321 – P12-13 – U/S, D/S
– narrows/gets shrubby in stream
(P14/15) ↳ buttonbush

WP322 – ~~P~~P16-17 – U/S, D/S

WP323 – P~~1~~8-19 – U/S, D/S
↳ becomes surface damp

– overall, areas of large pools and open water and areas of dense veg that's surface damp

Additional Notes Appended? O No O Yes number of pages _____ DESCRIPTION _____

RTHA
GBFR

WP338 – Crowley crossing P65 – U/S
– P60-62 – U/S – D/S, D/S
– standing water at culverts
~5m x 2m box culvert

DETAILED STREAM ASSESSMENT

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #:	NAME OF PROJECT:	TIME STARTED:	TIME FINISHED:
212364	Grand Niagara	11:35	12:05

COLLECTORS:	STREAM ID #:	DATE:
Bo Lan	LC1	2022/07/25

WEATHER: B3 30% C.C, 23°C

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:
Lyons Creek	Grand Niagara

CHAINAGE OR OTHER IDENTIFYING ATTRIBUTE:

GPS COORDINATES (UTM): US WP = 324 D/S WP = 328

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
Golf course, agriculture	fertilizers, pesticides

EXISTING STRUCTURE TYPE (IF ANY)

Bridge ✓	Box Culvert O	Open Foot Culvert O	CSP O	N/A O

Other O Describe: | Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	O	O	O	✓	O	

HYDRAULIC HEAD (mm):

Habitat Type Run, Pool, Riffle, Flat?	Substrate	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Other
Pool, Dry	Si-dominant					

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D
					(Si)	(Cl)		

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	O	O	✓ O	O
Right Upstream Bank	O	O	✓ O	O

HABITAT

IN-STREAM COVER (check all that apply; D is for dominant cover):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	✓	✓	✓	Instream Overhanging ✓	5%	Instream 70% Overhanging 1%	24%

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	0	0	0	0	0
VEGETATION TYPE (D for dominant):	Submergent	Floating	Emergent	None	
Predominant Species			RCG		
MIGRATORY OBSTRUCTIONS:	None	Seasonal/Temporary intermittent	Permanent		
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning None observed	Evidence of Groundwater None observed	Other		

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m			✓					✓		
10-30 m	✓					✓				
30+ m	✓					✓				

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #:

DOWNSTREAM PHOTO #:

OTHER PHOTO #S:

LEFT UPSTREAM BANK PHOTO #:

RIGHT UPSTREAM BANK PHOTO #:

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

WP324 – P20-21 – U/S – D/S
- Dry; grassed (RCG)

WP325 – P22-24 – U/S – D/S, D/S
- Start of pool
- Not wetted U/S

WP326 – P25-27 – U/S, D/S – bridge
- BW = 6 m WD = 0.2 m
- FW = 9 m FD = 1.5 m
- no flow, standing water

WP327 – P28-30 – U/S – D/S – U/S
- narrows and dries out D/S
- FW = 4 m FD = 1.0 m
- WW = 0.35 WD = 0.01

WP328 – P31-32 – U/S – D/S
- Dry and densely vegetated (RCG)

Additional Notes Appended? O No O Yes number of pages _____ DESCRIPTION _____

GRFR

~~tyons~~ Crowley Crossing WP329 – P64-67 – U/S, U/S, D/S, D/S
~6m x 2m box culvert
P68-69 – U/S, D/S
- standing water @ culvert

DETAILED STREAM ASSESSMENT

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #:	NAME OF PROJECT:	TIME STARTED:	TIME FINISHED:
21-2364		12:15	13:15

COLLECTORS:	STREAM ID #:	DATE:
B Law	LC2	2022/07/25

WEATHER: 23°C B3 30% C.C.

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:
Lyons Creek	Grand Niagara Golf Course

CHAINAGE OR OTHER IDENTIFYING ATTRIBUTE:

GPS COORDINATES (UTM):

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
Golf Course	fertilizer, pesticides

EXISTING STRUCTURE TYPE (IF ANY)

Bridge O	Box Culvert O	Open Foot Culvert O	CSP O	N/A O

Other O Describe: | Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	O	O	O	O	O	

HYDRAULIC HEAD (mm):

Habitat Type Run, Pool, Riffle, Flat?	Substrate	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Other
Pool, flat, dry	Si - dominant					

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D
					(Si)	(Cl)		

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	O	O	O	O
Right Upstream Bank	O	O	O	O

HABITAT

IN-STREAM COVER (check all that apply; D is for dominant cover):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	/	/	/	Instream 1% Overhanging 5%	1%	Instream 85% Overhanging 5%	5%

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	O	O	✓	O	O

VEGETATION TYPE (D for dominant):	Submergent	Floating	Emergent ✓	None
Predominant Species	✓	✓	RCG, Smartweed	✓

MIGRATORY OBSTRUCTIONS:	None ✓	Seasonal/Temporary intermittent flow	Permanent ✓
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning ✓	Evidence of Groundwater ✓	Other ✓

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m			✓		✓			✓		✓
10-30 m	✓					✓				
30+ m	✓					✓				

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #:	LEFT UPSTREAM BANK PHOTO #:
DOWNSTREAM PHOTO #:	RIGHT UPSTREAM BANK PHOTO #:
OTHER PHOTO #S:	

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

WP330 – U/S, D/S, streambed – P36~~38~~ P39-40 ~~P40-41~~ – U/S, D/S from south bank
- Densely vegetated
  - buttercup
  - smartweed
- standing water

WP331 – U/S – D/S – P41-42
- smartweed to RCG near bridge

P332 – P43-46 – D/S facing bridge
FW = 7m FD = 1.5m – U/S, D/S
WW = 5m WD = 0.2m – D/S facing water

WP329 – U/S, D/S, ~~bed~~ – P33-35
- U/S Crossing, standing water

WP333 – U/S, D/S, bed – P47-49
- Dense vegetation (smartweed, buttercup)
- wide – similar to bridge crossing

WP334 – U/S, D/S, bed – P50-52
- streambed hard to define
  - low wetted area
- dries out

WP335 – U/S, D/S – P53-54
- RCG area, surface damp

WP336 – U/S, DS, bed – P55-57

Additional Notes Appended? O No O Yes number of pages _____ DESCRIPTION _____

WP337 – P58-59
- U/S – D/S
- RCG corridor

→ difficult to track in RCG meadow
→ small narrow channel in RCG meadow
FW = 0.45m FD = 0.20m
WW = 0.30m WD = 0.02m
No flow

Bobolink/Meadowlark Monitoring Data Form: 10 min Surveys

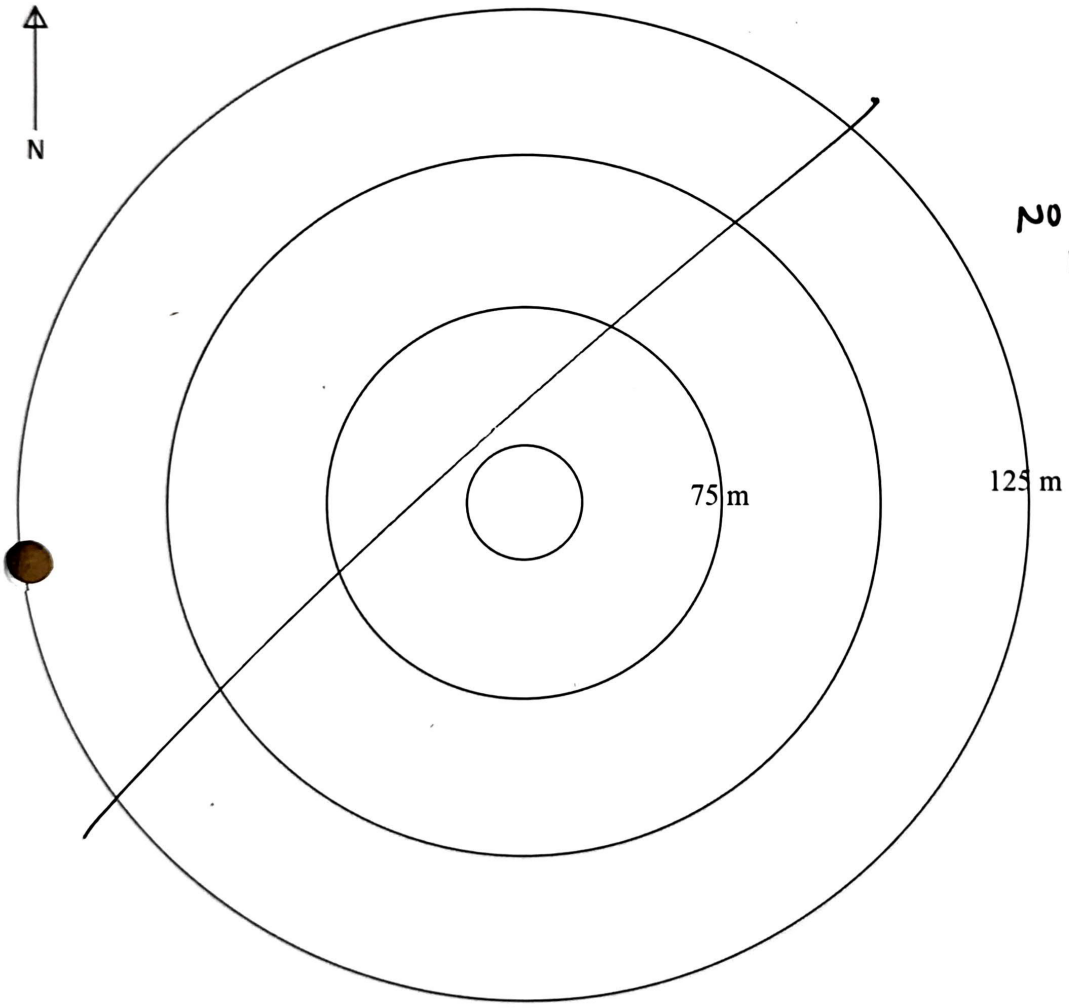
Project # 21-2364 Project Name: EMPIRE GRAND NIAGARA

DATE: JUNE 03/22 OBS: Dayna LeClair VISIT: 1

Temp: 18° (°C) CloudCover(%): 60 Rain: - Wind: NW @ 1

Start time (from vehicle): 0830 End time(back at vehicle): 0930

Point Count# EAME-02
Start Time (24 hr): 0841
Photo's: —



NO EAME OBSERVED FROM STATION

Comments:

OBSERVED
X - Observed in breeding season
POSSIBLE
H - Observed in suitable nesting habita
S - Singing male(s)
PROBABLE
P - Pair observed
T - Permanent territory presumed
D - Courtship or display
V - Visiting probable nest site
A - Agitated behaviour/anxiety calls
B - Brood Patch/cloacal protuberance
CONFIRMED
NB - Nest-building
DD - Distraction display
NU - Used nest or egg shells
FY - Fledged/downy young
AE - Adult leaving or entering nest site:
FS - Adult carrying fecal sac
CF - Adult carrying food
NE - Nest containing eggs
NY - Nest with young

DILLON CONSULTING

Date data entered:_____ Corresponding Report #:_____

Date checked:_____ Checked by:_____

Bobolink/Meadowlark Monitoring Data Form: 10 min Surveys

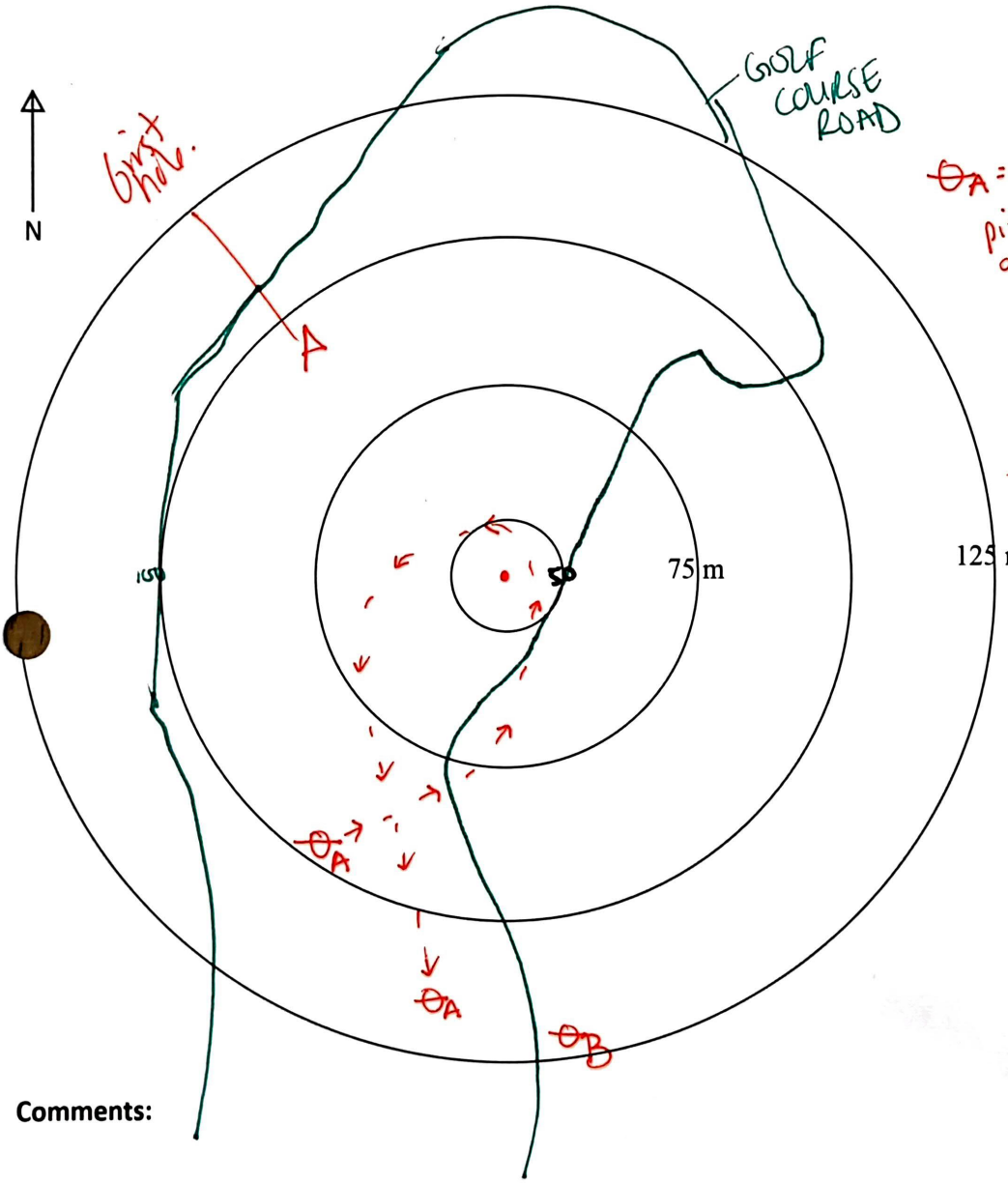
Project # 21-2364 Project Name: EMPIRE GRAND NIAGARA

DATE: JUNE 03/22 OBS: Dayna McClair VISIT: 1

Temp: 18 (°C) CloudCover(%): 60 Rain: - Wind: NW@ 1

Start time (from vehicle): 0830 End time(back at vehicle): 0930

Point Count# ENME-01
Start Time (24 hr): 0905
Photo's: ——



θ_A = 250° @ ~88m pitched up from grass & flew around me & landed closer to θ_B

θ_B = 239° ~ 110m heard only best estimate of location

Comments:

OBSERVED
X - Observed in breeding season
POSSIBLE
H - Observed in suitable nesting habita
S - Singing male(s)
PROBABLE
P - Pair observed
T - Permanent territory presumed
D - Courtship or display
V - Visiting probable nest site
A - Agitated behaviour/anxiety calls
B - Brood Patch/cloacal protuberance
CONFIRMED
NB - Nest-building
DD - Distraction display
NU - Used nest or egg shells
FY - Fledged/downy young
AE - Adult leaving or entering nest site:
FS - Adult carrying fecal sac
CF - Adult carrying food
NE - Nest containing eggs
NY - Nest with young

DILLON CONSULTING

Date data entered:_____ Corresponding Report #:_____

Date checked:_____ Checked by:_____

Bobolink/Meadowlark Monitoring Data Form: 10 min Surveys

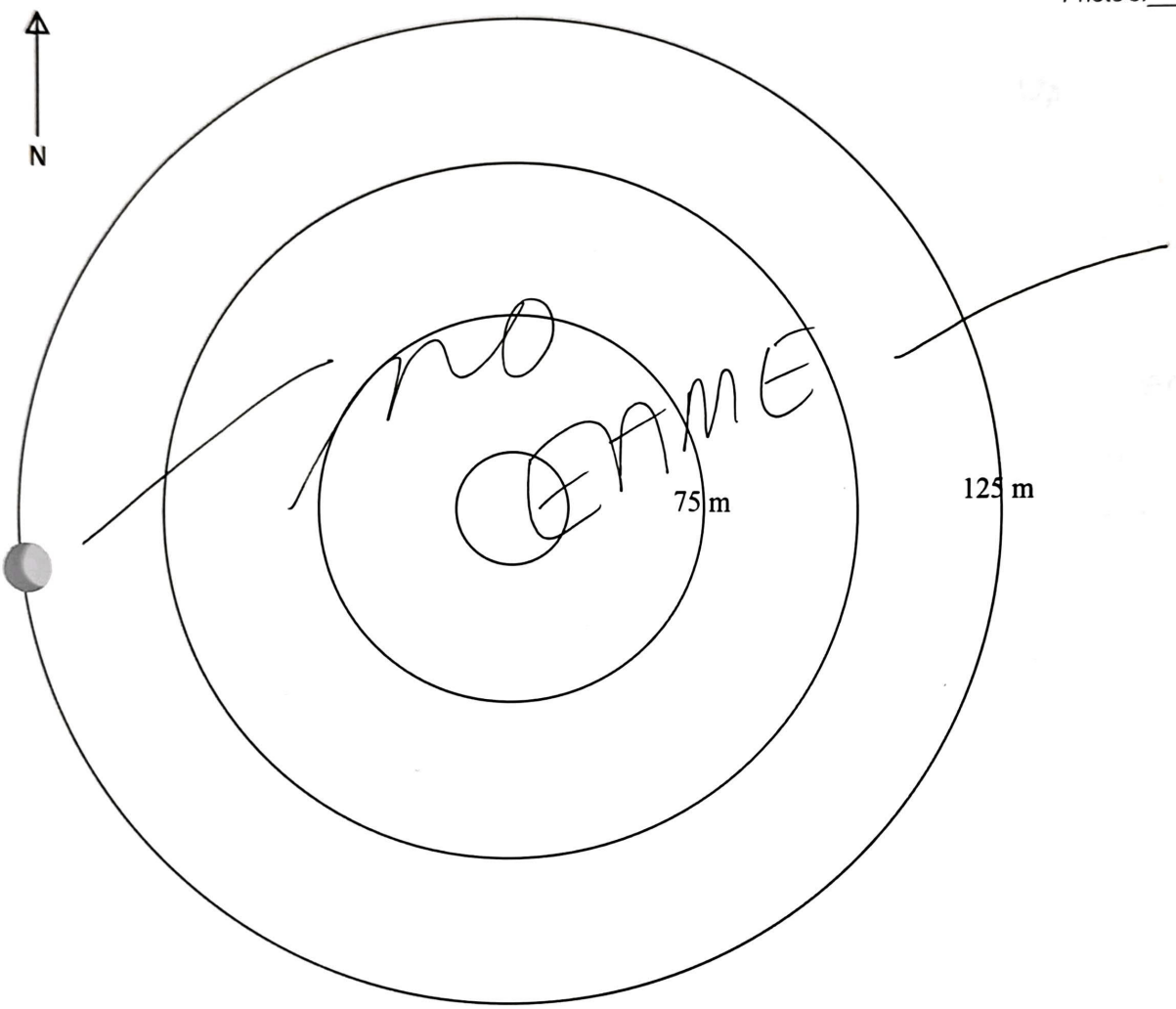
Project # 21-2364 Project Name: EMPIRE

DATE: JUNE 10/22 OBS: DLL VISIT: 2

Temp:____(°C) CloudCover(%):____Rain:____Wind:___

Start time (from vehicle): 730 End time(back at vehicle): 830

Point Count# EAME #2
Start Time (24 hr): 745
Photo's: ——



Comments:

OBSERVED
X - Observed in breeding season
POSSIBLE
H - Observed in suitable nesting habita
S - Singing male(s)
PROBABLE
P - Pair observed
T - Permanent territory presumed
D - Courtship or display
V - Visiting probable nest site
A - Agitated behaviour/anxiety calls
B - Brood Patch/cloacal protuberance
CONFIRMED
NB - Nest-building
DD - Distraction display
NU - Used nest or egg shells
FY - Fledged/downy young
AE - Adult leaving or entering nest sites
FS - Adult carrying fecal sac
CF - Adult carrying food
NE - Nest containing eggs
NY - Nest with young

DILLON CONSULTING

Date data entered:_____ Corresponding Report #:_____

Date checked:_____Checked by:_____

Bobolink/Meadowlark Monitoring Data Form: 10 min Surveys

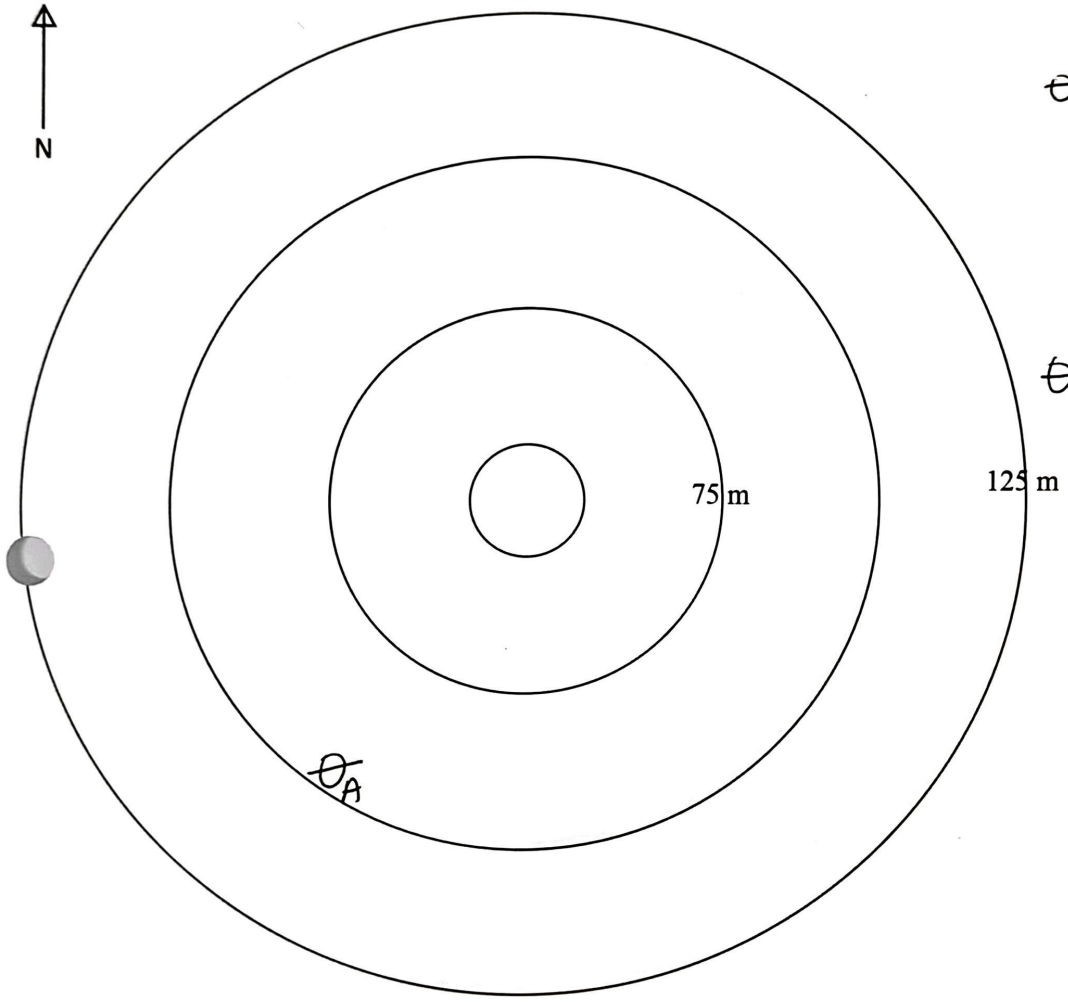
Project # 21-2364 Project Name: EMPIRE

DATE: JUNE 10/22 OBS: DLL VISIT: 2

Temp:____(°C) CloudCover(%):____Rain:____Wind:___

Start time (from vehicle): 730 End time(back at vehicle): 830

Point Count# EAME#1
Start Time (24 hr): 505
Photo's:



θA - EAME ♀ - assume
calling from grass
@ 240° ~ 95m

θB - EAME ♂ - assume
singing & agitated
from perch in rough.
@ 205° ~ 130m ~~130m~~

Comments:

OBSERVED
X - Observed in breeding season
POSSIBLE
H - Observed in suitable nesting habita
S - Singing male(s)
PROBABLE
P - Pair observed
T - Permanent territory presumed
D - Courtship or display
V - Visiting probable nest site
A - Agitated behaviour/anxiety calls
B - Brood Patch/cloacal protuberance
CONFIRMED
NB - Nest-building
DD - Distraction display
NU - Used nest or egg shells
FY - Fledged/downy young
AE - Adult leaving or entering nest site:
FS - Adult carrying fecal sac
CF - Adult carrying food
NE - Nest containing eggs
NY - Nest with young

DILLON CONSULTING

Date data entered:_____ Corresponding Report #:_____
Date checked:_____Checked by:_____

Bobolink/Meadowlark Monitoring Data Form: 10 min Surveys

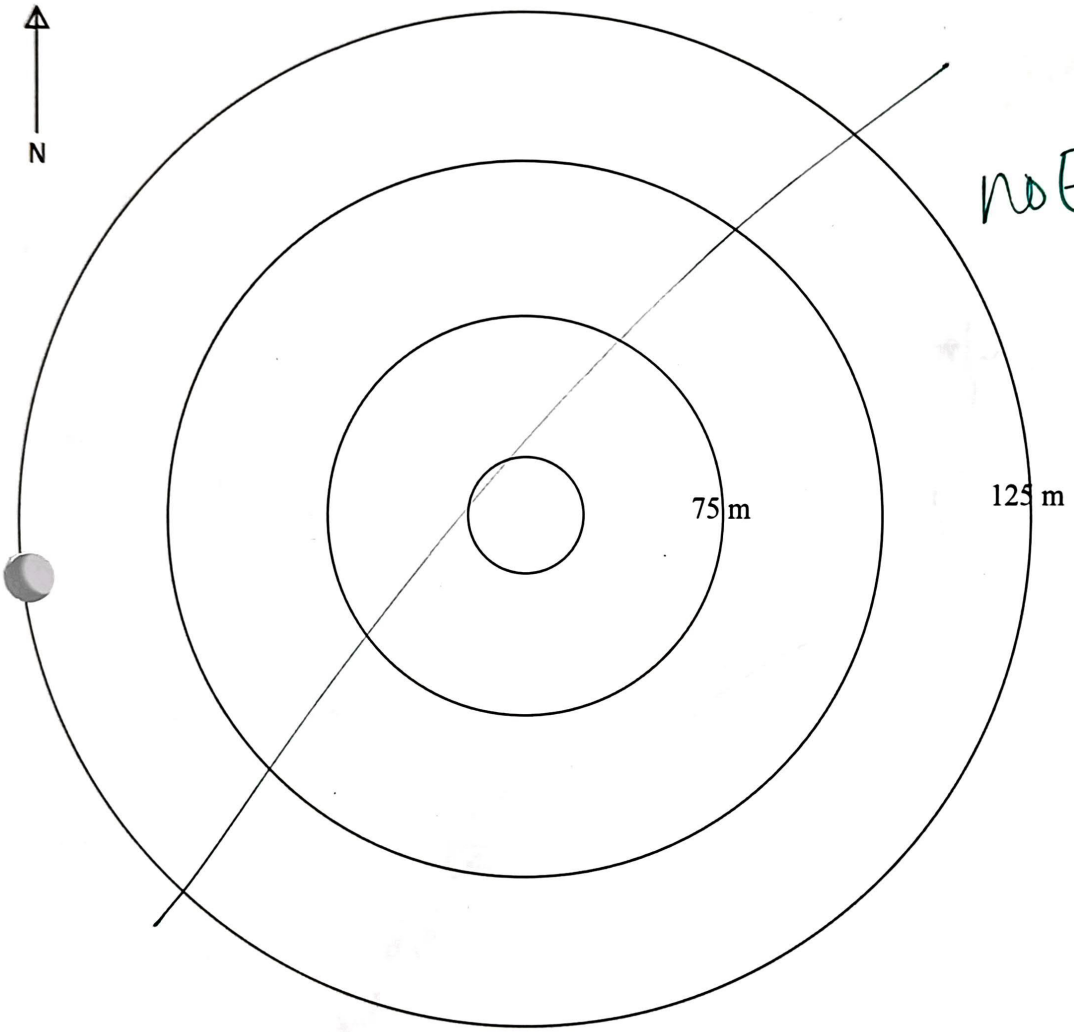
Project #_____ Project Name: EMPIRE

DATE: JUNE 16/22 OBS: DLL VISIT: 3

Temp: 26 (°C) CloudCover(%): 10 Rain: - Wind: SW 20 km

Start time (from vehicle): 0710 End time(back at vehicle):_____

Point Count# EAME #2
Start Time (24 hr): 0715
Photo's: taken on collector



no EAME

Comments:

OBSERVED
X - Observed in breeding season
POSSIBLE
H - Observed in suitable nesting habita
S - Singing male(s)
PROBABLE
P - Pair observed
T - Permanent territory presumed
D - Courtship or display
V - Visiting probable nest site
A - Agitated behaviour/anxiety calls
B - Brood Patch/cloacal protuberance
CONFIRMED
NB - Nest-building
DD - Distraction display
NU - Used nest or egg shells
FY - Fledged/downy young
AE - Adult leaving or entering nest site
FS - Adult carrying fecal sac
CF - Adult carrying food
NE - Nest containing eggs
NY - Nest with young

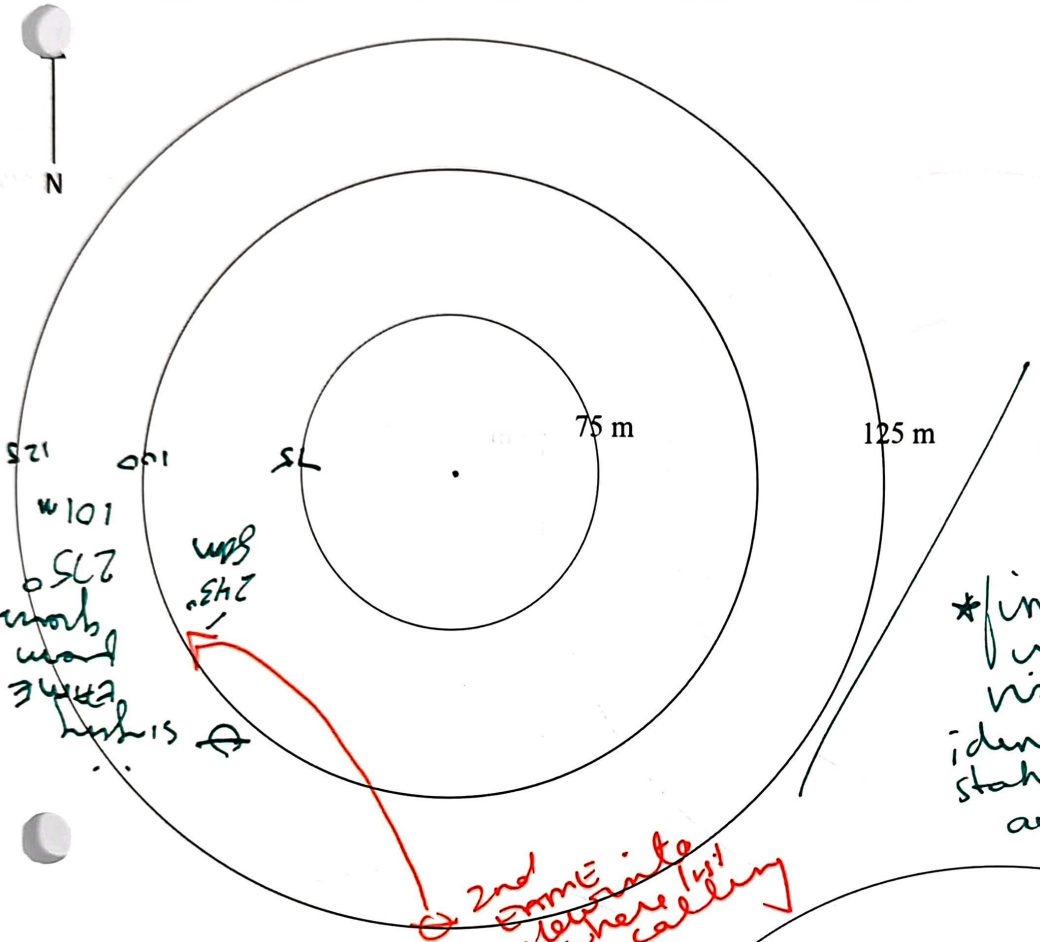
DILLON CONSULTING

Date data entered:_____ Corresponding Report #:_____
Date checked:_____ Checked by:_____

Bobolink/Meadowlark Monitoring Data Form: 10 min Surveys

Project #_____ Project Name: EMPIRE

DATE: June 16/22 OBS: DLL VISIT: 3



EAME #2

Point Count# ~~EAM~~ #4

Start Time (24 hr): 0727

Photo's: taken on collector

Comments:

likely bird from road junction that I collected on field maps.

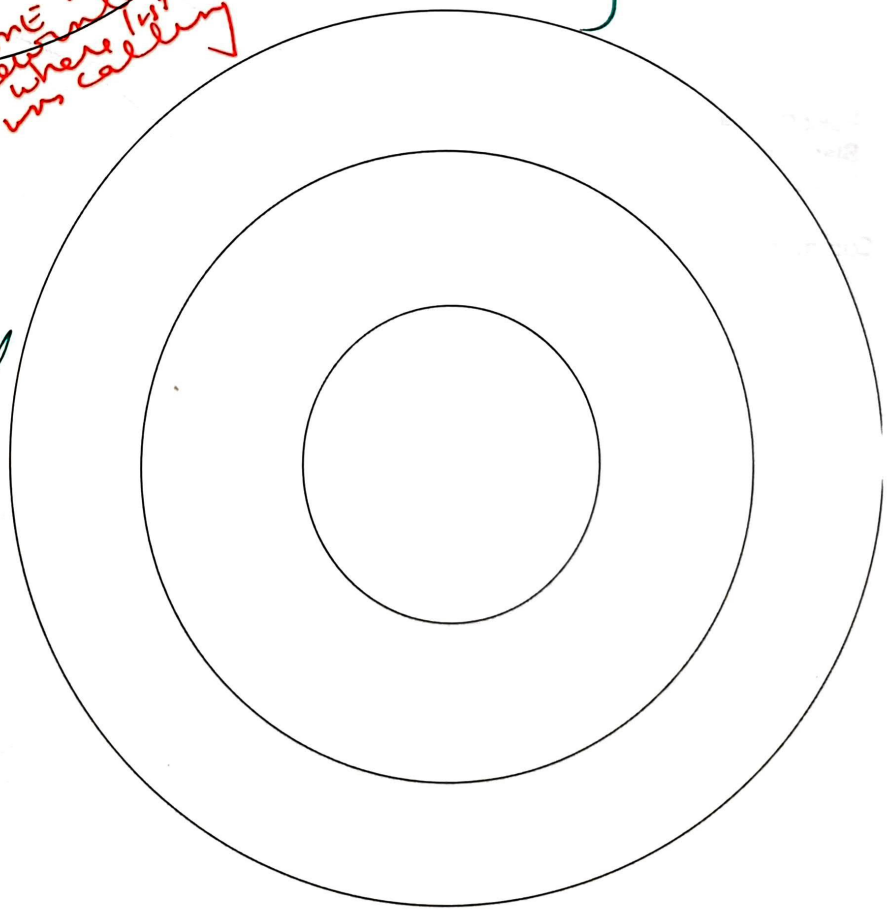
*finished survey round 3; will visit *new habitats identified during staking for EAME activity

Point Count# ~~EAME#3 - visit 2~~

Start Time (24 hr):_____

Photo's:_____

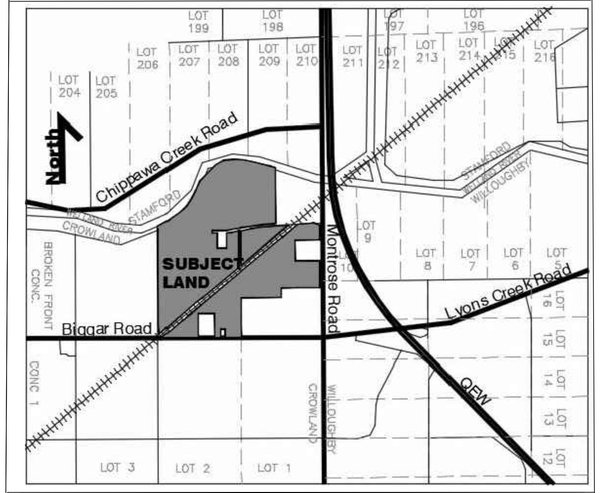
Comments: moved to new sheet for visit #2

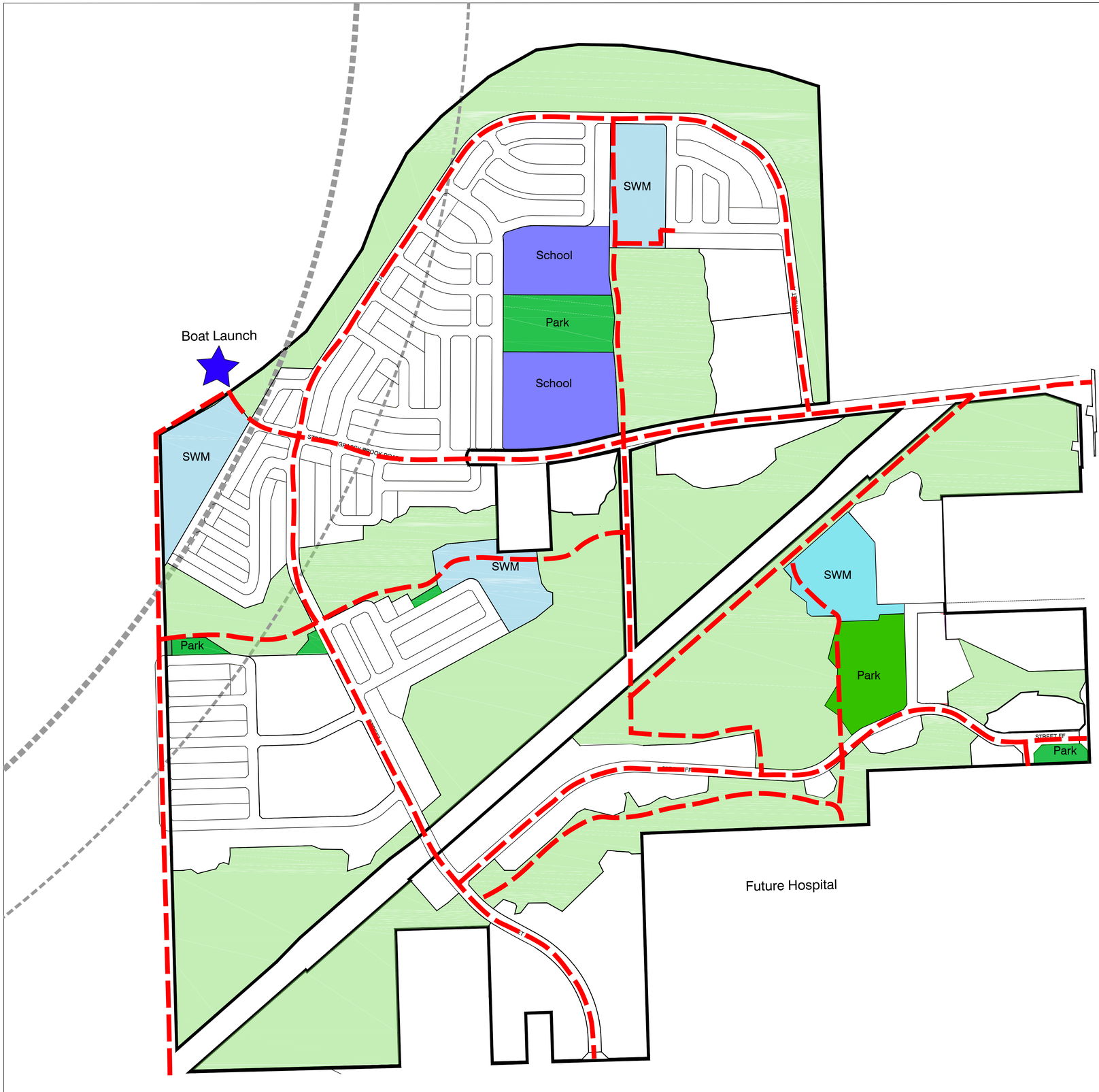


Appendix E

Trails Plan

EMPIRE GRAND NIAGARA - TRAILS PLAN





LEGEND

- School
- Park
- Natural Heritage
- SWM
- Boat Launch
- On and Off Road Trails
- 2.0 km to Cytec Property
- 200m buffer to Cytec 2km line

N

armstrong
planning | project management

January 26, 2023

Appendix F

Environmental Scope Review Meeting Minutes

Meeting Minutes

Subject: Grand Niagara – Environmental Scope Review

Date: May 13, 2022

Location: Conference call

Our File: File #21-2364

Distribution: Attendees
John Castro, Project Manager, Land Development, Empire Communities
Michael Auduong, Senior Planner, Armstrong Planning and Project Management

Attendees

Adele Mochrie, Project Manager	Dillon Consulting Limited (Dillon)
Dayna LeClair, Technical Lead	Dillon
Nicholas Godfrey, Watershed Planner	Niagara Peninsular Conservation Authority (NPCA)
Adam Aldworth, Planning Ecologist	NPCA
Adam Boudens, Senior Environmental Planner/ Ecologist	Niagara Region (Region)

Notes

Item	Discussion	Action by
1.	Introductions	
2.	Project Overview	
3.	Development Lands	
3.1.	**EIS Addendum submission:** Original Terms of Reference (TOR) identified an initial spring 2022 submission at the request of the client to reduce potential risks to the planning submission schedule, however this does not provide an opportunity to incorporate any new information that will be gathered by the Dillon team. Discussed refinement to TOR to provide one EIS Addendum submission in the fall 2022 which will allow for incorporation of fieldwork results and feature staking. Both NPCA and Region confirmed they are ok with one submission.	Dillon
3.2.	The agencies noted that the EIS Addendum should provide as much detail as reasonable on mitigation and enhancement opportunities, and monitoring plan requirements. NPCA also asked that the team consider educational signage (Dillon agreed to append sample signage and brochure from the Wyndfield West development in Brantford to EIS	

Addendum to illustrate what they look like) and confirmed they are supportive of the use of QR codes to engage trail uses; suggested it could link to the local native plant list through NPCA.

3.3. **Buffer Restoration:**
On-site restoration will focus on naturalizing the buffers and will be documented in the EIS Addendum. Off-site enhancement captured in the Restoration Area to the west (discussed further below).

3.4. **Additional Fieldwork:**
In addition to the targeted surveys for SAR grassland birds (in area of potential Eastern Meadowlark breeding habitat) identified in the TOR, it was agreed that Dillon would conduct the following: — Dillon

- Field verification to confirm there are no features within the buffer area where the road encroaches into the wetland buffer at the north end of the property
- Field verification of existing conditions at all three watercourse crossings.

3.5. **Active Transportation:**
It was agreed that no additional surveys are required to support trails within the buffers, as it is assumed that asphalt and mulch trails will still allow surface water to infiltrate the surrounding lands thereby reducing potential hydraulic impacts to the wetlands, and that in general, trails are not maintained during the winter (ie. no salt or sand placed during winter months). As agreed, trails will be designed to be close to the outer edge of the buffer to distance users from the wetland feature. It was noted that the trails illustrated on the Grand Niagara Secondary Plan suggest that there may be additional watercourse crossings. Dillon will review the potential for additional trail crossings with the design team. — Dillon

3.6. **Linkages and Ecopassages:**
The Region requested that additional details be provided in the EIS Addendum to illustrate location and details of the linkages and Ecopassages proposed on-site, and document the target species, preliminary design element, etc. Dillon noted that the watercourse crossings are anticipated to be open bottom culverts, which will be designed to allow for sufficient area along the banks to facilitate wildlife movement, whereas the ecopassage under Grassy Brook Road will likely be a dual purpose culvert that will need to meet openness ratio for the target species.

Item	Discussion	Action by
	The Region also noted the newer requirements to be considered by our team such as Amphibian Enclosure Fencing; typically buried fencing to protect species from entering resident yards that back on to the natural features, or at least in some pinch point areas.	
3.7.	**Feature Staking:** Discussed and agreed to targeted feature staking that focuses on the greatest features with the intent that smaller features contained within will be protected through the larger buffer (instead of fully staking the limits of each feature). Both agencies also noted that features proposed for removal (wetlands and significant woodlands) should also be staked so that areas of removal can be properly calculated in support of the Restoration Plan. NPCA and Region suggested available dates for feature staking the week of June 13, 2022. Dillon will provide suitable dates and both agencies will attend together. Dillon to confirm we can get golf carts (2) to ease of access across the site.	Dillon
4.	Restoration Lands	
4.1.	**Terms of Reference:** Discussed need for TOR for a Scoped EIS for the Restoration Lands. Agencies agreed and asked for Dillon to include strategy pertaining to the monitoring plan (Region and NPCA). In addition, the agencies agreed that as the features were being protected/enhanced, no formal feature staking would be required.	Dillon
4.2.	**Scoped EIS:** Based on previous discussions with Jessica Abrahamse, former Watershed Planner with the NPCA, it was agreed that a single site visit would be conducted in the spring/summer of 2022 to document existing conditions, with the understanding that existing natural heritage features would not be impacted, but enhanced through the proposed Restoration Plan. Both agencies agreed to this approach.	
4.3.	**Channel Realignment:** Discussed NPCA staff qualification requirements for the channel realignment design. NPCA will review and confirm if drawings need to be stamped by a P.Geo or P.Eng. In addition, NPCA will confirm if a hydrological study is required to assess potential impacts to floodplain.	NPCA

Item	Discussion	Action by
4.4.	**Access to Restoration Lands:** The NPCA would like the opportunity to visit the restoration lands for field verification of features. Dillon will coordinate access.	Dillon
5.	**Next Steps:** Based on the outcome of this meeting and in consideration of previous agency comments received to date, the TOR will be revised and recirculated.	Dillon
6.	**Next Meeting:** Once the areas of removals is confirmed and a restoration strategy table prepared, Dillon will set up another meeting with NPCA/Region.	Dillon

Errors and/or Omissions

These minutes were prepared by Adele Mochrie who should be notified of any errors and/or omissions.

Appendix G

Schedule A-4(b) – Restoration Plan

WELLAND RIVER

GRASSY BROOK RD

MORRIS RD

GRAND NIAGARA DR

BIGGAR RD

CROWLAND AV

Map 5 to Official Plan Amendment No. 118

Schedule A-4(b), Natural Heritage Rehabilitation Plan

- Affected Area
- Watercourse
- Pipeline Easement
- Rail Line
- Utility Corridor
- Environmental Protection Area
- Provincially Significant Wetlands

Ecological Restoration Areas

- Slough Forest
- Deciduous Swamp
- Upland Hardwoord Forest
- Shrub Thicket
- Open Wetland Restoration Area
- Cultural Savannah Thicket
- Open Wetland Restoration Area
- Floodplain Spawning Fish Habitat Marsh
- Riparian Marsh Restoration Area

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