

NATURAL HERITAGE ENVIRONMENTAL IMPACT STUDY

PREPARED FOR

NIVAS Developments Ltd.

Markdale Residential Draft Plan of Subdivision:

**Part Lot 101, Concession 1 NETSR
Geographic Township of Artemesia
Settlement of Markdale
Municipality of Grey Highlands
County of Grey**

PREPARED BY

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1 Executive Summary

NIVAS Development Ltd. has proposed a Draft Plan of Subdivision within its land holding at Part Lot 101, Concession 1 NETSR, geographic Township of Artemesia, Settlement of Markdale, Municipality of Grey Highlands, Grey County. The full property having assessment Roll No. 420824000130300 for 11.69 ha (28.9 ac) is vacant lands dominated with open agricultural fields with wetland, scrub/thicket stand, conifer plantation and small hardwood forest stand. The subject lands have had previous Plans of Subdivision by former landowner, but said Plan lapsed approval periods. The current landowners whom acquired the lands in early 2021 proceeded with an EIS - Terms of Reference (ToR), which was approved by SVCA with Natural Heritage Environmental Impact Study (EIS) works carried out from mid-April to mid-August 2021 in accordance to the ToR to address potential negative impacts associated with site development.

Through on-site investigations, data analysis, mitigative measures and remedial action for natural vegetation seeding, this EIS has demonstrated and concluded that with recommended measures, no negative impacts are anticipated to the identified significant natural environment features or ecological functions within the Study Land or its adjacent lands from the proposed Draft Plan of Subdivision. With the recommended mitigative measures implemented, site development would be in compliance with the Natural Heritage Policies of the 2020 Provincial Policy Statement, the 2019 Grey County Official Plan and the 2017 Municipality of West Grey Official Plan.

2 Introduction

This Natural Heritage EIS has been undertaken to address current Planning Policies and technical review by the Saugeen Valley Conservation Authority (SVCA) and other applicable Provincial and Federal Acts / Legislation / Regulations. Technical reporting will follow the Provincial Natural Heritage Reference Manual of March 2010 for natural heritage features, ecological function identification and impact assessment format as defined by the Provincial Policy Statement 2.1. A desk-top review of available literature reports, data files, feature maps etc. currently available through Municipal, Provincial and Federal agencies has also been undertaken, augmented with field survey/inventory works for the Study Lands.

Within this technical report, the field investigation lands are referred to as the '**Study Land**', delineated on Figure 2. A broader review of the 120m adjacent lands, referred to as the '**Site Lands**' has also been delineated on Figure 2, assessed through air photo interpretation, background literature reviews and road side/ property line observations, to identify any adjacent natural environment features or corridor/linkages for ecological functions review.

3 Study Works

3.1 Background Review

A literature review and data search was conducted to aid in the identification of Natural Heritage features and to search for historical occurrence records for flora and fauna species of conservation concern within 5 km of the Study Land. This background review was utilized to augment field data collection. A complete listing of reports / documents reviewed or cited is provided in the reference section. Sources include:

- 2019 Grey County Official Plan and schedule mapping
- 2017 Grey County Natural Heritage Study, Green in Grey
- 2015 Municipality of Grey Highlands Official Plan and schedule mapping, Zoning
- OMNRF-Midhurst District; fish and wildlife records and mapping of provincial features in the Land Information Ontario database.
- Natural Heritage Information Center (NHIC) database of the Ontario Ministry of Natural Resources and Forestry (OMNRF) on the Land Information Ontario website for significant flora and fauna records.

3.2 Field Study Methodology

Property location mapping is provided on Figure 1, with the field inventory lands or '**Study Land**' and the adjacent 120 m or '**Site Lands**' shown on Figure 2. Historical data record searches, literature reviews and satellite image interpretation encompassed the Site Lands with a broader landscape review extending 5 km from the Study Lands.

Field investigations and data collection for this EIS report were carried out from mid April to mid-August 2021 for 2 season coverage (three season coverage was not deemed necessary given the site features and surrounding urban setting). A complete list of field work dates, weather conditions and focused survey works is provided in Table 1.

- A qualified two-person team comprised of John Morton and Judith Jones from AWS Environmental Consulting Inc. completed natural environment field inventory and assessment works within the Study Lands.

Vascular Plant Surveys were conducted during the growing seasons (spring and summer) of 2021, with a full species listing, ranking, status levels and Floristic Quality Scores provided within Appendix 3. Given the small land base of the Study Land, inventory works followed a random coverage search method.

General Fauna Surveys within the Study Land included specific searches and/or investigation for amphibians, breeding birds, activity for snakes, general searches for mammals and movement corridor functions. A full summary list of all recorded fauna species over the study period has been provided under Appendix 4 with current rankings, status levels and highest bird breeding codes observed.

Breeding Bird Surveys for the Study Land followed two standardized search methods:

- a) Monitoring activity included a 'Point Count' methodology for breeding activity in accordance to Bird Studies Canada for Woodland habitat and Open Country habitat. Point Count Locations were established to cover all habitat types within the Study Land, with no point count location closer than 100m (limited overlapping of potential territories). Occurrences were recorded through both sightings and calling for a total of 5-10 minutes at each point count location in the early morning hours (dawn to 0930 for Open Country and 1030 for Woodlands). Point Count location mapping have been provided within Appendix 4.
- b) Additional bird observations of feeding adults and fledglings during summer site visits were also recorded and listed under Appendix 4 as observations outside the breeding season.

Herpetofaunal Surveys were conducted within the Study Land but were focused within suitable habitat areas.

- a) Suitable habitat for amphibian breeding activity was identified within the wetland feature located in the northeast Study Land corner. As such, intensive amphibian (Anuran) calling survey works were undertaken in accordance to Bird Studies Canada- Amphibian Marsh Monitoring Protocols during the early and mid breeding period. With the wetlands going dry in late June, no suitable habitat for late season breeding activity occurs within the Study Land.
- b) Reptiles-Snake activity was actively searched for during the hibernation emergence period and summer gestation period within suitable habitat areas of the Study Land.

Mammal sightings or observations of habitat use (tracks, scat) were recorded during all other flora and fauna investigation work during site visits in 2021.

With no watercourses within the Study Land there is no Fish Habitat to Federal Fisheries Act definition, this was confirmed through preliminary on-site investigation, therefore no fish community assessment work was required.

The EIS field survey works and technical reporting follows recommended/standard provincial guidelines, protocols and techniques.

3.3 Field Survey Dates

Table 1: Field Survey Dates and Focus of Works

Date	Survey Time & Duration	Weather Conditions (at start time)	Survey Focus
April 8, 2021	1115 to 1230 For 0.75 hrs	Wind Speed = 6-11 km/hr Air Temp.= 22° C Precipitation = 0, Cloud Cover = 25%	Preliminary habitat review, General Fauna, Stick Nests, Reptile hibernation emergence period activity.
April 13, 2021	2100 to 2115 For 0.25 hrs	Wind Speed = 3-6 km/hr Air Temp.= 8° C Precipitation = 0, Cloud Cover = 50%	Anuran night time calling survey, Bat foraging activity
May 19, 2021	1045 to 1145 For 1.0 hrs	Wind Speed = 12-19 km/hr Air Temp.= 24° C Precipitation = 0, Cloud Cover = 50%	Turtle basking, Snake activity, General Fauna, Amphibian egg mass search
May 19, 2021	2230 to 2240 For 0.25 hrs	Wind Speed = 6-12 km/hr Air Temp.= 17° C Precipitation = 0, Cloud Cover = 50%	Anuran night time calling survey, Bat foraging activity
May 30, 2021	0840 to 0910 For 0.5 hrs	Wind Speed = 3-6 km/hr Air Temp. = 14.0° C Precipitation = 0, Cloud Cover = 50%	Breeding Bird survey, General fauna
June 2, 2021	0630 to 0745 For 1.25 hrs	Wind Speed = 6-12 km/hr Air Temp. = 12.0° C Precipitation = 0, Cloud Cover = 50%	Breeding Bird survey, General fauna, Turtle egg laying activity search
June 23, 2021	0910 to 1110 2-person crew For 4.0 hrs	Wind Speed = 12-19 km/hr Air Temp. = 20.0° C Precipitation = 0, Cloud Cover = 25%	Spring season flora inventory, Breeding Bird survey, General Fauna
July 16, 2021	1000 to 1100 For 1.0 hours	Wind Speed = 6-12 km/hr Air Temp. = 22.0° C Precipitation = 0, Cloud Cover = 75%	Vegetation community and ELC classifications, Snake gestation activity monitoring, General Fauna
August 14, 2021	0830 to 1000 For 1.5 hours	Wind Speed = 3-6 km/hr Air Temp. = 20.0 C Precipitation = 0, Cloud Cover = 25%	Summer season flora inventory, Snake gestation activity monitoring, General Fauna

Total in-field survey work provided 10.5 hours of search /survey coverage over nine site visits during the spring and summer seasons of 2021. All survey work site visit dates and weather conditions are in accordance with protocol requirements for the focused field survey works noted.

4 Vegetation Community Characterization

Vegetation community boundaries within the Site Lands (Figure 7) were mapped and defined in the field based on the 'Ecological Land Classification (ELC) for Southern Ontario, First Approximation'. ELC types, ranking and characterization for each vegetation community are provided in Table 2.

Table 2: Vegetation Communities Types - ELC Codes

Vegetation Community Number	ELC Code	Type	Description	Provincial Ranking
1	CUT1-3	Chokecherry Cultural Thicket (Anthropogenic)	Dense stand of tree saplings and tall shrubs, Average ht = 4m, patchy but thick areas of ground cover (shrubs to forbs) at 40% coverage. Rock rubble scattered throughout.	S5
2	CUP3-3	Scotch Pine Coniferous	Immature aged Scotch Pine Avg. 5m in height and 8cm dbh. Patchy ground cover at 60% forbs.	S5
3	CUM1-1	Dry-Moist Old Field Meadow	Damp soil conditions, evidence of periodic tilling for attempted field cultivating expansion. 100% ground cover of forbs and graminoids	S5
4	FOD6-6	Dry-Fresh Sugar Maple-Hardwood Deciduous Forest	Mature hardwood forest with closed upper canopy, broad age structure, ground cover at 50% of forbs.	S5
5	SWT2-2	Willow Mineral Thicket Swamp	High stem density of tall shrubs at 4m with closed canopy, sections flooded in spring season.	S5
6	MAM2-2	Reed-canary Grass Mineral Meadow Marsh	Spring flooding almost 1m in depth, dense grasses with a small summer season pond with rooted floating aquatic plants.	S5
7	SWD3-1	Red Maple Mineral Deciduous Swamp	Flooded during spring freshet, 20cm water depth, mix of Mature trees and saplings with a semi-open canopy.	S5

Significant Feature Analysis

5 Habitat of Endangered and Threatened Species

A literature search for historic records of Endangered and Threatened species has been undertaken for the surrounding landscape extending 5 km's from the Study Lands utilizing the Species At Risk in Ontario (SARO) listings maintained by the Ontario Ministry of Natural Resources and Forestry (MNR); and the national lists maintained by Environment Canada (i.e. Committee on the Status of Endangered Wildlife in Canada (COSEWIC)), has been provided under Appendix 2.

Through this background literature review, four bird species with an Endangered or Threatened Status were noted. A review of each is provided below for Provincial habitat description requirements, Study Land habitat description plus recommended additional review or impact assessment if deemed warranted.

- Bobolink
 - Provincial habitat description: *Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland > 50 ha*
 - No suitable habitat within the Study Land to provincial description. Intensive on-site bird survey works did not record this species within the Study Land (see Appendix 4 listing).
 - No negative impacts to the breeding population or Regulated habitat, no further review or impact assessment is deemed warranted for this species.
- Eastern Meadowlark
 - Provincial habitat description: *Open, grassy meadows, farmlands, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent open grassy areas > 10 ha in size.*
 - Patchy suitable habitat within vegetation community 3 and along field/hedgerows, but well below the threshold habitat size required. Intensive on-site bird survey works did not record this species within the Study Land (see Appendix 4 listing).
 - No negative impacts to the breeding population or Regulated habitat, no further review or impact assessment is deemed warranted for this species.
- Canada Warbler
 - Provincial habitat description: *The Canada Warbler breeds in a range of deciduous and coniferous, usually wet forest types, all with a well- developed, dense shrub layer. Dense shrub and understory vegetation help conceal Canada Warbler nests that are usually located on or near the ground on mossy logs or roots, along stream banks or on hummocks. Its primary breeding range is in the Boreal Shield, extending north into the Hudson Plains and south into the Mixedwood Plains. Although the Canada Warbler breeds at low densities across its range, in Ontario, it is most abundant along the Southern Shield.*

- Patchy and marginal habitat within vegetation community 7. Typically this bird species is associated with very large tracts of forest cover. Intensive on-site bird survey works did not record this species within the Study Land (see Appendix 4 listing).
 - No negative impacts to the breeding population or Regulated habitat, no further review or impact assessment is deemed warranted for this species.
- Wood Thrush
 - Provincial habitat description: *Carolinian and Grey Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12m*
 - Patchy and marginal habitat within vegetation community 7. Intensive on-site bird survey works did not record this species within the Study Land (see Appendix 4 listing).
 - No negative impacts to the breeding population or Regulated habitat, no further review or impact assessment is deemed warranted for this species.
- Restricted Species
 - MECP-SAR division was contacted regarding details for restricted records in the broader search coverage area. Species noted were not recorded within the Study Land, nor was there suitable habitat within the Study Land. No further review or impact assessment is required.

The Provincial Policy Statement (PPS) section 2.1.7 states:

Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

MNRF documentation of historical records states:

Absence of information for a specific location does not mean there are no natural areas, provincially tracked species, plant communities or wildlife concentration areas at that location. It means that on the date the MNR created the dataset there was no information for that location. These data are not a substitute for site visits.

As such, detailed site investigations within the Study Land were undertaken for flora and fauna that are currently listed under the Endangered Species Act (ESA). For the Study Land, observed vascular plants are recorded under the flora listing of Appendix 3 and observed or evidence of fauna are recorded under the listing been provided in Appendix 4. Through intensive on-site survey works, **no** Species-At-Risk (SAR) were identified within the Study Land.

Through this analysis of historical data and on-site investigations it has been confirmed that no species currently having an Endangered or Threatened status are present within or immediately adjacent to the Study Land. Thus, it has been demonstrated that site development within the Study Land will be in compliance with the Endangered Species Act (ESA) 2007, the 2020 PPS 2.1.7, the 2019 Grey County Official Plan policy 7.10.2 and Municipality of Grey Highlands Official Plan policy 4.11.4. Therefore, it has been demonstrated and concluded that no further impact assessment for this feature is deemed warranted for this feature.

6 Fish Habitat

No watercourses that support fish or Fish Habitat, as defined under the Federal Fisheries Act are identifiable on any background mapping for the Site Lands. This was confirmed through on-site investigation works. The identified wetland feature which is flooded during the spring run-off or high precipitation events is not linked to any surface water feature which supports fish, as such the seasonally flooded wetland does not meet the definition for Fish Habitat nor were any fish species observed throughout the study period in the wetland environment (which goes dry during the summer season).

The Provincial Policy Statement (PPS) Natural Heritage section 2.1.6 states:

Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

The PPS Natural Heritage section 2.1.8 states:

Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

The Grey County Official Plan policy 2.8.6 (1) in part states:

Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

The Municipality of Grey Highlands Official Plan for 'Hazard' policy 4.4.2 (f) for Fish Habitat in part states:

No development shall be permitted within 30 metres of water bodies.

With **no** Fish Habitat identified within the Study or Site Lands, site development will be in-compliance with these planning policies and the Federal Fisheries Act. Therefore it has been demonstrated and concluded that no further review or impact assessment is deemed warranted for this feature.

7 Significant Valleylands

Grey County has identified Significant Valleylands within its Natural Heritage System-Green in Grey, with area mapping provided on Figure 4B. The County O.P. constraint mapping shows no Significant Valleyland feature within the Study or Site Lands.

The Grey County Official Plan policy 7.7.2 for Significant Valleylands states:

Significant Valleylands will not be required to be mapped in municipal zoning by-laws, as these features are generally already covered by Hazard Land and Regulated mapping across the County.

The Provincial Policy Statement (PPS) section 2.1.5 (c) states:

Development and site alteration shall not be permitted in significant valleylands in Ecoregions 6E and 7E unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

The PPS section 2.1.8 for the adjacent lands to Significant Valleylands states:

Development and Site Alteration shall not be permitted on adjacent lands (120m) to the natural heritage features and areas identified in policies 2.1.4, 2.1.5 and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

Similar policy wording for adjacent lands to Significant Valleylands is within the Grey County Official Plan policy 7.7.1.

With **no** Significant Valleyland feature within the Site Lands, the proposed site development will be in-compliance for the aforementioned policies for the Study Lands and adjacent land policies. Therefore it has been demonstrated and concluded that no further review or impact assessment is deemed warranted for this feature.

8 Significant Areas of Natural and Scientific Interest (A.N.S.I.)

A review of Provincially Significant ANSI's was undertaken from OMNRF and Land Information Ontario web site mapping provided on Figure 3. This provincial mapping demonstrates that no significant ANSI features, either earth science or life science, occur within the Study Land or Site Lands.

The Provincial Policy Statement (PPS) Section 2.1.5 (e) states:

Development and site alteration shall not be permitted in significant areas of natural and scientific interest unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

The PPS Natural Heritage Section 2.1.8 for adjacent lands states:

Development and site alteration shall not be permitted on adjacent lands (120 m) to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

Similar policy wording for Significant ANSI's is within the Grey County Official Plan policy 7.6.1, and the Municipality of Grey Highlands policy 4.11.2.

With **no** ANSI feature identified within the Study or Site Lands, it has been demonstrated and concluded that site development within the Study Land would be in compliance with the PPS 2.1.5 (e), 2.1.8, Grey County Official Plan policy 7.6.1 and the Municipality of Grey Highlands Official Plan policy 4.11.2. Therefore, no further review or impact assessment is deemed warranted for this feature.

9 Significant Wetlands

A review of Provincially Significant Wetlands (PSW) was undertaken from OMNRF and Land Information Ontario web site mapping shown on Figure 3. This provincial mapping demonstrates that **no** evaluated significant wetland features occur within the Study Land or the Site Lands.

The Provincial Policy Statement (PPS) section 2.1.4 (a and b) states:

Development and site alteration shall not be permitted in significant wetlands in Ecoregions 5E, 6E and 7E and significant coastal wetlands.

The PPS Natural Heritage section 2.1.8 states:

Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

The Study Land is within Ecoregion 6E, thus this policy is applicable. With **no** confirmed PSW within the Study Land or Site Lands, it can be concluded that site development would be in compliance with the PPS 2.1.4 (a and b) and policy 2.1.8. Similar policy wording for PSW's and their adjacent lands is within the Grey County Official Plan policy 7.3.1 and the Municipality of Grey Highlands Official Plan policy 4.3.2 (a and b).

With **no** Significant Wetland feature within the Study Land or Site Lands, it has been demonstrated and can be concluded that site development within the subject property would also be in compliance with the noted Official Plan policies relating to provincially significant wetlands.

Both the County of Grey Official Plan mapping shown on Figure 4B and the Municipality of Grey Highlands Official Plan shown on Figure 5B identify an 'Other Wetland' feature in the northeast corner of the subject property/Study Land. On-site investigations confirmed the presence of a wetland feature which meets the wetland definition by the Province and Official Plans.

The Grey County Official Plan policy 7.3.2.1 for Other Wetlands states in part:

No development or site alterations are permitted within Other Wetlands or their adjacent lands...unless it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

The Municipality of Grey Highlands Official Plan policy 4.11.7 for Other Wetlands has similar wording and intent as the County OP.

As such, further review and impact assessment is warranted and provided under reporting section 15 for Other Wetlands to address the County and Municipality Official Plans.

10 Significant Woodlands

The County of Grey has undertaken countywide mapping for Significant Woodlands within its current Official Plan-Appendix B, with study area mapping provided under Figure 4B. The County Official Plan mapping shows no 'Significant Woodland' designation within the Study Land or the Site Lands.

The Natural Heritage Provincial Policy 2.1.5 (b) regarding Significant Woodlands states:

Development and site alteration shall not be permitted in significant woodlands in Ecoregions 6E and 7E unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

The PPS Natural Heritage section 2.1.8 states:

Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

The Grey County Official Plan policy 7.4.1 states:

No development or site alteration may occur within Significant Woodlands or their adjacent lands (120m) unless it has been demonstrated through an environmental impact study, as per Section 7.11 of this Plan, that there will be no negative impacts on the natural features or their ecological functions.

The Municipality of Grey Highlands Official Plan policy 4.11.8 has similar wording relating to their Schedule 'C' mapping, has similar policy wording for Significant Woodlands and their 120m adjacent lands.

With **no** Significant Woodland feature identified within the Study Land or Site Lands, site development will be in-compliance with the aforementioned PPS and Official Plan policies for both the Study Land and adjacent land policies. Therefore it has been demonstrated and concluded no negative impacts to Significant Woodlands will occur from this development proposal and no further review or impact assessment is deemed warranted.

11 Significant Wildlife Habitat

Currently no mapping has been undertaken within Grey County to identify all Significant Wildlife Habitat (SWH) due to its complexity and sub-component aspects requiring on-site survey works. Some historical Provincial MNRF inventory and wildlife assessment works within Grey County has been sourced to aid in determination of confirmed SWH within these Study Lands and within the County's Natural Heritage System. Additionally EIS field inventory works carried out over the Study Lands will augment this historical data to aid in the determination of significance for each wildlife habitat sub-component.

The Ontario Ministry of Natural Resources and Forestry published in January 2015 ‘Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E’ as a supplement document to the 2000 Significant Wildlife Habitat Technical Guide (SWHTG). This supporting document provides a listing of candidate and criteria or threshold levels to confirm the presence of significant wildlife habitat within Ecoregion 6E with MNRF-Land Information Ontario identifying that the subject lands are situated within Ecoregion 6E. Some historical Provincial MNRF inventory and wildlife assessment works within Grey County has been sourced to aid in determination of confirmed SWH. Additionally EIS field inventory works carried out over the Study Land will augment this historical data to aid in the determination of significance for each wildlife habitat sub-component.

The Study Land has been confirmed to be situated within the provincial Ecoregion 6E, provided below is a review of Ecoregion 6E criteria for candidate SWH and criteria threshold levels for confirmed SWH within the Study Land or Site Lands. This review follows the Natural Heritage Reference Manual, 2010 (NHRM), flow chart of Figure No. 9-1 for the identification and confirming ‘Significant Wildlife Habitat’, with provincial criteria habitat types compared to those listed under the Site Lands ELC types of Table 2 and on-site investigations.

11.1 Seasonal Concentration Areas of Animals

A summary review of Provincial Criteria Table 1.1 is provided below:

- Waterfowl Stopover and staging (Terrestrial)
 - No criteria waterfowl species were observed.
 - ELC criteria codes CUM1 and CUT1 are present within the Study Land.
 - Criteria threshold for species and aggregate numbers not met.
 - No confirmed SWH.
- Waterfowl Stopover and staging (Aquatic)
 - No criteria waterfowl species were observed.
 - ELC criteria code SWD3 is present within the Study Land.
 - Criteria threshold for species and aggregate numbers not met.
 - No Confirmed SWH.
- Shorebird Migratory Stopover
 - No criteria shorebird species were observed.
 - No ELC criteria codes are present and no suitable habitat identified within the Study Lands.
 - Criteria threshold for species and aggregate numbers not met.
 - No confirmed SWH.
- Raptor Wintering Area
 - No criteria raptor species were observed.
 - ELC forest criteria code FOD is present in the Study Land present with scattered open uplands CUM and CUT present, however; well below the threshold criteria size of >15ha.
 - No historical documentation of habitat use during winter period.
 - No confirmed SWH.

- Bat Hibernacula
 - No criteria bat species were observed.
 - No ELC criteria codes present within the Site Lands.
 - No historical documentation of bat hibernation activity.
 - No confirmed SWH.
- Bat Maternity Colonies
 - No criteria bat species were observed.
 - ELC criteria code FOD and SWD are present within the Study Land:
 - Field assessment of vegetation community 4 and 7 within the Study Land only noted 4 trees having a dbh >25cm but with no cavities and no standing snags were recorded, thus well below the provincial criteria for significance determination. Additionally, no development will occur within either vegetation community with development setback to maintain no negative impact on either vegetation community.
 - No historical documentation of bat maternity activity, no on-site assessment functional habitat.
 - No confirmed SWH.
- Turtle Wintering Areas
 - No criteria turtle species were observed.
 - ELC criteria codes MA and SW are present within the Study Land but little organic substrate.
 - No confirmed SWH.
- Reptile Hibernaculum
 - One common Gartersnake was observed during the summer 'forage' season.
 - Scattered burrows and rock piles and were checked with no evidence of snake activity.
 - No confirmed SWH.
- Colonially-Nesting Bird Breeding Habitat: Bank and Cliff
 - No criteria bird species were observed.
 - ELC criteria codes CUT1 and CUM1 are present but no suitable nesting habitat (banks, eroding slopes) identified within the Study Land.
 - No confirmed SWH.
- Colonially-Nesting Bird Breeding Habitat: Tree/Shrub
 - No criteria bird species were observed.
 - ELC criteria code SWD3 is present within the Study Land, but no nesting activity.
 - No confirmed SWH.
- Colonially-Nesting Bird Breeding Habitat: Ground
 - No criteria bird species were observed.
 - ELC criteria code MAM3, CUM and CUT are all present within the Study Land, but no nesting activity.
 - No confirmed SWH.

- Migratory Butterfly Stopover Areas
 - No criteria butterfly species were observed.
 - Forest ELC criteria code FOD and open field criteria codes CUM and CUT are present, however; Study Land is not located within 5 km of Lake Ontario (criteria area in Ontario).
 - No confirmed SWH.
- Landbird Migratory Stopover Areas
 - Several migratory songbird species present within the Study Lands.
 - ELC criteria codes FOD and SWD are present; however, the Study Land is not located within 5 km of Lake Ontario (criteria area in Ontario).
 - No confirmed SWH.
- Deer Yarding Areas
 - OMNRF determines this habitat. Midhurst District has identified and mapped wintering deer yards within Grey County. A review of provincial mapping shows no such habitat has been designated within the Site Lands.
 - No confirmed SWH.
- Deer Winter Congregation Areas
 - Within Grey County, deer are typically constrained by snow depths thus yarding habitat is used rather than congregation areas. Congregation areas are typically associated with Carolinian regions, thus not a SWH function in Grey County.
 - No confirmed SWH.

11.2 Rare Vegetation Communities

A summary review of Provincial Criteria Table 1.2.1 is provided below:

- Cliffs and Talus Slopes
 - No ELC criteria code types present within the Site Lands.
 - No confirmed SWH.
- Sand Barren
 - No ELC criteria code types present within the Site Lands.
 - No confirmed SWH.
- Alvar
 - No ELC criteria code types present within the Site Lands.
 - No confirmed SWH.
- Old Growth Forest
 - ELC criteria codes FOD and SWD are present within the Study Land.
 - Provincial habitat description criteria for 'Old Growth Forest' community are not present (tree sizes, density, etc.) within the Study Lands or identifiable within the adjacent lands.
 - No confirmed SWH.
- Savannah
 - No ELC criteria code types present within the Site Lands.
 - No confirmed SWH.

- Tallgrass Prairie
 - No ELC criteria code types present within the Site Lands.
 - No confirmed SWH.
- Other Rare Vegetation Communities
 - No identified vegetation communities with an S1, S2 or S3 ranking present within the Site Lands (see Table 2)
 - No confirmed SWH.

11.3 Specialized Habitat for Wildlife

A summary review of Provincial Criteria Table 1.2.2 criteria is provided below:

- Waterfowl Nesting Area
 - No criteria waterfowl species observed.
 - ELC criteria codes MAM2 and SWD3 are present within the Study Land.
 - Criteria thresholds not met for species diversity or numbers.
 - No confirmed SWH.
- Bald Eagle and Osprey Nesting, Foraging and Perching Habitat
 - No criteria species observed.
 - ELC criteria codes FOD and SWD are present within the Study Land however; no large water bodies or large open water wetlands, no evidence of current or historical nesting activity within the Study Land or surrounding adjacent lands.
 - Criteria thresholds not met for active use of habitat.
 - No confirmed SWH.
- Woodland Raptor Nesting Habitat
 - No criteria species observed.
 - ELC criteria codes FOD and SWD are present within the Study Land; however, no forest interior habitat was identified within the Site Lands.
 - No nesting activity identified. No documented nesting activity within the Site Lands.
 - Criteria thresholds for species, numbers and habitat size plus habitat use, not met.
 - No confirmed SWH.
- Turtle Nesting Areas
 - No criteria species observed.
 - No ELC criteria codes present within the Study Land and no suitable habitat identified.
 - Criteria thresholds for species, numbers and habitat size plus use, not met.
 - No Confirmed SWH.
- Seeps and Springs
 - Criteria fauna species (White-tailed Deer) were identified within the Study Land.
 - No seeps or groundwater upwelling functions identified within the Study Land.
 - Criteria thresholds for numbers or presence not met.
 - No confirmed SWH.

- Amphibian Breeding Habitat (Woodland)
 - Criteria species: Spring Peeper identified within the Study Land.
 - ELC criteria codes FOD and SWD are present within the Study Land.
 - Criteria threshold for species diversity or numbers of "*at least 20 individuals*" was met (see Appendix 3), with primary breeding activity occurring in vegetation communities 6 and 7.
 - **Confirmed SWH.**
- Amphibian Breeding Habitat (Wetlands)
 - Criteria species Northern Leopard Frog identified within the Study Land.
 - ELC criteria codes SW and MA are present within the Study Land.
 - Criteria thresholds with 2 or more frog/toad species not met and criteria threshold for numbers "*at least 20 breeding adults*" was not met (see Appendix 3).
 - No confirmed SWH.
- Woodland Area-Sensitive Bird Breeding Habitat
 - No criteria bird species observed.
 - ELC criteria codes FOD and SWD are present within the Study Land however; no forest interior habitat (>100 m from forest edge) identified within the Study Land woodland feature.
 - Criteria thresholds for species diversity, numbers, presence or interior forest habitat, not met
 - No confirmed SWH.

11.4 Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)

A summary review of Provincial Criteria Table 1.3 criteria is provided below:

- Marsh Breeding Bird Habitat
 - No criteria bird species observed.
 - ELC criteria code MAM2 is present within the Study Land.
 - Criteria thresholds not met for species diversity, numbers or active habitat use.
 - No confirmed SWH.
- Open Country Bird Breeding Habitat
 - No criteria bird species observed.
 - ELC criteria codes CUM1 is present within the Study Land but well below the criteria threshold size of >30ha needed.
 - Criteria thresholds for species diversity, numbers or active habitat use, not met.
 - No confirmed SWH.
- Shrub/Early Successional Bird Breeding Habitat
 - Indicator criteria indicator: Brown Thrasher recorded within vegetation community 1 but no Common or Special Concern criteria species were recorded.
 - ELC criteria code CUT1 is present within the Study Land.
 - Criteria thresholds for species diversity or numbers not met.
 - No confirmed SWH.

- Terrestrial Crayfish
 - No criteria species (no chimneys) observed.
 - ELC criteria codes MAM2, SWT and SWD are present within the Study Land.
 - Criteria threshold for species diversity, numbers or active habitat use, not met.
 - No confirmed SWH.
- Special Concern and Rare Wildlife Species
 - No flora species were observed in 2021 within the Study Land that have a ranking of Special Concern or of provincial rarity (S1, S2 or S3). See Appendix 2 listing.
 - One fauna species: Monarch Butterfly was observed in 2021 within the Study Land, having a current Special Concern status. See Appendix 3 listing.
 - Historical MNR Records (see Appendix 1) for the surrounding landscape (extending 5 km from Study Lands) identified three species with Special Concern or Provincial Rarity status. A review potential or warranted further impact assessment is provided below:
 - Snapping Turtle and Midland Painted Turtle: Not recorded within the Study Land through intensive fauna investigations of 2021, nor was suitable habitat to provincial description identified within the Study Land for egg-laying or overwintering. No negative impacts are anticipated from site development, thus no further assessment required.
 - Hart's-tongue Fern: Not recorded within the Study Land through intensive flora investigations of 2021, nor was there suitable habitat to provincial description identified within the Study Land. No negative impacts are anticipated from site development, thus no further assessment required.
 - **Confirmed SWH for Monarch Butterfly.**

11.5 Animal Movement Corridors

A summary review of Provincial Criteria Table 1.4.1 Criterion is provided below:

- Amphibian Movement Corridors
 - With **confirmed** significant amphibian breeding habitat through Section 11.3, further review for amphibian breeding corridor assessment is required.
- Deer Movement Corridors
 - No deer wintering habitat was confirmed through Section 11.1 analysis, thus no delineation for deer movement is required.

11.6 Exceptions for Ecoregion 6E

A summary review of Provincial Criteria Table 1.5.1 is provided below:

- Mast Producing Areas
 - Candidate areas are only within EcoDistrict 6E-14, the Upper Bruce Peninsula.
 - No confirmed SWH.

- Sharp-tailed Grouse
 - Candidate areas are only within EcoDistrict 6E-17, for Manitoulin Island.
 - No confirmed SWH.

In summary for this review of Ecoregion 6E criteria schedules, Significant Wildlife Habitat has been confirmed within the Study Land for: Amphibian Breeding and Movement, plus Special Concern species Monarch Butterfly habitat.

The Natural Heritage Provincial Policy 2.1.5 (d) states:

Development and site alteration shall not be permitted in significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

The Natural Heritage Provincial Policy 2.1.8 regarding the adjacent lands (120m) for significant wildlife habitat states:

Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5 and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

Similar policy wording for Significant Wildlife Habitat and its adjacent lands (120m) is within the Grey County Official Plan policy 7.10 and the Municipality of Grey Highlands Official Plan policy 4.11.5.

With Significant Wildlife Habitat confirmed within the Study Land, further review and impact assessment for SWH is warranted and provided under reporting section 14.

12 Significant Feature Analysis Summary

Through the significant feature analysis, the following Natural Heritage features of provincial and/or local concern have been identified within the Study Land or within its 120m adjacent lands:

- i. Significant Wildlife Habitat:
 - a. Amphibian Breeding and Movement
 - b. Monarch Butterfly habitat
- ii. Other Wetlands - Locally Significant

Further review of these confirmed significant features and their ecological functions are provided in the 'Impact Assessment' component of this EIS. Site development with recommended mitigation measures in relation to the proposed development activity is also provided to maintain compliance with applicable Acts, Legislation and Planning Policies.

Impact Assessment

13 Development Proposal

The applicants proposed Residential Subdivision is primarily focused within the agricultural fields of the Study Land, with scattered hedgerows, small conifer plantain, scrub thickets and a wetland feature also on-site. The subject lands are border to the west by urban residential development, Grey Rd 12 and more residential development to the north and another planned subdivision to the south. The subdivision will have full servicing and a required storm water management pond on-site.

The former landowners (Dimakos) had several versions of Subdivision Plans for the subject property approved in 1993 and 2013 with approval lapsing in 2016, Grey County File No. 427-91001. No environmental impact studies were requested or undertaken for the previous subdivision plans, with Saugeen Valley Conservation Authority (SVCA) comments of the now lapsed 2013 application and subdivision plan providing preliminary conditional approval in relation to the Storm Water Pond in a similar location as to that now proposed in this application. Through the current applicant's pre-application consultation process with the SVCA, a natural heritage environmental impact study to support the new Plan of Subdivision was requested, given land use policy changes, species status changes and more, spanning over the last 8 to 28 years of the former design Subdivision Plans.

14 Significant Wildlife Habitat

14.1 Amphibian Breeding Characterization

Through on-site survey works and data analysis of reporting section 11.3, amphibian breeding activity has been confirmed to meet provincial threshold criteria for significant habitat. Both early spring breeding and mid spring breeding activity periods were focused within vegetation communities 6 and 7, assessed through night time Anuran calling activity and daytime egg mass searches. Vegetation community 6 is characterized as a Reed-canary Grass Meadow Marsh having dense growth of rooted aquatic vegetation, scatted tree saplings and a small terrain depression-pond feature within its southern limit (possibly an old excavated farm pond). Vegetation community 7 is a Red Maple swamp dominated with pole wood size trees and a few scattered mature trees, with abundant woody debris at ground level. Both communities were flooded from snow melt run-off accumulation, with surface waters receding through most of the meadow marsh and swamp by mid- June with only the terrain-pond depression having surface waters till early July, 2021. Though vegetation community 5, being the westerly adjacent Willow thicket swamp, had scattered pockets of surface water accumulation in the early spring season, these lands dried out much quicker and was not observed to support amphibian egg masses present.

14.1.1 Impact Assessment

Development or site alterations (including hydrology input) within vegetation community 6 or 7 would see direct loss of habitat and negatively impact this portion of the wetland feature and its identified ecological function. In accordance to the PPS 2.1.5 (d), the Grey County Official Plan policy 7.10 and the Municipality of Grey Highlands Official Plan policy 4.11.5, no development or site alterations should be permitted within the identified significant amphibian breeding habitat of vegetation community 6 and community 7.

The Study Land vegetation communities 3, 4 and 5 represent the natural environment within the adjacent lands to the identified SWH. Vegetation communities 1 and 2 are beyond the 120m adjacent land policy to the SWH of vegetation community 6 and 7. Additionally, neither the immature dry soil conifer plantation of vegetation community 2 or and the dry soil conditions of the semi-open scrub thickets of vegetation community 1 support functional summer range habitat for amphibians.

Given that much of the adjacent lands are altered and active agricultural fields, a vegetated Buffer Zone width of 10m around the perimeter to vegetation community 6 and 7 should be maintained for No Development or Site Alterations as shown on Figure 9. This vegetated buffer zone width is of sufficient development setback distance to maintain both upland and wetland natural vegetation around the SWH perimeter and maintain the adjacent natural environment amphibian summer range habitat, corridor movement habitat (see section 14.2) and a large portion of the Monarch Butterfly habitat (see section 14.3).

Constrained site alterations for Storm Water Management (SWM) only, could precede within vegetation community 5, beyond the 10m buffer to vegetation community 6 and 7, as this form of land alteration can support amphibian breeding activity and provide amphibian summer range habitat for adults as well. To maintain no loss of SWH or negative impacts on its ecological function from site alterations within the land area of vegetation community 5, the following mitigative measures should be adhered to for SWM design and construction:

- No vegetation clearing or site alterations occurring April 1st to August 15th.
- SWM construction should be focused within the dry summer and fall seasons.
- The north, east and south perimeters of the SWM disturbed lands are to have sediment control measures installed to provincial standards prior to site alterations occurring and maintained in an operational manner until such time that the disturbed lands have stabilized and vegetation growing. Said sediment control measures must be removed at that time to permit unobstructed amphibian movement.
- SWM design must show a pre and post surrounding landscape hydrology input 'water balance' equation to the 'wetland' feature. Design and construction aspects must demonstrate and incorporate a post-subdivision and SWM design to be within 10% (less and greater) than of the pre-subdivision hydrology input from the surrounding landscape to vegetation community 6 and 7.
- An 'Oil & Grit' separator shall be installed to provincial standards immediately up gradient to the SWM pond.
- At a minimum the westerly and southerly sloped sides of the SWM pond shall be seeded down with native tall grasses and forbs (flowering herbaceous perennial plants and milkweed).

In addition to the above mitigative measures, a barrier fence being a minimum 1.5m in height, shall be erected along the outer perimeter of the buffer zone to vegetation community 6 and 7 along the Subdivision side as per shown on Figure 10 and linked with fencing along the amphibian movement corridor as per reporting section 14.2.1 and depicted on Figure 10. This fencing should also be carried on around the perimeter of the SWM pond similar to that depicted on Figure 10.

14.2 Amphibian Movement Characterization

Through on-site survey works and confirmation that amphibian breeding is to a provincial significance level, amphibian movement habitat is to be assessed in accordance to SWH reporting section 11.5.

Within the Study Land, vegetation communities 6 and 7 have been identified as the amphibian breeding habitat areas. These two communities, which go semi-dry during the summer season, also function as the primary summer range habitat and overwintering habitat, for overlapping habitat functions were seasonal flooding occurs. In addition, suitable amphibian summer range habitat was observed with vegetation community 4, both the on-site and southeasterly off-site woodland.

The off-site vegetation community 4 Hardwood Woodlot being Block 304 for the adjacent Devonleigh Plan of Subdivision, was observed to support adult frogs during property line walks along the Study Land perimeter. The hedgerow (fence line) along the north property line provides cover habitat of grass/shrub/tree growth and along with the immediate adjacent field vegetation functions as a 'linkage corridor' between the amphibian breeding habitat area to this off-site hardwood woodlot, as depicted on Figure 8.

14.2.1 Impact Assessment

Through the recommended 10m wide vegetated Buffer Zone width of reporting section 14.1.1 to vegetation community 6 and 7, the on-site adjacent forested land of vegetation community 4 will not be developed, maintaining this area as amphibian summer range and movement habitat.

To maintain the amphibian movement functions and corridor linkage habitat along the north property line hedgerow, a minimum 5m wide setback from the north property line should be maintained as a 'No Development' area. This corridor zone should be linked with the wetland buffer zone and the off-site woodlot tree line to the south and retained as a natural vegetation linkage zone, as depicted on Figure 9. Along the outer limit to this 5m wide setback line, a barrier fence being a minimum 1.5m in height, shall be erected and linked to said fencing around the wetland and SWM pond perimeter, as depicted on Figure 10. This fencing shall discourage human disturbance, grass cutting or debris dumping within the amphibian movement corridor lands. With these mitigative measures, amphibian movement and associated corridor habitat will maintained in a functioning manner between these critical habitat areas from the Subdivision development.

14.3 Special Concern Species - Monarch Butterfly

Both adult and caterpillar Monarchs were observed within the Study Land, with primary activity associated within vegetation community 3, along the fringe of the wetland feature.

In Ontario, Special Concern species do not receive regulatory species or habitat protection, as such habitat impact measures fall under land use planning policies for Significant Wildlife Habitat.

The provincial habitat description and population threats for this species are provided below:

Throughout their life cycle, Monarchs use three different types of habitat. Only the caterpillars feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. Monarchs spend the winter in Oyamel Fir forests found in central Mexico. The largest threat to Ontario Monarchs is habitat loss and fragmentation at overwintering sites in central Mexico where forests are being logged and converted into agricultural fields and pastures. Widespread pesticide and herbicide use throughout the Monarch's range may also limit recovery.

14.3.1 Impact Assessment

Through the impact assessment of reporting section 14.1.1 a 10m wide vegetated buffer zone for no development or site alteration has been recommended around the wetland vegetation communities 6 and 7. This buffer zone will retain approximately 30% of the native identified Monarch supporting habitat of vegetation community 3. In addition, two remedial measures have been recommended to create new habitat within the Study Land for Monarchs: the SWM pond side slopes have been recommended to include seeding down with native flowering plants including milkweed, and the north property line amphibian movement corridor lands (section 14.2.1) will also support native flowering plants for Monarchs. As such, no net loss of habitat for Monarchs will be incurred from this site development proposal, thus maintain compliance with Significant Wildlife Habitat policies.

In summary for SWH, with focused Site Development, constrained Site Alterations, avoidance of sensitive amphibian breeding habitat, maintained amphibian movement corridors and retained plus remedial action for Monarch habitat, no negative impacts to the Significant Wildlife Habitat feature or its identified ecological functions are anticipated from the Plan of Subdivision. Therefore, it has been demonstrated through this impact assessment and can be concluded that the Residential Draft Plan of Subdivision would be in-compliance with the PPS 2.1.5 (d) and 2.18 for adjacent lands to Significant Wildlife Habitat. Similarly the Draft Plan of Subdivision will be in-compliance to the Grey County Official Plan 7.10 and Municipality of Grey Highlands Official Plan 4.11.5 for SWH and its adjacent lands.

15 Other Wetlands- Locally Significant & Hazard

15.1 Characterization

Vegetation communities 5, 6 and 7 reflect the wetland feature, with outer boundary limit as shown on Figure 8, defined in accordance to provincial wetland evaluation guidelines following the 50% vegetation rule. The 'Hazard' designated lands shown on Figure 5C extend beyond the wetland defined perimeter.

Vegetation communities 6 and 7 have been identified as the key wetland area providing critical ecological functions for Significant Wildlife Habitat-amphibian breeding.

15.1.1 Impact Assessment

The Grey County Official Plan policy 7.3.2.1 in part states:

No development or site alterations are permitted within Other Wetlands or their adjacent lands (30m) ... unless it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

The Municipality of Grey Highlands Official Plan policy 4.11.7 has similar wording and intent.

Through the impact assessment of SWH reporting section 14.1.1, the key wetland area and critical habitat area for ecological function have been recommended for no development or site alteration, plus a vegetated buffer zone within the adjacent lands has been recommended. Through impact assessment of SWH reporting section 14.2.1 a linkage movement corridor will also be retained for no ecological function impairment of the wetland ecology.

Site alterations within the wetland vegetation community 5 for storm water management only will have no negative impact on the SWH of the wetland ecology, plus the SWM pond will create habitat and provide life cycle functions for amphibians. Potential hydrology concerns from the subdivision development lands have also been mitigated to maintain natural surface water input for quantity and quality to the wetland vegetation communities 6 and 7.

With the identified ecological function of this wetland protected, vegetated buffer zones and vegetated linkage corridors maintained, no negative impacts to the wetland ecology are anticipated. Constrained site alteration to storm water management only within the western 1/3rd of the wetland feature will have minimal feature impacts as the storm water pond environment will support similar aquatic vegetation and provide similar habitat for amphibians. Therefore site development consistent with EIS Figure 10, will not negatively impact on the integrity of the wetland and is considered to be in-compliance with the aforementioned 'Other Wetland' policies and Hazard Land policies for utilities only and adjacent lands to Other Wetlands and Hazard lands.

The Grey County Official Plan policy 7.2.2 for Hazard Lands states in part:

Permitted uses in the Hazard Lands land use type are forestry and use connected with the conservation of water, soil, wildlife and other natural resources. Other uses also permitted are agriculture....public utilities...

It is anticipated based on former Subdivision application comments within the same subject lands, that the proposed SWM area which is still in the general same location as former Subdivision Site Plan designs and same intent as a eventually becoming a public utility, is still acceptable to the approval agencies.

The Municipality of Grey Highlands Official Plan policy 4.4.1 for Hazard Land-Permitted Uses listst: *Public Utilities... subject to Section 4.4.2(d)(ii)....* as a permitted use, similar to former subdivision applications for the Study Land.

The Municipality of Grey Highlands Official Plan policy 4.4.2 for Hazard Land-Policies states in part:

(a) The permitted uses will only be permitted where site conditions are suitable and where relevant hazard impacts have been reviewed.

- Engineering assessment and design works will be required to address the Hazard Land limits and the floodplain area & catchment area, for both pre & post site development, along with the hydrology constraint noted under mitigative point 16.2(iv).

(d) (ii) No environmental impacts will result. An Environmental Impact Study may be required as a condition of all development.

- This EIS has demonstrated and concluded that with recommended avoidance of the key wildlife habitat area of the wetland and mitigation measures, no negative impacts to the Wetland or its ecological function or that of the Hazard Land natural environment will occur from focused and constrained site development. Mitigation measures included: development setbacks providing vegetative buffer zones, constrained timelines for tree/shrub clearing, retained linkage corridor and additional Engineering assessment/design work for hydrology input to the wetland-SWH area. The SWM design within the Hazard Land and westerly area of the EIS wetland feature, will have no anticipated negative impact to the natural environment, with anticipated re-alignment of the Hazard Land limit within the Study Land through supportive engineering assessment works.

16 Mitigation

The following mitigative measures should be implemented through Site Plan Control, Development Agreement and/or Development permits/approvals. These measures are recommended to maintain the ecological functioning role and natural heritage features that have been identified within the Study Lands and are in compliance with applicable Acts, Legislation, and Natural Heritage Planning Policies of the Provincial Policy Statement, County and Municipality Official Plans and environmental guidelines.

- 16.1 No Development or Site Alterations should occur within the EIS vegetation community 6 and 7 plus the associated 10m wide vegetated buffer zone, as shown on EIS Figure 10.
- 16.2 No Lot or Road Development should occur within the remaining wetland feature lands of EIS vegetation community 5. A constrained site alteration for storm water management within this portion of the wetland feature is permissible provided the following mitigative measures are incorporated into the Site Plan design and site construction:
 - i. No vegetation clearing or site alterations occurring April 1st to August 15th.
 - ii. SWM construction should be focused within the dry summer and fall seasons.
 - iii. The north, east and south perimeters of the SWM disturbed lands are to have sediment control measures installed to provincial standards prior to site alterations occurring and maintained in an operational manner until such time that the disturbed lands have stabilized and vegetation growing. Said sediment control measures must be removed at that time to permit unobstructed amphibian movement.
 - iv. SWM design must show a pre and post surrounding landscape hydrology input 'water balance' equation to the 'wetland' feature. Design and construction aspects must demonstrate and incorporate a post-subdivision and SWM design to be within 10% (less and greater) than of the pre-subdivision hydrology input from the surrounding landscape to vegetation community 6 and 7.
 - v. An 'Oil & Grit' separator shall be installed to provincial standards immediately up gradient to the SWM pond.
 - vi. At a minimum the westerly and southerly sloped sides of the SWM pond shall be seeded down with native tall grasses and forbs (flowering herbaceous perennial plants and milkweed).
- 16.3 No development shall be permitted within 7m to the north property fence line as shown on EIS Figures 9 and 10. Minor site alterations within this corridor area for grading or fill placement if required is permissible but is to be stabilized and seeded down with native grasses in a timely manner.
- 16.4 No development shall be permitted within 2m to the abutting adjacent property Woodlot in the Study Land southeast corner as shown on EIS Figure 9 and 10. Minor site alterations within this corridor area for grading or fill placement if required is permissible but no below natural grade alterations and no fill placement greater than 20cm in depth within this 2m setback and any disturbed lands area to be stabilized and seeded down with native grasses in a timely manner.
- 16.5 A permanent barrier fence being a minimum 1.5m in height, shall be erected along the wetland buffer zone south perimeter and corridor movement land limit, as depicted on Figure 10. For Best Management Practices, this barrier fencing could be continued along the south and west perimeter of the Storm Water Management Pond area.
- 16.6 Tree clearing activity shall not occur from April 1st to August 15th during the active nesting period for breeding birds, in accordance to the Federal Migratory Birds Act, without additional mitigation measures consistent with the Migratory Birds Act for nesting deterrence and monitoring by a qualified person.

17 Conclusions

This EIS has demonstrated that with focused development, avoidance of the key wetland communities, retained vegetated buffer zones, maintained linkage corridor, constrained site alterations, constrained tree cutting timelines, remedial vegetation planting and remedial fencing the Draft Plan of Subdivision is anticipated to have no negative impacts or loss of ecological function to the Natural Heritage features assessed within the Study Land or surrounding natural environment. Further environmental review on the storm water management design may still be required to be undertaken during the detailed design phase. Therefore, with the noted mitigation measures, it has been concluded that Residential Site Development would be in compliance with the 2020 Natural Heritage policies of the Provincial Policy Statement, the 2019 Grey County Official Plan and the 2017 Municipality of Grey Highlands Official Plan.

All *italicized* comments contained within this report are quotes from available literature, technical reports, manuals and documents relevant to the features and/or functions observed within the Study Land. All natural feature locations are estimates based on current Grey County satellite imagery, topographic mapping on Ontario Base Maps, plotting in the field with hand-held GPS. The maps contained within this report should not be considered 'a legal survey' but are deemed adequate for this planning/application review process.

Respectfully Submitted,



John Morton, President
AWS Environmental Consulting Inc.

18 References

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Ltd. Markdale Draft Plan of Subdivision

19 Figures

Mapping Note for Clarification:

All below figures are a very close approximation for the property boundary, but given various mapping scales, boundary anomalies, etc., figures may not exactly match the survey plan dimensions to their entirety.

Figure 1.....	Property Location
Figure 2.....	Study and Site Lands
Figure 3.....	Provincial Natural Heritage Features
Figure 4A.....	Grey County Official Plan-Land Use Designations
Figure 4B.....	Grey County Official Plan- Constraint Mapping
Figure 5A.....	Municipality of Grey Highlands Official Plan-Land Use Designations
Figure 5B.....	Municipality of Grey Highlands Official Plan-Natural Heritage Constraints
Figure 5C.....	Municipality Zoning
Figure 6.....	Conservation Authority Regulatory & Screening Lands
Figure 7.....	Vegetation Communities
Figure 8.....	Natural Heritage Features
Figure 9.....	Natural Heritage Buffer Zones
Figure 10.....	No Development and Constrained Lands

Figure 1: Property Location

- Base map source: Grey County website.

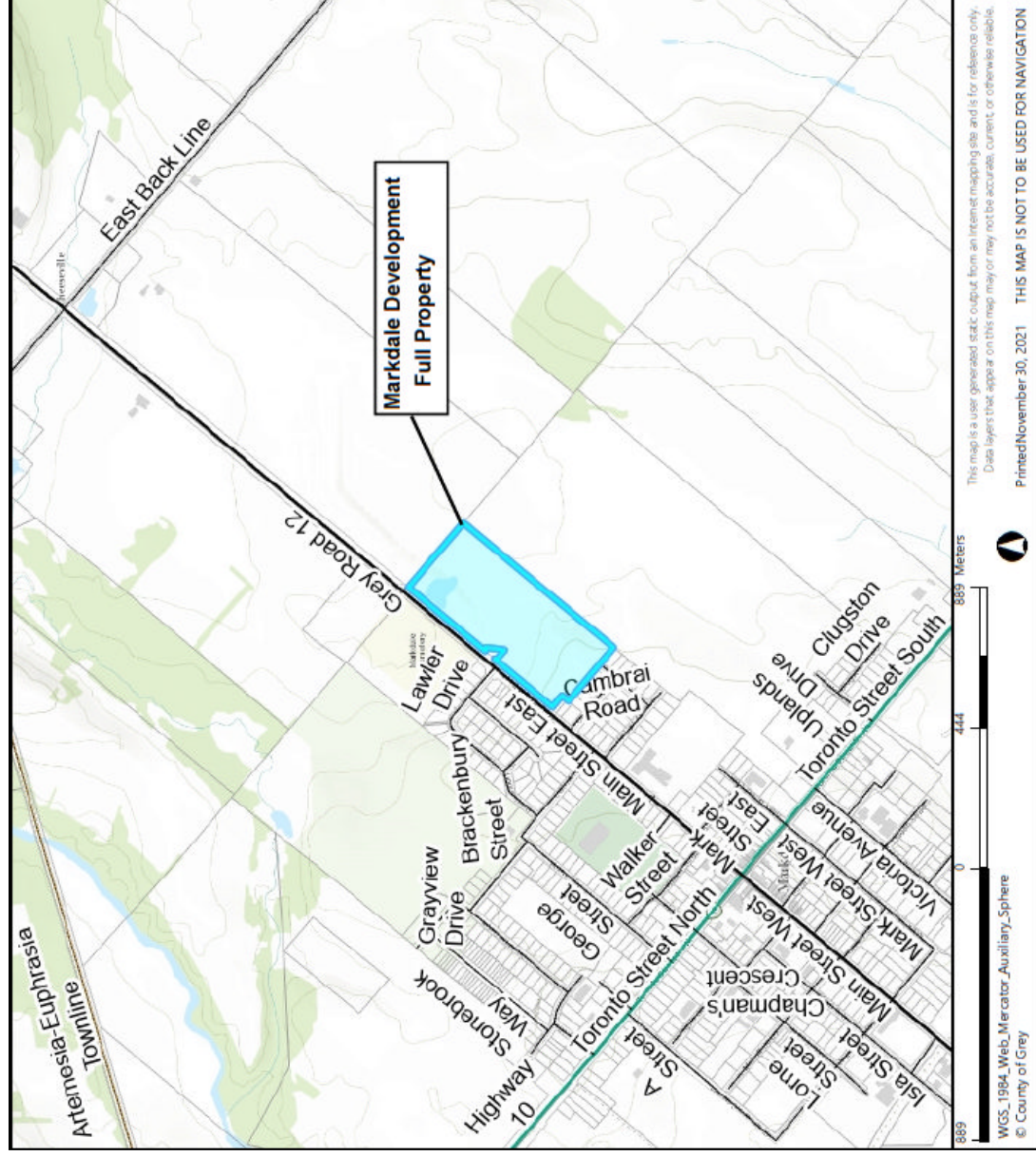


Figure 2: Study and Site Lands

- Base map source: Grey County website, with 2020 air photo imagery.
- Site Lands represents those surrounding lands 120m beyond the Study Land

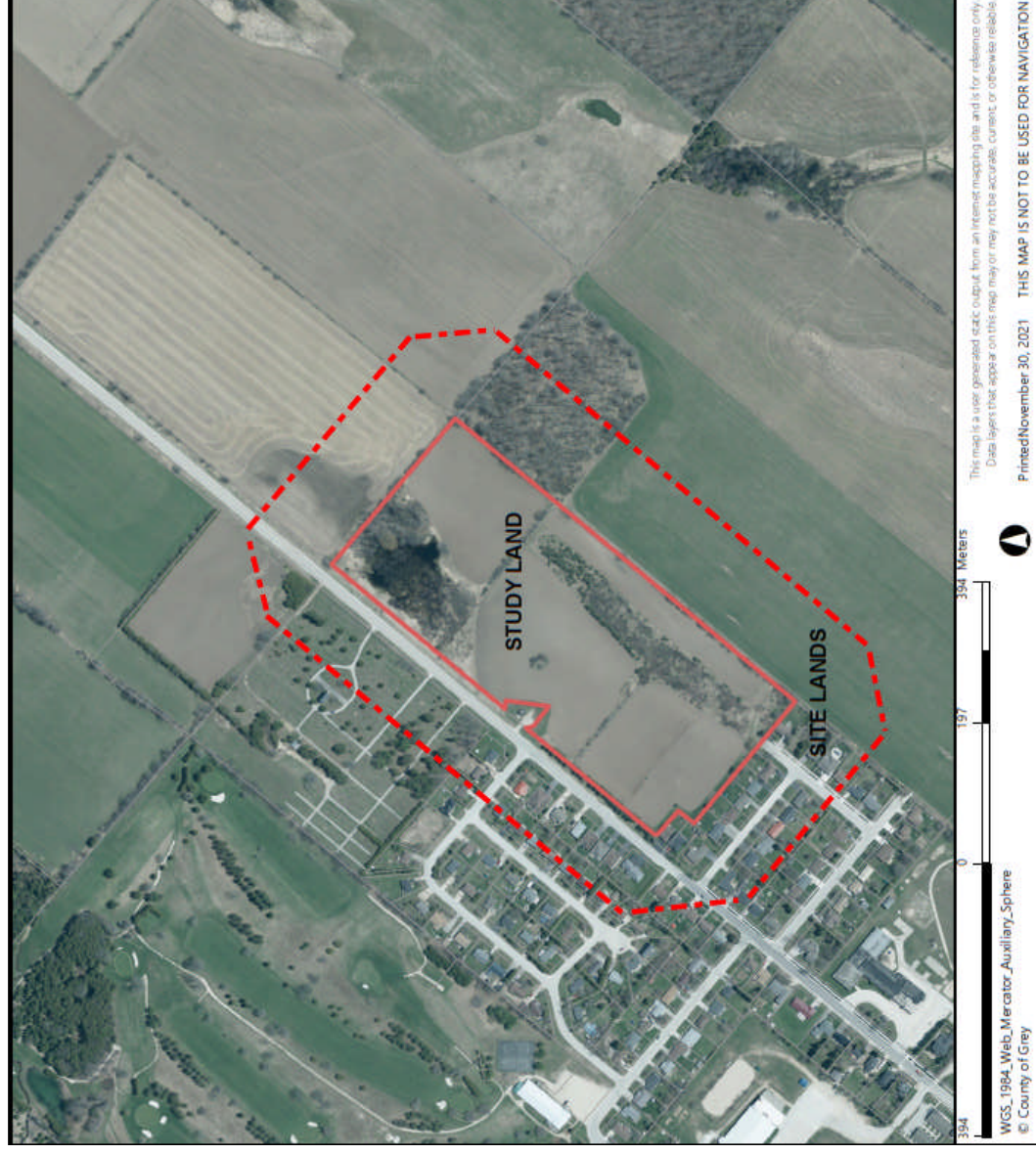
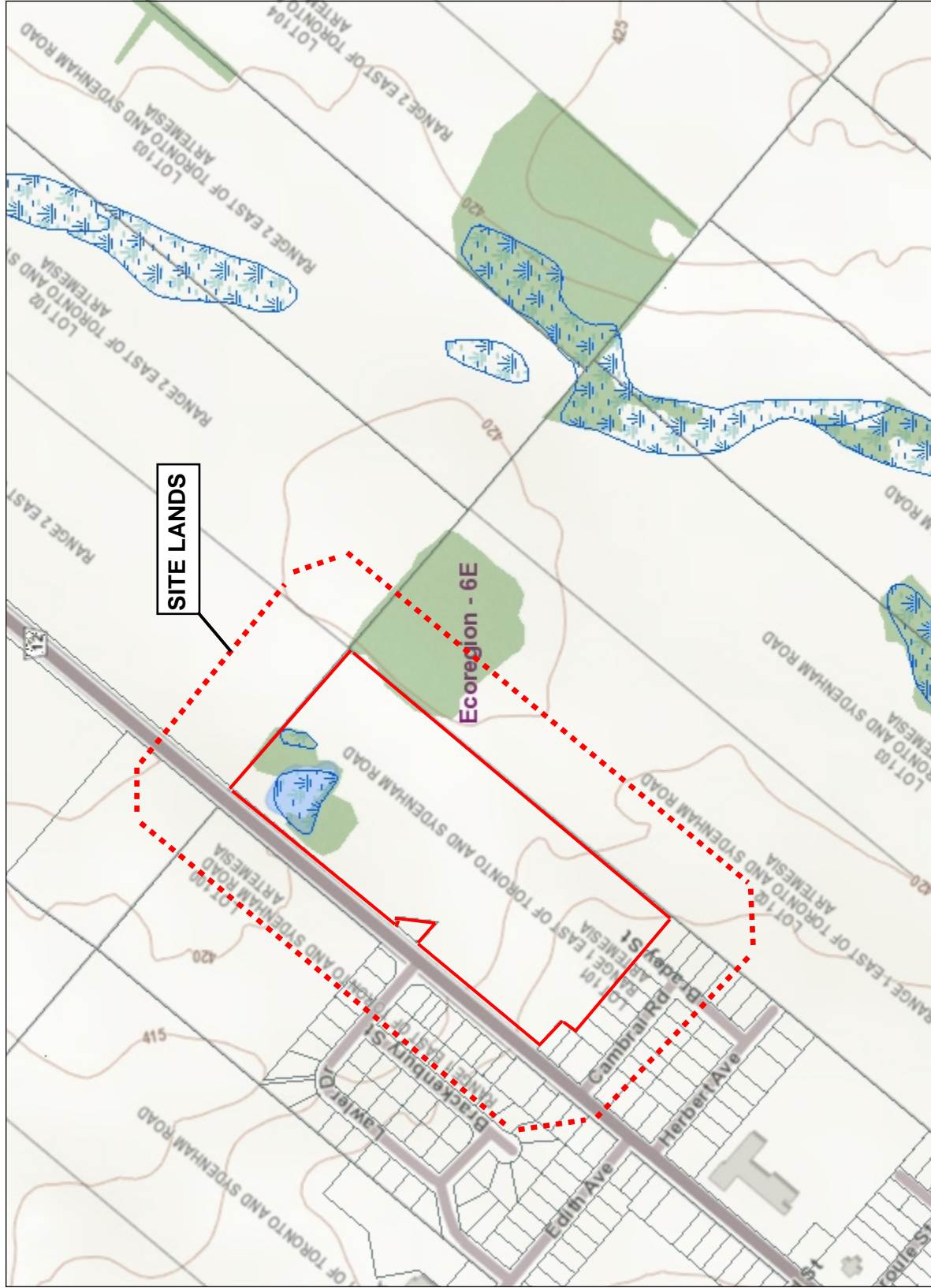


Figure 3: Provincial Features

Notes: NVIS Development Ltd
Markdate Draft Plan of Subdivision



0.3 0 0.16 0.3 Kilometers

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry (OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

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0.3 Kilometers

This map may not display all features listed in the legend because the feature layer was not turned on at the time the map was made; the features do not exist in the geographic range; or features have not been mapped. Absence of a feature in the map does not mean they do not exist in this area.

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- Legend**
- Assessment Parcel
 - Woodland
 - Conservation Reserve
 - Provincial Park
 - Natural Heritage System
 - Ecoregion
 - Wetland
 - Provincially Significant Wetland
 - Non-Provincially Significant Wetland
 - Unrated Wetland
 - Area of Natural Heritage & Scientific Interest (ANSI)
 - Provincially Significant Life Source ANSI
 - Provincially Significant Earth Science ANSI
 - Greenbelt Plan
 - Boundary
 - Greenbelt External Connections
 - Land Use Designations
 - Protected Countryside
 - Greenbelt Towns and Villages
 - Greenbelt Hamlets
 - Urban River Valley
 - Greenbelt Specialty Crop Area
 - Niagara Escarpment Plan (NEP)
 - Boundary
 - Parks and Open Space System
 - Land Use Designations
 - Escarpment Natural Area
 - Escarpment Protection Area
 - Escarpment Rural Area
 - Mineral Resource Extraction Area
 - Escarpment Recreation Area
 - Urban Area
 - Minor Urban Centre
 - Oak Ridges Moraine Conservation Plan (ORM)
 - Boundary
 - Land Use Designations
 - Natural Core Area
 - Natural Linkage Area
 - Countywide Area
 - Rural Settlement
 - Palgrave Estates
 - Residential Community
 - Settlement Area



Figure 4A: Grey County Official Plan – Land Use

- Base map source: Grey County website, with 2020 air photo imagery, Schedule 'A' overlay: Hazard & Primary Settlement



Figure 4B: Grey County Official Plan – Environmental Constraints

- Base map source: Grey County website, with 2020 air photo imagery. Unevaluated Wetland identified.

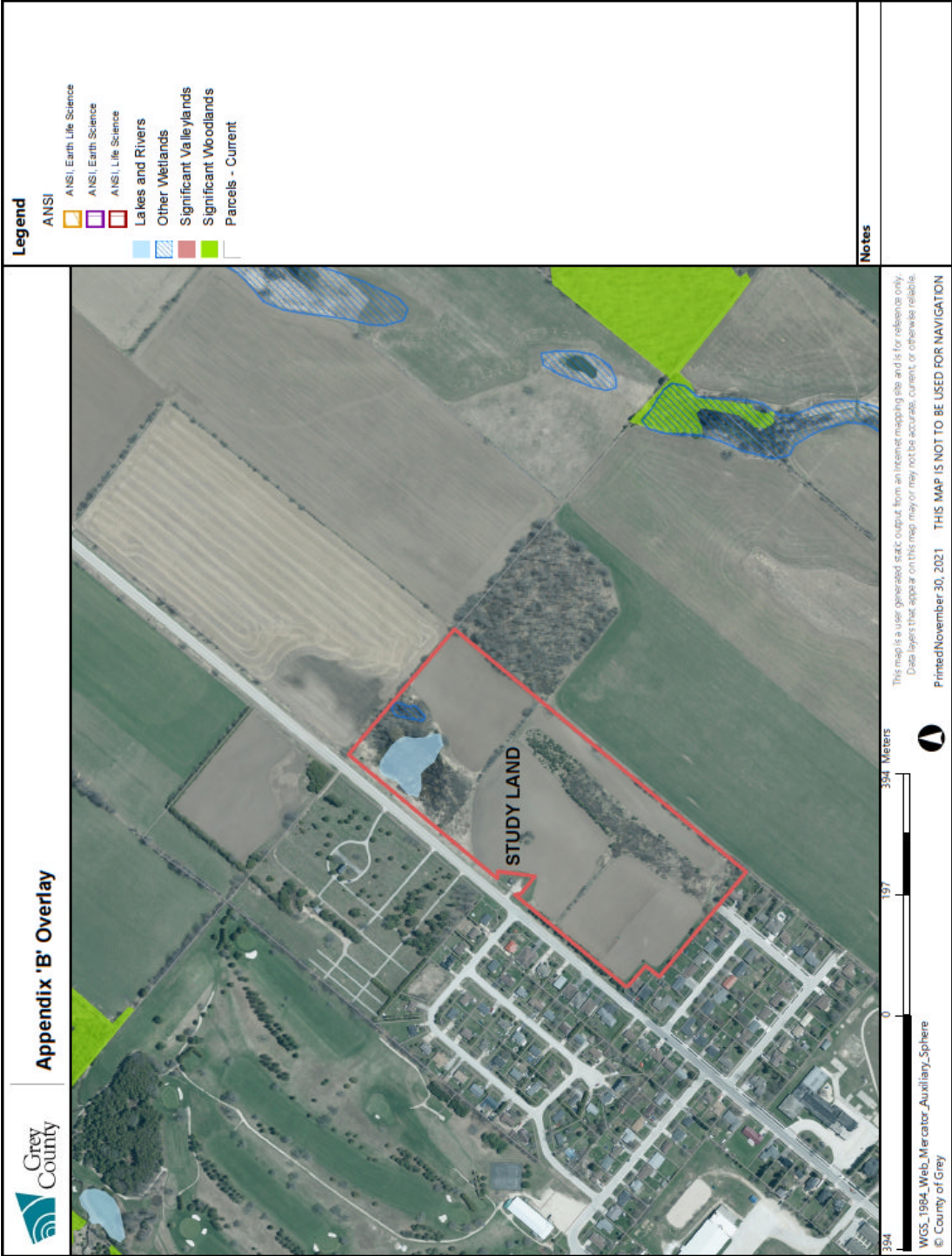


Figure 5A: Municipality of Grey Highlands Official Plan – Schedule ‘A’ Land Use

- Primary Settlement Area & Hazard



Figure 5B: Municipality of Grey Highlands Official Plan – Environmental Constraints

- Study Land (Lot 101) with ‘Other Wetland’ identified.

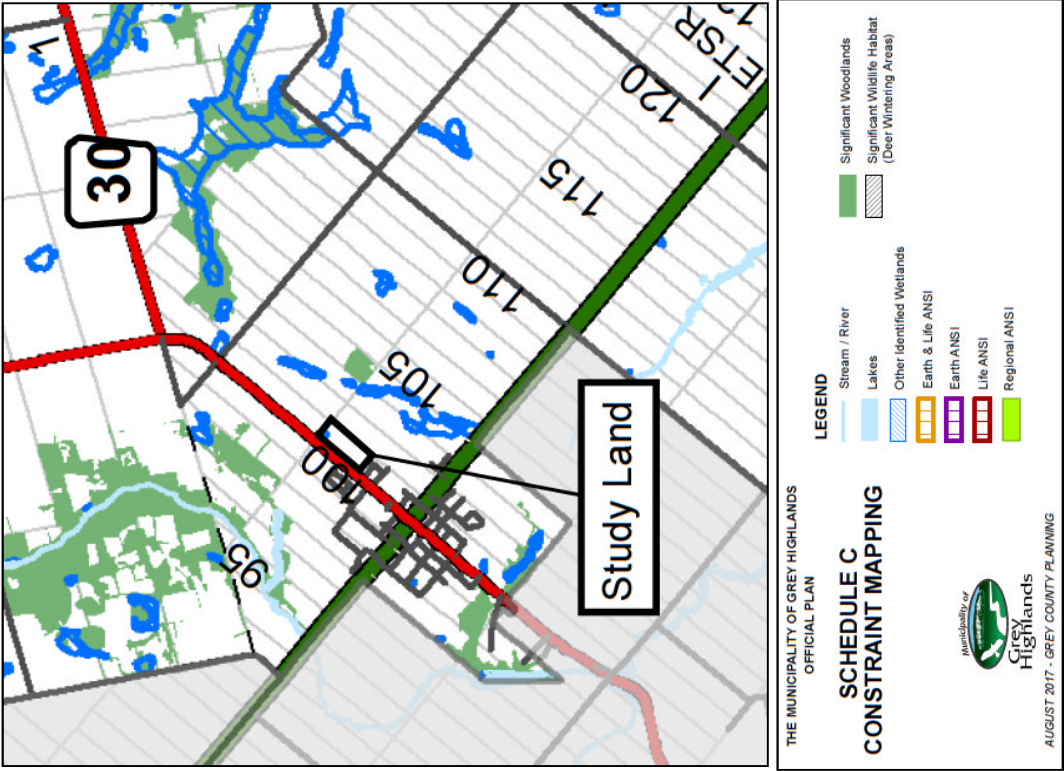


Figure 5C: Municipality of Grey Highlands – Zoning

- Base map source: Grey County website, with 2020 air photo imagery and Zoning overlay.

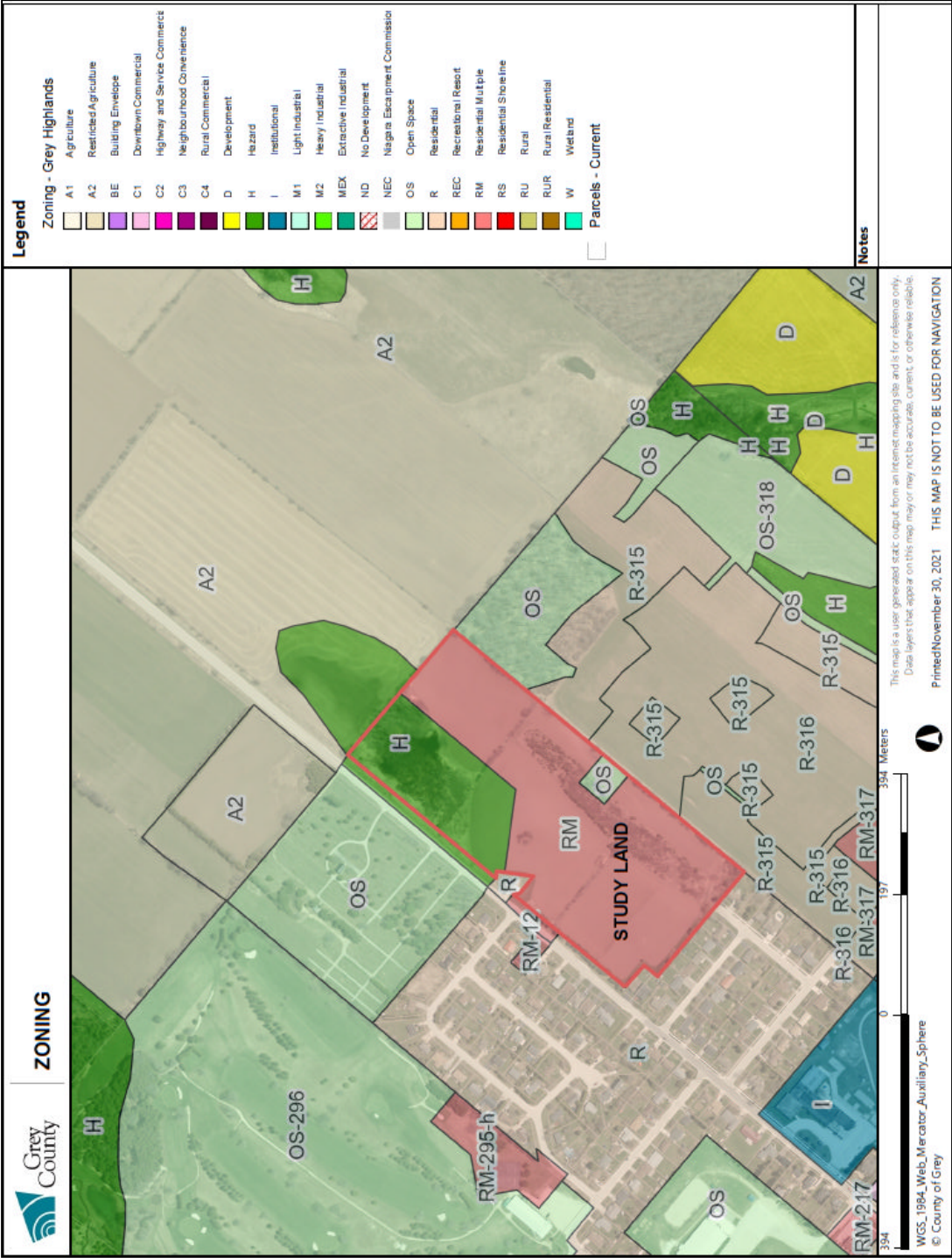


Figure 6: Saugeen Valley Conservation Authority – Screening Lands

- Base map source: Grey County website, with 2020 air photo imagery.

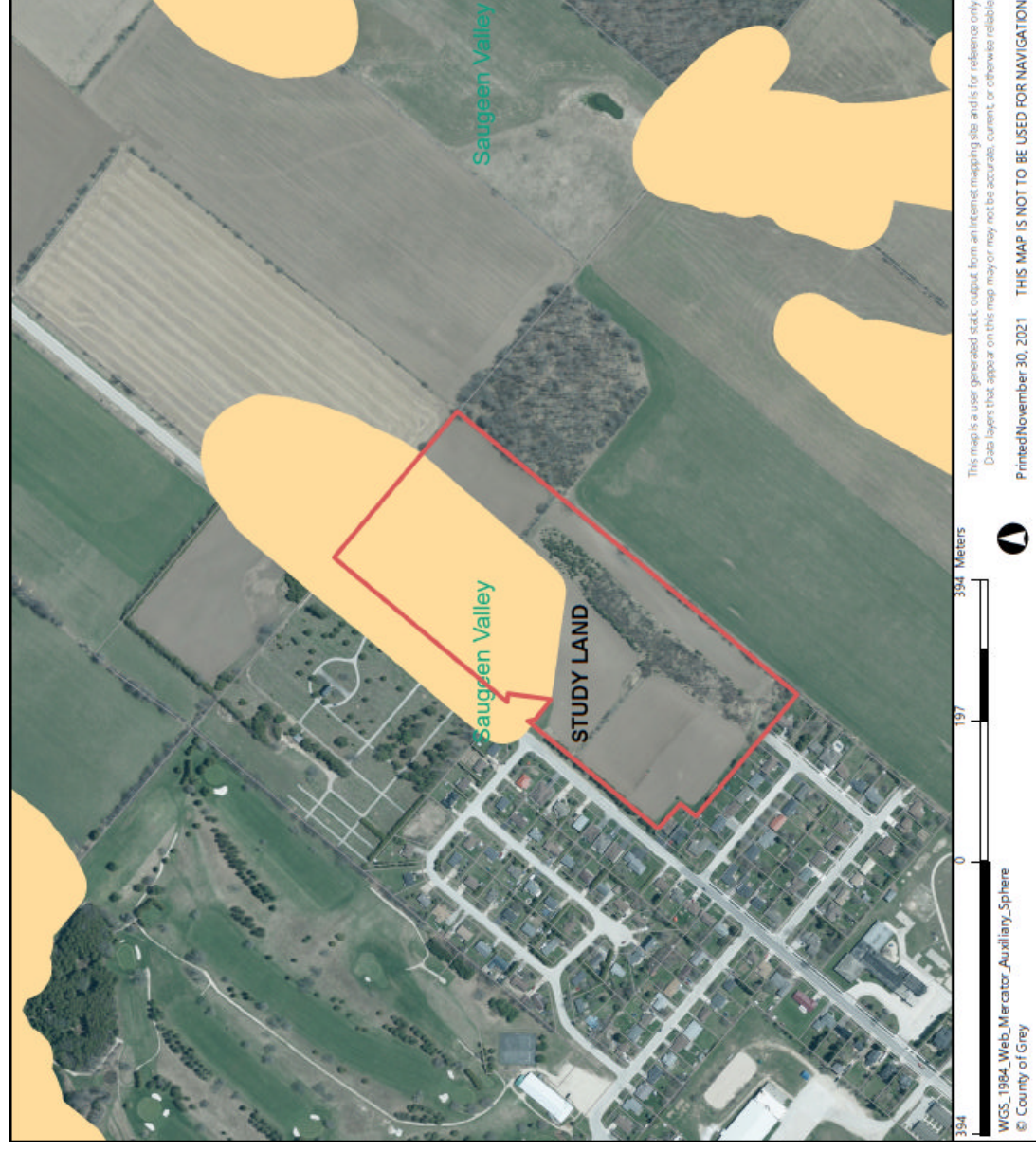


Figure 7: Vegetation Communities

- Base map source: Grey County website, with 2020 air photo imagery.

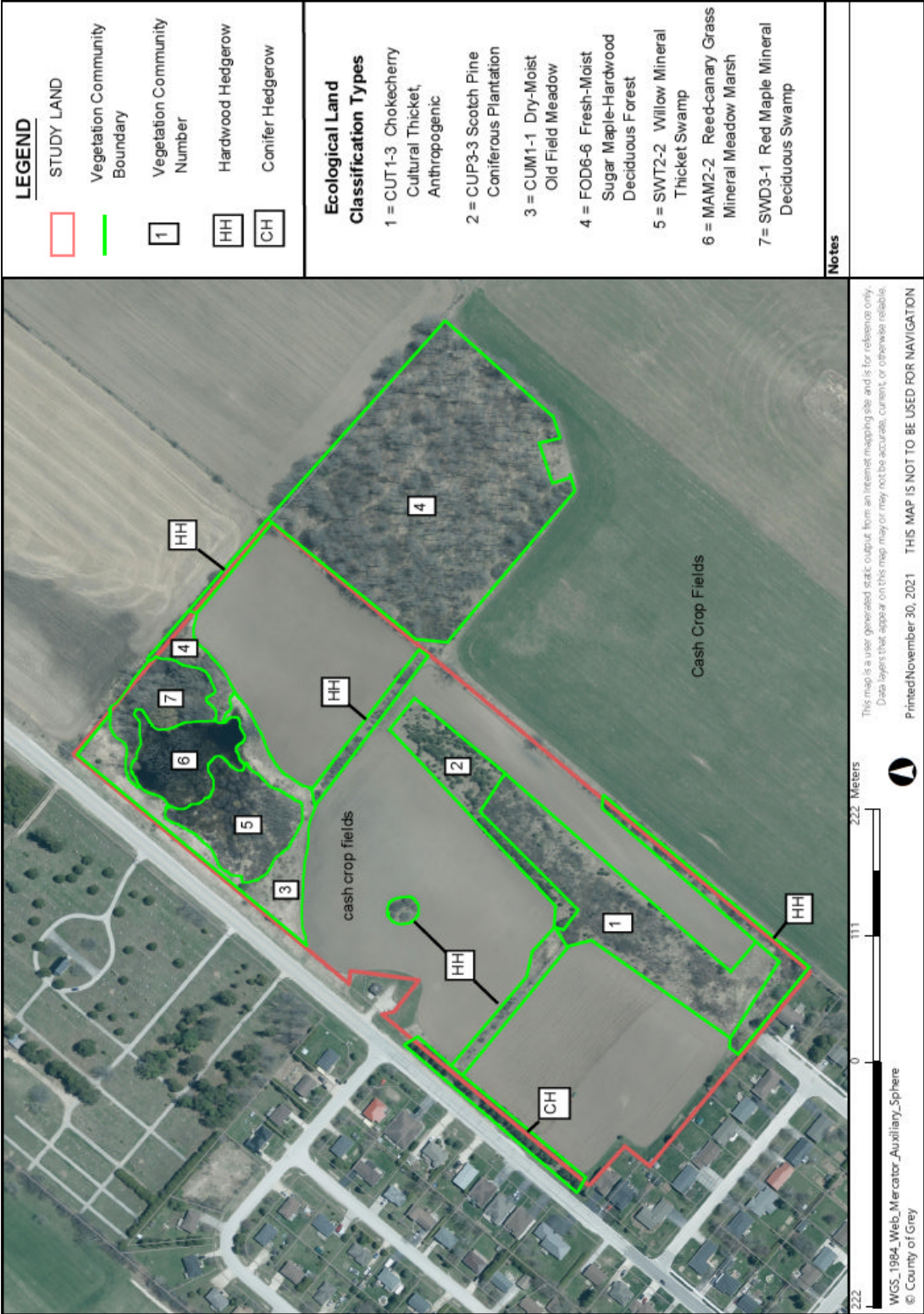


Figure 8: Natural Heritage Features

- Base map source: Grey County website, with 2020 air photo imagery.

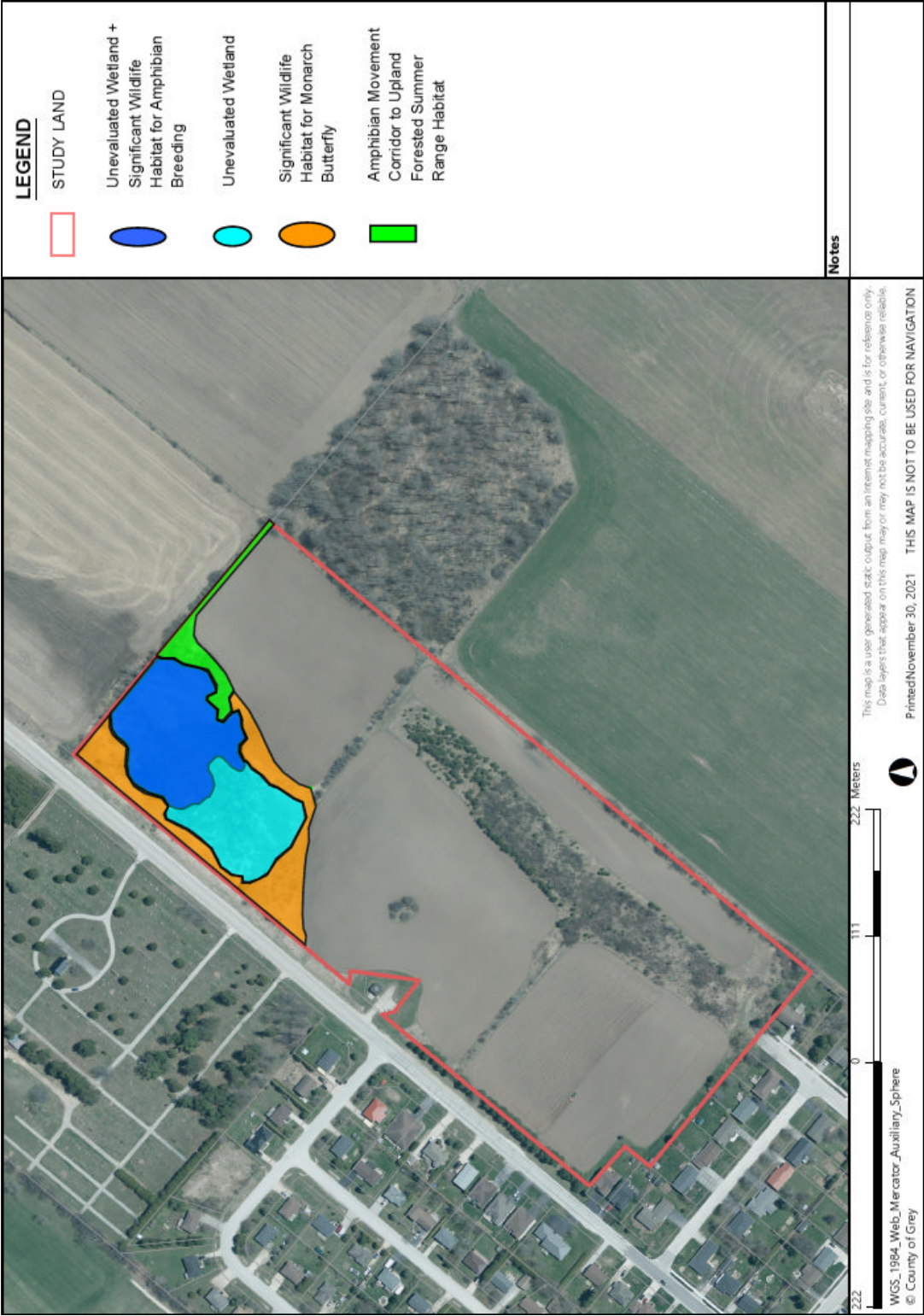


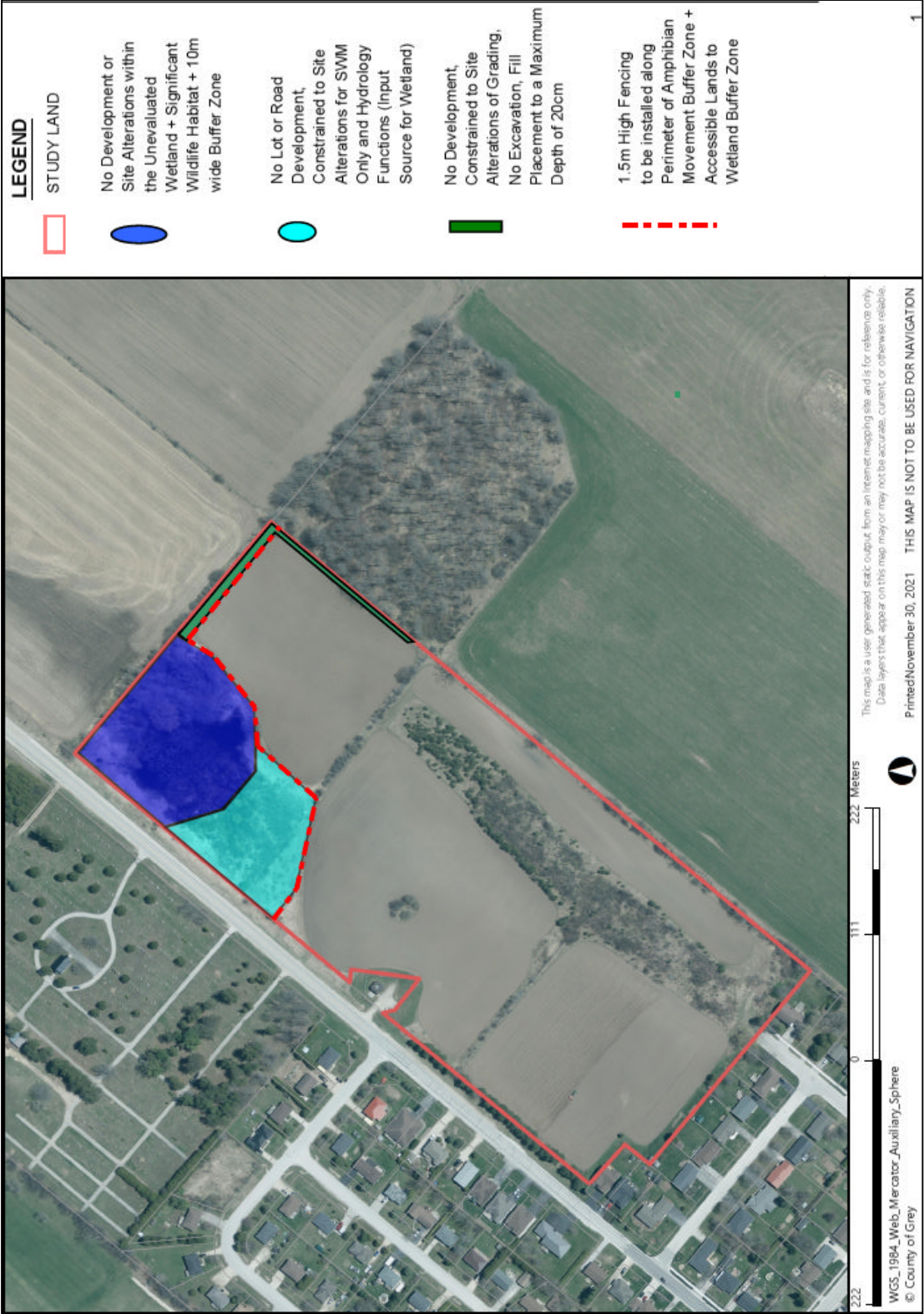
Figure 9: Natural Heritage Buffer Zones and Development Setbacks

- Base map source: Grey County website, with 2020 air photo imagery.



Figure 10: No Development and Constrained Lands

- Base map source: Grey County website, with 2020 air photo imagery.



APPENDIX 1

- County of Grey; Property Parcel Report

Roll Number	Address	Assessed Value	Acerage
420824000130300	No Address Assigned	\$702000	21.89

Notice: Assessed value may not reflect current market value [MPAC](#)

NEC Designation	Legal Description	Property Use
Outside the Niagara Escarpment Plan Area	ARTEMESIA CON 1 NETSR PT LOT;101 RP 16R10434 PART 1	Multi-residential vacant lot

Zoning
Restricted Agriculture,Residential Multiple,Residential,Open Space,Hazard

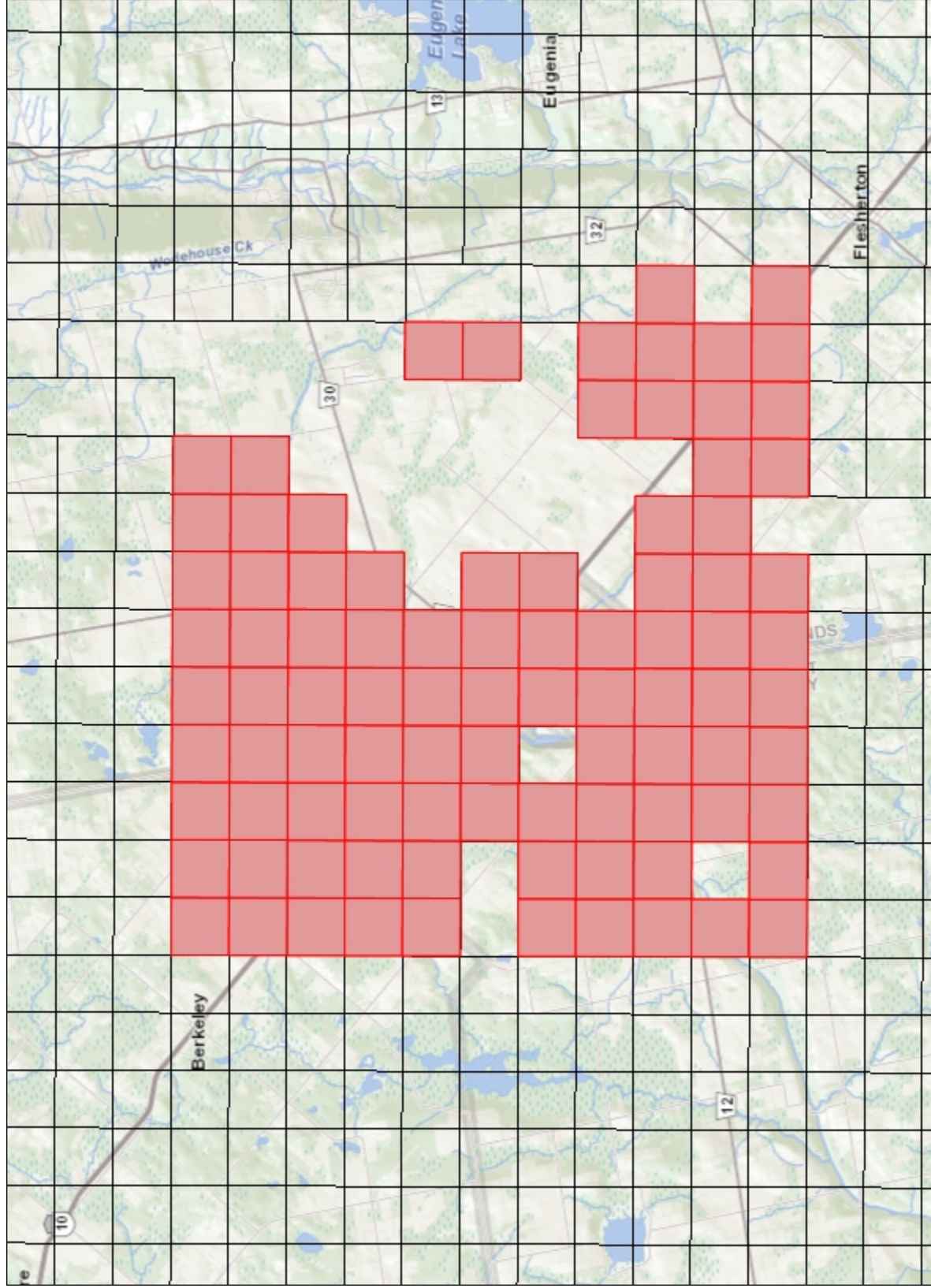


APPENDIX 2

- Historical Records Search for Significant Flora and Fauna within 5 km of the Study Lands

Search coverage map for historical records of ' Species of Conservation Concern ' , within 5 km's to the Study Land

NVIS Dev. Ltd.
Markdale Subdivision



Legend

- Assessment Parcel
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System
- Ecoregion
- Wetland
- Provincially Significant Wetland
- Non - Provincially Significant Wetland
- Unrated Wetland
- Area of Natural Heritage & Scientific Interest (ANSI)
- Provincially Significant Life Source ANSI
- Provincially Significant Earth Science ANSI
- Greenbelt Plan
- Boundary
- Greenbelt External Connections
- Land Use Designations
- Protected Countryside
- Greenbelt Towns and Villages
- Greenbelt Hamlets
- Urban River Valley
- Greenbelt Specialty Crop Area
- Niagara Escarpment Plan (NEP)
- Boundary
- Parks and Open Space System
- Land Use Designations
- Escarpment Natural Area
- Escarpment Protection Area
- Escarpment Rural Area
- Mineral Resource Extraction Area
- Escarpment Recreation Area
- Urban Area
- Minor Urban Centre
- Oak Ridges Moraine Conservation Plan (ORM)
- Boundary
- Land Use Designations
- Natural Core Area
- Natural Linkage Area
- Countryside Area
- Rural Settlement
- Palgrave Estates Residential Community
- Settlement Area

This map may not display all features listed in the legend because the feature layer was not turned on at the time the map was made; the features do not exist in the geographic range; or features have not been mapped. Absence of a feature in the map does not mean they do not exist in this area.



5.2 Kilometers
0 2.62 5.2
This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

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NIVAS Developments Inc. - Markdale Subdivision

NHIC historical records search for flora and fauna 'species of conservation concern',
within a 5km radius to the Study Land

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status
Species	Bobolink	Dolichonyx oryzivorus	S4B	THR	THR
Species	Eastern Meadowlark	Sturnella magna	S4B	THR	THR
Species	Canada Warbler	Cardellina pusilla	S4B	SC	THR
Species	Wood Thrush	Hylocichla mustelina	S4B	SC	THR
Species	Snapping Turtle	Chelydra serpentina	S4	SC	SC
Species	Midland Painted Turtle	Chrysemys picta marginata	S4	NAR	SC
Species	Hart's-tongue Fern	Asplenium scolopendrium	S3	NAR	NAR
Species	Restricted Species				

APPENDIX 3

- Flora Listing: Rankings, Status and Floristic Quality Scoring

NIVAS Development Ltd. - Markdale Subdivision, EIS Study Land : Town of Markdale

Flora Listing with current Ranking, Status and S. Ontario Floristic Quality Scoring

No flora species of conservation concern recorded within the Study Land

1) Uplands: Vegetation communities 1, 2, 3, 4 and Hedgerows (Hardwood & Conifer)

Latin Name	Common Name	Native or Introduced	Federal			Provincial			Regional	FQA	
			Ranking	COSEWIC	SARA	Ranking	COSSARO	ESA		Local	CW
<i>Abies balsamea</i>	Balsam Fir	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	5	-3
<i>Acer negundo</i>	Manitoba Maple	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	0	-2
<i>Acer saccharum</i>	Sugar Maple	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	4	3
<i>Agrostis gigantea</i>	Redtop	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	0
<i>Anemone virginiana</i>	Thimbleweed	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	4	5
<i>Apocynum androsaemifolium</i>	Spreading Dogbane	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	5
<i>Arctium minus</i>	Burdock	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Asclepias syriaca</i>	Common Milkweed	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	0	5
<i>Betula pendula</i>	Weeping Birch	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	-4
<i>Bromus inermis</i>	Smooth Brome	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Centaurea nigra</i>	Black Knapweed	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Chenopodium album</i>	Lamb's Quarters	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	1
<i>Clinopodium vulgare</i>	Wild Basil	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	4	5
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	6	5
<i>Cornus obliqua</i>	Silky Dogwood	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	2	-3
<i>Crataegus submollis</i>	Downy Hawthorn	N	N4?	NAR	N.A.	S5	NAR	N.A.	Common	4	-2
<i>Daucus carota</i>	Wild Carrot	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Elymus repens</i>	Twitch Grass	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	3
<i>Erigeron strigosus</i>	Rough Fleabane	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	0	1
<i>Fragaria virginiana</i>	Wild Strawberry	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	2	3
<i>Fraxinus americana</i>	White Ash	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	4	3

<i>Galium mullugo</i>	Cleavers	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Hesperis matronalis</i>	Dame's Rocket	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Hypericum perforatum</i>	Common St. John's Wort	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Larix laricina</i>	Tamarack	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	7	-3
<i>Leucanthemum vulgare</i>	Ox-eye Daisy	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	0
<i>Lonicera tatarica</i>	Tatarian Honeysuckle	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	-3
<i>Maianthemum stellatum</i>	Starry False Solomon's Seal	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	6	1
<i>Malus pumila</i>	Apple	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Malva moschata</i>	Musk Mallow	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Medicago lupulina</i>	Black Medic	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	1
<i>Nepeta cataria</i>	Catnip	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	1
<i>Parthenocissus inserta</i>	Virginia Creeper	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	3	3
<i>Phalaris arundinacea</i>	Reed Canary Grass	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	0	-4
<i>Phleum pratense</i>	Timothy	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	3
<i>Physocarpus opulifolius</i>	Ninebark	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	5	-2
<i>Picea abies</i>	Norway Spruce	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Pilosella aurantiaca</i>	Orange Hawkweed	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	0
<i>Pilosella caespitosa</i>	Yellow Hawkweed	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	0
<i>Pilosella officinarum</i>	Mouse-ear Hawkweed	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	0
<i>Pinus sylvestris</i>	Scotch Pine	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Plantago lanceolata</i>	English Plantain	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	0
<i>Populus tremuloides</i>	Trembling Aspen	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	2	0
<i>Potentilla recta</i>	Sulphur Cinquefoil	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Prunus serotina</i>	Black Cherry	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	3
<i>Prunus virginiana</i>	Chokecherry	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	2	1
<i>Quercus robur</i>	English Oak	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	0
<i>Rhamnus cathartica</i>	Common Buckthorn	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	3
<i>Ribes cynosbati</i>	Prickly Gooseberry	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	4	5
<i>Rubus occidentalis</i>	Wild Black Raspberry	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	2	5
<i>Salix discolor</i>	Pussy Willow	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-3
<i>Silene vulgaris</i>	Bladder Campion	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Solidago altissima</i>	Tall Goldenrod	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	1	3
<i>Solidago canadensis</i>	Canada Goldenrod	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	1	3
<i>Solidago rugosa</i>	Rough Goldenrod	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	4	-1

<i>Sonchus oleraceus</i>	Common Sow Thistle	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	3
<i>Sorbus aucuparia</i>	European Mountain Ash	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Stellaria graminea</i>	Grass-leaved Stitchwort	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Symphytotrichum lanceolatum</i>	Panicked Aster	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-3
<i>Symphytotrichum lateriflorum</i>	Calico Aster	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-2
<i>Symphytotrichum novae-angliae</i>	New England Aster	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	2	-3
<i>Syringa vulgaris</i>	Lilac	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Taraxacum officinale</i>	Dandelion	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	3
<i>Tragopogon dubius</i>	Goat's Beard	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Trifolium pratense</i>	Red Clover	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	2
<i>Ulmus americana</i>	American Elm	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-2
<i>Viburnum lentago</i>	Nannyberry	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	4	-1
<i>Viburnum opulus ssp. trilobum</i>	High-bush Cranberry	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	5	-3
<i>Vicia cracca</i>	Tufted Vetch	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Viola tricolor</i>	Johnny-Jump-Up	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
<i>Vitis riparia</i>	Wild Grape	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	0	-2
MEAN										1	2

Total number of Native species =

34

Total number of Introduced or Non-Native species =

37

71

2) Wetland Habitat : Vegetation communities 5, 6 and 7

Latin Name	Common Name	Native or Introduced	Federal			Provincial			Regional	FQA	
			Ranking	COSEWIC	SARA	Ranking	COSSARO	ESA		CC	CW
<i>Acer rubrum</i>	Red Maple	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	4	0
<i>Acer saccharinum</i>	Silver Maple	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	5	-3
<i>Alisma triviale</i>	Northern Water Plantain	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-5

Anemone canadensis	Canada Anemone	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	3	3
Asclepias syriaca	Common Milkweed	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	0	5
Asparagus officinalis	Asparagus	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	3
Cicuta maculata	Spotted Water Hemlock	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	6	-5
Cornus obliqua	Silky Dogwood	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	5	-4
Cornus sericea	Red Osier Dogwood	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	2	-3
Eleocharis palustris	Creeping Spikerush	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	0	0
Eutrochium maculatum	Joe-Pye-Weed	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	0	0
Galium palustre	Marsh Bedstraw	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	5	-5
Glyceria striata	Fowl Manna Grass	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-5
Iris versicolor	Blue Flag	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	5	-5
Phalaris arundinacea	Reed Canary Grass	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	0	-4
Polygonum amphibium	Water Smartweed	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	5	-5
Populus balsamifera	Balsam Poplar	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	4	-3
Populus tremuloides	Trembling Aspen	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	2	0
Potentilla anserina	Silverweed	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	5	-4
Salix bebbiana	Bebb's Willow	N	NNR	NAR	N.A.	S5	NAR	N.A.	Common	4	-4
Salix discolor	Pussy Willow	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-3
Salix fragilis	Crack Willow	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	0
Salix petiolaris	Meadow Willow	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-3
Scirpus atrovirens	Dark Green Bulrush	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-5
Sium suave	Water Parsnip	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	4	-5
Symphotrichum lateriflorum	Calico Aster	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-2
Ulmus americana	American Elm	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	3	-2
Viburnum lentago	Nannyberry	N	N5	NAR	N.A.	S5	NAR	N.A.	Common	4	-1
Vicia cracca	Tufted Vetch	I	NNA	Exotic	N.A.	SNA	Exotic	N.A.	Exotic	0	5
MEAN										3	-2

Total number of Native species = 26

Total number of Introduced or Non-Native species = $\frac{3}{29}$

National and Provincial Rank: Based on current 2021 Ontario Natural Heritage Information Center (NHIC) listings

NNA/ NNR	defined as: No Ranking	SNA	defined as : Unranked
N5	defined as: Very common	S5	defined as: Secure
N4	defined as: Common	S4	defined as: Apparently Secure
N3	defined as: Rare to uncommon species	S3	defined as: Vulnerable
N2	defined as : Very Rare	S2	defined as: Imperiled
N1	defined as: Extremely Rare	S1	defined as: Critically Imperiled

NAR defined as : Not At Risk / END defined as : Endangered / THR defined as :Threatened / SC defined as : Special Concern

National Status based on: Species At Risk Act, COSEWIC 2021 Listings

Provincial Status based on: 2007 Endangered Species Act and current regulatory habitats, NHIC 2021 and 2021 COSSARO Listings

Regional Status based on: Bruce-Grey Plant Committee: A Checklist of Vascular Plants for Bruce and Grey Counties Ontario

Ontario Ministry of Natural Resources and Forestry, 'Floristic Quality Assessment' (**FQA**) Scoring System:

CC = Coefficient of Conservatism, ranked 0 (grows anywhere) to 10 (very specific habitat requirements)

WI = Wetness Index, values from -5 (very wet) to 5 (very dry)

Note: CC scores of 8 or higher are indicator species of candidate Significant Woodlands

APPENDIX 4

- Fauna Listing: Ranking and Status and Point Count Location Map

NIVAS Development Ltd. - Markdale Subdivision, EIS Study Land : Town of Markdale

Fauna Listing with Current Ranking, Status and Observed Numbers

One 'Species of Conservation Concern' recorded: Monarch Butterfly

Note: 'X' denotes a criteria bird species for Significant Wildlife Habitat determination

Birds	Latin Name	Common Name	Recorded Breeding Code	Observed Range of Adult Numbers	Federal			Provincial			Regional
					Ranking	COSEWIC	SARA	Ranking	COSSARO	ESA	
	Agelaius phoeniceus	Red-winged Blackbird	Conf	7	N5	NAR	N.A.	S4	NAR	N.A.	Common
	Archilochus colubris	Ruby-throated Hummingbird	Po-H	1	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Carduelis tristis	American Goldfinch	Pr	5	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Charadrius vociferus	Killdeer	Conf	2	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Colaptes auratus	Northern Flicker	Po-H	1	N5	NAR	N.A.	S4	NAR	N.A.	Common
	Cyanocitta cristata	Blue Jay	Po-H	3	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Dumetella carolinensis	Gray Catbird	Pr	4	N5	NAR	N.A.	S4	NAR	N.A.	Common
	Empidonax minimus	Least Flycatcher	Po-H	2	N5	NAR	N.A.	S4	NAR	N.A.	Common
	Geothlypis trichas	Common Yellowthroat	Po-H	1	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Molothrus ater	Brown-headed Cowbird	Po-H	1	N5	NAR	N.A.	S4	NAR	N.A.	Common
	Picoides pubescens	Downy Woodpecker	Po-H	2	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Poecile atricapillus	Black-capped Chickadee	Po-H	3	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Quiscalus quiscula	Common Grackle	Po-H	2	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Spizella passerina	Chipping Sparrow	Pr	4	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Sturnus vulgaris	European Starling	Po-H	2	NNA	NAR	N.A.	SNA	NAR	N.A.	Common
	Toxostoma rufum	Brown Thrasher	Po-H	2	N5	NAR	N.A.	S4	NAR	N.A.	Common
	Troglodytes aedon	House Wren	Po-H	1	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Turdus migratorius	American Robin	Pr	4	N5	NAR	N.A.	S5	NAR	N.A.	Common
	Zenaidura macroura	Mourning Dove	Po-H	1	N5	NAR	N.A.	S5	NAR	N.A.	Common

X

Condensed Breeding Codes as per Bird Studies Canada Protocol

Ob = Observed bird outside of the Breeding Season Po-S = Possible: Singing/Calls in suitable nesting habitat
Ob-X = Observed in breeding season but no evidence of breeding Pr = Probable: pairs observed, nest building, courtship display
Po-H = Possible: Observed in suitable nesting habitat Conf = Confirmed: active nest, egg shells, feeding young

Mammals

Latin Name	Common Name	Observed Number	Federal			Provincial			Regional
			Ranking	COSEWIC	SARA	Ranking	COSSARO	ESA	
Odocoileus virginianus	White-tailed Deer	2	N5	NAR	N.A.	S5	NAR	N.A.	Common
Canis latrans	Coyote	1	N5	NAR	N.A.	S5	NAR	N.A.	Common
Peromyscus maniculatus	Deer Mouse	3	N5	NAR	N.A.	S5	NAR	N.A.	Common
Tamias striatus	Eastern Chipmunk	3	N5	NAR	N.A.	S5	NAR	N.A.	Common

Reptiles

Thamnophis sirtalis sirtalis	Eastern Garter Snake	1	N5	NAR	NA	S5	NAR	NA	Common
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Amphibians

Lithobates pipiens	Northern Leopard Frog	10 to 12	N5	NAR	N.A.	S5	NAR	N.A.	Common
Pseudacris crucifer	Spring Peepers	>25	N5	NAR	N.A.	S5	NAR	N.A.	Common

Fish

None Observed		0							
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Butterflies

Danaus plexippus	Monarch	5	N5	NAR	N.A.	S4	SC	N.A.	Common
Phyciodes coccia	Northern Crescent	2	N5	NAR	N.A.	S5	NAR	N.A.	Common
Pieris rapae	Cabbage White	7	NNA	NAR	N.A.	SNA	NAR	N.A.	Exotic

Dragonflies & Damselflies

Anax junius	Common Green Darner	6	N5	NAR	NA	S5	NAR	NA	Common
Libellula luctuosa	Widow Skimmer	4	N5	NAR	NA	S5	NAR	NA	Common
Pachydiplax longipennis	Blue Dasher	8	N5	NAR	NA	S5	NAR	NA	Common

National and Provincial Rank: Based on current 2021 Ontario Natural Heritage Information Center (NHIC) listings

NNA defined as: Not Ranked	SNA defined as : Unranked	NAR: Not At Risk
N5 defined as: Secure	S5 defined as: Secure	END : Endangered
N4 defined as: Apparently Secure	S4 defined as: Apparently Secure	THR: Threatened
N3 defined as: Vulnerable	S3 defined as: Vulnerable	SC: Special Concern
N2 defined as : Imperiled	S2 defined as: Imperiled	
N1 defined as: Critically Imperiled	S1 defined as: Criticall Imperiled (Prov. Rare)	

National Status based on: Species At Risk Act, and COSEWIC 2021 Listings

SARA: Schedule 1 listed, Schedule 2 or Scheule 3 or Not Applicable (NA)

Provincial Status based on: 2007 Endangered Species Act, NHIC 2021, and COSSARO 2021 Listings

ESA:Regulated General or Specific Habitat or Not Applicable (NA)

Regional Status lists based on:

Birds- Region No. 8 (Bruce) 'Atlas Breeding Birds of Ontario 2001-2005'

Dragonflies & Damselflies: S. Ontario Regional Lists of Odonata, Paul Pratt

Anuran (Frog and Toad) Point Count Calling Survey Results:

Survey Date / Time	Point Count No.	Species Code / Calling Code / Numbers	Species Code / Calling Code / Numbers
April 13 / 2100	A1	SP / 3 / >25	

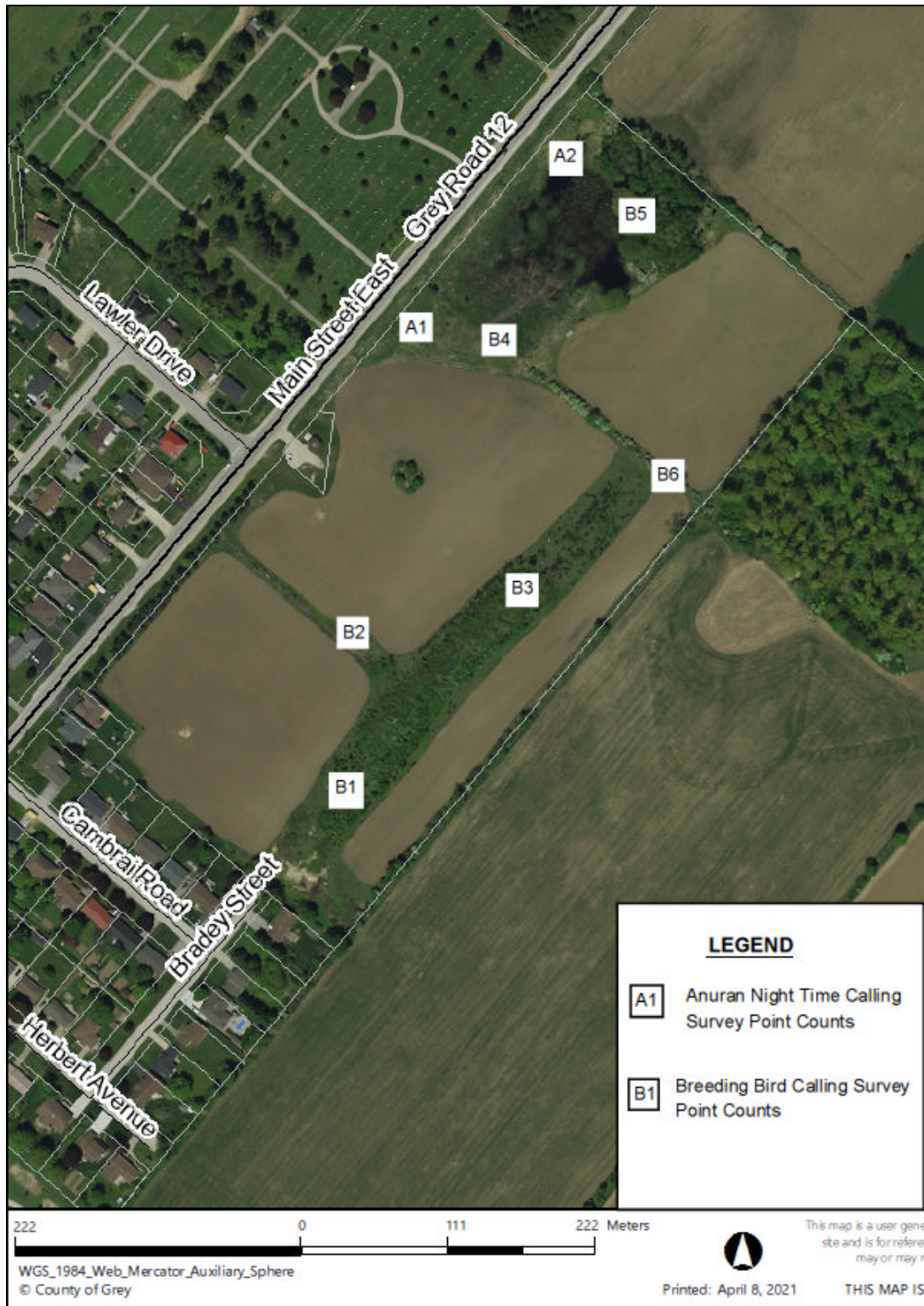
North American / Bird Studies Canada - Marsh Monitoring Frog Calling Abundance Codes:

Code 0 = No calling activity
Code 1 = Individual calls do not overlap and calling individuals can be descretly counted
Code 2 = Calls of individuals sometimes overlap, but numbers of individuals can still be estimated
Code 3 = Overlap among calls seems continous (full chores) and count estimate is impossible

Frog Species Codes:			
SP = Spring Peeper	WF = Wood Frog	NLF= Northern Leopard Frog	BF = Bullfrog
GT = Gray Treefrog	GF = Green Frog	AT = American Toad	PF = Pickeral Frog
			MF = Mink Frog
			WCF = Western Chorus Frog

POINT COUNT MONITORING SITES - Location Mapping

- Base map source: Grey County website, with 2015 air photo imagery.



APPENDIX 5

- Approved EIS-Terms of Reference



AWS Environmental Consulting Inc.
(Operating as Aquatic and Wildlife Services)

**242090 Concession Rd. 3 Keppel,
R.R. # 1, Shallow Lake, Ontario, Canada, N0H 2K0**

Office: 519-372-2303, Email: aws@gbtel.ca

Web site: www.awsenvironmental.ca

February 19, 2021

By E-Mail Only

Saugeen Valley Conservation Authority
1078 Bruce Road 12
P.O. Box 150
Formosa, ON
N0G 1W0

Attention: Megan Stansfield, Planning Technician

Re: EIS-Terms of Reference
Nivas Developments Ltd
Markdale Area Draft Plan of Subdivision
Part Lot 101, Con 1 NE TSR, Geographic Township of Artemesia
Property Assessment Roll No.: 420824000130300

Dear Megan

AWS Environmental Consulting Inc. has been retained to provide you a 'Terms of Reference' (ToR) for a Natural Heritage Environmental Impact Study on the aforementioned property on behalf of the applicants: Nivas Developments Ltd. (contact Santosh Mishra). This ToR outlines the proposed EIS field investigation and seasonal timelines specifically for this land parcel in relation to air photo review of habitat types and review of historical provincial flora/fauna records within the surrounding landscape.

Outlined in blue below is the EIS Field Study Land-Plan of Subdivision Lands.
Technical reporting shall also include a review of the 120m 'Adjacent Lands'.



Environmental Impact Study (EIS) field timelines are outlined below to address the Natural Heritage policies of the Provincial Policy Statement, County of Grey EIS guidelines and technical review by the Saugeen Valley Conservation Authority.

A background review of provincial data records of significant vascular flora and fauna has identified the following species of conservation concern within the surrounding landscape, with potential suitable habitat within the subject Study Land: Bobolink, Eastern Meadowlark, Wood Thrush, Eastern Wood-pewee, Snapping Turtle, Hart's-tongue Fern and Restricted species. In addition to these records and with the noted site features, there is also potential for Butternut, Milksnake, Monarch and SAR Bats.

EIS field investigations within the Study Land shall follow accepted natural heritage study methodologies, protocols and guidelines to provincially required standards for the following inventory aspects:

- Tree cavity and Snag habitat assessment prior to leaf-out for bat habitat survey within the woodland feature.
- Three breeding bird surveys within the 'open' & scrub habitat and two within the 'woodland' habitat, shall be required during the active breeding season.
- Minimum of one survey during the snake hibernation emergence activity period and one survey during the snake gestation activity period.
- Two night time Anuran calling surveys during the active early & mid season breeding periods. Pending on-site habitat review there may be required an additional survey during the late season amphibian breeding period.
- Spring and summer season flora and fauna inventory and hydrology functions.
- Vegetation community mapping to Southern Ontario Ecological Land Classification
- Flora and Fauna listings with current status and rankings, including vascular plant floristic quality scores for Southern Ontario.
- Mapping of any habitat, colony locations, sightings etc for flora & fauna 'species of conservation concern'.

EIS Field Inventory Work Investigation/Monitoring Schedule

1) Field Period: April 15th to April 30th (+/- 2 weeks depending on weather-snow melt)

- Day time investigations for:
 - Preliminary habitat feature review and characterization
 - Hydrology, Amphibian breeding habitat assessment
 - General Fauna
 - One reptile hibernation emergence activity period survey.
- One Night time site visit for:
 - Amphibian calling- breeding activity survey, early season egg-laying period
 - Bat foraging activity, presence/absence

2) Field Period: May 1st to May 30th

- Day time investigations for:
 - Tree cavity and Snag habitat assessment for bat roosting
 - General fauna investigations
- One night time site visit (May 15th-30th) for:
 - Amphibian calling- breeding activity survey, early season egg-laying period

- Bat foraging activity, presence/absence
- 3) Field Period: May 25th to July 7th
- Day time investigations for:
 - Three breeding Bird activity surveys within the open grassland habitat & scrub land in accordance to provincial methodology for Bobolink/Eastern Meadowlark.
 - Two breeding Bird activity surveys within the woodland feature in accordance to Bird Studies Canada protocols.
 - Spring season Flora inventory
 - General Fauna inventory
 - Butterfly & Dragonfly investigations during the spring foraging season
- 4) Field Period: July 20th to August 15th
- Day time investigations for:
 - General Fauna
 - One snake gestation activity survey.
 - Hydrology functions
 - Vegetation communities/Ecological Land Classification mapping
 - Butterfly & Dragonfly investigations during the summer foraging season
 - Butternut Health Assessment, if any identified
- 5) Field Period: August 15th to September 10th
- Daytime site visit for:
 - Late Summer-early Fall season Flora survey (focus on Grasses, Asters and Goldenrod identification)
 - General Fauna

Given the site location, past site disturbances, terrain/elevation and identifiable vegetation community types it is anticipated the above recommended field investigative works will be sufficient to address potential natural heritage features and development impact assessments. If you feel additional natural heritage field inventory works are required please email the undersigned to discuss further or if this ToR is acceptable please email the undersigned to confirm approval.

Thank you

Respectfully Submitted



John Morton, President
AWS Environmental Consulting Inc.

cc Matt Rapke, Municipality of Grey Highlands (by email)
Stephanie Lacey-Avon, County of Grey (by email)
Santosh Mishra, Nivas Developments Ltd. (by email)
Manesh Patel, Nivas Developments Ltd. (by email)
Ron Davidson, Land Use Planner (by email)

APPENDIX 6

➤ Site Photographs



Photo No. 1: Vegetation Community 1, June 2021

Photo No. 2: Vegetation Community 2, April 2021





Photo No. 3: Vegetation Community 3, June 2021

Photo No. 4: Vegetation Community 2, July 2021





Photo No. 5: Vegetation Community 5, April 2021

Photo No. 6: Vegetation Community 6 spring flooding, April 2021





Photo No. 7: Vegetation Community 7 spring flooding, April 2021

Photo No. 8: Vegetation Community 5, dry conditions, June 2021





Photo No. 9: Vegetation Community 6, June 2021

Photo No. 10: Field conditions, June 2021



APPENDIX 7

➤ AWS Qualifications & EIS Experience



AWS Environmental Consulting Inc.
(Operating as Aquatic and Wildlife Services)

242090 Concession Rd. 3 Keppel,
R.R. # 1, Shallow Lake, Ontario, Canada, N0H 2K0

Office: 519-372-2303, Email: aws@gbtel.ca

Web site: www.awsenvironmental.ca

C.V. Summary: John D. Morton

Education

- 1985: Graduate Sault College, Forestry Technician
- 1986: Honors Graduate Sault College, Fish & Wildlife Technologist
- 15 years training and experience with Ontario Ministry of Natural Resources as a contract & full time employee for Natural Heritage Programs and Biology/Ecology

Work Experience Summary

- 1997 to Present: Sole Proprietorship of **Aquatic and Wildlife Services**, specializing in Natural Heritage
 - Studies and Development Impact Assessments:
 - Over 250 Natural Heritage and Natural Environment Impact Study Reports for Land Use development proposals throughout Southwestern and Central Ontario in accordance to Legislation and Regulation for Federal and Provincial Agencies, Government and Niagara Escarpment Plan Policies and Conservation Authority Regulatory Lands.
 - Impact assessment technical reports ranging from: Single Residential Lot creations to Plan of Subdivisions for 100+ Lots, and Aggregate applications ranging from 5ha Wayside Gravel Pits to 120 ha Quarry Operations for both above and below groundwater table.
 - Design and Monitoring technical reports for Marina Development, , Water Crossings, Recreational Pond designs, Fish & Wildlife Habitat Restoration Plans and Managed Forest Plans.
 - Species At Risk Surveys for flora and fauna with study areas encompassing 20ha to 7000ha
 - Ontario Municipal Board expert witness testimony on Natural Heritage Features, Ecology, Development Impacts and Mitigation Techniques.
- 1986 to 1997 : Resource Technician with the Ontario Ministry of Natural Resources, responsibilities included:
 - Backfill positions for Owen Sound Area Office District Biologist (Fisheries and Wildlife), and District Fish & Wildlife Management Officer.
 - Review and commenting on Provincial interests through Planning Review for development proposals.
 - Deputy Conservation Officer with completion of 5-week Enforcement Training Program, Provincial Offenses charges, court evidence presentation and convictions.
 - Fish & Wildlife Population and Habitat surveys and Rehabilitation Designs.

- Midhurst District Administrator and Program Coordinator of Wetlands and CFWIP Programs with annual budgeting and auditing roles.
- Fisheries Research Technician and Fish Culture Technician, Chatsworth Fish Culture Station.
- 1982 to 1986 : Contract Resource Technician With Ontario Ministry of Natural Resources, Grey-Sauble and Saugeen Conservation Authorities, responsibilities included:
 - Wetland Inventory Technician, Fish and Wildlife Population and Habitat Surveys.

Project Related Experience Summary

- Fauna population and habitat surveys:
 - Salmonid biomass surveys through seining and Electrofishing.
 - Stream/Watershed surveys for habitat quality/conditions, fish passage/barriers, water quality assessment including Benthic Macro Invertebrate sampling.
 - Genetic research survey work on Chinook Salmon, Saugeen Muskellunge, Backcross Lake Trout.
 - Inland Lake surveys for water quality, thermal regimes, fisheries qualitative assessments through seining, trap netting, creel survey.
 - Stream/River/Lake Fisheries habitat enhancement and rehabilitation Plans.
 - Wintering Deer Yard mapping, quality assessment, carrying capacity calculations, herd health monitoring and natural reproduction rates.
 - Genetic research work on Bruce Peninsula Eastern Massassagua Rattlesnake and Black Bears including radio telemetry.
 - Breeding Bird surveys including waterfowl nesting surveys and natural recruitment success, Bald Eagle monitoring and banding, mapping of Owen Sound area significant production/staging areas.
 - Amphibian qualitative assessment within sensitive environments and monitoring population trends for wetland habitat conditions.
 - Species At Risk Surveys with habitat mapping and Ecological Land Classification community mapping for Copeland Forest, Shallow Lake Wetland, Meaford National Defense Training Centre, Grey County Pretty River Forest Tract and Oliphant Fens
- Flora species and habitat surveys:
 - Provincially Certified Wetland evaluator to Book 2 and 3 standards, with over 150 wetland evaluations and desktop upgrades completed. Wetland Evaluation instructor to former book 2 standards with successful training of 30+ candidates.
 - Southern Ontario Ecological Land Classification- Vegetation Community Mapping for sensitive and/or rare habitat types including fens, bogs, natural beaches, and alvars plus common woodland community types.
 - Botanical qualitative inventory works including identification, mapping of species of conservation concern with status levels and habitat types/condition assessments.
 - Tree marking for sustainable harvesting and rotational management of fuel wood and/or saw logs.
 - Native tree and shrub nursery operation with annual seedling production and retail sales of deciduous and conifer seedlings and saplings.

Certification & Training Courses:

- Provincially Certified Wetland Evaluator to Book 2 and Book 3 Standards
- Provincial Class 1 Electrofishing Certification
- Provincial workshop training for Natural Heritage Environmental Impact Studies, Natural Hazard Studies and Non-Renewable (Aggregates) Impact Studies
- Level '1' OMNR Law Enforcement training
- Advanced Fish Habitat training and Habitat Impact Assessment
- Fluvial Geomorphology Workshop
- Stream Bioengineering Restoration training
- Cyprinidae Identification Workshop
- Wetland Restoration Techniques Training
- Provincial Managed Forest Tax Incentive Plan Approver
- Species-At-Risk Ontario Mussel Identification
- Bruce Peninsula Eastern Massassagua Rattlesnake Habitat Identification Training through Radio Telemetry work with Parks Canada
- Ecological Land Classification System for Southern Ontario
- Provincial Tree Making Course
- WHMIS
- Ontario Courts Evidence Collection and Presentation Training
- Department of Fisheries and Oceans South Georgian Bay Fish Habitat Issues Workshop
- Provincial Butternut Health Assessor
- Biotechnical Slope Stabilization Workshop.

Recipient of Provincial -OMNR Award for Fish Habitat Restoration Works & Stewardship

C.V. SUMMARY: Judith Jones

Education

B.S. Botany, University of Michigan, Ann Arbor 1980

M.S. Cell Biology, University of Illinois, Chicago 1983

Ontario Provincial Wetland Evaluator--certified 1999

Canadian Environmental Assessment Agency—screening training, 2007

Certificate of Proficiency in Spanish, Ryerson University, 2012

Areas of Expertise

Plant identification and classification

Vegetation identification and mapping (Ecological Land Classification; VSP; other protocols)

Identification and mapping of Species at Risk and their habitats

Life science inventories

Field mapping of other natural features

Judith Jones has been a consulting biologist since 1994. She has worked for AWS since 2005.

Highlights of Recent Projects

SURVEYS FOR ENVIRONMENTAL IMPACT

STUDIES (Subdivisions, Aggregates, etc.)

Aquatic and Wildlife Services since 2005

Robin Craig Consulting since 2013

M.K. Ince and Associates (2006)

CEAA screening, Beausoleil First Nation (2007-8)

LIFE SCIENCE INVENTORIES

- 58 acres on Manitoulin Island for a species at risk farm plan.

- Ecological survey for an ecogift transfer.

- Copeland Forest

- Oliphant Shoreline

- Degrassi Point Prairie Remnant

- Carden Alvar ANSI

- 4 provincial parks on Manitoulin Island

- 4 conservation reserves on the Georgian Bay Coast

- Alvars of the Manitoulin District

- Manitoulin Island Escarpment ecosystem

- Field work: NCC's Ecological Survey of the Georgian Bay Coast.

RESEARCH

- Life history of Hill's Thistle (threatened)

- Demographics of Pitcher's Thistle (thr.)

- Niagara Escarpment: 50 years of forest change, VSP and point-quarter sampling.

- Sustainable harvest levels for Canada Yew (*Taxus canadensis*)

- Fire history of Oak Savannah vegetation

- Fire history of Manitoulin alvars

SPECIES AT RISK SURVEYS

- SAR surveys & mapping: Wikwemikong First Nation, Serpent River First Nation, Beausoleil First Nation, United Chiefs and Councils of M'nidoo M'nissing.

- Trent-Severn Waterway (Parks Canada)

- Fort St. Joseph National Historic Site

- Sault Canal National Historic Site

- Survey and mapping of Pitcher's Thistle and dune grasslands on Lake Huron

RECOVERY OF SPECIES AT RISK

- Author of more than 25 recovery strategies, action plans, management plans, and COSEWIC reports for endangered, threatened, and special concern species.

- Monitoring design and implementation for several species at risk and for prairie and alvar habitats.

- Coordinator of SAR monitoring by volunteers on Manitoulin Island

OTHER

- Gathering traditional ecological knowledge (TEK): Wikwemikong, Sagamok Anishnaabek, and elsewhere.

- Workshops about SAR for schools, Christian Island, Manitoulin Island

- Spring flora courses for non-biologists

- Layout and construction of trails (Misery Bay Provincial Park; other locations)

- Nature and environment columnist for the Manitoulin Expositor (1992-2004)

Natural Heritage Environmental Impact Studies and Experience 1997-2019

Residential Subdivisions & Commercial Development

Grey County (17)		Bruce County (31)
Andpet 16th Ave Comm Deve.-Owen Sound	Lakeside Woods Subdivision-Saugeen	Pegasus Trails-Saugeen
Loucks Subdivision- Chatsworth	Weatherhead Development- Eastnor	Lorne Beach Development- Kincardine
Langen Subdivision-Shallow Lake	Maple Ridge Development-Amabel	Muholland Division St-Southampton
Boulter Subdivision- Keppel	Good Acres Development-Eastnor	Chippewa Golf & Country Club-Saugeen
Hilton Head Subdivision- Meaford	Brown Subdivision- Kincardine	Leslie Subdivision-Saugeen
Oak Meadows Subdivision-Meaford	Sundance Estates- Bruce	McMillan Subdivision-Saugen
Mannerow Estates- Owen Sound	Walker Estates Phase II-Amabel	Peacock's Meats and Groceries Inc-Tobermory
Georgian Shores Subdivision-Sarawak	Mystic Cove Subdivision-Kincardine	John Webster-Southampton
Sutacriti Park Phase III- Sarawak	Black Subdivision-Kincardine	John Innes-Southampton
Debrincat Subdivision- Holland	Mary Rose Subdivision-Saugeen	Moravian Subdivision-Southampton
Ferraro Subdivision- McCullough Lake	Gray Mildmay Development- Carrick	Barry's Construction-Walkerton
Andpet Bothwells Corner Comm.- Owen Sound	Lake Huron Escape-Bruce	Innes Subdivision-Southampton
HSC Alvanley Comm. Cement Plant-Keppel	MacKenzie Development-Saugeen	Sauble Sunset Residence-Subdivision
MacKinnon-Smart Subdivision-Francis Lake	Harkins Harbour Development- Lindsay	Sabbagh: Southampton Subdivision
Saugeen Cedar Heights-Hanover	Karen Investment Ltd-Port Elgin	
Sunvale Homes-Durham	Dent Dubdivision-Mildmay	Manitoulin Island (1)
Barry's Construction-Kilsyth	Barry's Construction- Blue Water Shores	Barrie Island 300ac Cottage Subdivision
Georgian Escapes-Owen Sound Bay		

Infrastructure Projects & Industrial Development

Bruce County (17)		Grey County (20)
Barrow Bay North Shore Road	Owen Sound 7th Street Drain	Town of Hanover Business Park
Bruce Road 21-Stoney Creek	Highway 4 Hanover-Stream Crossing	Viking-Cives Ltd - Mount Forest
Bruce Road 25	Owen Sound 6th Ave Stream Course	Sydenham Heights-Owen Sound Servicing
Kincardine-Park Street	Sarawak Carney Street SWM	Georgian Bluffs-Ingilis Falls Road
Bruce Road 9	Southgate- Camp Creek Crossing	
Bruce Road 12	Owen Sound 9th St. Bridge	Wellington County (2)
Southampton Sanitary Sewers	Owen Sound 10th St. Extension	Murphy Subdivision - Mount Forest
Arran Landfill Expansion	Grey County Line	South Saugeen Development-Mount Forest
Calhoun Drain	Greir Creek Bridge	Perth County (1)
Bruce County Line Road Upgrades	Chatsworth- Sewage Upgrade	Maitland River Estates - Listowel
Otter Creek-Dam Removal	Southgate-Stream Realignment	Huron County (2)
McClure's Bridge	Mill Creek Crossing	Wingham Force main
Silver Creek Bridges-Walkerton	Dipple Drain	Goderich Pier Stabilization
Saugeen Shores 10th Line Drain	West Grey-Traverston Creek Realignment	Wellington County (2)
Mildmay Elora Street Dam Removal	Owen Sound-Sydenham River Stabilization	Town of Minto-Coon Creek 5-Year Monitoring
South Bruce Carrick-Normanby Meux Cr Bridge	Minnihill Creek Fish Habitat Improvements	Town of Minto-Palmerston Industrial Park
Mildmay Adam Street Dam Removal		

Natural Heritage Environmental Impact Studies and Experience 1997-2019

Recreational and Energy Land Use Development

Grey County (31)	Bruce County (13)	Simcoe County (3)
Monterra Plateau Stream Realignment Devils Glen Ski Hill Expansion Morris Wetland Creation Rocky Saugeen Campground Expansion Sobiski Property Shoreline Stabilization Pesnail Property Shoreline Stabilization Carmicheal Pond Cleanout Overton Pond Design Beaver River Bank Stabilization Andrews Pond Design Hrodzicki Storage Building Klages Tree Retention Plan Cedar Run Horse Park Expansion Osler Bluff Shi Club-Storage Building Osler Bluff Ski Club-Water Reservoir Blue Mount. Orchard Run Ski Hill Expansion Walters Falls Hydro Facility Proposal Blue Mount Resort-Roller Blue Mount. Resort Stream Monitoring AndPet Commercial Development East West Exchange Retreat Camp Lahman Comm. Development Blue Mount. Resort SWMP Outlet Monitoring Lee Pond Design Morrison Marina Meaford-Cemetery Creek Realignment Goodyear-Effluent Monitoring Miller Group Ltd, -Owen Sound Indus. Park Parker-Nature Retreat Resort Bayou Cable Park Inc.-Thornbury Georgian Escapes Ltd- Retreat	Blue Heron Parking Lot Home Hardware-Sauble Beach Mystic Cove Stream Realignment Casey Property-Bank Stabilization Wells Trucking-Mildmay MacKenzie Marina Dredging Pike Bay Marina Dredging Chesley Lake Cottagers Assoc. Dredging Miller Property Shoreline Dredging Hood Property Shoreline Dredging Smith Com. Expansion LEED Tree Retention Plan Mildmay-Hamel's Pond and Elora Street Dam	Hamilton Brothers Ltd.-Stream Restoration Devils Glen Stream Realignment Devils Glen Club House Expansion Robitaille Wind Farm-Cedar Point Dufferin County (2) Bowman Comm. Development Cedar Highlands Ski Club Wellington County (1) White's Creek Restoration Manitoulin Island (3) Manitoulin Streams Association Municipality Official Plan

Natural Heritage Environmental Impact Studies and Experience 1997-2019

Lot Severances & Building Envelopes

Grey County (96) and NEC		
Zaferis Building Envelope Clancy- 20th Street Building Envelope Emmerson Building Envelope Shantz Building Envelope Fligg Building Envelope Todd Severance Underwood Building Envelope Klages Severances Beacock Building Envelope McNeil Building Envelope Gilbert Severances Dillman Severance Thom Severances DiFranco Severances Farnenhorst Building Envelope Biesinger Severances Love Building Envelope Braun Severances Legge Building Envelope Wilcox Building Envelope HSC Clavering Severances Holmes Building Envelope Brulette Severances Philipp Severances Sheppard Severance Pfaff Building Envelope Wilmer Severances Doherty Building Envelope Menaul Severance McNabb Building Envelope Toombs Building Envelope McGowan Building Envelope Lobban Severance	Hughes Building Envelope Wilson Building Envelope Smith Severance Currie Building Envelope Valette Building Envelope Robinson Severance Taylor Building Envelope Lowe Building Envelope Donavon Building Envelope Lupia Building Envelope Zeggil Severances McNeil Severance Byers Building Envelope Gilmour Building Envelope Martindill Severance Peach Severance Ryan Severance J. Martin Building Envelope Shrek Building Envelope James Severance Maxwell Severance Harris Severance R. Martin Building Envelope Philipp Building Envelope Bauman Building Envelope Berg Building Envelope Shrek Severance Yoder Severance Hollingshead Severance McKay Building Envelope Molner Severance Detzier Severance Baragar Building Envelope	Wiley Severance Davies Severance Stewart Severances Irwin Building Envelope Valent Building Envelope Barfoot Building Envelope Voisin Building Envelope Colborne Building Envelope Tengler Building Envelope Langeraa Building Envelope Wattie Building Envelope Hall Severance Hrodzicki Building Envelope Nicholls Dwelling Expansion NEC-Caframo Tree Preservation Plan Elliott Building Envelope Spaleta Building Envelope Haslam Severance Bethune Severance O'Sullivan Building Envelope McGlynn Building Envelope Edgar Lot Severances Moore Building Envelope Dr. Bond Lot Severance Craig Building Envelope Godwin Building Envelope Weber Envelope Value Stream Prod. Severances Cameron Building Envelope

