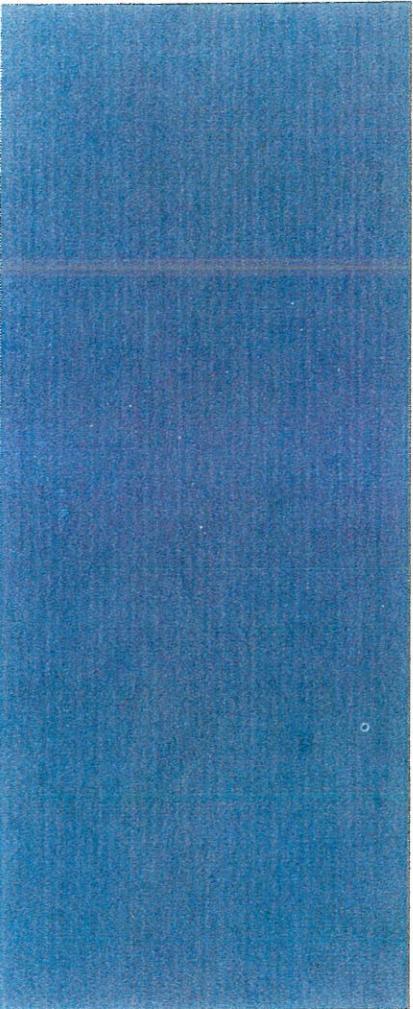


ENVIRONMENTAL IMPACT STUDY

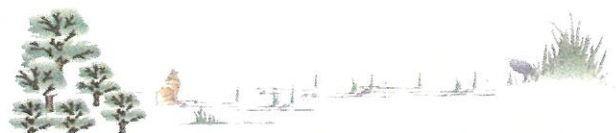


PART OF THE SOUTH HALF OF LOT 1, CONCESSION II, TOWNSHIP OF INNISFIL (NOW WITHIN THE CITY OF BARRIE)

Prepared for:

Di Poce (Innisfil) Inc.

January 2019 (Revised October 2019)



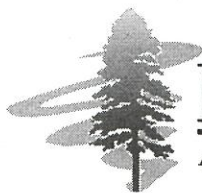
Cunningham Environmental Associates

and



Michalski Nielsen
ASSOCIATES LIMITED

ENVIRONMENTAL PLANNING BIOPHYSICAL ANALYSIS
LAKE CAPACITY ASSESSMENT RESOURCE MANAGEMENT



Michalski Nielsen

ASSOCIATES LIMITED

January 18, 2019

Oksana Vialykh, BBA, AACI
D. BOTTERO & ASSOCIATES LIMITED
Property Valuation and Realty Consulting Services
4300 Steeles Avenue West, Unit 32
Vaughan, Ontario L4L 4C

Re: Di Poce (Innisfil) Inc.; Our File 1714

Ms. Oksana Vialykh:

Enclosed please find our report entitled **ENVIRONMENTAL IMPACT STUDY, PART OF THE SOUTH HALF OF LOT 1, CONCESSION 11, TOWNSHIP OF INNISFIL (NOW WITHIN THE CITY OF BARRIE)** (January 2019 [Revised October 2019]).

Should you have any questions, or if further clarification is required, do not hesitate to call.

Yours truly,

MICHALSKI NIELSEN ASSOCIATES LIMITED

Per:

Michael Michalski
Limnologist and Senior Advisor

David Cunningham
Cunningham Environmental Associates

MM/be

Enc.

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1 INTRODUCTION

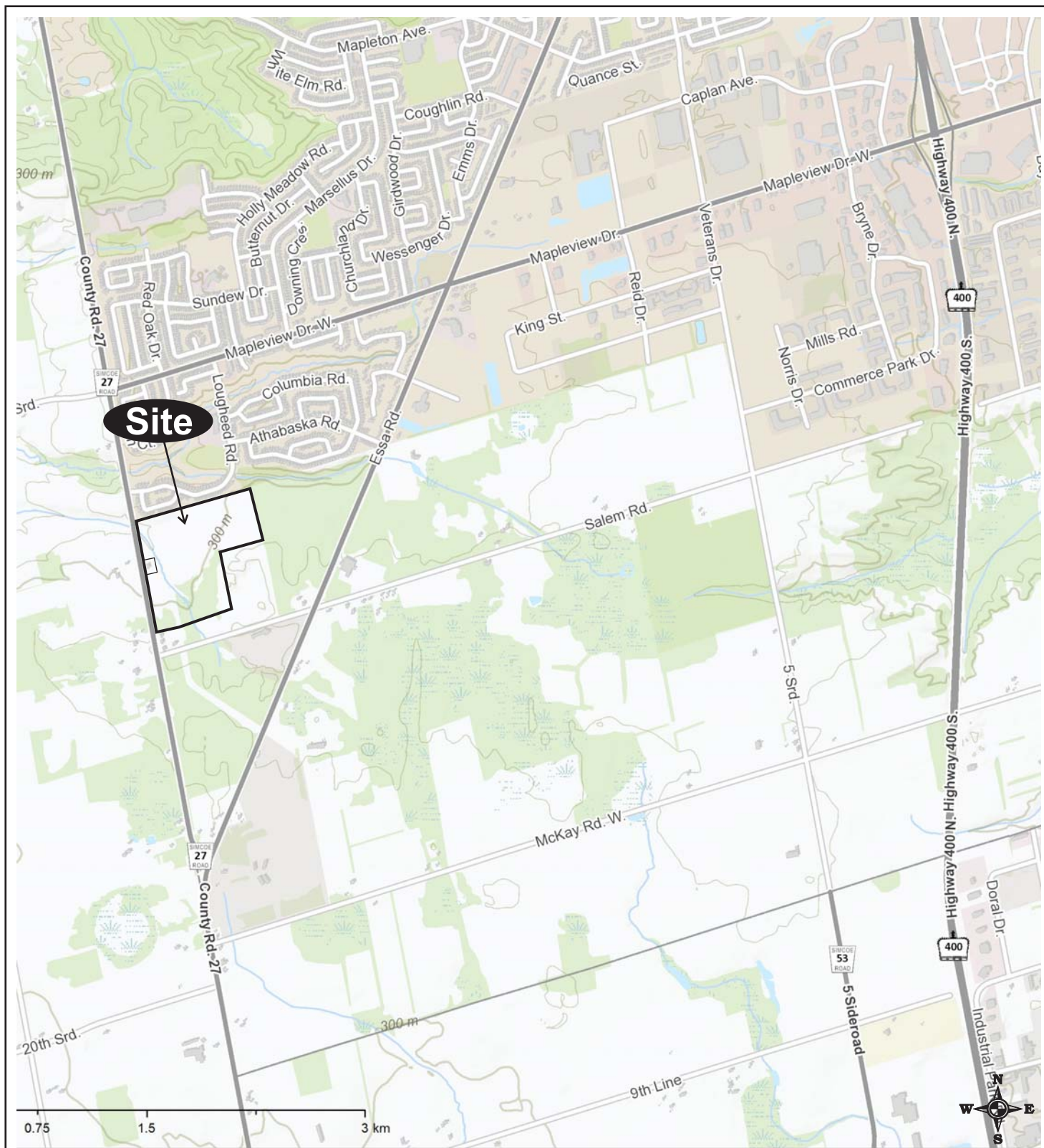
1.1 Background

This **Environmental Impact Study (EIS)** provides information on biophysical features of lands located immediately east of County Road 27 and to the north of Salem Road (**Figure 1**). It builds on inventories of natural features and evaluations of ecological significance that were presented in the **Subwatershed Impact Study Report, Salem Secondary Lands, City of Barrie (SIS)** (Schaeffers Consulting Engineers *et al.* 2017), as well as including an impact analyses and identification of mitigation measures. The property's legal description is Part of the South Half of Lot 1, Concession 11, Township of Innisfil (now the City of Barrie); it constitutes part of the lands that were annexed from the Town of Innisfil and are now within the approved **Salem Secondary Plan (SSP)** of the City of Barrie.

The subject property is 25.8 hectares (ha) with a total frontage of 407.7 metres (m) along County Road 27. There is no development on site, which historically was used primarily for agricultural crop production. The southern part of the landholding is vegetated with upland and wetland tree and shrub species; an intermittently flowing tributary cuts through the property southeast to northwest, eventually connecting to Bear Creek west of County Road 27. A prominent man-made feature is a TransCanada Pipeline which traverses the western part of the property in a north-south alignment, running parallel to County Road 27; the Pipeline is subject to an easement. **Figure 2** provides a local context with low density residential uses to the north, County Road 27 to the west and agricultural lands beyond, Salem Road to the south and a former waste disposal site (i.e., now vacant land) to the southwest, and vacant lands that will be developed for residential uses to the east.

As explained in **The Planning Justification Report** (2019), prepared by McNaughton Hermesen Britton Clarkson Planning Limited (MHBC), the property is within Phase 1 of the **SSP**, and is currently designated Residential Area and Natural Heritage System (NHS) (**Figure 3**). The landowner, Di Poce (Innisfil) Inc. has an interest in developing the property for residential, commercial, open space, school, parks and environmental protection purposes. A Draft Plan of Subdivision prepared by MHBC shows 38 townhouse blocks consisting of 199 residential units, three medium density residential blocks, a commercial block, five open space blocks, a school block, and park and stormwater management blocks (**Figure 4**). The Draft Plan also includes two blocks for the above-mentioned easement over TransCanada Pipeline lands.

This **EIS** was undertaken to support the Draft Plan of Subdivision and a Zoning By-law Amendment, both of which are to be submitted to the City of Barrie by MHBC. Regarding the Zoning By-law



<http://maps.simcoe.ca/public/>

Figure 1. Study Site Location

Scale 1:NTS

DiPoce (Innisfil) Inc. Property

Part of South Half of Lot 1
Concession 11
City of Barrie
County of Simcoe



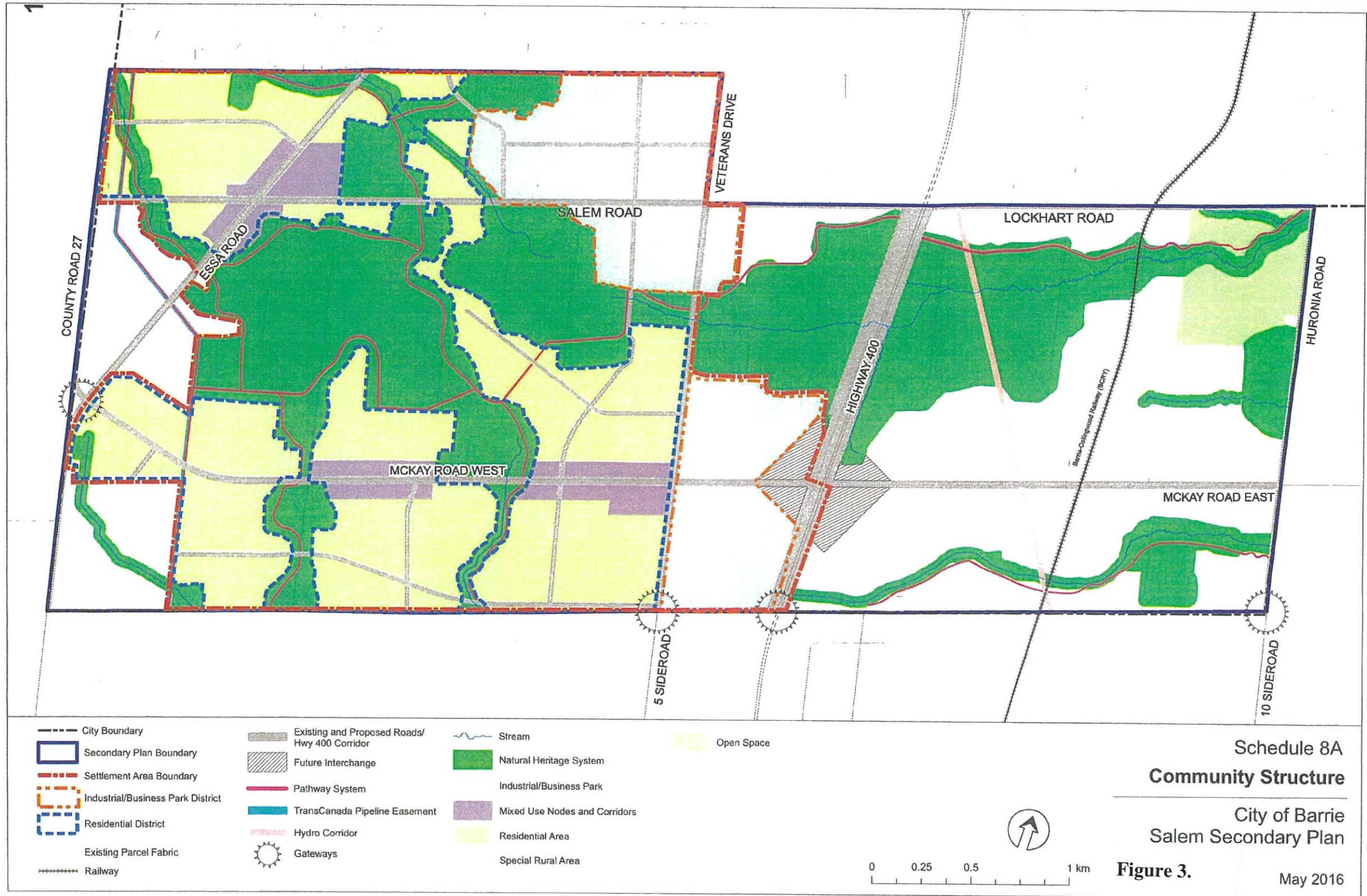
subject property

Michalski Nielsen
ASSOCIATES LIMITED

In Association With



Cunningham Environmental Associates





LEGAL DESCRIPTION

PART OF SOUTH HALF LOT 1
CONCESSION 11
GEOGRAPHIC TOWNSHIP OF INNISFIL
TOWN OF INNISFIL
COUNTY OF SIMCOE

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: _____

JOHN DIPOCE
DIPOCE (INNISFIL) INC.

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: _____

RODNEY H. GEYER - O.L.S.
GEYER SURVEYS

KEY PLAN

LEGEND

- PROJECT BOUNDARY LINE
- RIGHT OF WAY LINE
- BLOCK LINE
- LOT LINE
- PARCEL FABRIC

REVISION No. DATE ISSUED / REVISION BY

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990 C.P.13 AS AMENDED

A. AS SHOWN	F. AS SHOWN	K. ALL SERVICES AS REQUIRED
B. AS SHOWN	G. AS SHOWN	(WATER, SANITARY, STORMWATER, HYDRO)
C. AS SHOWN	H. MUNICIPAL WATER SUPPLY	L. AS SHOWN
D. AS SHOWN	I. SILT LOAM	
E. AS SHOWN	J. AS SHOWN	

STAMP

DATE DEC. 5, 2018

FILE No. 0853F

SCALE 1:1,400 (ARCH D)

DRAWN BY M.M.

CHECKED BY D.A.

OTHER

PROJECT

DIPOCE BARRIE
DIPOCE (INNISFIL) INC.

FILE NAME DRAFT
PLAN OF SUBDIVISION

DWG No. 1 of 1

SCALE BAR 0 7 14 21 28 35 70 105 140m

MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

N:\Barrie\DiPoce - Barrie Expansion\Land - 0853F\Drawings\Draft Plan\CAD\DrawPlan-Colour-2018-12-05.dwg

LAND USE SUMMARY

LAND USE	LOTS / BLOCKS	UNITS	AREA (ha)
TOWNHOUSE - 7.0m UNITS	001-193	193	4.97ha
FUTURE TOWNHOUSE - 7.0m UNITS	194-199	6	0.10ha
MEDIUM DENSITY RESIDENTIAL	39-41	-	3.46ha
COMMERCIAL	42	-	0.28ha
SCHOOL	43	-	2.21ha
STORMWATER MANAGEMENT AREA	44	-	1.25ha
PARK	45	-	2.48ha
OPEN SPACE	46-50	-	6.69ha
PIPELINE	51-52	-	0.90ha
WALKWAY	53-55	-	0.09ha
WALKWAY & DRAINAGE	56	-	0.04ha
TEMPORARY CUL-DE-SAC	57	-	0.30ha
RIGHT OF WAY	-	-	-
TOTALS	-	199	25.82ha

Amendment, its intent is to rezone the lands from an Agricultural General (AG) Zone to Neighbourhood Residential (R5), Neighbourhood Multiple Residential (RM3), General Commercial (C4), Open Space (OS), Environmental Protection (EP), and Educational Institutional (I-E) Zones, in accordance with City of Barrie's Zoning By-law. The **EIS** is divided into seven sections, as follows.

1. **Introduction**, that describes the location of the subject property and purpose/scope of the **EIS**.
2. **Relevant Environmental Development Policies**, that presents the policies having an influence on the proposed subdivision including: the 2014 **Provincial Policy Statement (PPS)**; the **Salem Secondary Plan (Amendment No. 38 to the City of Barrie Official Plan) (SPP)**; **Ontario's Regulation 172/06-Nottawasaga Valley Conservation Authority: Regulation of Development Interference with Wetlands and Alterations to Shoreline Watercourses (Ontario Regulation 172/06)**; and the **Nottawasaga Valley Conservation Authority Planning and Regulation Guidelines (2009) (NVCA Guidelines)**, and the *2007 Endangered Species Act (ESA 2007)*.
3. **Approach**, which describes the specific methodologies used to collect and analyze data on natural heritage features.
4. **Existing Conditions**, which presents site specific conditions and distribution of terrestrial and aquatic features occurring within the landholding, inclusive of Species at Risk (SAR).
5. **Resource Significance**, that evaluates the biological and/or ecological significance of the various vegetation communities and wildlife habitats found on the property, and confirms the absence of SAR and their habitats.
6. **Proposed Development Plan, Impact Evaluation and Mitigation**, which summarizes features of the Draft Plan of Subdivision, and presents an evaluation of environmental impacts and proposed mitigation measures.
7. **Policy Compliance, Concluding Remarks and Recommendations**.

1.2 **Acknowledgements**

The vegetation and wildlife components of this **EIS** were undertaken by David Cunningham (Terrestrial Ecologist); he also provided related text, graphics and photographs. Kimberly Laframboise undertook a

SAR evaluation and contributed to our initial vegetation and wildlife inventories. Geri Poisson, B.A. (Hon.) (Terrestrial Ecologist) and David D'Entremont, H.BSc. (Terrestrial Ecologist) undertook surveys to confirm the presence of bats and nocturnal wildlife and their habitats, respectively. Michael Michalski (Limnologist and Senior Advisor) directed all technical aspects of the assignment, and prepared, integrated and edited draft and final versions of the **EIS**, inclusive of sections or parts of sections on: environmental policies; impact assessment and mitigation; wetland offsetting/compensation, policy compliance; and conclusions and recommendations.

2 RELEVANT ENVIRONMENTAL POLICIES/GUIDELINES

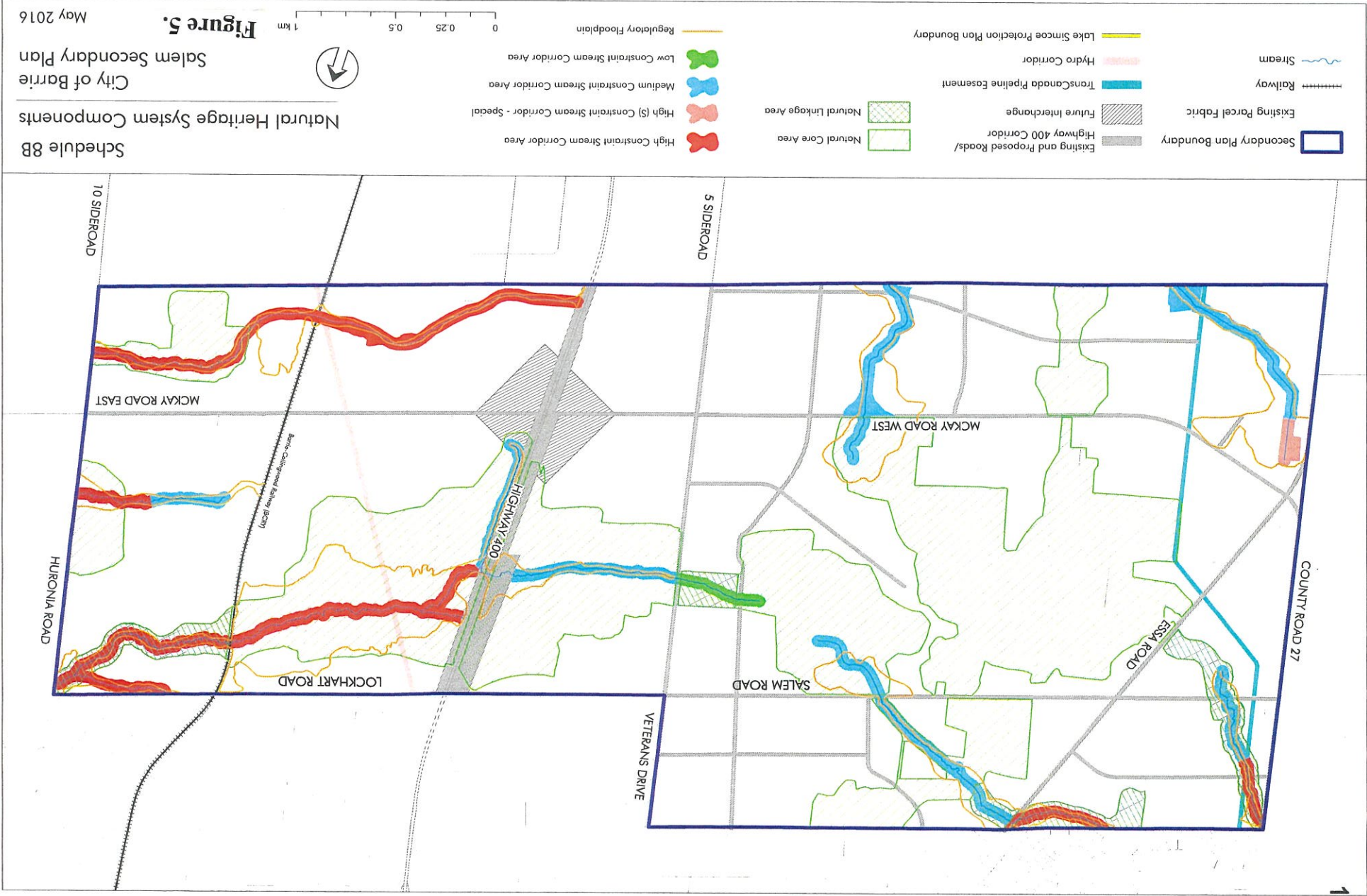
2.1 2014 Provincial Policy Statement

The **PPS** came into effect on April 30, 2014 and applies to all land use planning applications either commenced or in process on that date. As an overriding policy, the **PPS** states that natural areas shall be protected for the long term. In this connection, it states that development and site alteration shall not be permitted in the habitat of endangered and threatened species, and fish habitat, except in accordance with provincial and federal requirements. Significant wildlife habitat (SWH) is relevant to the development proposal; in this regard, the **PPS** does not prohibit outright development and site alteration in these features. Rather, the test is that no negative impacts must be demonstrated on the area's natural features and their ecological functions, which is typically undertaken through an **EIS**. The **PPS** goes on to say that development and site alteration may be permitted on adjacent lands to SWH and fish habitat, provided that the ecological functions of the subject lands are evaluated, and it is demonstrated that there will be no negative impacts on these features or functions. As well, the policy document reiterates the need for planning authorities to protect, improve or restore the quality/quantity of water by identifying water resource systems consisting of groundwater features, hydrologic functions, natural heritage features and areas, and surface water features, and maintaining linkages between these features and functions.

Policies 2.2.1(h) is also important to the proposed development. It states that, “. . . Planning authorities shall protect, improve or restore the quality and quantity of water by ensuring that stormwater management practices minimize stormwater volumes and contaminant loads, and maintain or increase the extent of vegetative and pervious surfaces”.

2.2 Salem Secondary Plan

The basis for the City of Barrie's NHS was initially set out in the **Natural Heritage Characterization Report** prepared by Natural Response Solutions Inc. and Dougan + Associates (2012), as well as the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Response Solutions Inc. 2012). The purpose of these documents was to, “. . . protect, preserve, and where appropriate, enhance the natural environment . . . and ensure the long term sustainability in an urban context, while recognizing and maintaining linkages between natural area features.” **Figure 3** which is shown in **Section 1.1** is Schedule 8A Community Structure for the **SSP**; it shows the extent of the NHS through the subject property. In this regard, there are only two land uses: Residential Area which encompasses most of the property; and NHS which runs north to south almost paralleling County Road 27. Schedule 8B (**Figure 5**) portrays the NHS Components of the **SSP**; the predominant feature on the subject property is a



Natural Linkage Area, within which are High and Medium Constraint Stream Corridor Areas and the Regulatory Floodplain limit. The following Secondary Plan policies define the various ecological components of the NHS and permitted uses including infrastructure.

8.3.2.1 Natural Areas

- a) The Natural Core Area designation on Schedule 8B includes important natural heritage, hydrological and hydrogeological features or groupings of such features, including key natural heritage and hydrological features, together with required buffers and adjacent lands intended to protect the function of the features and ensure the long term sustainability of the Natural Heritage System within an urban context.
- b) A core area approach focuses on protecting not only the features, but their ecological functions as well. The core areas were delineated based on an evaluation which considered a series of broad general ecological principles in conjunction with a range of site specific factors. The factors are based on both features and functions and the boundaries include a 30 metre buffer from the edge of the wetlands and watercourses within the Natural Core Areas, a 10 metre buffer from the dripline of woodland features, and a 5 metre buffer where the boundary of the Natural Core Area is an existing meadow or thicket.
- c) The general ecological principles considered included:
 - i) Diversity – Areas of diverse habitats and/or supporting a rich assemblage of species;
 - ii) Size – Sufficient size to protect interior habitat;
 - iii) Contiguity – Designed to create contiguous units;
 - iv) Connectivity – The unit can be linked to other units;
 - v) Significance – The areas support significant species or habitats; and,
 - vi) Overall watershed functionality including hydrologic processes which protect the flow regime of receiving streams

8.3.2.2 Natural Linkage Area

- a) The primary function of the Natural Linkage Area designation on Schedule 8B is to connect two or more Natural Core Areas, or to connect a Natural Core Area to habitats outside the Salem Secondary Plan Area. Linkages are important for a variety of plants and wildlife, facilitating daily and seasonal movements, as well as gene flow. In most cases, the Natural Linkage Areas also provide available habitat.
- b) The Natural Linkage Areas are primarily associated with stream corridors that connect two or more Natural Core Areas. In order to sustain potential movement between the Natural Core Areas, a minimum linkage width of 100 metres was established. In addition, a number of linkage-specific criteria reflecting site-specific characteristics formed the basis for the establishment of the Natural Linkage Area designation which in a few cases results in a portion of a Natural Linkage Area which is less than 100 metres in width.

8.3.2.3 High Constraint Stream Corridor Area

High Constraint Stream Corridor Areas as designated on Schedule 8B include identified watercourses with associated riparian lands, and the Corridor Area shall include buffers measured from stable top-of-bank. These areas are located within Natural Core and Natural Linkage Areas. They must be protected in their existing locations for hydrogeological and ecological reasons in accordance with the directions established in the City of Barrie, Drainage and Stormwater Management Master Plan, Intensification and Annexed Lands, 2012.

8.3.2.4 Medium Constraint Stream Corridor Area

- a) Medium Constraint Stream Areas as designated on Schedule 8B include identified watercourses and adjacent riparian lands, including buffers measured from stable top-of-bank. These areas are also located within Natural Core and Natural Linkage Areas. They must be protected for hydrogeological and ecological reasons in accordance with the directions established in the City of Barrie, Drainage and Stormwater Management Master Plan, Intensification and Annexed Lands, 2012 (Drainage and Stormwater Master Plan). However, they may be modified and/or relocated and consolidated with other watercourses provided that the watercourse feature, as well as the function of the watercourse, is maintained in accordance with the directions in the Drainage and Stormwater Management Master Plan, as well as Federal, Provincial and Conservation Authority regulations. In addition, the principles of natural channel design and bioengineering shall be considered as part of the process.
- b) Where a Medium Constraint Stream Corridor Area in a Natural Linkage Area designation is relocated, the land use designation on the abutting lands on Schedule 8C, Land Use Plan, shall apply to the lands from which the Corridor and Natural Linkage Area designation is relocated.

8.3.2.5 Low Constraint Stream Corridor Area

- a) Low Constraint Stream Areas as designated on Schedule 8B include identified watercourses and adjacent riparian lands, including buffers measured from stable top-of-bank. These areas are also located within Natural Core and Natural Linkage Areas. They must be protected for hydrogeological and ecological reasons in accordance with the directions established in the City of Barrie, Drainage and Stormwater Management Master Plan, Intensification and Annexed Lands, 2012 (Drainage and Stormwater Master Plan). However, they may be modified and/or relocated and consolidated with other watercourses or removed provided that the watercourse feature, as well as the function of the watercourse, is maintained in accordance with the directions in the Drainage and Stormwater Management Master Plan, as well as Federal, Provincial and Conservation Authority regulations. In addition, the principles of natural channel design and bioengineering shall be considered as part of the process.
- b) Where a Low Constraint Stream Corridor Area in a Natural Linkage Area designation is relocated or removed, the land use designation on the abutting lands on Schedule 8C, Land Use Plan, shall apply to the lands from which the Corridor and Natural Linkage Area designation is relocated.

8.3.3 NATURAL HERITAGE SYSTEM BOUNDARIES

8.3.3.1 Natural Core and Natural Linkage Areas and High Constraint Stream Corridor Areas

- (a) The boundaries of the Natural Core Area, Natural Linkage Area and High Constraint Stream Corridor Area designations on Schedule 8B, Natural Heritage System shall be maintained generally in accordance with the designations on Schedule 8B.
- (b) Minor modifications may be considered to the boundaries of these designations when the boundary is surveyed as part of the development review process to reflect differences in scale and level of detail. However, such minor modifications shall not negatively impact the Natural Heritage System as determined by the City, in consultation with the applicable Conservation Authority, nor shall such minor modifications result in any significant decrease or increase in the size of the Natural Heritage System. Further, any minor modification which might result in a change to the boundary of a Provincially Significant Wetland shall require approval of the Ministry of Natural Resources based on the submission of studies required by that Ministry.

8.3.3.2 High (S), Medium and Low Constraint Stream Corridor Areas

- (a) The location and boundaries of the Medium Constraint Stream Corridor Area designations in Natural Core Areas shall be maintained generally in accordance with the designations on Schedule 8B. Minor modifications may be considered in accordance with the provisions of Section 8.3.3.1 (b).
- (b) The location and boundaries of the High (S), Medium and Low Constraint Stream Corridor Area designations outside of Natural Cores on Schedule 8B shall be determined in accordance with the directions in the Drainage and Stormwater Management Master Plan, as well as Federal, Provincial and Conservation Authority regulations during the preparation of a Subwatershed Impact Study required by Section 8.7.2 of this Plan. In addition, the principles of natural channel design and bioengineering shall be considered as part of the process.

8.3.4 Permitted Uses, Buildings, and Structures

Development or site alteration shall be prohibited in the Natural Heritage System except in relation to the following permitted uses: forest, fish and wildlife management;

- (b) stewardship, conservation, restoration and remediation undertakings including the deepening, relocation or consolidation of Medium and Low Constraint Stream Corridor Areas in accordance with the policies of Section 8.3.3.2;
- (c) existing uses and accessory uses, buildings and structures to the existing uses;
- (d) flood or erosion control projects, but only if the projects have been demonstrated to be necessary in the public interest after alternatives have been considered;

-
- (e) retrofits of existing stormwater management works (i.e. improving the provision of stormwater services to existing development in the watershed where no feasible alternative exists);
 - (f) infrastructure, including tunneling of underground services, subject to the policies of Section 8.3.5, but only if the need for the project has been demonstrated through an Environmental Assessment, including a Class Environmental Assessment or other similar environmental approval and there is no reasonable alternative;
 - (g) low-intensity recreational uses that require very little terrain or vegetation modification and few, if any buildings or structures, and which are located to maximize protection of features such as wetlands, streams and wooded areas, including, but not limited to, nonmotorized trail/pathway use, natural heritage appreciation, and unserviced camping on public or institutional land;
 - (h) stormwater management facilities subject to the policies of Section 8.3.6; and,
 - (i) grading for permitted uses such as lots, streets, and public facilities located outside of, but adjacent to the Natural Heritage System, in the Natural Heritage System buffer in accordance with the directions established in the relevant Subwatershed Impact Study, and any applicable Federal, Provincial policies and regulations and Conservation Authority regulations and through the preparation of an Environmental Impact Study(EIS) required by Section 8.7.2 of this Plan, provided that upon completion of the grading the buffer shall be planted and maintained as natural self-sustaining vegetation for lands subject to the Lake Simcoe Protection Plan.

8.3.5 Infrastructure

- i) use non-standard cross-sections designed to minimize impacts on the natural environment and be kept to the minimum width possible;
- ii) generally only cross the Natural Heritage System in the general areas of the street designations on Schedules 8C and 8D1 and 8D2 or, as defined through an Environmental Assessment, including a Class Environmental Assessment, using low impact construction methods such as tunneling/directional drilling for underground services;
- iii) be designed to minimize grading;
- iv) be located outside key natural heritage and key hydrologic features to the maximum extent possible;
- v) provide for the safe movement of wildlife in the design and construction of the street as much as feasible; and,
- vi) be designed to keep any related structures or parts of structures outside the High Constraint Stream Corridor Area to the maximum extent possible, or as defined through an Environmental Assessment, including a Class Environmental

Assessment, and shall use low impact construction methods such as tunneling/directional drilling for underground services.

2.3 Ontario Regulation 172/06 – Nottawasaga Valley Conservation
Authority: Regulation of Development, Interference with
Wetlands and Alterations to Shorelines and Watercourses

Of particular relevance to the subject application is Nottawasaga Valley Conservation Authority's (NVCA) **Ontario Regulation 172/06**. With respect to wetlands, Section 2 (1) states that, "... Subject to Section 3 (Permission to Develop), no person shall undertake development, or permit another person to undertake development on or on the areas within the jurisdiction of the Authority that are:

- (d) wetlands; or
- (e) other areas where development could interfere with the hydrologic function of a wetland, including areas within 120 metres of all provincially significant wetlands and wetlands greater than 2 hectares, and areas within 30 metres of wetlands less than 2 hectares in size, but not including those where development has been approved pursuant to an application made under the *Planning Act* or other public planning or regulatory process."

Section 6 (Permission to Alter) relates to permission to alter and reads as follows.

- 1) The Authority may grant a person permission to alter to straighten, change, divert, or interfere with the existing channel of a river, creek, stream or watercourse or to change or interfere with a wetland.
- 2) The permission of the Authority shall be given in writing, with or without conditions.

2.4 Nottawasaga Valley Conservation Authority Planning and
Regulation Guidelines (August 28, 2009)

The **NVCA Guidelines** was prepared to, "... provide staff with the Authority's technical standards and requirements (e.g., vegetative setbacks required for streams and wetlands) for both the Plan Input and Review and Permitting Programs." The subject document was initially, "... presented to the Authority's Planning Advisory Committee on May 9, 2008, and staff were directed too use the document as an 'interim guideline'. They were then circulated to municipal planning staff on May 21, 2008, for review and comments. The proposed guidelines have been posted on the NVCA's website inviting public input since May 2008. A workshop was held with municipal partners to review the draft guidelines and obtain feedback in November 2008. The revised guidelines were presented to the Authority's Planning

Advisory Committee on April 17, 2009. Following their direction, the guidelines were circulated to member municipalities and posted on our website for a further 30 day review period.” Of particular relevance to the development proposal described herein is Section 4.7 of the **NVCA Guidelines**; it deals with wetlands and adjacent lands. With respect to developing the subject lands, the following guidelines are relevant.

4.7.4.1 Development and Interference Within Wetlands

- 1) In general, development and interference shall not be permitted within wetlands;

4.7.4.2 Development Within “Other Areas”

The NVCA’s Regulation identifies “other areas” as follows:

“Other areas where development could interfere with the hydrologic function of a wetland, including areas within 120 metres of all provincially-significant wetlands and wetlands greater than 2 hectares in size, and areas within 30 metres of wetlands less than 2 hectares in size, but not including those where development has been approved pursuant to an application made under the Planning Act or other public planning or regulatory process.”

4.7.4.2.1 Area Within 30 Metres of the Wetland

- 1) In general, development shall not be permitted within 30 metres of the boundary of the wetland;
- 5) Notwithstanding Section 4.7.4.2.1.1), single family buildings or structures may be permitted within 30 metres of a wetland on vacant lots of record if the interference on the hydrologic function of the wetland has been deemed to be acceptable by the conservation authority. An Environmental Impact Study to assess the hydrologic impact shall be required if the submitted plans do not demonstrate the following:
 - a) All development (including grading) is located outside the regulated wetland and maintains as much setback as feasible;
 - b) Disturbances to natural vegetation communities contributing to the hydrologic function of the wetland are avoided;
 - c) The overall existing drainage patterns for the lot will be maintained;
 - d) Disturbed area and soil compaction is minimized;
 - e) Development is located above the high water table;
 - f) All septic systems are located a minimum of 15 metres from the wetland and a minimum of 0.9 metres above the water table;
 - g) Impervious areas are minimized;
 - h) Best Management Practices are used to:
 - i) maintain water balance

-
- ii) control sediment and erosion
 - iii) buffer wetlands

4.7.4.2.2 Area Between 30 Metres to 120 Metres of the Wetland

- 1) In general, development may be permitted in the area between 30 metres to 120 metres of a wetland if the interference on the hydrologic functions of the wetland has been deemed to be acceptable by the conservation authority;
- 2) Further to Section 4.7.4.2.2.1), public infrastructure (e.g. roads, sewers, flood and erosion control works) and various utilities (e.g. pipelines) may be permitted in the area between 30 metres to 120 metres of a wetland subject to the activity being approved through a satisfactory Environmental Assessment process and/or if the interference on the hydrologic functions of the wetland has been deemed to be acceptable by the conservation authority;
- 3) Further to Section 4.7.4.2.2.1), conservation or restoration projects may be permitted in the area between 30 metres to 120 metres of a wetland if the interference on the hydrologic functions of the wetland has been deemed to be acceptable by the conservation authority;
- 4) Further to Section 4.7.4.2.2.1), development associated with public parks (e.g. passive or low intensity outdoor recreation and education, trail system) may be permitted in the area between 30 metres to 120 metres of a wetland if the interference on the hydrologic functions of the wetland has been deemed to be acceptable by the conservation authority;

Further to Section 4.7.4.2.2.1), single family buildings or structures may be permitted in the area between 30 metres to 120 metres of a wetland on vacant lots of record if the interference on the hydrologic functions of the wetland has been deemed to be acceptable by the conservation authority. An Environmental Impact Study to assess the hydrologic impact shall be required if the submitted plans do not demonstrate the following:

- a) Disturbances to natural vegetation communities contributing to the hydrologic function of the wetland are avoided;
- b) The overall existing drainage for the lot will be maintained;
- c) Disturbed area and soil compaction is minimized;
- d) Development is located above the high water table;
- e) All septic systems are located at a minimum 0.9 metres above the water table;
- f) Impervious areas are minimized;
- g) Best Management Practices are used to:
 - i) maintain water balance
 - ii) control erosion and sediment
 - iii) buffer wetlands
- 5) Further to Section 4.7.4.2.2.1), larger scale development associated with large commercial uses, industrial uses, multiple residential uses (condominiums,

apartments, townhouses, etc.) and/or development into the water table may be permitted in the area between 30 metres to 120 metres of a wetland if the interference on hydrologic functions of the wetland has been deemed to be acceptable by the conservation authority. An Environmental Impact Study to assess the hydrologic impact shall be required.

In reviewing the above, it is apparent that there are no guidelines or direction provided on wetland replacement or offsetting, a matter that is further addressed in **Sections 6 and 7** of this **EIS**. There are wetland features that have been identified and staked in-situ.

2.5 2007 Endangered Species Act

The *ESA* came into effect in Ontario in 2007, and provided for immediate protection of all species on the Species at Risk in Ontario (SARO) list. This protection is afforded under Section 9(1) of the *Act*, which reads as follows:

Prohibition on killing, etc.

9.(1) No person shall,

- a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;
- b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,
 - (i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;
 - (ii) any part of a living or dead member of a species as referred to in subclause (i),
 - (iii) anything derived from a living or dead member of a species referred to in subclause (i); or
- c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b)(i), (ii) or (iii). 2007, c.6, s.9(1).

Additionally, the *ESA* affords habitat protection to species on the SARO list. The relevant portions of the *Act* are found under Sections 10(1) through 10(3) and are reproduced as follows.

Prohibition on damage to habitat, etc.

- 10(1) No person shall damage or destroy the habitat of,
- (a) a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species; or
 - (b) a species that is listed on the Species at Risk in Ontario List as an extirpated species, if the species is prescribed by the regulations for the purpose of this clause. 2007, c.6, s. 10(1).

Also important is the definition of habitat under the *ESA*, which is described under Section 2(1) as follows.

- “Habitat” means,
 - (a) With respect to a species of animal, plant or other organism for which a regulation made under clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species, or
 - (b) With respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding, and includes places in the area describe din clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nets, hibernacula or other residence; (habitat).
- Definition of “habitat”, cl. (b)
 - (2) For greater certainty, clause (b) of the definition of “habitat” in subsection (1) does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry on their life processes. 2007,c.6, s.2 (2).

It is important to note that the landowner, as well as the individual or organization carrying out any activities on those lands, are both subject to the enforcement and penalty provisions of the *ESA* should Sections 9 or 10 be contravened.

The Ministry of Natural Resources and Forestry (MNRF¹) provides a document entitled **Categorizing and Protecting Habitat Under the *ESA*** that outlines the overall approach and considerations that it uses in determining whether a proposed activity is likely to damage or destroy habitat protected under subsection 10(1). The following is provided from that document.

*Not every activity that occurs within or near habitat will damage or destroy that habitat.
Determining whether a proposed activity is likely to damage or destroy the habitat of an*

¹ Note that the Ministry of Natural Resources (MNR) changed to the Ministry of Natural Resources and Forestry in 2014, and for purposes of this *EIS*, the acronyms are interchangeable.

endangered or threatened species requires the consideration of the activity details, which parts of habitat are likely to be altered by the activity, and how the alteration may affect the species' ability to carry out its life processes.

3.1.1 Damaging Habitat

An activity that damages the habitat of a species is one that alters the habitat in ways that impair the function (usefulness) of the habitat for supporting one or more of the species' life processes.

3.1.2 Destroying Habitat

An activity that destroys the habitat of a species is one that alters the habitat in ways that eliminate the function (usefulness) of the habitat for supporting one or more of the species' life processes.

In some cases, the anticipated alteration that a proposed activity will have on habitat may be so minor that the function of the habitat for supporting the species' life processes will not become impaired or eliminated. In such cases the activity would not contravene subsection 10(1) of the ESA and would not require authorization under the Act with respect to this provision. In other cases, the alteration may be more significant such that the function of the habitat for supporting one or more of the species' life processes may become impaired or eliminated. Such activities would contravene subsection 10(1) of the ESA and would require authorization under the Act prior to proceeding.

While in most projects, mitigation measures can be implemented to protect against killing, harming or harassing a living member of a protected species, in many geographic areas it is more difficult to carry out a project without damaging, or having some influences on, the habitat of all SARO listed species. MNRF has a permitting process which allows activities which would otherwise be prohibited under Sections 9 or 10 of the **ESA**, which is described under Section 17. The most relevant portions of that Section, as it pertains to this project, are included as follows:

Permits

- 17.(1) The Minister may issue a permit to a person that, with respect to a species specified in the permit that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species, authorizes the person to engage in an activity specified in the permit that would otherwise be prohibited by section 9 or 10. 2007, c.6, s. 17(1).

Limitation

- (2) The Minister may issue a permit under this section only if,
- (a) the Minister is of the opinion that the activity authorized by the permit is necessary for the protection of human health or safety;

-
- (b) the Minister is of the opinion that the main purpose of the activity authorized by the permit is to assist, and that the activity will assist, in the protection or recovery of the species specified in the permit;
 - (c) the Minister is of the opinion that the main purpose of the activity authorized by the permit is not to assist in the protection or recovery of the species specified in the permit, but,
 - (i) the Minister is of the opinion that an overall benefit to the species will be achieved within a reasonable time through requirements imposed by conditions of the permit,
 - (ii) the Minister is of the opinion that reasonable alternatives have been considered, including alternatives that would not adversely affect the species, and the best alternative has been adopted, and
 - (iii) the Minister is of the opinion that reasonable steps to minimize adverse effects on individual members of the species are required by conditions of the permit.

Section 17(2)(c)(i) establishes the principle of “overall benefit” in providing an opportunity to allow projects to proceed where there has been an holistic approach to understanding the relationship of that project to the environment, where the habitat of species regulated under the *ESA* has been properly considered, and where the proponent has designed the project in a manner that achieves an overall benefit to such species.

As described later in this **EIS**, a detailed assessment of SAR was completed for the lands to be developed, as well as on adjacent lands. Staff of the MNRF were consulted with respect to the possible presence of bats and whip-poor-will and their habitats, with the intent to ensure that potential impacts are avoided.

3 APPROACH

3.1 Collection and Review of Background Information

3.1.1 Vegetation/Floristics

Prior to and following our various site investigations of the subject property, background information on biophysical and natural features (vegetation/floristics) were collected from the MNRF Midhurst District Office, Natural Heritage Information Centre (NHIC) and Land Information Ontario (LIO), County of Simcoe, City of Barrie, and the Brereton Field Naturalist Club.

Coloured orthophotographs were obtained from Google Earth Pro (July 20, 2009, September 6, 2010, August 15, 2013, April 20, 2014, July 12, 2014, August 29, 2015, and July 25, 2016) and the County of Simcoe GIS website (1989, 1997, 2002, 2008, 2012 and 2016); these provided complete coverage of the Di Poce (Innisfil) Inc. property and some overlap of the adjacent lands. They were used to ascertain and delineate the general vegetation cover on-site and any connectivity/linkages off-site. Preliminary boundaries and general types of vegetation communities were overlaid onto an aerial field base map (2016), and subsequently refined through ground-thruthing.

The community types and typical inherent floristics of each were delineated through botanical inventories conducted on the following dates: April 19, May 12, June 5, June 11, June 19, July 13, August 10, and September 18, 2017 and May 19, 2018. Additional botanical data were obtained from field work conducted as part of the SIS, and preliminary natural features identification and edge staking on July 10, 2015 and May 5, 2016 with staff of the NVCA. Data were also obtained from the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Inc. 2012).

Documentation and other sources reviewed included but were not limited to the following:

- **Life Science Areas of Natural and Scientific Interest in Site District 6E-8 – A Review and Assessment of Significant Natural Areas in Site District 5E-8** (Hanna 1984);
- **Natural Heritage Resources of Ontario: Bibliography of Life Science Areas of Natural and Scientific Interest in Ecological Site Regions 6E and 7E, Southern Ontario** (Riley *et al.* 1997);
- **Google Earth Pro Orthorectified Coloured Orthophotographs** (Google Pro July 20, 2009 to July 25, 2016)

-
- **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Ind. 2012).

In addition to the reports listed above, various databases were searched for flora records on-site or in the surrounding area. These websites and databases included:

- **Simcoe County GIS Biophysical and Natural Environment Overlays** (County of Simcoe 2018);
- **Natural Heritage Information Centre (NHIC) Internet Database/Biodiversity Explorer** (NHIC 2018);
- **Land Information Ontario Make-A-Map** (LIO 2018); and
- **Ministry of Natural Resources & Forestry Midhurst District Office Information Request Form** (Midhurst District MNRF 2018).

Background information was also garnered to assess the potential for SAR and/or Significant Woodland Habitat (SWH), based on either species presence and/or habitat types determined from the floral surveys.

In addition to the data sources listed above, a number of consultant team technical reports, tables, draft plans and drawings were reviewed during preparation of this **EIS**, inclusive of the following:

- **Tree Inventory and Preservation Plan Report – Di Poce Subdivision, Barrie, Ontario** (Kuntz Forestry Consulting Inc. 2018);
- **Functional Servicing Report – Di Poce (Innisfil) Inc. Properties Proposed Mixed Use Development, Salem Secondary Lands** (Schaeffers Consulting Engineers 2018);
- **Geotechnical Investigation – Proposed Residential Developments, County Road 27, Barrie, Ontario** (GeoPro Consulting Limited 2018a);
- **Geotechnical Investigation – Slope Stability Assessment and Geotechnical Setback Study, Proposed Residential Developments, County Road 27, Barrie, Ontario** (GeoPro Consulting Limited 2018b);
- **Noise Feasibility Study – Proposed Mixed-Use Development, Di Poce Subdivision, Barrie, Ontario** (HGC Engineering 2018);

-
- **Results of Private Well Survey – Well Survey For Development Within 300 M Radius, Di Poce Site, Barrie, Ontario** (Terraprobe 2017);
 - **Hydrogeological Assessment – Di Poce Management Inc., Barrie, Ontario** (R. J. Burnside & Associates Limited 2018);
 - **Planning Justification Report** (Draft) (MHBC 2018); and
 - **Di Poce (Innisfil) Inc. Properties – Geomorphic Assessment, Salem Secondary Plan Area, Bear Creek Watershed, City of Barrie, County of Simcoe DRAFT** (Beacon Environmental Limited 2019).

3.2 Identification of Vegetation Communities Based on Ecological Land Classification System for Southern Ontario

It was agreed by the City of Barrie and natural resource review agencies that the identification of vegetation communities on all participating landowners in the **SSP**, which includes the Di Poce (Innisfil) Inc. property, would be based on the **City of Barrie Annexed Lands Natural Heritage Characterization Report** (Natural Resource Solutions Inc. et al. 2012) and the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Inc. 2012). Refinements were undertaken on June 11, 2014, July 10, 2015 and May 5, 2016, as part of our contribution to the **SIS**. Additional data for the identification, characterization, delineation and species content of each natural feature were the result of extensive field work conducted for this **EIS** on April 19, May 12, June 5, June 11, June 19, July 13, August 10, and September 18, 2017 and May 19, 2018.

The characterization and mapping of the vegetation communities were classified according to their Ecosite landscape unit community type, following the Ecological Land Classification (ELC) format outlined in **Ecological Land Classification for Southern Ontario: First Approximation and Its Application** (Lee *et al* 1998), with updated ELC codes contained in Lee (2008). Additionally, further characterization, delineation and significance of the vegetation communities was accomplished through a review of the **Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario** (Bakowsky 1997).

As defined by the MNRF, an Ecosite, “is a mappable landscape unit defined by a relatively uniform parent material, soil and hydrology, and consequently supports a consistently recurring formation of plant species which develop over time (vegetation chronosequence).” Within each ecosite landscape unit, there

are a variety of vegetation types. A vegetation type, “is a part of an ecosite, and represents a specific assemblage of species which generally occur in a site with a more uniform parent material, soils and hydrology, and a more specific stage within a chronosequence.”

The classification of the general vegetation communities was characterized according to species composition and physiognomic characteristics. The nomenclature for the flora observed is consistent with and relied on the following authorities:

- Lycopodiaceae to Aspleniaceae. Cody, W. J., and D. F. Britton. 1989. **Fern and Fern Allies of Canada**. Publication 1829/E, Agriculture Canada, Research Branch, Ottawa.
- Taxaceae to Orchidaceae – Voss, E. G. 1972. **Michigan Flora. Part 1: Gymnosperms and Monocots**. Cranbrook Institute of Science and University of Michigan Herbarium. Bulletin 55.
- Saururaceae to Cornaceae – Voss, E. G. 1985. **Michigan Flora. Part 2: Dicots**. Cranbrook Institute of Science and University of Michigan Herbarium. Bulletin 59.
- Pyrolaceae to Compositae – Voss, E. G. 1996. **Michigan Flora. Part 3: Dicots**. Cranbrook Institute of Science and University of Michigan Herbarium. Bulletin 61.
- Newmaster, S. G., A. Lehela, P. W. C. Uhlig, S. McMurray, M. J. Oldham, and Ontario Forest Research Institute. 1998. **Ontario Plant List**. FRI Paper No. 123.
- Bradley, D. J. 2013. **Southern Ontario Vascular Plant Species List**. 3rd Edition. Science & Information Branch Southern Science and Information Section. Ontario Ministry of Natural Resources, Peterborough, Ontario. SIB SSI SR-03, 78 p.

3.3 Vegetation Surveys, Delineation and Confirmation of Limits of Woodlands, Wetlands, Meadows, Linkages and Buffer Widths

As identified in **Section 1.3** of the **SIS** and policies of the **SSP**, refinements to the Natural Heritage System features boundaries and buffers in consultation with the City of Barrie and NVCA is permitted, as long as the NHS objectives and other intentions of the Master Plan are maintained. The extensive site reconnaissance and botanical inventories undertaken in 2014, 2015 and 2016 as part of the **SIS**, and supplemented with additional botanical inventories undertaken in 2017 and 2018 for this **EIS** resulted in some refinements to the characterization and boundaries of the on-site natural and cultural features (e.g., woodland, wetland, meadow, and agricultural cropland).

Based on the NHS mapping relevant to the Di Poce (Innisfil) Inc. property, only the intermittent Bear Creek tributary and abutting natural and cultural features within 50 m of the centre-line of the tributary lie within the approved NHS, (**Figure 6**). The intermittent Creek and abutting natural and cultural features (within 50 m of the centre-line) were mapped and designated as a Natural Linkage Area, a component of the NHS.

As indicated on the coloured orthophotography, an extensive woodland/wetland/meadow mosaic of natural features lies outside of the Natural Linkage Area designation. Although not part of the NHS, it is recognized that the wetlands (which are unevaluated) and stream features external to the NHS are regulated by the NVCA under **Ontario Regulation 172/06**. The boundaries of the unevaluated wetlands were staked in-situ with NVCA staff on May 5, 2016. The delineation and staking of the on-site wetland features resulted in a significant change to the ELC units when compared to those shown on Figure 5A of the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Inc. 2012).

In addition to the delineation and staking of the wetland features, the boundaries of the intermittent tributary were staked on May 5, 2016 with NVCA staff participating. As inventoried above, the approved Natural Linkage Area in this part of the NHS was 50 m on both sides of the intermittent tributary, as measured from the centre-line of the feature. Subsequently, discussions with staff of the NVCA and City of Barrie resulted in a reduction to the width of the Natural Linkage Area, from 50 m on each side of the centre-line of the intermittent tributary to 30 m on both sides, for the reach north of the woodland/wetland mosaic. This revision is reflected on the ELC figure contained in Appendix B-2 Parcel 1 Di Poce (Innisfil) Inc. of the **SIS**.

The boundary of the Natural Linkage Area is the outer limit of this NHS designation and does not require any additional buffers. As well, it is our opinion that none of the approved **SSP** buffers apply to the woodland/wetland/meadow mosaic features that lie outside of the Natural Linkage Area. However, we are cognizant that although the woodland/wetland/meadow mosaic features are not part of the NHS, the wetland component is regulated by the NVCA under **Ontario Regulation 172/06** and hence our staking of the unevaluated wetland portions on May 5, 2016. The result of the staking exercise pertaining to the unevaluated wetlands was provided, reviewed and approved by the NVCA.

The rarity or significance for vegetation communities and vascular plants (floristics) was determined from standard status lists, published literature and the NHIC web-site database (NHIC 2018). Sources for flora



*crop from NHS Figure 5A (NRSI 2012)

Figure 6. Natural Heritage System "Linkage" and ELCs

Scale 1:NTS

Di Poce (Innisfil) Inc. Property

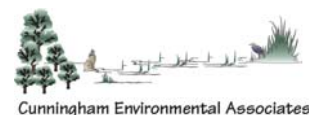
Part of South Half of Lot 1
Concession 11
City of Barrie
County of Simcoe



subject property

Michalski Nielsen
ASSOCIATES LIMITED

In Association With



Cunningham Environmental Associates

included Bakowsky (1997), Environment Canada (2018), Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (2018), Province of Ontario (2007), Ministry of Natural Resources and Forestry (2018), Oldham and Brinker (2009), and Riley *et al.* (1989). Rare plant species on a federal level are listed in the ***Species At Risk Act (SARA), 2002***. On a provincial level, the Species At Risk in Ontario (SARO) list includes those species regulated under the ***ESA 2007***, as amended from time to time. The determination for plant species rarity consisted of a straightforward comparison of the plant species recorded on-site with those listed in these source references.

3.4 Evening Amphibian Call Surveys

Incidental observations of amphibians were recorded during all daytime field surveys relating specifically to wildlife (June 5 and June 19, 2017) and during the botanical surveys undertaken on April 19, May 12, June 5, June 11, June 19, July 13, August 10, and September 18, 2017 and May 19, 2018. Evening amphibian calling surveys (e.g., frogs and toads) were conducted on three evenings: April 19th, May 12rd, and June 11th, 2017, with a follow-up survey undertaken on May 19, 2018. The amphibian call surveys followed protocols in the **Marsh Monitoring Program** (Bird Studies Canada *et al* 2009), and were completed from five on-site fixed stations and an off-site control location (see **Figure 10** in **Section 4.5**).

Supplemental data on the presence of amphibians during the daytime was garnered from field work conducted in 2014 and 2015 as part of the SAR and other wildlife inventories pertaining to the SIS documentation. As part of the background information review, any records or sightings of amphibians obtained from the NHIC website database (NHIC 2018), **Ontario Nature Amphibian and Reptile Atlas** (Ontario Nature 2018), **City of Barrie Annexed Lands Natural Heritage Characterization Report** (Natural Resource Solutions Inc. *et al.* 2012) and the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Inc. 2012) were noted and included in this EIS.

3.5 Dawn Breeding Bird Surveys

Dawn breeding bird surveys were completed between sun-up (0500 hr and 0830 hr) on June 5 and June 19, 2017. A total of seven breeding bird point count stations were used to document the bird species present, with a surveyed duration of 10 minutes per station, in addition to random roving routes (see **Figure 9** in **Section 4.5**). The breeding bird surveys were conducted more than one week apart under favourable weather conditions (i.e., low wind, little or no precipitation) following the survey methods and breeding evidence codes of the **Ontario Breeding Bird Atlas (OBBA)** (Bird Studies Canada *et al.* 2006).

All birds seen and heard on or adjacent to the subject property were tallied. Observations were coded using the behavioural codes of the **OBBA** (e.g., S – Singing Male, P – Pair, etc.). Weather conditions on each survey date were recorded, and included parameters such as air temperature, wind speed and direction, cloud cover, and precipitation. Additional bird data were garnered from incidental observations recorded during the numerous botanical inventories conducted in 2017 and 2018.

Supplemental data on the presence of bird species during the daytime was garnered from field work conducted in 2014 and 2015 as part of the SAR and other wildlife inventories pertaining to the SIS documentation. As part of the background information review, any records or sightings of bird species obtained from the NHIC website (NHIC 2018), **Ontario Nature Amphibian and Reptile Atlas** (Ontario Nature 2018), **City of Barrie Annexed Lands Natural Heritage Characterization Report** (Natural Resource Solutions Inc. *et al.* 2012) and the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Inc. 2012) were also noted.

3.6 Nocturnal Breeding Bird Surveys

Nocturnal breeding bird surveys were completed on three evenings: June 8th, July 10th and July 11th, 2017. The June 8th, 2017 survey was conducted during the “Mid-season (optimal timing) Preferred Timing” survey window associated with the full moon, as per the Bird Studies Canada recommendations. Surveys were undertaken on two consecutive evenings during the “Late Window (breeding season) Alternate Timing” on July 10th and July 11th, 2017 following the July 9, 2017 full moon period. The surveys were completed from two roadside point count stations established to provide coverage of the subject property and adjacent lands. The duration of the point count stations were 10 minutes each. Weather conditions were recorded on each survey date. The nocturnal breeding bird species were targeted at two species. The first was the eastern whip-poor-will (*Antrostomus vociferus*) which is listed as Threatened in Ontario under the **ESA 2007**. Threatened means the species lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it. A control station was sampled on the same evenings to establish whether whip-poor-will were calling locally, and hence likely to be detected on and/or adjacent to the subject property. The location of the control site was Lot 4, Concession 4, Oro-Medonte Township (Horseshoe Valley). The other species is common nighthawk (*Chordeiles minor*) which is listed as a Special Concern species. Special Concern means the species lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.

3.7 Wildlife and Wildlife Habitat

The subject property was surveyed to determine the presence of mammals and reptiles. These were documented based on visual contact (direct sightings) and/or on the basis of indirect evidence (e.g. vocalizations, tracks, scats, pellets, burrows, nests, feathers, browse, etc.). No formal mammal or reptile wildlife surveys were conducted (e.g., small mammal trapping), nor warranted.

Mammals: Data for mammals was garnered from incidental observations recorded during the numerous botanical inventories conducted on April 19th, May 12th, June 5th, June 11th, June 19th, July 13th, August 10th, and September 18th, 2017 and May 19th, 2018. In addition, any mammal sightings during the dawn breeding bird surveys (June 5th and June 19th, 2017) and evening amphibian surveys (April 19th, May 12th, June 11th, 2017 and May 19th, 2018) were noted and included herein.

Supplemental data on the presence of mammal species during the daytime was obtained from field work conducted in 2014 and 2015 as part of the SAR and other wildlife inventories pertaining to the **SIS**. As well, any records or sightings of mammal species obtained from the NHIC website database (NHIC 2018), **City of Barrie Annexed Lands Natural Heritage Characterization Report** (Natural Resource Solutions Inc. *et al* 2012) and the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Inc. 2012) were noted.

Standard lists and published literature used to determine the status or rarity of mammals included Environment Canada (2002), Committee on the Status of Endangered Wildlife in Canada (2018), Province of Ontario (2007), Ministry of Natural Resources and Forestry (2018), Austen *et al.* (1994), **Ontario Breeding Bird Atlas**. (2006), Dobbyn (1994), and Cadman *et al.* (2007). The determination for mammal species rarity consisted of a straightforward comparison of property and abutting land wildlife species recorded, with those listed in these source references.

Reptiles: Data for reptile species was garnered from incidental observations recorded during the above-noted inventories. In addition, any reptile sightings during the above-noted dawn breeding bird and evening amphibian surveys were noted.

Supplemental data on the presence of reptile species during the daytime was garnered from field work conducted in 2014 and 2015 as part of the SAR and other wildlife inventories pertaining to the **SIS**. Also, any records or sightings of reptile species obtained from the NHIC website database (NHIC 2018), **City of Barrie Annexed Lands Natural Heritage Characterization Report** (Natural Resource Solutions Inc.

et al 2012) and the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Inc. 2012) were noted.

Standard lists and published literature used to determine the status or rarity of reptiles included Environment and Climate Change Canada (2002), Committee on the Status of Endangered Wildlife in Canada (2018), Province of Ontario (2007), Ministry of Natural Resources and Forestry (2018), and **Ontario Nature** (2018). The determination for reptile species rarity consisted of a straightforward comparison of property and abutting land wildlife species recorded, with those listed in these source references.

Species of Conservation Interest: This subsection on Species of Conservation Interest pertains to SAR, either Endangered or Threatened and species of Special Concern as per the federal ***Species At Risk Act, 2002*** (Environment Canada and Climate Change 2018) and Ontario's ***ESA 2007***.

Any data pertaining to Species of Conservation Interest was garnered from incidental observations recorded during the numerous botanical inventories undertaken on eight days in 2017 and one day in 2018. In addition, any sightings during the dawn breeding bird and evening amphibian surveys were noted.

Supplemental data on the presence of Species of Conservation Interest during the daytime was garnered from field work conducted in 2014 and 2015 as part of the SAR and other wildlife inventories pertaining to the SIS. As part of our background information review, any records or sightings were also obtained from the NHIC website database (NHIC 2018), **Ontario's Amphibian and Reptile Atlas** (Ontario Nature 2018), **City of Barrie Annexed Lands Natural Heritage Characterization Report** (Natural Resource Solutions Inc. *et al* 2012) and the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Inc. 2012) and included in the EIS.

3.8 Fish and Fish Habitat

There is a tributary of Bear Creek which traverses the subject property in a south to northwest direction, with its origin from an unevaluated wetland/pond feature that lies to the south of Salem Road. The orientation and reach of the tributary is illustrated on Figure 6A. Barrie Annex Lands – West Aquatic Resources in **City of Barrie Annexed Lands Natural Heritage Characterization Report** (Natural Resource Solution Inc. *et al* 2012), as watercourse BEA-001. The tributary is also illustrated on Figure 3A. Barrie Annexed Lands West Parcel – Watercourse Reach Rankings; in that report, the tributary has

been divided into four reaches (BEA1-1, BEA1-2, BEA1-3 and BEA1-4), with reaches BEA1-3 and BEA1-4 germane to the subject property. Reach BEA1-3 is designated with a Medium ranking (M). Medium rankings were assigned to watercourses that provide important fish habitat and which support fish and/or water quantity and quality to brook trout spawning areas. Reach BEA1-4 is designated with a High ranking (H). High ranked habitat is assigned to watercourses with sensitive and/or critical fish habitat including brook trout habitat and/or confirmed spawning habitat. These rankings were applied to reaches where the water table was at or above the surface as this is often associated with high quality brook trout habitat. The Medium and High reaches are shown on Figure 5 therein. A High Rank is also applied if the Department of Fisheries and Oceans (DFO) finds that fish SAR are present.

No fish biomass surveys were conducted in the tributary of Bear Creek for this **EIS**, nor were any warranted. As previously stated, it was agreed by the City of Barrie and the resource management agencies that the sources for natural environment features were the background studies undertaken for the creation of the City of Barrie NHS. When on-site during all flora and fauna inventories, inspections of the tributary were conducted to note the type and species composition of the tributary's riparian habitats, and if any fish species were present within the tributary itself. It is to be noted that the tributary on the subject property and on adjacent lands to the south are protected as part of a Natural Linkage Area designation (**Figure 6**). **SSP** policies allow for infrastructure (e.g., road, services) crossings of the NHS, including the Natural Linkage Area designation.

4 EXISTING CONDITIONS

4.1 Land Use

As contained in the **Planning Justification Report** (MHBC 2019), the subject property, is located at the municipal address of 8001 County Road 27, City of Barrie, in the County of Simcoe. The vacant parcel is legally described as Part of South Half of Lot 1, Concession 11, former Geographic Township of Innisfil, now in the City of Barrie.

The property is generally located in the southwestern portion of the City of Barrie, just north of the intersection of Salem Road and County Road 27 (**Figure 1**). It directly abuts existing as-built residential development within the former City of Barrie boundary to the north. The lands located directly west of the property on the opposite side of County Road 27 are within the Township of Essa.

Land use on-site in the northern half is predominantly for agricultural crop production, namely soybean and corn. The southern portion is covered with a woodland/unevaluated wetland mosaic, along with meadows and cultural woodlands. Traversing the site in a south to northwest direction is a tributary of Bear Creek, with its source located in wetland features south of Salem Road. There is also a TransCanada Pipeline that runs north-south parallel to County Road 27.

The property lies in the extreme northwestern corner of the approved **SSP (Figure 3)**, within part of an area annexed from the Town of Innisfil. As per Schedule 8A in the **SSP**, the entire property is designated Residential Area, including the wetlands, save and except for the NHS Natural Linkage Area, which will be protected. As intended and as shown on the Draft Plan of Subdivision (**Figure 4**), Blocks 46 through 52 are to be re-zoned to an Open Space Environmental Protection (EP) zone.

Land use to the north includes a low density residential subdivision within the former City of Barrie municipal boundary. East of the agricultural cropland portion on-site is forested land approved for residential development and which is currently undergoing site preparation (i.e., roads and servicing). Land to the south is comprised of vacant grassland, namely a former Provincial waste disposal site, along with four as-built residential lots on the north side of Salem Road. To the west is a farmstead, agricultural cropland and as-built residential lots, mostly west of County Road 27, with one residential lot on the east side. **Figure 2** shows the subject property in a local context, with existing, approved and future residential developments, along with current industrial uses (Unilock Barrie) and woodland/wetland features that are part of the City of Barrie NHS within the **SSP**.

4.2 Terrain Conditions

4.2.1 Topography and Drainage

Spot elevations and the edges of the bush lines were surveyed and plotted on the Surveyor's Real Property Report - Plan of Survey of Part of South Half of Lot 1, Concession 11, (Geographic Township of Innisfil), Town of Innisfil, (Now in the City of Barrie), County of Simcoe (Rodney Geyer Ontario Land Surveyors Inc. 2017).

Information on the general physiography, topography and drainage was summarized from the **SIS** and the **Functional Servicing Report – Di Poce (Innisfil) Inc. Properties Proposed Mixed Use Development, Salem Secondary Lands, City of Barrie** (Schaeffers Consulting Engineers 2018)(**FSR**).

In terms of physiography, the subject property lies within a region known as the Peterborough Drumlin Field, known for its highly calcareous till (Chapman and Putnam 1984). The on-site topography is generally flat to gently rolling, with elevations ranging from approximately 308 m above seal level (asl) in the east (on the agricultural cropland, to 291 m asl in the northwest corner along the edges of the tributary of Bear Creek (as shown on Figure 4.3 in **Appendix A**). The tributary is the only natural watercourse on-site and originates on the southern side of Salem Road from an unevaluated wetland and open water pond. The watercourse conveys intermittent and trickle flows across the property in a north to northwest direction. This characterization is based on monitoring which confirms that the watercourse is intermittent with flows occurring in the spring ranging from 0.4 litres per second (L/s) to 6.9 L/s.

There is also a man-made drainage swale along the southern edge of the single as-built lot that fronts onto County Road 27. This swale conveys surface drainage from the County Road 27 ditches, across the property in a west to east direction, before entering the tributary. The overall topography and drainage is sloped towards the tributary at slopes ranging from 1.5% to 5%. The entire Bear Creek tributary is contained and protected within the NHS Natural Linkage Area, which includes an outer boundary of 30 m on both sides from the centre-line of the watercourse. The pre-development drainage areas are shown on Figure 2-1 in the **FSR**.

4.2.2 Soils

GeoPro Consulting Limited (GeoPro) prepared two reports pertaining to geotechnical investigations of the subject property. These include **Geotechnical Investigation – Proposed Residential Developments, County Road 27, Barrie, Ontario** (GeoPro Consulting Limited 2018a) and **Geotechnical Investigation – Slope Stability Assessment and Geotechnical Setback Study, Proposed Residential Developments, County Road 27, Barrie, Ontario** (GeoPro Consulting Limited 2018b). General descriptions of the existing soil conditions were derived from both reports for purposes of this EIS. Both should be reviewed in their entirety for specific details. The limitations presented form an integral part of each report and they must be considered in conjunction with each document.

As stated, information of the existing subsurface conditions was obtained from a limited number of boreholes, test pits, in-situ tests and laboratory tests of soil samples. A total of twenty-six (26) boreholes (Boreholes BH1 to BH26) were advanced at locations shown on the Borehole and Monitoring Well Location Plan (Drawing 1). Depths ranged from about 3.7 m to 15.3 m below the existing ground surface.

The following summaries are not binding and not definitive, and are only offered to provide an understanding of the general soils found in relation to the existing vegetation cover types (where applicable). The following soils were encountered from the various boreholes and include; top soil; fill material; reworked sandy silt (fine) sand and silt and silty (fine) sand; clayey silt and silty clay; sand and silt till and silty sand till; and sandy silt (fine) sand and silt, silty (fine) sand, (fine) sand, gravelly sand and sand and gravel. According to the GeoPro reports, the predominant soil condition within the development limit is generally sand to silty sand.

Top Soil: Topsoil thicknesses ranged from 170 mm to 360 mm and were encountered surficially in all boreholes, except BH16.

Fill Materials: BH14 and BH16 components consisted of fill material below the topsoil or granular base/subbase and consisted of organic sand silt to organic silt, sandy silt, sand and silt, silty sand and gravelly sand. These soils extended to depths ranging from about 0.6 m to 2.1 m below the existing ground surface.

Reworked Sandy Silt, (Fine) Sand and Silty and Silty (Fine) Sand: These soil types were encountered below the topsoil in BH1 to BH3, BH5 to BH15, BH17 to BH21, BH23 and BH24. They extended to depths ranging from about 0.6 m to 1.2 m below the existing ground surface.

Clayey Silt and Silty Clay: These soil deposits were encountered below the reworked soils, native sandy silt and silt sand deposits in BH6, BH7, BH19 and BH24. They extended to depths ranging from about 0.9 m to 5.6 m below the existing ground surface.

Sand and Silt Till and Silty Sand Till: These soil deposits were encountered below the fine sand or within sandy silt to sand and silt deposits in BH19 and BH26. They extended to depths ranging from about 2.9 m to 6.6 m below the existing ground surface.

Sand Silt, (Fine) Sand and Silt, Silty (Fine) Sand, (Fine) Sand, Gravelly Sand and Sand and Gravel: These soil deposits were encountered below the topsoil, fill materials, reworked soils, clayey silt and silty clay deposits in all boreholes. They extended to depths ranging from about 3.7 m to 15.3 m below the existing ground surface.

4.3 Groundwater

Groundwater information specific to the subject property is contained in **Appendix A**. The R. J. Burnside figures and tables contained therein consist of the following:

- R. J. Burnside & Associates Limited (2018) Monitoring Locations;
- R. J. Burnside & Associates Limited (2018) Table 1 Groundwater Elevations;
- GeoPro Consulting Limited (2018a) Borehole Logs (BH07, BH14, BH18, BH21 and BH23);
- TerraProbe (2018) Borehole Logs (BH120, BH122, BH123, BH129, MW3s/d);
- Schaeffers Consulting Engineers *et al.* (2017) R. J. Burnside & Associates Limited Figure C-12 Interpreted Depth to Watertable;
- Schaeffers Consulting Engineers *et al.* (2017) R. J. Burnside & Associates Limited Figure C-13 Interpreted Groundwater Flow.

As shown on Figure C-12, the interpreted depth to watertable shows “0 and above grade” for the majority of the property, particularly for topographic elevations ranging from 291 masl to 299 masl. For elevations from approximately 300 masl to 302 masl, the interpreted depth to watertable shows a depth to watertable of “0 to 2 m below grade”. For elevations from approximately 303 masl to 308 masl, the interpreted

depth to watertable shows a depth to watertable of “2 to 4 m below grade. The R. J. Burnside & Associates Limited **Hydrogeology Report** (2018) should be consulted for details beyond those contained in **Appendix A**.

4.4 Vegetation

4.4.1 Regional Vegetation

The subject property lies within Site District 6E-8, which is part of the large Site Region 6E (Hanna 1984). Site District 6E-8 consists of a wide band extending from south of Lake Simcoe, eastward to the Bay of Quinte, including Lake Scugog, Rice Lake and the southern section of the Kawartha Lakes. The definition of a Site Region is an area of land within which the response of the vegetation to the features of the landform follows a consistent pattern (Hills 1959). Site District 6E-8 is generally described as an area of drumlinized till with local areas of water-lain silt and clay. The majority of the site district is contained within the Peterborough Drumlin Field, a physiographic region typified by drumlinoid hills, drumlin fields and eskers, interrupted by intervening wide river valley basins with muck, spillway and sand deposits (Chapman and Putnam 1984).

Based on a forest classification by Rowe (1972), the subject property lies within the Huron-Ontario Section (L.1) of the Great Lakes-St. Lawrence Forest Region. The original forest cover consisted primarily of hardwoods, such as sugar maple (*Acer saccharum*) and beech (*Fagus grandifolia*). Other woody associates include basswood (*Tilia americana*), white ash (*Fraxinus americana*), red ash (*Fraxinus pennsylvanica*), yellow birch (*Betula alleghaniensis*), red maple (*Acer rubrum*), red oak (*Quercus rubra*), white oak (*Quercus alba*) and bur oak (*Quercus macrocarpa*). Conifers such as eastern hemlock (*Tsuga canadensis*), eastern white pine (*Pinus strobus*), and balsam fir (*Abies balsamea*) are typical within the tolerant hardwood types. Species such as largetooth aspen (*Populus grandidentata*), butternut (*Juglans cinerea*), bitternut hickory (*Carya cordiformis*), hop hornbeam (*Ostrya virginiana*), and black cherry (*Prunus serotina*) are scattered throughout. Species associated with river-bottoms and swamp sites include blue-beech (*Carpinus caroliniana*), silver maple (*Acer saccharinum*), slipper elm (*Ulmus rubra*), rock elm (*Ulmus thomasi*), and black ash (*Fraxinus nigra*). Eastern white cedar (*Thuja occidentalis*) is ubiquitous to swampy depressions and on old fields.

The original forest cover in many parts of southcentral Ontario has been cleared for settlement and cultivation, and consequently, contiguous, extensive forest tracts are relatively uncommon. Tableland

woodland remaining within settlement (urban) areas are usually disturbed and/or in various stages of successional growth.

4.4.2 Site Vegetation Communities

The location and extent of the agricultural, cultural, and natural feature communities (ELCs) were characterized and delineated within the Di Poce (Innisfil) Inc. property as shown on **Figure 6**. This figure was cropped from Figure 5A in **Barrie Annexed Lands Natural Heritage System** (Natural Resources Solution Inc. 2012). It illustrates the results of the field work undertaken as part of the City of Barrie NHS study. The ELC types on the subject property were partially refined as part of the **SSP SIS**. The focus of the refinements is related to the delineation (via staking in-situ) and ELC characterization of the unevaluated wetland features with NVCA staff on May 5, 2016, as illustrated on **Figure 7**.

The extensive field inventories undertaken in preparation of the **EIS** (April 19, May 12, June 5, June 11, June 19, July 13, August 10, and September 18, 2017 and May 19, 2018) resulted in additional revisions to the characterizations of the unevaluated wetland, woodland, meadow and agricultural features (**Figure 8**).

The constituent vascular plant species, characterized and recorded in the anthropogenic, cultural and natural features are documented in a master plant list contained in **Appendix B**. It constitutes a comprehensive listing of plant species found during the 2017 and 2018 botanical field inventories, and supplemented by the **SSP SIS** field work undertaken in 2014 and 2015.

The following sub-sections provide summary descriptions of the subject property features, including their ELC characterization, approximate boundaries and typical inherent plant species composition in the overstory, understory, shrub and groundcover strata, where applicable. **Figure 8** is a schematic illustration of the vegetation communities and in conjunction with **Table 1** and the following text and representative photographs provides a qualitative summary and visual context of the agricultural, cultural and natural features found and documented within the subject property. The majority of the site that is proposed for mixed residential uses, the park and school site, consists mainly of agricultural cropland, with some intrusions into woodland and unevaluated wetland features. It is to be recognized that the only area on the subject property that lies within the City of Barrie NHS and shown in the approved **SSP** is the Natural Linkage Area. This component of the NHS essentially contains a tributary of Bear Creek, along with portions of meadow, coniferous forest, cultural woodland and unevaluated wetland, as illustrated on



Parcel 1
DI Poce (Innisfil) Inc.
8001 Country Road 27

Staked and Reviewed
By NVCA
2015

Figure 7.
Salem Secondary Plan Subwatershed
Impact Study (SIS) Parcel 1 - Di Poce
(Innisfil) Inc. Linkage Area and ELCs

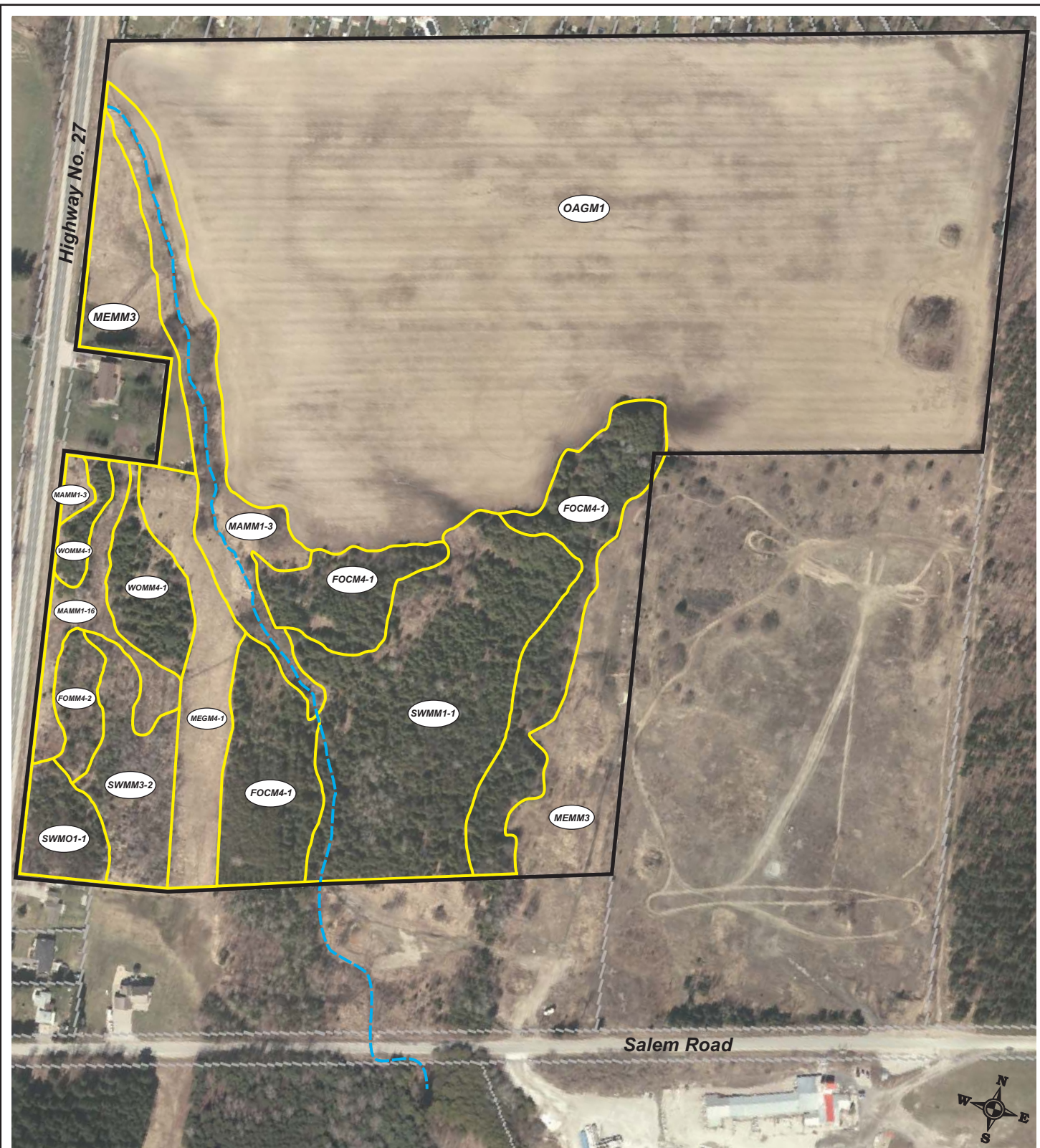
- Limit of Natural Heritage Feature
- Linkage
- AGR Vegetation Communities

2016 Ortho Imagery



Map Source:	
Project Name:	Barrie Properties
Project Number:	1714
Date:	10-Dec-2014
Created By:	K.L.F
Scale:	1:2,500

NO.	DATE DD.MM.YY	REVISIONS	BY
1	04/11/15	Revise Stream Corridor Limit & Parcel Fabric	JT
2	19/11/15	Finalize Drawing	JT
3	30/08/16	Vegetation Communities	JT
4	28/10/17	Vegetation Community Boundary Revisions	JT
5	13/11/17	Revise Linkage	JT
6	08/01/19	Revise Linkage to 30 metres	JT



<http://maps.simcoe.ca/public/>

Figure 8. Ecological Land Classification Units (2017)

Scale 1:3500 (approx)

Di Poce (Innisfil) Inc. Property

Part of South Half of Lot 1

Concession 11

City of Barrie

County of Simcoe



subject property



tributary of Bear Creek



ELC code



In Association With



Cunningham Environmental Associates

Table 1. List of Vegetation Communities (ELCs) on the Subject Property.

ELC Code	Vegetation Type	Summary Description
FOCM4-1	Fresh-Moist White Cedar Mineral Coniferous Forest	- lowland woodland feature situated in the northeast corner of the overall forest/unevaluated wetland mosaic east of the tributary; - comprised of three separate units, originally labelled in the NHS as FOC4-1, but found to have a relatively large internal block of treed swamp (SWMM1-1); - forest stand is dominated by early to mid-successional eastern white cedar, along with other woody associates such as yellow birch, trembling aspen, white elm, black cherry and common apple; - shrub and vine species include pussy willow, common buckthorn, Virginia creeper, riverbank grape, poison ivy, staghorn sumac and red-osier dogwood; - characteristic groundflora includes large-leaved aster, spinulose wood-fern, sensitive fern, deadly nightshade, downy yellow violet, bulblet fern, coltsfoot, enchanters nightshade and herb-robert.
FOMM4-2	Dry-Fresh White Cedar – Poplar Mixed Forest	- there are two units of this woodland feature on the west side of the TransCanada Pipeline and is surrounded by unevaluated wetland features; - dominant tree species include eastern white cedar and trembling aspen; - other woody associates, shrubs and vines are similar in composition to those found in FOCM4-1, as well as the groundcover.
WOMM4-1	Fresh-Moist Cedar-Hardwood Mixed Woodland	- there are two units of this woodland feature on the west side of the TransCanada Pipeline and is comprised of early successional trees, with small openings; - dominant trees and shrubs include eastern white cedar, trembling aspen, large-toothed aspen, Scotch pine balsam poplar, choke cherry, common buckthorn, red-osier dogwood, wild red raspberry, Virginia creeper, riverbank grape and maple-leaved viburnum; - typical groundflora includes field horsetail, tall goldenrod, New England aster, common buttercup, Canada goldenrod, enchanters nightshade, yellow rocket, purple-stemmed aster, Bebb's sedge, reed canary grass, red clover, wild basil, and fragrant bedstraw.

Table 1 (Cont'd.)

ELC Code	Vegetation Type	Summary Description
SWMM1-1	White Cedar-Hardwood Mineral Mixed Swamp	- a relatively large block of treed swamp characterized as white cedar-hardwood mixed swamp as staked in-situ with NVCA on May 5, 2016 and is a revision to the NHS ELC mapping; - eastern white cedar dominates in the overstorey and understorey; - other woody vegetation scattered black ash, green ash, trembling aspen, hybrid willow, balsam poplar, white elm, yellow birch, white birch, Scotch pine and scattered white pine. - there is an inclusion of SWTM3-6 (mixed willow mineral deciduous thicket dominated by pussy willow, hybrid willow, Missouri willow, red-osier dogwood, maple-leaved viburnum. - typical groundflora includes sensitive fern, lady fern, ostrich fern, Jack-in-the-pulpit, foam flower, bulblet fern, fragrant bedstraw, wild lily-of-the-valley, spinulose wood-fern, large-leaved aster, fringe loosestrife, grass-leaved goldenrod, helleborine, tall meadowrue and wild basil.
SWMM3-2	Poplar-Conifer Mineral Mixed Swamp	- an unevaluated wetland feature that borders part of the western edge of the TransCanada Pipeline; - the groundwater table is at or near the surface as evidenced by numerous seeps and muck-saturated soils; - trees and shrubs trembling aspen, large-toothed aspen, white elm and eastern white cedar; - shrubs and vines include alternate-leaved dogwood, red-osier dogwood, maple-leaved viburnum, Missouri willow, pussy willow, red-berried elder, riverbank grape, Virginia creeper and poison ivy; - the wet saturated soils provide substrate for fringe loosestrife, tall goldenrod, grass-leaved goldenrod, awl-fruited sedge, Bebb's sedge, sensitive fern, spotted jewelweed, purple-stemmed aster, swamp milkweed, reed canary grass, coltsfoot, spotted Joe pye-weed, boneset, dark green bulrush and tall meadowrue.

Table 1 (Cont'd.)

ELC Code	Vegetation Type	Summary Description
SWMO1-1	White Cedar-Hardwood Organic Mixed Swamp	- this small pocket of unevaluated wetland lies in the extreme southwest corner of the property and is dominated by eastern white cedar; - other trees and shrubs include trembling aspen, white elm, pussy willow, common elderberry, red-berried elder, common buckthorn, red-osier dogwood and Virginia creeper; - the mucky-organic soils support a groundflora of sensitive fern, lady fern, fringed loosestrife, purple-stemmed aster, water horehound, reed canary grass, creeping bent grass, narrow-leaved cattail, spotted Joy pye-weed and spotted jewelweed.
MAMM1-16	Mixed Graminoid Graminoid Mineral Meadow Marsh	- intertwined through the unevaluated treed swamp and mixed woodland mosaic on the west side of the TransCanada Pipeline is an unevaluated wetland characterized as graminoid meadow marsh; - there are scattered trees and shrubs similar to those found in FOMM4-2 and WOMM4-1; - groundflora includes tussock sedge, creeping buttercup, swamp milkweed, purple loosestrife, deadly nightshade, purple-stemmed aster, fowl manna grass, dark green bulrush, awl-fruited sedge, Bebb's sedge, spotted Joe pye-weed, sensitive fern, lady fern, hairy willow-herb, reedtop and meadow sedge; - there is a natural swale dominated by narrow-leaved cattails and common reed that drains surface runoff to the north where upon it enters into a man-made ditch that conveys surface runoff from Highway No. 27, along the southern edge of an as-built lot, and drains into the Bear Creek tributary.
MAMM1-3	Reed Canary Grass Graminoid Mineral Meadow Marsh	- a narrow band characterized as reed canary grass meadow marsh borders both side of the Bear Creek tributary, with reed canary grass as the dominant grass species; - other grasses, including forbs and ferns are Canada bluejoint grass, fowl manna grass, creeping bent grass, spotted Joe pye-weed, hairy willow-herb, coltsfoot, spotted jewelweed, wild mint, blue vervain, field horsetail, curly dock, swamp milkweed, purple loosestrife, New England aster, tall goldenrod, dark green bulrush, foxtail sedge and awl-fruited sedge.

Table 1 (Cont'd.)

ELC Code	Vegetation Type	Summary Description
MEGM4-1	Open Graminoid Meadow	- this grassland feature is labelled as CUM1-1 on the NHS mapping and lies within the TransCanada Pipeline; - based on the field work undertaken from 2014 – 2017 by CEA and MNAL this feature more resembles an open graminoid meadow dominated by common grasses, and intermixed with forbs and weeds; - typical groundflora includes meadow fescue, awnless brome grass, orchard grass, timothy, reed canary grass, tall goldenrod, Canada goldenrod, wild carrot, bull thistle, quackgrass, red clover, white clover, common milkweed, New England aster, curly dock, common dandelion, yellow cress, smallflower willow-herb, blue-eyed grass, ox-eye daisy and cow vetch; - species of note include northern green orchid, showy lady's slipper, and foxglove beardtongue.
MEMM3	Dry-Fresh Mixed Meadow	- this grassland feature is labelled as CUM1-1 on the NHS mapping and lies along the eastern edge of the property and extends off-site; - scattered trees and shrubs include trembling aspen, common crab-apple, eastern white cedar, common buckthorn, nannyberry, white ash, hawthorn, and wild red raspberry; - the grassed and weedy groundcover contains species such as wild carrot, tall goldenrod, Canada goldenrod, common mullein, common milkweed, New England aster, timothy, orchard grass, meadow fescue, hairy agrimony, white clover, red clover, white sweet-clover, common plantain, common dandelion, bull thistle, Canada thistle, ox-eye daisy, common ragweed, daisy fleabane, Kentucky bluegrass, curly dock, chicory, common burdock, field horsetail, field pennycress, shepherd's-purse, common strawberry, mouse-eared chickweed, reed canary grass, cow vetch, king-devil, eastern bracken fern, Canada anemone, spreading dogbane, yarrow, wormseed mustard, St. John's-wort, path rush, starry false Solomon's-seal, and goat's-beard.
OAGM1	Annual Row Crop – Agricultural Cropland	- outside of the woodland/unevaluated wetland mosaic, the remainder of the subject property is vegetated with annual row crops of soybean and/or corn since the Salem SP SIS field work commenced in 2014.

Figure 6, a crop of Figure 5A – **Barrie Annexed Lands Natural Heritage System** (Natural Resource Solutions Inc. 2012). The mosaic of unevaluated wetland features, woodland and meadow features that are contiguous with the Natural Linkage Area, are not part of the NHS. It is also to be noted that the ELC codes on **Figure 6**, have been revised to reflect the updated MNRF ELC system codes, as contained in Lee (2008), along with alterations to their boundaries due to the recognition of unevaluated wetland features arising from our wetland boundary staking undertaken with NVCA staff. As mentioned previously, the width of the Natural Linkage Area has been changed from a 50 m watercourse setback to a 30 m watercourse setback, as agreed to by the NVCA. All of the watercourse constraints (e.g., floodline, meander belt width and 30 m watercourse setback have been surveyed and plotted, as per the MHBC Watercourse Constraints evaluation (see **Figure 11** in **Section 6.1**).

Fresh-Moist White Cedar Mineral Coniferous Forest (FOCM4-1): Labelled as FOM4-1 on **Figure 6**, the wetland staking resulted in a relatively large portion of this feature being relabeled as unevaluated wetland (SWMO1-1). The remaining portion of the forest cover is almost entirely dominated by early successional to mid-successional eastern white cedar and is characterized as fresh-moist white cedar mineral coniferous forest (FOCM4-1) as shown on **Figure 8 (Photographs 1 and 2)**. There are three ELC units of this upland forested feature on the eastern side of the TransCanada Pipeline. Portions of the two units that border the eastern side of the tributary lie within the Natural Linkage Area.

Other woody associates include yellow birch, trembling aspen, black cherry, white elm (*Ulmus americana*), common apple (*Malus pumila*), along with scattered red pine (*Pinus resinosa*), eastern white pine, and Scotch pine (*Pinus sylvestris*). Shrub and vine stratum species include choke cherry (*Prunus virginiana*), common buckthorn (*Rhamnus cathartica*), pussy willow (*Salix discolor*), Missouri willow (*Salix eriocephala*), Virginia creeper (*Parthenocissus inserta*), riverbank grape (*Vitis riparia*), poison ivy (*Rhus radicans*), staghorn sumac (*Rhus typhina*), and red-osier dogwood (*Cornus stolonifera*).

Details regarding species, trunk diameter at breast height (DBH), trunk integrity, crown structure, crown vigor, crown dieback and dripline width at the interface of FOCM4-1 and SWMM1-1 and along the eastern edge of FOCM4-1 are contained in the **Tree Inventory and Preservation Plan Report, Di Poce Subdivision, Barrie, Ontario** (Kuntz Forestry Consulting Inc. 2018) (see **Appendix C**).

Typical herbaceous forbs, grasses, sedges and ferns in the barren-sparse-clumped groundcover includes: spinulose wood-fern (*Dryopteris carthusiana*), sensitive fern (*Onoclea sensibilis*), deadly nightshade (*Solanum dulcamara*), Virgin's-bower (*Clematis virginiana*), lady fern (*Athyrium filix-femina*), daisy



Photograph 1. View inside a portion of fresh-moist white cedar mineral coniferous forest (FOCM4-1) dominated by early to mid-successional eastern white cedar, with a sparse, patchy groundcover, mainly of ferns



Photograph 2. Typical view within FOCM4-1 showing dense distribution of eastern white cedar, along with other woody associates such as yellow birch, white elm, trembling aspen, choke cherry and other scattered conifers



Photograph 3. View of east edge of fresh-moist white cedar - hardwood mixed woodland (WOMM4-1) along west edge of TCPL



Photograph 4. View of east edge of WOMM4-1 comprised mainly of eastern white cedar and poplars, with a closed to semi-open canopy, situated along west edge of TCPL

fleabane (*Erigeron annuus*), common dandelion (*Taraxacum officinale*), bulblet fern (*Cystopteris bulbifera*), coltsfoot (*Tussilago farfara*), downy yellow violet (*Viola pubescens*), sow-thistle (*Sonchus oleraceus*), herb-robert (*Geranium robertianum*), enchanters nightshade (*Circaea lutetiana*), common burdock (*Arctium minus*), wood-sorrel (*Oxalis europea*), oak fern (*Gymnocarpium dryopteris*), wild sarsaparilla (*Aralia nudicaulis*), large-leaved aster (*Eurybia macrophyllus*), heart-leaved aster (*Symphyotrichum cordifolium*), yellow trout-lily (*Erythronium americanum*), and false Solomon's-seal (*Maianthemum canadense*).

Dry-Fresh White Cedar – Poplar Mixed Forest (FOMM4-2): The small stand of white cedar, poplars and other hardwoods is situated west of the TransCanada Pipeline and borders the edges of three wetland communities (**Figure 8**). The composition is similar to that of FOCM4-1, including the groundcover. It is slightly elevated from the surrounding unevaluated wetland features (SWMM3-2 and SWMO1-1 and MAMM1-16). The edges of this feature were delineated as part of the unevaluated wetland staking exercise.

Fresh-Moist White Cedar-Hardwood Mixed Woodland (WOMM4-1): **Figure 6** and **Figure 8** show two units of this cultural woodland feature on the western side of the tributary. The NHS ELC code as shown on **Figure 6** is CUW1, with an applicable updated ELC code of WOMM4-1 (**Figure 8**), dominated by eastern white cedar, along with typical hardwoods such as trembling aspen, large-toothed aspen, Scotch pine, balsam poplar (*Populus balsamifera*) and white elm (**Photograph 3** and **4**). Shrub and vine species include choke cherry, tartarian honeysuckle (*Lonicera tatarica*), red-osier dogwood, alternate-leaved dogwood (*Cornus alternifolia*), common buckthorn, Virginia creeper, riverbank grape, wild cucumber (*Echinocystis lobata*), poison ivy and maple-leaved viburnum (*Viburnum acerifolium*),

The fresh to moist and in some sections saturated mineral soils provide a substrate that contains upland and lowland (with some transitional and wetland affinity) plant species. Typical groundcover includes common forbs, grasses, sedges and ferns such as: field horsetail (*Equisetum arvense*), silverweed (*Argentina anserina*), tall goldenrod (*Solidago altissima*), New England aster (*Symphyotrichum novae-angliae*), common buttercup (*Ranunculus acris*), daisy fleabane, enchanters nightshade, herb-robert, yellow trout-lily, common dandelion, forget-me-not (*Myosotis laxa*), yellow rocket (*Barbarea vulgaris*), Canada goldenrod (*Solidago canadensis*), purple-stemmed aster (*Symphyotrichum puniceum*), sensitive fern, reed canary grass (*Phalaris arundinacea*), Bebb's sedge (*Carex bebbii*), creeping bent grass (*Agrostis stolonifera*), graceful sedge (*Carex gracillima*), foxtail sedge (*Carex vulpinoidea*), common strawberry

(*Fragaria virginiana*), red clover (*Trifolium pretense*), wild basil (*Clinopodium vulgare*), path rush (*Juncus tenuis*) and fragrant bedstraw (*Galium triflorum*).

White Cedar-Hardwood Mineral Mixed Swamp (SWMM1-1): A relatively large block of the woodland/unevaluated wetland mosaic on the eastern side of the tributary is comprised of white cedar-hardwood treed swamp (**Photographs 5 and 6**) (**Figure 8**). This feature was not identified or mapped on **Figure 6** as a wetland, although a portion of it lies within the Natural Linkage Area. This treed swamp as shown on **Figure 7** was identified and mapped as such in Appendix B-2 of the SIS. Portions of this unevaluated wetland feature lie within the Natural Linkage Area. It also contains a small inclusion characterized as Mixed Willow Mineral Deciduous Thicket Swamp SWTM3-6.

Eastern white cedar is the dominant tree species in both the overstorey and understorey. Other tree species include green ash (*Fraxinus pennsylvanica*), black ash (*Fraxinus nigra*), trembling aspen, balsam poplar, white elm, yellow birch, white birch, and scattered white spruce (*Picea glauca*). Shrub and vine species include red-osier dogwood, common buckthorn, Missouri willow, pussy willow, Bebb's willow (*Salix bebbiana*), slender willow (*Salix petiolaris*), maple-leaved viburnum, alternate-leaved dogwood, speckled alder (*Alnus rugosa*), Virginia creeper, riverbank grape, poison ivy, and wild cucumber. A portion of this wetland feature lies within the NHS Natural Linkage Area.

The groundcover includes a mix of wetland forbs, ferns, sedges and grasses, along with transitional lowland plants typical of moist to saturated soils, given the very shallow groundwater table and numerous seeps in this feature. Plant species observed include: sensitive fern, ostrich fern (*Matteuccia struthiopteris*), lady fern, bulblet fern, Bebb's sedge, foam flower (*Tiarella cordifolia*), fragrant bedstraw, starflower (*Trientalis borealis*), Jack-in-the-pulpit (*Arisaema triphyllum*), fringed loosestrife (*Lysimachia ciliata*), large-leaved aster, poison ivy, common dandelion, wild lily-of-the-valley (*Maianthemum canadense*), grass-leaved goldenrod (*Euthamia graminifolia*), water horsetail (*Equisetum fluviatile*), enchanters nightshade, helleborine (*Epipactis helleborine*), riverbank grape, Virginia creeper, awl-fruited sedge (*Carex stipata*), tall meadowrue (*Thalictrum pubescens*), spotted jewelweed (*Impatiens capensis*), narrow-leaved cattail (*Typha angustifolia*), yellow rocket, deadly nightshade, wild basil, yellow avens (*Agrimony gryposepala*), graceful sedge, creeping buttercup (*Ranunculus repens*) and tall goldenrod.

Poplar-Conifer Mineral Mixed Swamp (SWMM3-2): This unevaluated wetland feature borders part of the western edge of the TransCanada Pipeline, in the southwestern corner of the property (**Photograph 7**). The groundwater table is at or near surface, as evidenced by the numerous seeps and



Photograph 5. View inside the north portion of the unevaluated wetland feature characterized as white cedar - hardwood mixed mineral swamp (SWMM1-1), dominated by eastern white cedar, black ash, trembling aspen, with an inclusion of mixed willow thicket swamp (SWTM3-6)



Photograph 6. Typical view southern edge of SWMM1-1 dominated by eastern white cedar, poplars, willows, ashes and birches, with a shrub stratum of willows, dogwoods and vines, along with extensive seeps and saturated muck soils



Photograph 7. View of east edge of poplar-conifer mineral mixed swamp (SWMM3-2), with very shallow groundwater and saturated muck soils and seeps, with boundary staked in-situ on May 5, 2016 with NVCA staff



Photograph 8. View inside a portion of a small stand of unevaluated wetland characterized as white cedar - hardwood organic mixed swamp (SWMO1-1), with typical woody associates of poplar and white elm and a fern groundcover

muck-saturated soils. Its boundary has been revised (**Figure 8**) when compared to **Figure 6** (SWM3-2 on the crop from the Figure 5A of the NHS), based on the in-situ staking exercise undertaken with NVCA staff on May 5, 2016.

This treed swamp wetland feature is dominated by trembling aspen, large-toothed aspen, white elm and eastern white cedar. Alternate-leaved dogwood, red-osier dogwood, maple-leaved viburnum, common buckthorn, red-berried elder (*Sambucus pubens*), pussy willow, Missouri willow, riverbank grape, Virginia creeper and poison ivy are common woody associates.

The wet-saturated soils contain groundcover species such as: fringed loosestrife, tall goldenrod, grass-leaved goldenrod, awl-fruited sedge, Bebb's sedge, graceful sedge, stellate sedge (*Carex rosea*), mosses, Jack-in-the-pulpit, sensitive fern, lady fern, bulblet fern, eastern bracken fern (*Pteridium aquilinum*), field horsetail, wild mint (*Mentha arvensis*), purple-stemmed aster, Canada goldenrod, water horehound (*Lycopus europaeus*), swamp milkweed (*Asclepias incarnata*), reed canary grass, creeping bent grass, coltsfoot, spotted Joe pye-weed (*Eutrochium maculatum*), boneset (*Eupatorium perfoliatum*), path rush, dark green bulrush (*Scirpus atrovirens*), fragrant bedstraw, and tall meadrupe.

White Cedar-Hardwood Organic Mixed Swamp (SWMO1-1): This unevaluated wetland is in the southwestern corner of the property (**Photograph 8**). It is labelled as SWM4-1 on **Figures 6** and **7**, with the revised applicable update ELC code of SWMO1-1, given the wet-saturated organic muck soils and extensive seepage. Eastern white cedar is the dominant tree species in the overstory and understory. Other woody associates include trembling aspen, white elm, pussy willow, maple-leaved viburnum, common elderberry (*Sambucus canadensis*), red-berried elder, common buckthorn, red-osier dogwood, riverbank grape, Virginia creeper and poison ivy.

The wet-saturated soils and seeps support a groundcover similar to that found in SWMM3-2.

Mixed Graminoid Graminoid Mineral Meadow Marsh (MAMM1-16): This unevaluated wetland which was staked on May 5, 2016 is situated to the west of the TransCanada Pipeline. Part of it is a natural swale that drains northward where upon it enters a man-made ditch that conveys runoff from the ditches along both sides of County Road 27 to the Bear Creek tributary (**Photographs 9** and **10**). There are scattered trees, shrubs and vines throughout, such as trembling aspen, white elm, red-osier dogwood, common buckthorn, pussy willow, Missouri willow, red-berried elder, meadowsweet (*Spiraea alba*), riverbank grape and Virginia creeper. It is labelled as MAM2 on **Figure 6**, with the revised ELC code (MAMM1-16) shown on **Figure 8**.



Photograph 9. Northward view of natural swale dominated by cattails, part of mixed graminoid graminoid mineral meadow marsh (MAMM1-16), an unevaluated wetland feature staked in-situ on May 5, 2016 with NVCA staff



Photograph 10. Westward view of part of unevaluated wetland MAMM1-16, showing a groundcover of ferns, cattails, and wetland sedges and grasses, with a shrub stratum of dogwood and willow shrubs



Photograph 11. Northward view (upgradient) of a narrow band of reed canary grass graminoid mineral meadow marsh (MAMM1-3), an unevaluated wetland designated as part of an NHS "Linkage" area



Photograph 12. Southward view of TCPL dominated mainly by open graminoid meadow (MEGM4-1), comprised of common grasses, weeds and herbaceous forbs, with small pockets and finger drainage swales dominated by sedges

The groundcover contains a combination of wetland, wetland-affinity and wet meadow grasses, sedges, and herbaceous forbs. Typical species include: tall goldenrod, tussock sedge (*Carex stricta*), creeping buttercup, wild mint, creeping bent grass, yellow rocket, marsh blue violet (*Viola cucullata*), reed canary grass, New England aster, purple loosestrife (*Lythrum salicaria*), redtop (*Agrostis gigantea*), lady's-thumb (*Persicaria maculosa*), dark green bulrush, fowl manna grass (*Glyceria striata*), Canada goldenrod, deadly nightshade, purple-stemmed aster, spotted Joe pye-weed, beggar-ticks (*Bidens frondosa*), eastern bracken fern, awl-fruited sedge, Bebb's sedge, Canada thistle (*Cirsium arvense*), stinging nettle (*Urtica dioica*), hairy willow-herb (*Epilobium hirsutum*), fringed loosestrife and meadow sedge (*Carex granularis*). There are also small swards or clumps of common reed (*Phragmites australis*), narrow-leaved cattail and reed canary grass, along with small pockets of standing water.

Reed Canary Grass Graminoid Mineral Meadow Marsh (MAMM1-3): This narrow band which is dominated by reed canary grass is an unevaluated wetland that was staked on May 5, 2016 (**Figure 8**). It lies on both sides of the tributary in the northern half of the property; it is within the Natural Linkage Area (**Photograph 11**). Based on the May 5, 2016 site visit and additional discussions with NVCA staff, this NHS component and its width from the centre-line of the tributary was reduced to an overall width of 60 m (30 m on both sides of the tributary) from its original overall width of 100 m. The MAMM1-3 portion remains fully ensconced within the Natural Linkage Area designation along with agricultural cropland and part of FOCM4-1 as shown on **Figure 7**.

Other grasses, along with forbs and ferns include: Canada bluejoint grass, creeping bent grass, spotted Joe pye-weed, boneset, blue vervain (*Verbena hastata*), smallflower hairy willowherb (*Epilobium parviflorum*), coltsfoot, evening primrose (*Oenothera biennis*), virgin's-bower, elecampane (*Inula helenium*), beggar-ticks, spotted jewelweed, wild mint, false wood-nettle (*Boehmeria cylindrical*), creeping buttercup, fragrant bedstraw, field horsetail, fringed loosestrife, swamp milkweed, purple loosestrife, New England aster, grass-leaved goldenrod, tall goldenrod, early goldenrod (*Solidago juncea*), dark green bulrush, foxtail sedge and awl-fruited sedge.

Open Graminoid Meadow (MEGM4-1): This grassland feature was labelled as dry-moist old field (CUM1-1) on **Figure 6**, with its revised ELC code (fresh-moist open graminoid meadow MEGM4-1) as shown on **Figure 8 (Photographs 12 and 13)**. It is the main feature within the TransCanada Pipeline and is dominated primarily by grasses and weeds, along with scattered trees and shrubs and a small band of cattails along its southern edge, which extends off-site to the south. Shrub species include red-osier



Photograph 13. Northward view of TCPL dominated by open graminoid meadow (MEGM4-1), comprised mainly of grasses, along with sedges, ferns and herbaceous forbs



Photograph 14. East view of part of dry-fresh mixed meadow (MEMM3) on subject property and showing extension off-site onto Parcel 3 (abutting east edge of subject property, dominated by grasses and weeds)



Photograph 15. Westward view of agricultural cropland, namely annual row crops (OAGM1), planted from 2014 to 2017 with soybean and/or corn, a cultural feature with an approved designation of residential in the Salem SP



Photograph 16. Eastward view of annual row crop (OAGM1) agricultural cropland showing corn stubble from previous years planting, with part of MAMM1-3 and tributary of Bear Creek in the foreground

dogwood, common buckthorn, nannyberry (*Viburnum lentago*), wild red raspberry (*Rubus idaeus*) and choke cherry.

Typical groundcover species include: reed canary grass, creeping bent grass, awnless brome grass (*Bromus inermis*), timothy (*Phleum pratense*), orchard grass (*Dactylis glomerata*), quackgrass (*Elymus repens*), awl-fruited sedge, meadow fescue (*Festuca pratensis*), wild carrot (*Daucus carota*), cow vetch (*Vicia cracca*), daisy fleabane, bull thistle (*Cirsium vulgare*), ox-eye daisy (*Chrysanthemum leucanthemum*), red clover, white clover (*Trifolium repens*), common milkweed (*Asclepias syriaca*), New England aster, tall goldenrod, Canada goldenrod, curly dock (*Rumex crispus*), common dandelion, night-flowering catchfly (*Silene noctiflora*), purple-stemmed aster, purple loosestrife, yellow cress, smallflower hairy willowherb, blue-eyed grass (*Sisyrinchium montanum*), Deptford pink (*Dianthus armeria*), Plant species of note include northern green orchid (*Platanthera hyperborean*), showy lady (*Cypripedium reginae*), and foxglove beardtongue (*Penstemon digitalis*).

Dry-Fresh Mixed Meadow (MEMM3): This mixed meadow feature was labelled as dry-moist old field (CUM1-1) on **Figure 6**, with its revised ELC code (dry-fresh mixed meadow MEMM3), as shown on **Figure 8 (Photograph 14)**. It lies along the easternside of property, along the eastern edge of FOCM4-1 and extends off-site. Scattered trees and shrubs include trembling aspen, common crab-apple (*Malus pumila*), eastern white cedar, common buckthorn and wild red raspberry.

Typical groundflora includes: wild carrot, tall goldenrod, Canada goldenrod, common mullein (*Verbascum thapsus*), common milkweed, awnless brome grass, timothy, orchard grass, meadow fescue, eastern bracken fern, hairy agrimony (*Agrimony gryposepala*), white clover, red clover, white sweet-clover (*Melilotus alba*), common plantain (*Plantago major*), English plantain (*Plantago lanceolata*), ox-eye daisy, fleabane, cow vetch, reed canary grass, Kentucky blue grass (*Poa compressa*), bull thistle, Canada thistle, New England aster, heal-all (*Prunella vulgaris*), curly dock, chicory (*Cichorium intybus*), common burdock, field horsetail, mouse-eared chickweed (*Cerastium vulgare*), yellow goat's-beard (*Tragopogon pratensis*), field pennycress (*Thlapsi arvense*), shepherd's purse (*Capsella bursa-pastoris*), common dandelion, common strawberry, and common ragweed (*Ambrosia artemisiifolia*).

Annual Row Crops (OAGM1): This cultural feature comprises the majority of the property which is designated Residential in the SSP, and is proposed for mixed residential uses, as per the Draft Plan of Subdivision prepared by MHBC (**Figure 4**). The agricultural cropland has been planted since 2014 with

either soybean (*Glycine max*) or corn (*Zea mays*), which are rotated along with possible other crops such as clover or left fallow (**Photographs 15 and 16**).

Details regarding the dry-fresh mixed meadow (MEMM3) interface with the property perimeter tree cover (FOCM4-1) located partially along the northern and entire eastern edges is contained in Kuntz Forestry Consulting Inc. 2018) (see **Appendix C**).

4.4.3 Floristics

During all site visits, detailed botanical inventories were conducted within the cultural and natural features that lie within the subject property. A master vascular plant species list is contained in **Appendix B**. The presence of any federal, provincial and/or regional rarities is discussed in **Section 5.0**.

4.5 Wildlife and Wildlife Habitat

The vegetation communities and land uses identified, delineated and inventoried within the subject property are comprised mainly of agricultural cropland – annual row crops (ELC unit AGM1) in the northern half, with a mosaic of woodland/unevaluated wetlands and meadows in the southern half (**Figure 8**). The tributary of Bear Creek and its abutting natural and cultural features on both sides within 30 m of the Creek's centre line are designated in the approved **SSP** as Natural Linkage Area. It is to be noted that approximately one-third (i.e., 6.69 ha) of the overall property area of 25.82 ha is comprised of natural features, and for the most part will be retained intact. It is the intent as part of the Draft Plan of Subdivision, that the natural features (i.e., Block 46 to 52) will be rezoned to an Environmental Protection (Open Space) zone, thereby affording protection to the on-site and local wildlife populations and their inherent ecological functions.

Permanent, summer residents and migrant wildlife species have adapted to the present land use conditions. The on-site and abutting natural features (i.e., to the east and south of the property) provide typical life-cycle opportunities such as nesting, resting, feeding, and roosting for mostly rural tolerant wildlife. All of the species observed or heard on the property are ubiquitous to the local geographical area, and all have been recorded on adjacent lands, particularly those extensive mosaics of woodlands, unevaluated wetlands, meadows, and shrub thickets contained in the Natural Heritage System.

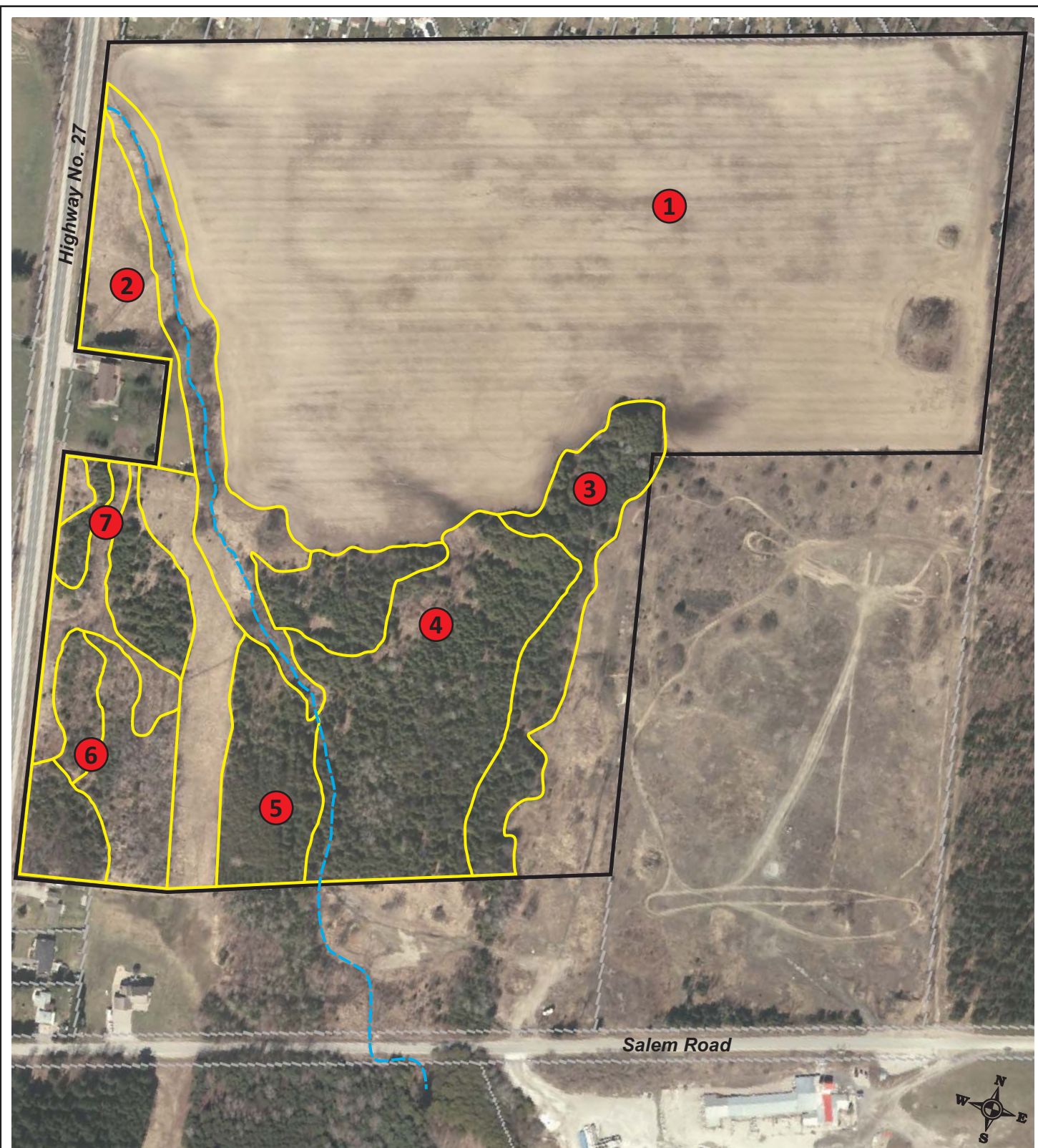
The following subsections provide summaries of the wildlife inventories undertaken on the subject property during the spring to fall months of 2017. These are supplemented with observations garnered

during the 2017 botanical inventories and previous field investigations undertaken as part of the **SIS** and data contained in the NHS reports prepared by Natural Resource Solutions Inc. (2012).

Birds: Forty-three (43) bird species were detected during the two dawn breeding bird surveys and supplemented with observations from the botanical inventories and **SIS** field work. The locations of the dawn breeding bird point count stations are shown in **Figure 9**. The results of the survey are in **Table 2**. Of these 43 species, 34 exhibited breeding evidence on the property and possibly on the abutting lands. Examples of bird species observed on-site and considered common within the local geographic area include: cedar waxwing (*Bombycilla cedrorum*); northern cardinal (*Cardinalis cardinalis*); mourning dove (*Zenaidura macroura*); American crow (*Corvus brachyrhynchos*); blue jay (*Cyanocitta cristata*); chipping sparrow (*Spizella passerina*); American goldfinch (*Carduelis tristis*); red-winged blackbird (*Agelaius phoeniceus*); common grackle (*Quiscalus quiscula*); black-capped chickadee (*Poecile atricapillus*); yellow warbler (*Geothlypis trichas*); downy woodpecker (*Picoides pubescens*); American robin (*Turdus migratorius*); great-crested flycatcher (*Myiarchus cinerascens*); and red-eyed vireo (*Vireo olivaceus*). Our list should not be considered definitive, as weather conditions and subsequent surveys may result in additional species being found. However, these additional sightings would likely be restricted to the mosaic of woodland/unevaluated wetland and meadow features, that will remain intact and protected through containment in an Environmental Protection zone.

Only two birds species were observed or heard on-site that are designated either as Special Concern and/or Threatened on either a Federal and/or Provincial level. A wood thrush (*Hylocichla mustelina*) was heard calling during breeding season in a block of unevaluated wetland (SWMM1-1). This species is designated as Threatened on a Federal level (**SARA 2002**) and is a Special Concern species in the Province (**ESA 2007**). The other bird species is eastern wood pewee (*Contopus virens*), which is designated as a Special Concern species under both legislations. It was observed or heard calling in the same unevaluated wetland feature.

Mammals: Mammal species observed, heard or evidence of presence noted on the property or on abutting lands include: red squirrel (*Tamiasciurus hudsonicus*); eastern gray squirrel (*Sciurus carolinensis*); eastern chipmunk (*Tamias striatus*); eastern cottontail (*Sylvilagus floridanus*); groundhog (*Marmota monax*); northern raccoon (*Procyon lotor*); American porcupine (*Erethizon dorsatum*); coyote (*Canis latrans*); beaver (*Castor canadensis*); and white-tailed deer (*Odocoileus virginianus*). All of these mammal species are ubiquitous to the local geographical area and the natural features contained on and



<http://maps.simcoe.ca/public/>

Figure 9. Dawn Breeding Bird Point Count Stations

Scale 1:3500 (approx)

Di Poce (Innisfil) Inc. Property

Part of South Half of Lot 1

Concession 11

City of Barrie

County of Simcoe



subject property



tributary of Bear Creek



dawn breeding bird point count station



In Association With



Cunningham Environmental Associates

Table 2. Bird Species List for Subject Property - DiPoce (Innisfil) Inc. 8001 County Road 27, City of Barrie, County of Simcoe.

			Point Count Station									Conservation Rank Information ²			
FAMILY	SCIENTIFIC NAME	COMMON NAME	1	2	3	4	5	6	7	Breeding Evidence ¹	Relative Location	S RANK	G RANK	SARO STATUS	COSEWIC Status
Accipitridae	<i>Buteo jamaicensis</i>	Red-tailed Hawk	X,							Possible	Adjacent woodlands	S5	G5	NAR	
Alcedinidae	<i>Megaceryle alcyon</i>	Belted Kingfisher					X,			None	NA	S4B	G5		
Anatidae	<i>Branta canadensis</i>	Canada Goose	X,X							FO	NA	S5	G5		
Anatidae	<i>Anas platyrhynchos</i>	Mallard		X,			X,			None	NA	S5	G5		
Ardeidae	<i>Ardea herodias</i>	Great Blue Heron	X,							FO	NA	S4	G5		
Bombycillidae	<i>Bombycilla cedrorum</i>	Cedar Waxwing			C,				C,C	Probable	On-site	S5B	G5		
Cardinalidae	<i>Cardinalis cardinalis</i>	Northern Cardinal			C,P		C,P			Probable	On-site	S5	G5		
Cardinalidae	<i>Passerina cyanea</i>	Indigo Bunting				S,				Possible	On-site	S4B	G5		
Cardinalidae	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak					S,S	S,		Probable	Adjacent woodlands	S4B	G5		
Cathartidae	<i>Cathartes aura</i>	Turkey Vulture	X,							FO	On-site	S5	G5		
Charadriidae	<i>Charadrius vociferus</i>	Killdeer	H,C							Possible	On-site	S5B,S5N	G5		
Columbidae	<i>Zenaida macroura</i>	Mourning Dove			C,C	C,P	C,C	X,X	X,X,	Probable	On-site	S5	G5		
Corvidae	<i>Corvus brachyrhynchos</i>	American Crow			H,C	C,C	C,C	H,C		Probable	On-site	S5B	G5		
Corvidae	<i>Cyanocitta cristata</i>	Blue Jay			C,C	C,C,	C,C,	C,C	C,C	Probable	On-site	S5	G5		
Emberizidae	<i>Melospiza melodia</i>	Song Sparrow	C,	H,H						Possible	On-site	S5B	G5		
Emberizidae	<i>Passerculus sandwichensis</i>	Savannah Sparrow	X,							None	On-site	S4B	G5		
Emberizidae	<i>Spizella passerina</i>	Chipping Sparrow			S,S,	S,S	S,S			Probable	On-site	S5B	G5		
Emberizidae	<i>Zonotrichia albicollis</i>	White-throated Sparrow	C,C							Probable	Adjacent woodlands	S5B	G5		
Emberizidae	<i>Melospiza georgiana</i>	Swamp Sparrow				S,P				Probable	On-site	S5B	G5		
Fringillidae	<i>Carduelis tristis</i>	American Goldfinch			H,H	H,S	H,H	H,H	S,S	Probable	On-site	S5B	G5		
Hirundinidae	<i>Tachycineta bicolor</i>	Tree Swallow				H,		H,		Possible	NA	S4B	G5		
Icteridae	<i>Agelaius phoeniceus</i>	Red-winged Blackbird		H,A		H,S		S,S	S,S	Probable	On-site	S4	G5		
Icteridae	<i>Molothrus ater</i>	Brown-headed Cowbird		X				H,H		Possible	On-site	S4B	G5		
Icteridae	<i>Quiscalus quiscula</i>	Common Grackle	H,					H,S	H,S	Possible	On-site	S5B	G5		
Laridae	<i>Larus delawarensis</i>	Ring-billed Gull	X							FO	NA	S5B,S4N	G5		
Mimidae	<i>Toxostoma rufum</i>	Brown Thrasher					X,	H,C	C,C	Probable	On-site	S4B	G5		
Paridae	<i>Poecile atricapillus</i>	Black-capped Chickadee			C,C	C,C	C,C	C,C	C,C	Probable	On-site	S5	G5		
Parulidae	<i>Geothlypis trichas</i>	Common Yellowthroat		H,					H,S	Possible	On-site	S5B	G5		
Parulidae	<i>Setophaga caerulescens</i>	Black-throated Blue Warbler				H,				Possible	On-site	S5B	G5		
Parulidae	<i>Setophaga petechia</i>	Yellow Warbler						S,S	S,S	Probable	Adjacent woodlands	S5B	G5		
Parulidae	<i>Setophaga ruticilla</i>	American Redstart					H,			Possible	On-site	S5B	G5		
Picidae	<i>Picoides pubescens</i>	Downy Woodpecker			C,C	C,C	C,C			Probable	Adjacent woodlands	S5	G5		
Sittidae	<i>Sitta canadensis</i>	Red-breasted Nuthatch				C,C	C,C			Probable	Adjacent woodlands	S5	G5		
Sturnidae	<i>Sturnus vulgaris</i>	European Starling		X,					X,X	None	On-site	SNA	G5		
Troglodytidae	<i>Troglodytes aedon</i>	House Wren				C,C,	,C	,C		Probable	On-site	S5B	G5		
Turdidae	<i>Hylocichla mustelina</i>	Wood Thrush				C,				Possible	On-site	S4B	G4	SC	THR
Turdidae	<i>Turdus migratorius</i>	American Robin	X,X	X,X	H,H	H,H	H,V	H,H	H,H	Probable	On-site	S5B	G5		
Tyrannidae	<i>Contopus virens</i>	Eastern Wood-pewee				C,C				Probable	Adjacent woodlands	S4B	G5	SC	SC
Tyrannidae	<i>Myiarchus crinitus</i>	Great Crested Flycatcher			,C			C,C	,C	Probable	On-site	S4B	G5		
Tyrannidae	<i>Sayornis phoebe</i>	Eastern Phoebe		X,						None	On-site	S5B	G5		
Tyrannidae	<i>Tyrannus tyrannus</i>	Eastern Kingbird	C,C	C,C						Probable	On-site	S4B	G5		
Vireonidae	<i>Vireo galbus</i>	Warbling Vireo				C,C	C,C		H,H	Probable		S5B	G5		
Vireonidae	<i>Vireo olivaceus</i>	Red-eyed Vireo			C,C	C,C	C,C			Probable	Adjacent woodlands	S5B	G5		

Surveys Conditions:
June 5, 2017; Start Time 0530hr/ End Time 0830hr; Start Temperature +13°C/ End Temperature +14°C; Start Wind B2/End Wind B2; Cloud Cover Start 25%, End 50%; Precipitation Nil; Observer David G. Cunningham (CEA)

June 19, 2017; Start Time 0515hr/ End Time 0830hr; Start Temperature +14°C/ End Temperature +19°C; Start Wind B3/End Wind B2; Start Cloud Cover 10%/ End Cloud Cover 10%; Precipitation Nil; Observer David G. Cunningham (CEA)

Point Count Survey Duration - 10 minutes/station

¹Highest level of breeding evidence detected based on Ontario Breeding Bird Atlas (OBBA) criteria and Breeding Evidence Codes

²Conservation Rank - from Ontario Ministry of Natural Resources & Forestry, Natural Heritage Information Centre, Species at Risk in Ontario Lists and Environment Canada/COSEWIC Lists

S-rank - S1 - Extremely Rare, S2 - Very Rare, S3 - Rare to Uncommon, S4 - Common, S5 - Very Common NAR - Not at Risk

G-Rank - G1 - Critically Imperiled, G2 - Imperiled, G3 - Vulnerable, G4 - Apparently Secure, G5 - Secure

³Breeding Evidence Codes: Entry examples **S,S** - Singing Male detected during first survey and second survey; **S** Singing male detected during first survey only ,**S** Singing male detected during second survey only

Breeding Evidence Breeding Evidence Codes

None FO - Species observed Flying Over showing no signs of use of subject or adajcent lands

Observed X - Species observed, no evidence of breeding

Possible H - Species observed in its breeding season in suitable nesting habitat

Note S or C - Singing male(s) present (S), or breeding calls heard (C), in suitable nesting habitat in breeding season

Probable P - Pair observed in suitable nesting habitat in nesting season

Probable D - Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.

Probable V - Visiting probable nest site

Probable A - Agitated behaviour or anxiety calls of an adult

Probable B - Brood Patch on adult female or cloacal protuberance on adult male

Probable N - Nest-building or excavation of nest hole.

Confirmed DD - Distraction display or injury feigning.

Confirmed NU - Used nest or egg shells found (occupied or laid within the period of the survey)

Confirmed FY - Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight

Confirmed AE - Adult leaving or entering nest sites in circumstances indicating occupied nest

Confirmed FS - Adult carying fecal sac.

Confirmed CF - Adult carying food for young.

Confirmed NE - Nest containing eggs.

Confirmed NY - Nest with young seen or heard

Note : Possible if only one observation of S or C, Probable if evidence of S or C in same place on two or more dates a week or more apart

abutting the site. None of these species are listed as a SAR, under the Federal **SARA 2002** or the Provincial **ESA 2007**.

Herpetofauna: **Table 3** contains a list of amphibians detected on the property and at a control site during the evening amphibian call count surveys conducted over the three evenings. The locations of the evening amphibian call stations are illustrated in **Figure 10**. The survey followed the standard protocols outlined in the **Marsh Monitoring Program** (Bird Studies Canada 2009). Amphibian species detected on-site and in low calling numbers (e.g., mostly calling code 1) included: American toad (*Bufo americanus*), spring peeper (*Pseudacris crucifer*), gray tree frog (*Hyla versicolor*), wood frog (*Rana sylvaticus*); and northern leopard frog (*Rana pipiens*). The species diversity and low number of calling individuals is expected, given the lack of open water on-site and abutting the property. All of these species were heard calling at the control site (along the southern and northern sides of McKay Road) in substantially higher calling numbers (e.g., mostly call code 2 and some calling code 3), with additional species noted such as western chorus frog (*Pseudacris triseriata*) and green frog (*Lithobates clamitans*).

The only reptile species noted on-site was the eastern garter snake (*Thamnophis sirtalis sirtalis*), that was observed in the TransCanada Pipeline grassland feature (i.e., open Graminoid meadow MEGM4-1).

Bats: A report was commissioned from Beacon Environmental Limited (Beacon) under direction from Michalski Nielsen Associates Limited to undertake an evaluation of potential bat habitat on the Di Poce (Innisfil) Inc. property. The purpose of the study was to assess the quantity and quality of bat habitat on-site based on the proposed Draft Plan of Subdivision. **Appendix D** contains the bat habitat assessment. In summary, it was determined that the immature treed habitats on the property do not represent high quality potential maternity roost habitat due to the lack of suitable snags/cavity trees. Therefore, following the MNRF Midhurst District Office survey protocols, acoustic monitoring to determine the presence of bats was deemed not be required. Of note is that the Concept Plan “H” in the Beacon report has been replaced with the most recent Draft Plan of Subdivision; but, the boundaries of the natural features to be retained remain the same, as does the bat surveyed area. It is recommended that vegetation removal on the subject property should occur during the period of September 30th to April 15th when bat species are potentially hibernating and would not be using the woodland/unevaluated wetland (treed swamp) features.

Table 3. Amphibian Species List for Subject Property - DiPoce (Innisfil) Inc. 8001 County Road 27, City of Barrie, County of Simcoe.

Common Name	Scientific Name	19-Apr-17						12-May-17						11-Jun-17						Conservation Rank		
		On-site #1	On-site #2	On-site #3	On-site #4	On-site #5	Control Site ²	On-site #1	On-site #2	On-site #3	On-site #4	On-site #5	Control Site	On-site #1	On-site #2	On-site #3	On-site #4	On-site #5	Control Site	S Rank	SARO Status	COSEWIC Status
Spring Peeper	<i>Pseudacris crucifer</i>	1-2	1-1	1-1			3	2-4	1-1	1-2			3	1-1					2-4	S5		
American Toad	<i>Anaxyrus americanus</i>							1-2					1-3	2-4	1-2				3	S5		
Wood Frog*	<i>Rana sylvaticus</i>			1-2			1-3						2-4						1-1	S5		THR
Western Chorus Frog	<i>Pseudacris triseriata</i>						2-4						3						1-3	S5		
Northern Leopard Frog**	<i>Rana pipiens</i>							1-2	1-1				2-3						1-2	S5		
Green Frog	<i>Lithobates clamitans</i>																		3	S5		
Gray Tree Frog	<i>Hyla versicolor</i>									1-3	1-2	1-2	3		1-1	1-3	1-1		3	S5		

Observation Conditions:

April 19 - Start Time: 2015hr, Air Temp. +7^oC, Wind B3 North Northwest, Cloud 50%, Precipitation Nil, Observer David G. Cunningham (CEA)

May 12 - Start Time: 2100hr, Air Temp. +10^oC, Wind B1 Northeast, Cloud 100%, Precipitation Nil, Observer David G. Cunnigham (CEA)

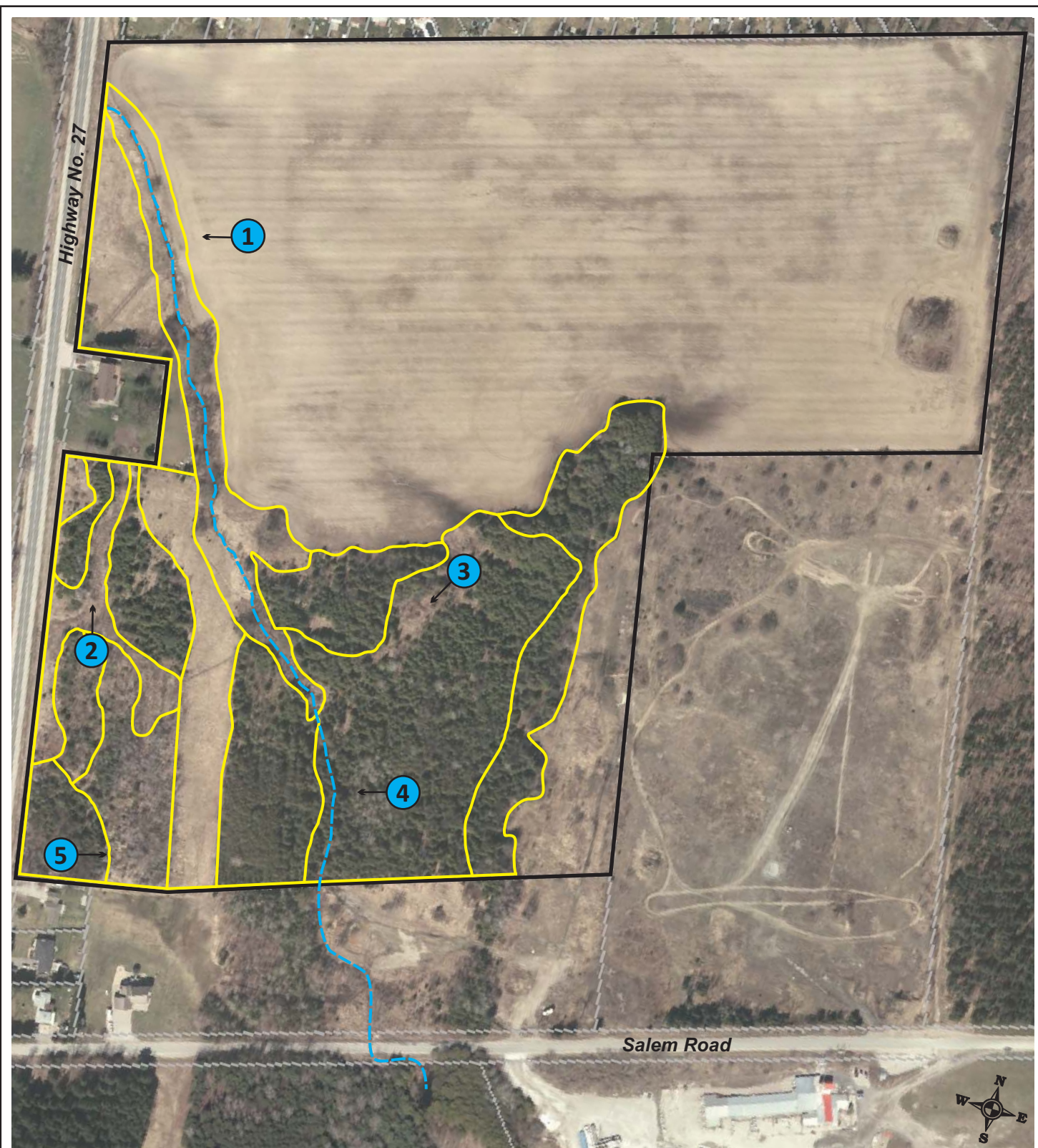
June 11 - Start Time: 2230hr, Air Temp. +20^oC, Wind B2 South, Cloud 0%, Precipitation Nil, Observer David G. Cunnigham (CEA)

¹Call Code: 3 - Full Chorus; 2-# - Overlapping Calls number of individuals calling total; 1-# - Non-overlapping Calls number of individuals calling total

²Control Site: McKay Road approximately 875 m west of Veterans Drive (NAD83 17T 603436m E 4906593m N)

* wood frog was observed in May and June but were not calling in the on-site woodland and woodland/unevaluated wetland features

** northern leopard frog was observed in May and June, but were not calling in the on-site woodland and woodland/unevaluated wetland, meadow features and tributary



<http://maps.simcoe.ca/public/>

Figure 10. Evening Amphibian Call Stations

Scale 1:3500 (approx)

Di Poce (Innisfil) Inc. Property

Part of South Half of Lot 1
Concession 11
City of Barrie
County of Simcoe



subject property



tributary of Bear Creek

evening amphibian call stations
(listening direction)

Michalski Nielsen
ASSOCIATES LIMITED

In Association With

Cunningham Environmental Associates

4.6 Fish and Fish Habitat

As previously described, there is an intermittent tributary of Bear Creek which traverses the subject property in a south to northwest direction, with its origin from an unevaluated wetland/pond feature that lies to the south of Salem Road. **Photographs 17 through 20** show conditions of the tributary at different sites within the subject property, as well as the open ditch/swale south of the existing developed lot that fronts County Road 27, and conveys surface runoff from the Road to the Bear Creek tributary. The orientation and reach of the tributary is illustrated on Figure 6A. Barrie Annex Lands – West Aquatic Resources in Natural Resources Solution Inc. and Dougan & Associates (2012) as watercourse BEA-001. The tributary is also illustrated on Figure 3A. Barrie Annexed Lands West Parcel – Watercourse Reach Rankings which has been divided into 4 reaches (BEA1-1, BEA1-2, BEA1-3 and BEA1-4), with reaches BEA1-3 and BEA1-4 germane to the subject property. Reach BEA1-3 is designated with a Medium ranking (M). Medium rankings were assigned to watercourses that provide important fish habitat and which support fish and/or water quantity and quality to brook trout spawning areas. Reach BEA1-4 is designated with a High ranking (H). High ranked habitat is assigned to watercourses with sensitive and/or critical fish habitat including brook trout habitat and/or confirmed spawning habitat.

No fish biomass or fish habitat assessment surveys were conducted in the tributary of Bear Creek for this **EIS**, nor were any warranted. As agreed during the formulation of the Salem Secondary Plan Subwatershed Terms of Reference (Appendix A in Schaeffers Consulting Engineers *et al.* 2017), a stream assessment following the Ontario Stream Assessment Protocol (Province of Ontario 2017) was not required for participating landowners.

Regardless of the lack of fisheries data for reaches BEA1-3 and BEA1-4, the entire length of the tributary of Bear Creek on-site and extending off-site to the south lies within the Natural Linkage Area, with a minimum 30 m boundary (setback) from the centre-line of the watercourse. All abutting natural and cultural features outside of the tributary's littoral zone will remain intact, with possible enhancement plantings within the 30 m setback that is currently agricultural cropland.

It is recognized that the Draft Plan of Subdivision (**Figure 4**) shows a proposed crossing of the tributary by Street 'A', which is a main collector road (24 m R.O.W). This road will also service an abutting approved residential development to the east, and provide access to County Road 27. The proposed crossing of the tributary traverse the Natural Linkage Area across Blocks 46 and 47, comprised mainly of a Reed Canary Grass Graminoid Mineral Meadow Marsh (MAMM1-3). Due diligence and all relevant



Photograph 17. Upgradient view of man-made drainage swale, along south edge of existing as-built lot that fronts onto Highway 27, and which conveys surface runoff from the highway, eventually draining into the Bear Creek tributary



Photograph 18. Upgradient view of Bear Creek tributary, along east edge of as-built residential lot that fronts onto Highway 27, shows trickle flow and silt-clay substrate, part of NHS designated "Linkage" area



Photograph 19. Downgradient view of Bear Creek tributary within FOCM4-1 feature along east edge of TCPL, that tributary lies within the NHS designated "Linkage" area, and show silt-sand and clayey substrate with shallow flow



Photograph 20. Upgradient view of part of Bear Creek tributary, lying within white cedar coniferous forest (FOCM4-1), part of the NHS designated "Linkage" area, reduced from a 100 m width to 60 m (30 m each side of creek centre-line)

requirements under the Federal ***Fisheries Act, 1985*** (Fisheries and Oceans Canada 1985 and Environment and Climate Change Canada 2018) will be addressed for the proposed crossing of the Bear Creek tributary. A component of the due diligence exercise will be the submission of a “Request for Review” to the Fisheries and Oceans Canada, as well as ascertaining any requirements under the Federal ***Species At Risk Act (SARA) 2002*** (Environment and Climate Change Canada 2018) and the Provincial ***ESA 2007*** (Province of Ontario 2007).

Detailed engineering drawings and specifications for the type of the proposed crossing of the Bear Creek tributary are lacking at this point in the planning process. At present, the proposed location and the alignment are shown on the Draft Plan of Subdivision (**Figure 4**), and discussions and guidance will be sought from Fisheries and Oceans Canada upon submission of the “Request for Review” form.

5 RESOURCE SIGNIFICANCE

5.1 Vegetation Communities/Floristics

Extensive ecological field inventories were conducted in 2017 and 2018; the data were supplemented with field work undertaken in 2014, 2015 and 2016 as part of the 2017, **SIS**. Additional information was found in the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Inc. 2012). From these sources, an assessment of the resource significance of the on-site vegetation communities was possible. In this regard, it is our professional opinion and supported by the data and schedules of the **SSP** that none of the vegetation communities are considered rare on either a Federal, Provincial, County or City level.

The tributary of Bear Creek and its abutting features are designated as a Natural Linkage Area, and are afforded protection through the policies of the **SSP**.

It is noted that there are unevaluated wetland features on-site, some of which were identified and mapped during the City of Barrie NHS field work (**Figure 6**). Based on subsequent field investigations as part of the **SIS**, supplementary wetland features and their boundaries were identified and staked in-situ with the NVCA on May 5, 2016 (**Figure 7**), namely the unevaluated treed swamp (SWMM1-1) in the southern part of the site. Furthermore, using the 2017 field work and update to the MNR ELC codes (Lee 2008), minor refinements to the unevaluated wetland features and their ELC characterizations were undertaken; these are illustrated on **Figure 8**. With the exception of the reed canary grass mineral meadow marsh (MAMM1-3) feature contained in the Natural Linkage Area, none of the unevaluated wetland features (SWMM1-1, SWMM3-2, SWMO1-1, and MAMM1-16) are part of the City of Barrie NHS.

Nevertheless, all of the unevaluated wetland features (including MAMM1-3 in the Natural Linkage Area) are regulated by the NVCA under **Ontario Regulation 172/06**. Authorized under the *Conservation Authorities Act* (Province of Ontario 1990), it refers to the “*Regulation of Development, Interference with Wetlands and Alteration to Shorelines and Watercourses*.”

From a floristics perspective, none of the plant species in the Di Poce (Innisfil) Inc. master plant species list (**Appendix B**) are designated or listed as Endangered, Threatened, rare or uncommon on either a Federal, Provincial, Regional or local level based on the status lists documented in **Section 3.3**. Butternut (*Juglans cinerea*) is known to occur on the adjacent property to the east of the agricultural cropland feature (OAGM1). Butternut is listed as Endangered under the **ESA 2007**. None were found on the subject property based on the on-site surveys, with an enhanced level of effort expended on the proposed

development land portions, as well as the eastern property edge interface with the off-site deciduous forest block (part of the City of Barrie NHS). As well, no butternuts are listed in the **Tree Inventory and Preservation Plan Report** (Kuntz Forestry Consulting Inc. 2018 – **Appendix C**).

A review of the NHIC web-site database (NHIC 2018) did not show any tracked plant species (EO_ID 1km x 1km squares) and/or any Natural Areas.

5.2 Species of Conservation Interest

In terms of SAR on both a Federal and Provincial level, no floral or faunal SAR were found or have been reported from the subject property, with the exception of wood thrush. Wood thrush is listed on Schedule 1 of the Federal SARA, 2002 as Threatened; similarly, it is Threatened in Ontario's *ESA 2007*. Based on the June 5, 2017 dawn breeding bird survey, an individual was heard calling in the unevaluated wetland treed swamp (SWMM1-1). In addition to the wood thrush, an eastern wood-pewee was heard calling in the same unevaluated wetland on both June 5 and June 19, 2019. Eastern wood pewee is a species of Special Concern under both the *SARA, 2002* and the *ESA, 2007*. According to the **OBBA** (Bird Studies Canada et al), survey protocols and level of breeding evidence, both species are considered “possible” breeders within the subject property.

As stated in **Section 5.1**, no floral SAR were found or has been reported from the property. This includes butternut, which is known to occur in the City of Barrie NHS, including the abutting property east of the agricultural cropland feature (OAGM1).

Three plant species of note include northern green orchid, showy lady's slipper and foxglove beardtongue which are not SAR nor regionally rare in Simcoe County. These species may be uncommon in the NHS as there is no listing in Appendix H - Plant Species Documented from the Barrie Annexed Lands in 2011 within the NVCA watershed portion of the **SSP**. The plant database for the **SSP** is somewhat comprehensive; but, it may be lacking and is not site specific. Regardless, all three species lie within the open Graminoid meadow portion (MEGM4-1) of the TransCanada Pipeline easement, which is not part of the proposed development and is intended to be zoned and protected as Environmental Protection (Blocks 47 and Block 49).

5.3 Significant Wildlife Habitat

The results of the wildlife field investigations also identified habitat features (i.e., attributes) and their inherent wildlife functions. Candidate SWH and the criteria used to identify and assess the potential designation as SWH are outlined in **Ecoregion 6E Criterion Schedule** (Ministry of Natural Resources and Forestry 2015). For the purposes of this **EIS**, a SWH assessment was not undertaken, nor warranted in our opinion, given that the vast majority of mosaic of woodland/unevaluated wetland and meadow features (6.69 ha or approximately 1/3 of the subject property) will be retained and rezoned as Environmental Protection - Open Space in Blocks 46 to 52 (**Figure 4**). The natural features illustrated on the Draft Plan of Subdivision as Blocks 46 to 52 will remain intact and also contain the Natural Linkage Area.

It is to be noted that none of the woodland/unevaluated wetland and meadow features (FOCM4-1, FOMM4-2, WOMM4-1, SWMM1-1, SWMM3-2, SWMMO1-1, MAMM1-16, MAMM1-3, MEGM4-1 and MEMM3) are identified or mapped as SWH or as being within the NHS, based on our review of the **City of Barrie Annexed Lands Natural Heritage System** (Natural Resource Solutions Inc. 2012) and the SSP.

Also, as contained in Appendix B of the **City of Barrie Annexed Lands Natural Heritage System Report** (Natural Resource Solutions Inc. 2012), a SWH assessment of the NHS Core Areas was undertaken. The Di Poce (Innisfil) Inc. property was not identified or mapped as lying within the NHS or NHS Core Area. The Natural Linkage Area designation was mapped and intended to protect a potential linkage of the NHS Core Area 1 via the Bear Creek tributary to other natural features downstream in the Bear Creek valley and other forest and or wetland features within Essa Township.

The intended rezoning of the woodland/unevaluated wetland and meadow features in Blocks 46 to 52 will protect the attributes and ecological functions of each feature, regardless of whether these features may qualify as candidate SWH.

6 PROPOSED DEVELOPMENT, IMPACT ANALYSES AND MITIGATION

6.1 Limits of Development

As described in **Section 1.1**, there are no buildings or roads within the subject property; however, it is not an untouched landscape. Agricultural crops have been grown over much of the site, inclusive of corn and soya. As well, a TransCanada Pipeline parallels Country Road 27. An unevaluated wetland and related woodlands dominate the southern part of the property, and a tributary to Bear Creek traverses the site in a north to south direction. Parts of the wetland and woodlands, and the Bear Creek tributary are included in the City of Barrie's NHS, that is, within a Natural Linkage Area. However, parts of the unevaluated wetland are outside of the protected corridor. These are identified as ELC units SWMM-1, SWMM3-2, SWMO1-1, MAMM1-3 and MAMM1-16 (refer to **Figure 8**); they receive no protection from policies in the **SSP**. As well, small parts of woodlands are outside the Natural Linkage Area (i.e., ELC units FOCM4-1, WOMM4-1, and FOMM4-2), and similarly receive no protection. It is against this background that limits of development needed to be determined, which in turn would provide Di Poce (Innisfil) Inc. with a net developable area, the latter of which is inherent in the development proposal set out in **Figure 4**. The question of how one arrives at reasonable development limits is a requirement in City of Barrie's conformity review, as follows.

1. In order to accurately determine the appropriate limits of development, NVCA staff request that a scaleable drawing be provided which illustrates the following:
 - i. the wetland boundaries;
 - ii. the width of all wetland buffers;
 - iii. the erosion hazard limit plus a 6.0 m access allowance;
 - iv. the floodplain limit plus a 6 m allowance;
 - v. the Bear Creek tributary plus 30 m setback on each side; and
 - vi. the proposed lot/block fabric.
2. An **EIS** is required in support of the proposed development and to appropriately delineate the limits to development. The **EIS** should identify all natural heritage features and functions on the property, and should identify impacts and mitigation opportunities associated with the development. This should include consideration of potential SAR and SAR habitat on the property including consultation with the MNR as required. Offsetting and restoration (as discussed at the September meeting) will be an important component of the **EIS**. We note that opportunities for offsetting and enhancement are present along the Bear Creek tributary corridor.

This **EIS** should be provided as part of the submission package in support of the application for the zoning by-law amendment and application for draft plan of subdivision approval.

With respect to the first requirement, **Figure 11** addresses: wetland boundaries staked in the field with NVCA staff on May 5, 2016, and subsequently surveyed; wetland buffer widths which are reconciled/justified in **Section 6.2.4.2**; the erosion hazard limit plus a 6.0 m access allowance, determined by GeoPro Consulting Limited; and the floodplain limit plus a 6 m allowance, identified by Schaeffers Consulting Engineers. The Bear Creek tributary plus a 30 m setback on each side of the centre line, and block fabric was determined by MHBC. Importantly, all of the Draft Plan of Subdivision is outside the 30 m setback from the centre line of the Bear Creek tributary in the northern part of the property. The limits of development associated with the unevaluated wetlands south of Street A are discussed in **Section 6.2.4**.

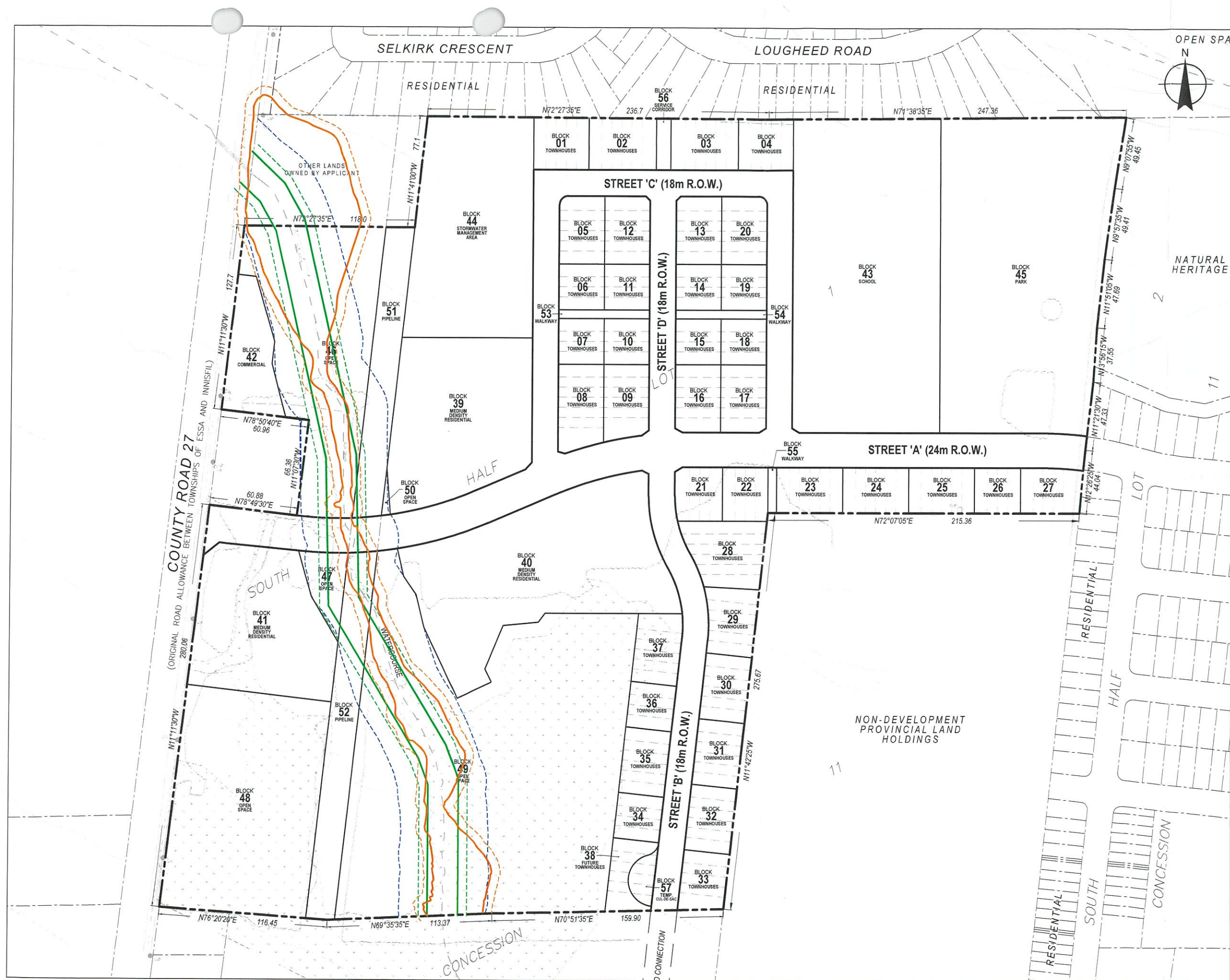
The commentary which follows is intended to provide prescriptions on mitigation measures which will need to be implemented. Inherent in our recommendations is the notion that mechanisms are in place whereby specific tactics can be implemented.

Before addressing impacts relating to the proposed subdivision, it is important to answer the overriding question of whether the Draft Plan of Subdivision is appropriate. In our opinion, the short answer is yes. While the subject landscape exhibits a number of environmental constraints, it is of sufficient size to accommodate the proposed residential and commercial uses and associated infrastructure, while at the same time protecting features associated with the NHS and most of the natural features and functions outside of the corridor.

6.2 Impact Evaluation

6.2.1 Vegetation Communities

There will be a small diminution in woodland communities that are outside the Natural Linkage Area, more specifically, most of ELC units FOCM4-1 and WOMM4-1 on the eastern and western sides of the corridor, respectively, and the northern part of FOMM4-2. Parts of these features will require removal in March 2019 for the approved east-west collector road (Street A) alignment. Additional tree removal is needed to accommodate the Medium Density blocks south of Street A and single family residential units associated with Street B in the southeastern part of the landholding. In our opinion, the diminishment in



WATERCOURSE CONSTRAINTS

DiPoce Barrie

Part of South Half Lot 1, Concession 11
Town of Innisfil
County of Simcoe

LEGEND

- Floodline
- - - 6m Buffer from Floodline
- Meander Belt
- - - 6m Buffer from Meander Belt
- - - 30m Watercourse Setback

FIGURE 11. Limits to Development.

DATE November 19, 2018

SOURCES MHBC Draft Plan - 2018-11-19

SCALE 0 50 100 150 200 250
Metres

N:\Barrie\0853\FDrawings\Other\Watercourse Constraints\CAD\WatercourseConstraints_2018-11-19

MHBC PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE

113 COLLIER STREET, BARRIE, ON L4M 1H2
P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

tree cover is not considered an adverse impact on the attributes and functions of the overall forest because these communities will remain represented and protected on site; as well, they are well represented and protected within the NHS elsewhere in the SSP. It is therefore recommended that:

- **any tree removal be undertaken outside the breeding period for birds and hibernating bats, which extends from April 15th to October 31st. This timing window relates to provisions of the federal *Migratory Birds Convention Act* for birds, and period when bats would not be using the woodland/wetland features.**

6.2.2 Wildlife and Wildlife Habitat

With the above-noted small diminishments in forest cover relative to that remaining and protected on site and elsewhere in the NHS, there will be some reduction in nesting opportunities, breeding habitats, foraging areas, roosting sites and territories in general for birds and mammals. It is also recognized that the tree clearing will result in an increase in edge habitat for those species that are already attracted to the area. We acknowledge that regrading and construction activities will result in both temporary and long term impacts including noise, and the introduction of new residential influences (e.g., lighting) and various outdoor activities. However, those wildlife species that were observed on the subject property during our many site visits will in our opinion continue in the long term, that is following construction and during occupation of the residential units.

6.2.3 Species of Conservation Interest

As described in **Section 5.2**, the only faunal Species of Conservation Interest encountered on the subject property were single calling events for wood thrush (Threatened and Special Concern) and eastern wood pewee (Special Concern). Both were heard calling in the same unevaluated wetland treed swamp (i.e., ELC unit SWMM-1); this habitat will be protected in the long term by virtue of placing it in an Environmental Protection zone (i.e., Block 48). No SAR flora were reported on the subject property. However, three species of note were identified in the Graminoid meadow MEGM4-1 part of the TransCanada Pipeline easement; the species included green orchard, showy lady's slipper and foxglove beardtongue, which may be locally rare. The easement is not part of the development proposal and is intended to be zoned Environmental Protection – Open Space (i.e., Blocks 47 and 49). Accordingly, all Species of Conservation Interest identified during the various field investigations will be protected.

6.2.4 Wetland and Buffer Offset Plan

6.2.4.1 *Background*

In our initial discussions with staff of the NVCA on September 19, 2017, we proposed to encroach into the swamp forest wetland on the southeastern side of the property. The diminution in wetland area was 0.11 ha. At the time, a very early development Concept A-6 was being contemplated in which Di Poce (Innisfil) Inc. did not have to accommodate a school site and park. Subsequent discussions with staff of the City of Barrie revealed that the landowner would indeed need to make allowances for these land uses within the developable portion of the subject property, which would have a considerable effect on the subdivision plan. To recoup some but not all of the residential yield, further encroachments would be needed to enable the Medium Density block on the southern side of Street A west of the TransCanada Pipeline easement, and along the eastern edge of the wetland associated with Street B (**Figure 4**). Accordingly, the area of wetland that would be reduced was increased from 0.11 ha to 0.36 ha (**Appendix E**). This represents an 8.8% reduction in unevaluated wetland, given that the total area of the two wetlands in the southern part of the landholding is 4.07 ha. Of importance is that the wetland to be diminished (ELC Unit SWMM1-1) is well represented both within the subject property and elsewhere in the NHS.

In response, the NVCA was not supportive of this reduction; as stated in Lee Bull's letter of August 8, 2018, her agency's flexibility for allowing the loss of 0.11 ha was, "... not intended to invite proposals for additional areas of wetland encroachment" (**Appendix F**). However, given the extent to which the school and park sites encroach into what was otherwise developable property (i.e., amounting to 3.26 ha), it is reasonable and fair in our opinion to allow this further small reduction in wetland area, and as will be discussed, has no negative impacts.

With respect to offsetting or compensating for the above diminutions, Lee Bull indicated in a telephone conversation of February 23, 2018 with the principal author of this **EIS** that the NVCA was looking for a 2:1 ratio in terms of wetland area replacement, and a 1:1 offsetting for any loss in wetland buffer. As well, it was preferable that the replacement occur on the subject landholding, although the offsetting could take place on another landholding within the Authority's watershed. The NVCA would also entertain a monetary settlement should insufficient lands be available on the subject property, based on guidelines prepared by the Lake Simcoe Region Conservation Authority (LSRCA).

6.2.4.2 *Wetland and Buffer Offset Plan*

There are three small areas of wetland that would be lost in order to enable the proposed Draft Plan Subdivision shown in **Figure 4**. As noted in **Section 6.2.4.1**, these three small areas amount to only 0.36 ha (**Appendix E**). Also, given a 20 m buffer width over part of the unevaluated wetland east of the TransCanada Pipeline and south of Street A, the total area of buffer that would be lost amounts to 1.31 ha. **Figure 12** (i.e., which also appears in **Appendix E**) shows the proposed **Wetland and Buffer Offset Plan**; Area 2 is the only area where the land will be changed from agricultural uses to an open marsh wetland. The area of this offset amounts to 0.39 ha, representing a “net gain” in wetland area (i.e., 0.36 ha removed versus 0.39 ha gained). The notion of “net gain” is a long recognized ecological principle initially advanced by the federal government’s DFO in connection with potential losses in fish habitat. In effect, any potential losses through development would need to be replaced or compensated through a net gain in habitat.

The location proposed for the compensation is excellently and ideally suited because it is adjacent to an intermittently flowing tributary, next to open fields of the TransCanada Pipeline easement that is revegetating to a cultural old field community, and is contiguous with a stormwater management area northwards, the outside walls of which will be vegetated with native plant species. As well, it will integrate into the City of Barrie’s NHS via its inclusion in the Natural Linkage Area, representing an overall net benefit to the stream corridor. Most important, it is consistent with direction provided by the NVCA in its conformity review comments (i.e., “. . . We note that opportunities for offsetting and enhancement are present along the Bear Creek tributary.”), and would be protected in the long term by virtue of it being within the Natural Linkage Area of the NHS.

The balance of the areas in **Figure 12** represents compensation for upland buffers that would not be implemented (i.e., Areas 1 and 3 through 6); collectively, they amount to 1.33 ha, which is a “net gain” over areas that will be lost which total 1.31 ha. Parts of the northern and eastern limits of the treed swamp forest as well as the large woodland/wetland complex south of the Medium Density block on Highway 27 would be protected. Fencing would be required between all wetland/woodland complexes and housing development, the specifications of which will be determined through consultation with staff of the City of Barrie.

Figure 12.

WETLAND & BUFFER COMPENSATION/OFFSET



In advancing the above **Wetland and Buffer Offset Plan**, we acknowledge that it falls marginally short of the criteria communicated by Lee Bull on February 23, 2018. In connection with our rationalization, we point out that there are no approved wetland or buffer offsetting guidelines set out in the **NVCA Guidelines** document, nor is mention made of required protocols in the parent **Ontario Regulation 172/06**. With respect to the latter and as mentioned in **Section 2**, the document is not absolute regarding to interference of wetlands, streams, etc. **Regulation 172/06** is permissive, meaning that the Conservation Authorities have some flexibility in this matter. As well, no direction or guidelines are provided on compensation or offsetting in the City of Barrie's **SSP**. We note that NVCA was part of the **SSP** and they did not raise the protection of the wetland or provide a compensation policy. Nevertheless, we recognize that wetlands have important biological and hydrological functions and strongly support the ecological principle of "net gain", which has proved to be the basis of our **Wetland and Buffer Offset Plan**. In this regard, as part of fulfilling draft plan conditions, it is recommended that:

- **Di Poce (Innisfil) Inc. prepare construction specifications and monitoring requirements for an open marsh wetland to be located within and adjacent to the Natural Linkage Area on the eastern side of the Bear Creek tributary north of Street A, as shown in Figure 12;**
- **an investigation be undertaken on hydrological functions to determine the impacts of removing three small areas of wetland to be replaced by residential development; and**
- **a minimum 1.5 metre high chain link fence be constructed between all residential, commercial or industrial lands which abut lands owned by the City of Barrie, including but not limited to Open Space, Environmentally Protected Lands, or other lands owned by the Municipality.**

It is acknowledged that the width of the buffer shown in **Figure 12** on that part of the swamp forest wetland east of the Natural Linkage Feature is 20 m, and not 30 m, the latter of which appears to be the NVCA norm. In this regard, Section 5.3 of the **NVCA Guidelines** dealing with vegetative and hazard buffers states in part:

"Buffers will be maintained adjacent to watercourses, natural features through the planning process. The following vegetative buffers are recommended using the most recent science and technical information available (for example, the **Greenbelt Plan** and the **Oak Ridges Moraine Conservation Plan**) to protect those features and functions.

In general, lots to be created through the plan of subdivision or consent and/or development and site alteration, is to be set back a minimum of the following:

- 30 metres from a wetland."

In beginning the final sentence above with the words, “. . . In general . . .”, we believe there is some discretion for determining buffer widths, which would be appropriate in this circumstance. More specifically, this part of the subject property was initially designated in the **SSP** for residential development, and Di Poce (Innisfil) Inc. needed to accommodate sites for a school and park uses which were not contemplated in the approved **SSP**. Also, we point out that Section 4.7.4.2.1 of the **NVCA Guidelines** may permit single family buildings or structures within 30 m of a wetland on vacant lots of record if the interference on the hydrological functions of the wetland has been deemed to be acceptable the Authority. Accordingly, in our opinion, there is ample reason for granting relief for buffer widths, in this case from 30 m to 20 m.

6.2.5 Stormwater Management – Quality Control

A stormwater management plan was prepared by Schaeffers Consulting Engineers as part of the **FSR**. It was designed to achieve 80% removal of total suspended solids (TSS). With respect to reduction in annual phosphorus loadings, the NVCA Guidelines require a maximum allowable post-development phosphorus loading of 100% of the pre-development load, and best efforts to achieve an additional 20% reduction. However, as pointed out by Schaeffers Consulting Engineers (2018), “. . . NVCA recognizes that in some circumstances, this 20% reduction cannot be achieved and therefore NVCA requires that the total phosphorus load at the post-development stage, at least matches that of pre-development.”

As indicated in Section 2.10 of the **FSR**, a treatment train approach was applied and evaluated, including: catch basin (i.e., involving scour reduction and annual clean out); end-of-pipe stormwater management pond (SWM) with a sediment forebay; and infiltration within the SWM pond. The total phosphorus remaining after the treatment train is approximately 12.6% resulting in a proposed removal of 87.4%, which is in keeping with the above-noted NVCA Guidelines.

Further details relating to the quality control feature of the stormwater treatment train for the Di Poce (Innisfil) Inc. property can be found in Sections 2.7 and 2.10 of the **FSR**.

7 POLICY COMPLIANCE, CONCLUDING REMARKS AND RECOMMENDATIONS

7.1 Compliance With Environmental Policies/Regulations

The results of our field investigations and analyses of natural features on and adjacent to the subject property indicate that the landholding can sustain 38 townhouse blocks consisting of 199 residential dwellings, three medium density residential blocks, one block each for commercial, school, park and stormwater management purposes, two blocks for the TransCanada Pipeline, and five open space blocks (see **Figure 4**). A Stormwater Management Plan has been prepared to treat overland runoff, recognizing that an estimated 87.4% removal in total phosphorus can be achieved by applying a treatment train of mitigation measures inclusive of catchbasins, a SWM pond having a sediment forebay, and infiltration within the SWM pond. The following commentary summarizes how the proposed Draft Plan of Subdivision complies with various provincial and local policies and regulations.

7.1.1 2014 Provincial Policy Statement and 2007 Endangered Species Act

Provincial policies that potentially apply to the subject application include assurances that no negative impacts will occur on significant habitat of endangered and threatened species, as well as fish habitat as well as surface water. In this regard, no development or site alteration is permitted in significant habitat of endangered and threatened species. Further, development and site alteration shall not be permitted in fish habitat, except in accordance with provincial and federal requirements. With respect to SWH, the 2014 **PPS** does not prohibit outright development and site alteration within SWH; rather the test is that no negative impacts must be demonstrated on the area's natural features and ecological functions, which is typically undertaken through an environmental impact study. Further, the 2014 **PPS** states that development and site alteration may be permitted on adjacent lands to fish habitat and SWH, provided that the ecological functions of the feature are evaluated and it is demonstrated that there will be no negative impacts on the feature or its functions.

Of the SAR regulated under the **ESA 2007**, habitat exists within the unevaluated wetland (ELC unit SWMM1-1) for wood thrush (Threatened) and eastern wood pe-wee (Special Concern). The habitat is to be protected within an Environmental Protection Open Space zone (Blocks 46 – 52 shown in **Figure 4**). None of the unevaluated wetlands or woodlands on the subject property warranted an assessment of SWH; this evaluation was considered moot because the majority of the habitats would be retained through Environmental Protection zoning. Accordingly, we support MHBC's recommendation that the City of Barrie recognize and rezone Blocks 46-52 as Environmental Protection as shown in the Draft Plan of Subdivision, and as stated in MHBC's **Planning Justification Report**.

With respect to water quality aspects of the tributary to Bear Creek, it will be physically protected through its inclusion in the Natural Linkage Area component of the NHS. As well, urban stormwater will be treated so there are no negative impacts on surface water quality. In this regard, a Stormwater Management Plan has been designed by Schaeffers Consulting Engineers (2018) to achieve a minimum 80% reduction in suspended solids. Additionally, future annual phosphorus loads will be reduced below current loadings, once the subject lands are developed and occupied. These measures will ensure that water quality and fish habitat associated with the Bear Creek tributary will not be degraded in the longterm, thereby benefiting the fish habitat functions in the downstream Bear Creek, a coldwater brook trout fishery.

7.2 Salem Secondary Plan

The mosaic of unevaluated wetland and wooded areas in the southern part of the landholding are not recognized in any of the schedules of the SSP, although a portion lies within the Natural Linkage Area of the City of Barrie's NHS. Nonetheless, it is recommended that most of the unevaluated wetland (i.e., 92%) be included in an Environmental Protection zone, thereby being sustained/protected in the long term. This constitutes an overall net benefit in ecological values beyond what is provided in the City of Barrie's NHS. The small areas of unevaluated wetland that would be lost would be replaced with an open marsh wetland on the eastern side of the Bear Creek tributary and west of the TransCanada Pipeline. The area of new wetland would exceed the area lost, in keeping with ecological principles of "net gain".

7.3 Conclusions and Recommendations

1. This EIS was undertaken in support of a Draft Plan of Subdivision and Zoning By-law Amendment, the intent of which is to rezone lands owned by Di Poce (Innisfil) Inc. from Agricultural General to Neighbourhood Residential, Neighbourhood Multiple Residential, General Commercial, Open Space, Environmental Protection and Educational Institutional, in accordance with the City of Barrie's Zoning By-law.
2. The subject property is 25.8 ha in area with a total frontage of 407.7 m along County Road 27. There is no development on site, the northern part of which has historically been used for agricultural crop production. The southern part is vegetated with upland and wetland tree and shrub species. An intermittently flowing tributary to Bear Creek cuts through the property southeast to northwest. A TransCanada Pipeline easement traverses the western part of the property in a north-south alignment, running parallel to County Road 27.

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3. Schedule 8A Community Structure for the **SSP** shows the extent of the City of Barrie's NHS through the subject property (**Figure 3**). There are only two land uses: Residential Area which encompasses a good part of the property; and NHS which runs north to south, almost paralleling County Road 27; the NHS area recognizes the existing Bear Creek tributary and associated buffers.

Of particular relevance to the planning applications is NVCA **Ontario Regulation 172/06**. With respect to wetlands, Section 2 (1) states that, "... Subject to Section 3 (Permission to Develop), no person shall undertake development, or permit another person to undertake development on or on the areas within the jurisdiction of the Authority that are:

(d) wetlands; or

(e) other areas where development could interfere with the hydrologic function of a wetland, including areas within 120 metres of all provincially significant wetlands and wetlands greater than 2 hectares, and areas within 30 metres of wetlands less than 2 hectares in size, but not including those where development has been approved pursuant to an application made under the *Planning Act* or other public planning or regulatory process."

Section 6 (Permission to Alter) relates to permission to alter and reads as follows.

- i. The Authority may grant a person permission to alter to straighten, change, divert, or interfere with the existing channel of a river, creek, stream or watercourse or to change or interfere with a wetland.
- ii. The permission of the Authority shall be given in writing, with or without conditions.

From the above, it is apparent that **Ontario Regulation 172/06** is not absolute with respect to interference with wetlands; in this regard, the NVCA has some discretion.

4. Extensive field inventories and evaluations of natural features were undertaken in the spring, summer and fall of 2014 through 2017 and 2018, with the following results.
- a) Eleven ELC units were identified and mapped, all of which are ubiquitous within the City of Barrie's NHS. Portions of unevaluated wetlands and woodland ELCs are within and external to the Natural Linkage Area. None of the plant communities are considered rare on either a Federal, Provincial, County or City level. Similarly, none of the individual plant species are designated or listed as Endangered, Threatened, Rare or Uncommon on

either a Federal, Provincial, Regional or local level. No butternut trees, which are Endangered in Ontario, were found on the property.

- b) Forty-three bird species were identified during two dawn breeding bird surveys and supplemented with observations during botanical inventories and other **SIS** field visits. Two species (i.e., wood thrush which is Threatened and eastern wood pe-wee which is Special Concern) were heard calling in the unevaluated wetland treed swamp (SWMM1-1) south of Street A. The habitat for these species will be protected in the long term by virtue of placing the feature in an Environmental Protection zone.
- c) Ten mammals were observed, heard, or evidence of presence noted either on the subject property or on adjacent lands. All are ubiquitous to the local geographic area and the natural features on and abutting the property. None are listed as SAR under the **ESA 2007**.
- d) Five amphibian species were detected on-site through evening amphibian call count surveys conducted over three evenings. The calls were low in number when compared with call frequencies at a nearby control site (i.e., north and south sides of McKay Road). Only one reptile species was observed; the occurrence was in the TransCanada Pipeline grassland feature.
- e) A bat habitat survey determined that trees on the subject property do not represent high quality potential maternity roost habitat, due to the lack of suitable snags/cavities. Accordingly, following the MNRF Midhurst District Office survey protocol, acoustic monitoring to determine quantitatively the presence of bats was not needed.
- f) The tributary to Bear Creek is intermittently flowing through virtually all of the subject property; based on observations, it is not fish bearing. However, it provides a fish habitat function via flow conveyance to downstream Bear Creek, which is a confirmed brook trout stream. The tributary to Bear Creek will be protected in the long term by virtue of it being located within the Natural Linkage Area; in this regard, there is a 30 m buffer or setback on both sides of the Creek centre line.

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- 5) **Figure 11** herein shows the development limits to the subject property. It is based on:
- wetland boundaries staked in the field with staff of the NVCA on May 5, 2016, and subsequently surveyed;
 - wetland buffer widths;
 - the erosion hazard limit plus a 6.0 m access allowance;
 - the floodplain limit plus a 6.0 m allowance; and
 - a 30 m setback on both sides of the Bear Creek tributary centre line.
- 6) To enable the proposed Draft Plan of Subdivision shown on **Figure 4**, parts of the unevaluated wetlands will need to be removed, amounting to 0.36 ha; this represents an 8.8% reduction in unevaluated wetlands, given that the total area of wetlands on the subject property is 4.07 ha. This diminishment will be offset by constructing 0.39 ha of an open water marsh based on “net gain” principles. This approach was initially advanced by the federal government’s DFO; in effect, any potential losses through development or site alteration would need to be replaced or compensated through a “net gain” in habitat. Also of importance is that the small unevaluated wetland areas that will be removed are well-represented both within the subject property and elsewhere in the NHS.
- 7) The location of the proposed wetland compensation is excellently and ideally suited for the following reasons.
- It is adjacent to the intermittently flowing Bear Creek tributary.
 - It will be contiguous with the open fields of the TransCanada Pipeline easement that is revegetating to a cultural old field community.
 - It is adjacent to a stormwater management area northwards, the outside walls of which will be vegetated with native plants.
 - And finally, it is consistent with direction provided by the NVCA in its conformity review comments (i.e., “. . . We note that opportunities for offsetting and enhancement are present along the Bear Creek tributary.”).
- 8) In advancing the compensation/offsetting plan, it is recognized that it falls short of NVCA criteria communicated during a telephone conversation with the principal author of this **EIS**. In
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justifying our “net gain” approach, it is pointed out that there are no formal or approved wetland offsetting guidelines or protocols set out in the **NVCA Guidelines**. Nor is mention made of any guideline/protocols in the parent **Regulation 172/06**. In this regard, **Regulation 172/06** is not absolute regarding interference with wetlands through development or site alteration; in fact, the Regulation is permissive, subject of course to permission being provided in writing by the NVCA, with or without conditions. Finally, no direction or guidelines are provided on matters relating to compensation or offsetting in the City of Barrie’s **SSP**. Nevertheless, we recognize that wetlands have important biological and hydrological functions; in this regard, we strongly support the “net gain” approach taken herein, which will result in an overall ecological benefit to the City of Barrie’s NHS.

The following recommendations are repeated from earlier sections of this **EIS**.

- 1) **Any tree removal be undertaken outside the breeding period for birds and hibernating bats, which extends from April 15th to October 31st. This timing window relates to provisions of the federal *Migratory Birds Convention Act* for birds, and period when bats would not be using the woodland/wetland features.**
- 2) **Di Poce (Innisfil) Inc. prepare construction specifications and monitoring requirements for an open marsh wetland to be located within and adjacent to the Natural Linkage Area on the eastern side of the Bear Creek tributary north of Street A.**
- 3) **An investigation be undertaken on hydrological functions to determine the impacts of removing three small areas of wetland to be replaced by residential development.**
- 4) **A minimum 1.5 metre high chain link fence be constructed between all residential, commercial or industrial lands which abut lands owned by the City of Barrie, including but not limited to Open Space, Environmentally Protected Lands, or other lands owned by the Municipality.**
- 5) **A wetland compensation plan be prepared as per as a condition of an NVCA Ontario Regulation 172/06 permit.**

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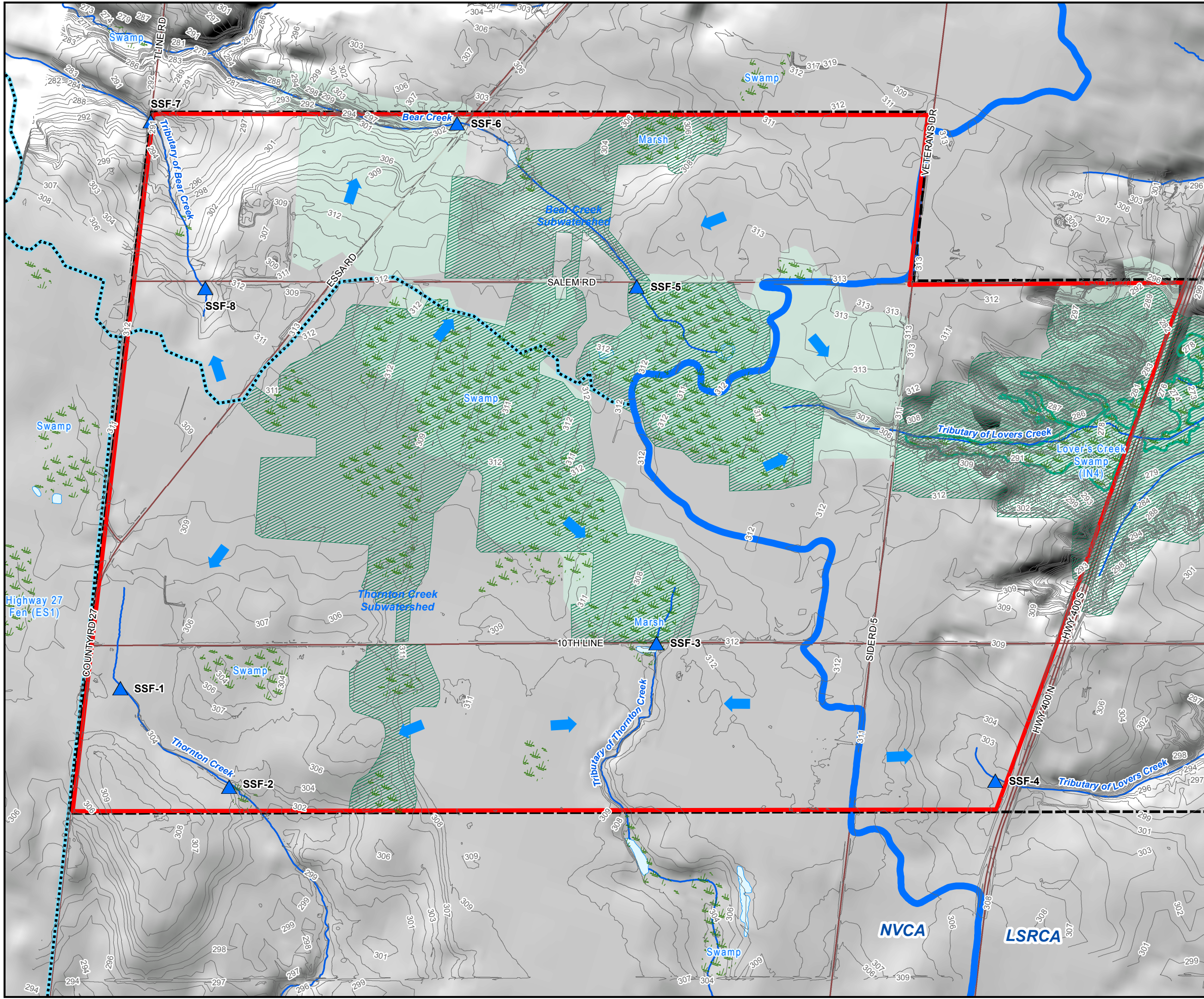
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**APPENDIX A – HYDROLOGY AND HYDROGEOLOGY,
SOURCE: R.J. BURNSIDE + ASSOCIATES
LIMITED**



- LEGEND**
- SALEM SECONDARY PLAN AREA (STUDY AREA)
 - SETTLEMENT AREA BOUNDARY
 - CONTOUR (1m intervals - masl)
 - Wetland Unit
 - ROADWAY
 - WATERSHED BOUNDARY
 - SUBWATERSHED BOUNDARY
 - WATERCOURSE
 - NATURAL HERITAGE SYSTEM BOUNDARY
 - WATERBODY
 - WOODED AREA
 - SURFACE WATER MONITORING LOCATION
 - SURFACE WATER FLOW DIRECTION

Sources:

- Ministry of Natural Resources, © Queen's Printer for Ontario
- Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Scale: 0 100 200 300 400 500 600 700 800 900 1,000 1,100 Metres

North Arrow: N

BURNSIDE

Client / Report

SALEM LANDOWNERS GROUP
BARRIE, ONTARIO

HYDROGEOLOGICAL ASSESSMENT

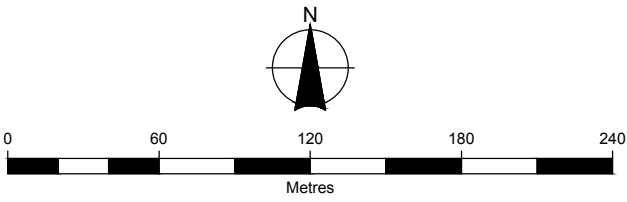
Figure Title

TOPOGRAPHY AND DRAINAGE

Drawn	Checked	Date	Figure No.
S.K.	S.C.	October 2017	4.3
Scale		Project No.	
1:15,000		300035640.000	



- LEGEND**
- SUBJECT LANDS
 - WATERCOURSE
 - MONITORING WELL (GEOPRO CONSULTING, 2018)
 - MONITORING WELL (TERRAPROBE, 2011)
 - MONITORING WELL (TERRAPROBE, 2018)
 - DRIVE POINT PIEZOMETER (RJB 2018)



Client / Report
**DI POCE MANAGEMENT INC,
BARRIE, ONTARIO**
HYDROGEOLOGICAL ASSESSMENT

Figure Title
MONITORING LOCATIONS

Drawn SK	Checked SC	Date SEPTEMBER 2018	Figure No. -
Scale 1:3,000		Project No. 300041886	

Table 1
Groundwater Elevations

Well Name	Well Depth (mbgs)	Ground Surface Elevation (masl)*	17-May-2018		28-Jun-2018		27-Jul-2018		14-Aug-2018	
			Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)
DP-BH7	14.79	301.40	14.42	286.98	14.26	287.14	14.47	286.93	14.63	286.77
DP-BH14	6.05	293.30	5.98	287.32	Dry	Dry	Dry	Dry	Dry	Dry
DP-BH18	4.10	296.60	1.26	295.34	1.96	294.64	2.51	294.09	2.56	294.04
DP-BH21	9.85	302.00	9.43	292.57	9.66	292.34	9.75	292.25	Dry	Dry
DP-BH23	6.08	299.20	2.35	296.85	3.83	295.37	4.42	294.78	4.60	294.60
DP-BH120	7.50	291.90	0.78	291.12	1.59	290.31	2.46	289.44	2.58	289.32
DP-BH122	8.89	299.70	Dry	Dry	-	-	Dry	Dry	Dry	Dry
DP-BH123	13.59	309.30	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
DP-BH129	4.51	290.60	3.32	287.28	3.86	286.74	4.33	286.27	4.33	286.27
MW3s	6.04	306.00	Dry	Dry	5.00	301.00	5.18	300.82	5.29	300.71
MW3d	7.47	306.00	4.73	301.27	5.02	300.98	5.19	300.81	5.30	300.70
DP-PZ1s	1.24	298.00	-0.03	298.03	0.23	297.77	0.54	297.46	0.29	297.71
DP-PZ1d	1.85	298.00	0.02	297.98	0.32	297.68	0.33	297.67	0.36	297.64

Notes

"-" denotes data unavailable

mbgs - meters below ground surface

masl - metres above sea level

* Ground elevations taken from geotechnical reports (GeoPro 2018, Terraprobe 2018)

"red text" denotes ground elevations estimated from google earth

PROJECT: Geotechnical Investigation for Proposed Residential Developments

DRILLING DATA

CLIENT: Di Poce Management Inc. c/o Oksana Vialykh, BBA, AACI

METHOD: Continuous Flight Auger - Auto Hammer

DIAMETER: 205 mm

PROJECT LOCATION: County Road 27, Barrie, Ontario

FIELD ENGINEER: RR

DATE: 2018-04-25

DATUM: Geodetic

SAMPLE REVIEW: DX

REF. NO.: 17-2099GE

BH LOCATION: See Borehole Location Plan

CHECKED: DL

ENCL. NO.: 8

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit			UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		SPT 20	Cone 40	blows/0.3m 60	80	W _p	Natural Moisture Content W	Liquid Limit W _L		
301.4															
0.0	TOPSOIL: (360 mm)														
301.0			1	SS	5										
0.4	REWORKED SANDY SILT TO SAND AND SILT: trace to some clay, trace gravel, trace organics, trace rootlets, layers of clayey silt, dark brown to brown, moist, loose		2	SS	11										
300.8															
0.6	CLAYEY SILT: some sand, trace organics, brown, moist, stiff														
300.2	SAND AND SILT: trace clay, trace gravel, pockets of organics, brown, moist, loose		3	SS	6										
1.2															
299.3															
2.1	SILTY SAND: trace clay, trace gravel, layers of sand, containing cobbles and boulders, brown, moist, dense		4	SS	40										
298.5															
2.9	FINE SAND AND SILT TO SILTY FINE SAND: trace gravel, layers/zones of silt, brown, moist, dense to very dense		5	SS	34										
3															
4															
5	--- auger grinding --- layers of clayey silt		6	SS	85 / 260 mm										
6															
295.8	SILTY SAND: trace to some gravel, layers of sand and silt, containing cobbles and boulders, brown, moist, very dense		7	SS	50 / 150 mm										
5.6															
6	--- auger grinding														
294.4	SAND: some silt, some gravel, containing cobbles and boulders, brown, moist, very dense		8	SS	50 / 130 mm										
6.9															
292.9	FINE SAND: trace to some silt, trace gravel, brown, moist, very dense		9	SS	50 / 80 mm										
8.5															
10															

01 - GEOPRO SOIL LOG - GEOPRO 17-2099 BH LOG PROJECT DATA 20180523-DC-DX-GP-1 2018-05-23 18:40

Continued Next Page

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, X 3: Numbers refer to Sensitivity

▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Residential Developments						DRILLING DATA													
CLIENT: Di Poce Management Inc. c/o Oksana Vialykh, BBA, AACI						METHOD: Continuous Flight Auger - Auto Hammer						DIAMETER: 205 mm							
PROJECT LOCATION: County Road 27, Barrie, Ontario						FIELD ENGINEER: RR						DATE: 2018-04-25							
DATUM: Geodetic						SAMPLE REVIEW: DX						REF. NO.: 17-2099GE							
BH LOCATION: See Borehole Location Plan						CHECKED: DL						ENCL. NO.: 8							
SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION TEST				Natural Moisture Content				REMARKS AND GRAIN SIZE DISTRIBUTION (%)					
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)				WATER CONTENT (%)				UNIT WT (kN/m ³)	GR	SA	SI	CL
							○ SPT ≧ Cone blows/0.3m 20 40 60 80				Plastic Limit Natural Moisture Content Liquid Limit W _p W W _L								
							● Unconfined X Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane				WATER CONTENT (%)								
							20	40	60	80	10	20	30	40					

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Residential Developments

DRILLING DATA

CLIENT: Di Poce Management Inc. c/o Oksana Vialykh, BBA, AACI

METHOD: Continuous Flight Auger - Auto Hammer

DIAMETER: 155 mm

PROJECT LOCATION: County Road 27, Barrie, Ontario

FIELD ENGINEER: RR

DATE: 2018-04-24

DATUM: Geodetic

SAMPLE REVIEW: DX

REF. NO.: 17-2099GE

BH LOCATION: See Borehole Location Plan

CHECKED: DL

ENCL. NO.: 15

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit			UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		○ SPT	≥ Cone	blows/0.3m		W _p	Natural Moisture Content	Liquid Limit		
293.3						20	40	60	80					
0.0	TOPSOIL: (340 mm)													
293.0			1	SS	3									
0.3	REWORKED SANDY SILT TO SAND AND SILT: trace to some clay, trace gravel, trace organics, trace rootlets, dark brown, moist, very loose		2	SS	5									
292.7														
0.6	SAND AND SILT: trace to some clay, trace gravel, trace rootlets, pockets of organics, organic stain, brown, wet, loose		3	SS	14									
292.1														
1.2	SAND AND SILT TO SILTY SAND: trace to some clay, trace gravel, pockets of sand, containing cobbles and boulders, moist to wet, compact to very dense													
			4	SS	14									
			5	SS	12									
			6	SS	70									
			7	SS	50 / 150 mm									
287.1	END OF BOREHOLE													
6.3	Notes: 1) Water was encountered at a depth of 2.3 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 3.7 mBGS upon completion of drilling. 3) Borehole caved at a depth of 4.0 mBGS upon completion of drilling. 4) 51 mm dia. monitoring well was installed in borehole upon completion of drilling. Water Level Reading Date W. L. Depth (mBGS) May 11, 2018 5.94													

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

 +³, ×³: Numbers refer to Sensitivity

▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Residential Developments							DRILLING DATA														
CLIENT: Di Poce Management Inc. c/o Oksana Vialykh, BBA, AACI							METHOD: Continuous Split Spoon							DIAMETER: 51 mm							
PROJECT LOCATION: County Road 27, Barrie, Ontario							FIELD ENGINEER: RR							DATE: 2018-05-01							
DATUM: Geodetic							SAMPLE REVIEW: DX							REF. NO.: 17-2099GE							
BH LOCATION: See Borehole Location Plan							CHECKED: DL							ENCL. NO.: 19							
SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION TEST				Natural Moisture Content				Liquid Limit				REMARKS AND GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	SHEAR STRENGTH (kPa)				Plastic Limit w _p	Natural Moisture Content w	Liquid Limit w _L	WATER CONTENT (%)	UNIT WT (kN/m ³)	GR SA SI CL					
							○ SPT 20	≧ Cone 40	blows/0.3m 60	80						● Unconfined ▲ Quick Triaxial	✕ Field Vane & Sensitivity ⊠ Penetrometer + Lab Vane				
296.6	TOPSOIL: (300 mm)																				
296.3																					
0.3	REWOKED SAND AND SILT: trace clay, trace gravel, brown, moist to wet, very loose		1	SS	2																
295.8																					
0.8	SAND AND SILT: trace clay, trace gravel, trace rootlets, layers/seams /pockets of sand, containing cobbles and boulders, brown, moist to wet, loose to compact		2	SS	6	295.4/May 11															
						Bentonite															
			3	SS	8																
			4	SS	9	294															
			5	SS	17	293															
			6	SS	13																
						Sand															
						Screen															
			7	SS	10	292															
291.4																					
5.2	NO SAMPLE RECOVERY: likely silty sand		8	NR	19	291															
290.7						Natural pack															
5.9	END OF BOREHOLE:																				
Notes: 1) Water was encountered at a depth of 2.3 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 3.5 mBGS upon completion of drilling. 3) Borehole caved at a depth of 5.3 mBGS upon completion. 4) 38 mm dia. monitoring was installed in borehole upon completion of drilling. Water Level Reading Date May 11, 2018 W. L Depth (mBGS) 1.20																					

GROUNDWATER ELEVATIONS

	1st	2nd	3rd	4th
Measurement				

GRAPH
NOTES

$+^3, \times^3$: Numbers refer to Sensitivity

▲ $\epsilon = 3\%$ Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Residential Developments

DRILLING DATA

CLIENT: Di Poce Management Inc. c/o Oksana Vialykh, BBA, AACI

METHOD: Continuous Flight Auger - Auto Hammer

DIAMETER: 155 mm

PROJECT LOCATION: County Road 27, Barrie, Ontario

FIELD ENGINEER: RR

DATE: 2018-04-23

DATUM: Geodetic

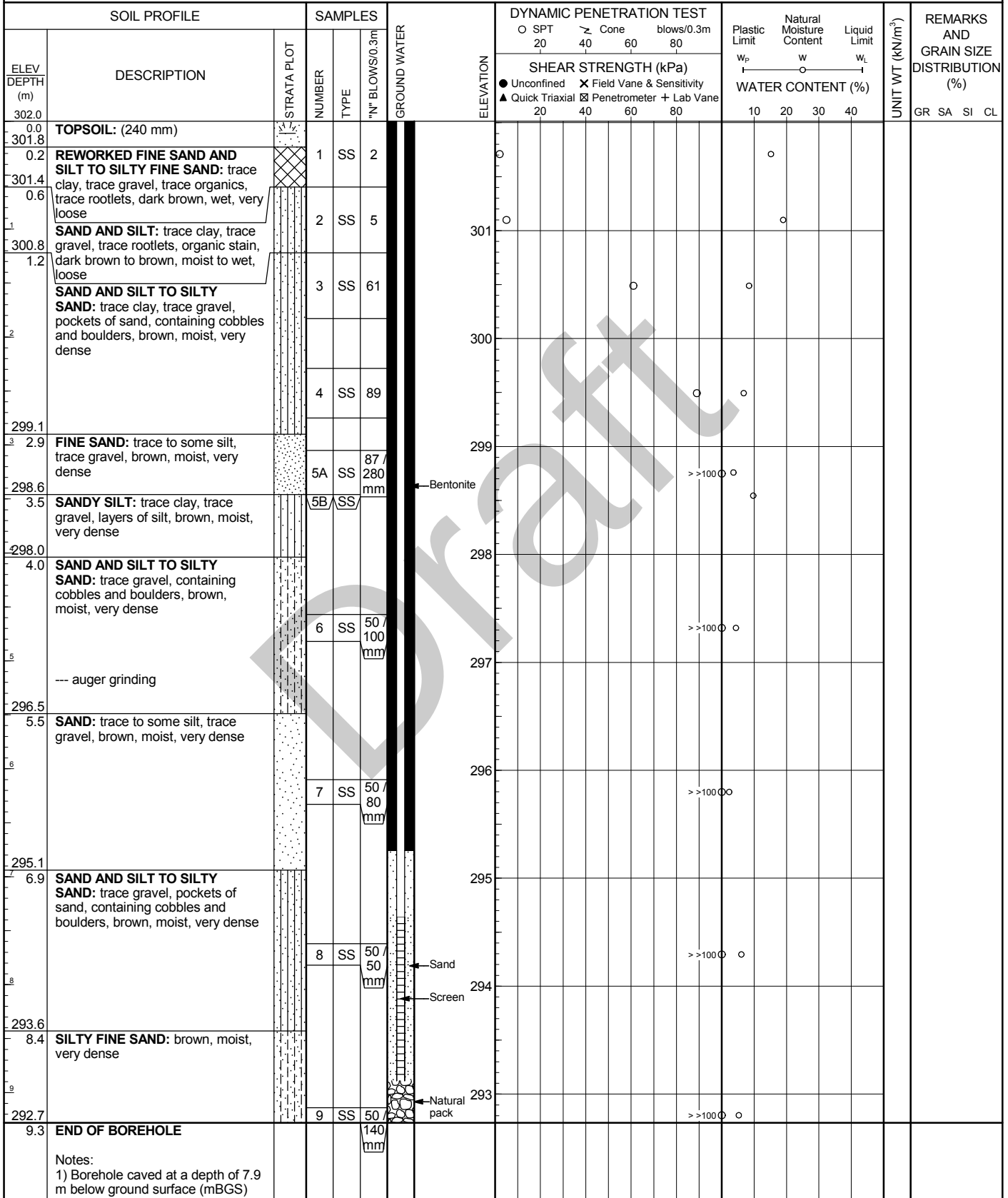
SAMPLE REVIEW: DX

REF. NO.: 17-2099GE

BH LOCATION: See Borehole Location Plan

CHECKED: DL

ENCL. NO.: 22



Continued Next Page

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+3, X3: Numbers refer to Sensitivity

▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Residential Developments						DRILLING DATA														
CLIENT: Di Poce Management Inc. c/o Oksana Vialykh, BBA, AACI						METHOD: Continuous Flight Auger - Auto Hammer								DIAMETER: 155 mm						
PROJECT LOCATION: County Road 27, Barrie, Ontario						FIELD ENGINEER: RR								DATE: 2018-04-23						
DATUM: Geodetic						SAMPLE REVIEW: DX								REF. NO.: 17-2099GE						
BH LOCATION: See Borehole Location Plan						CHECKED: DL								ENCL. NO.: 22						
SOIL PROFILE			SAMPLES				DYNAMIC PENETRATION TEST												REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	SPT 20	Cone 40	blows/0.3m 60	blows/0.3m 80	Plastic Limit w _p	Natural Moisture Content w	Liquid Limit w _L	UNIT WT (kN/m³) GR SA SI CL					
upon completion of drilling. 2) 51 mm dia. monitoring was installed in borehole upon completion of drilling. Water Level Reading Date W. L Depth (mBGS) May 11, 2018 Dry																				

PROJECT: Geotechnical Investigation for Proposed Residential Developments

DRILLING DATA

CLIENT: Di Poce Management Inc. c/o Oksana Vialykh, BBA, AACI

METHOD: Continuous Flight Auger - Auto Hammer

DIAMETER: 155 mm

PROJECT LOCATION: County Road 27, Barrie, Ontario

FIELD ENGINEER: RR

DATE: 2018-04-24

DATUM: Geodetic

SAMPLE REVIEW: DX

REF. NO.: 17-2099GE

BH LOCATION: See Borehole Location Plan

CHECKED: DL

ENCL. NO.: 24

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit			UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		20	40	60	80	W _p	W	W _L		
299.2	TOPSOIL: (240 mm)													
298.9	REWORKED FINE SAND AND SILT: trace organics, trace rootlets, dark brown, moist, loose		1A	SS	4									
298.7	REWORKED SANDY SILT: some clay, trace gravel, trace organics, trace rootlets, dark brown to brown, moist, loose		1B	SS	4									
298.6			2	SS	4									
298.0	SANDY SILT: some clay, trace organics, trace rootlets, organic stain, layers of sand, dark brown to brown, moist, loose		3	SS	17									
297.1	SAND AND SILT: trace clay, trace gravel, organic stain, brown, moist to wet, compact													
297.0	SAND AND SILT TO SILTY SAND: trace to some clay, trace gravel, sand pockets, containing cobbles and boulders, brown, moist to wet, dense to very dense		4	SS	44									
296.0			5	SS	53									
295.0	---auger grinding													
293.7	FINE SAND AND SILT TO SILTY FINE SAND: trace gravel, containing cobbles and boulders, brown, wet, very dense		6	SS	50 / 150 mm									4 64 21 11
293.0	END OF BOREHOLE		7	SS	50 / 120 mm									

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, X 3: Numbers refer to Sensitivity

▲ s=3% Strain at Failure



Project No. : 3-17-0047-03

Client : PRATT DEVELOPMENT INC.

Originated by : BH

Date started : January 24, 2018

Project : BEAR CREEK RIDGE

Compiled by : BH

Sheet No. : 1 of 1

Location : Barrie

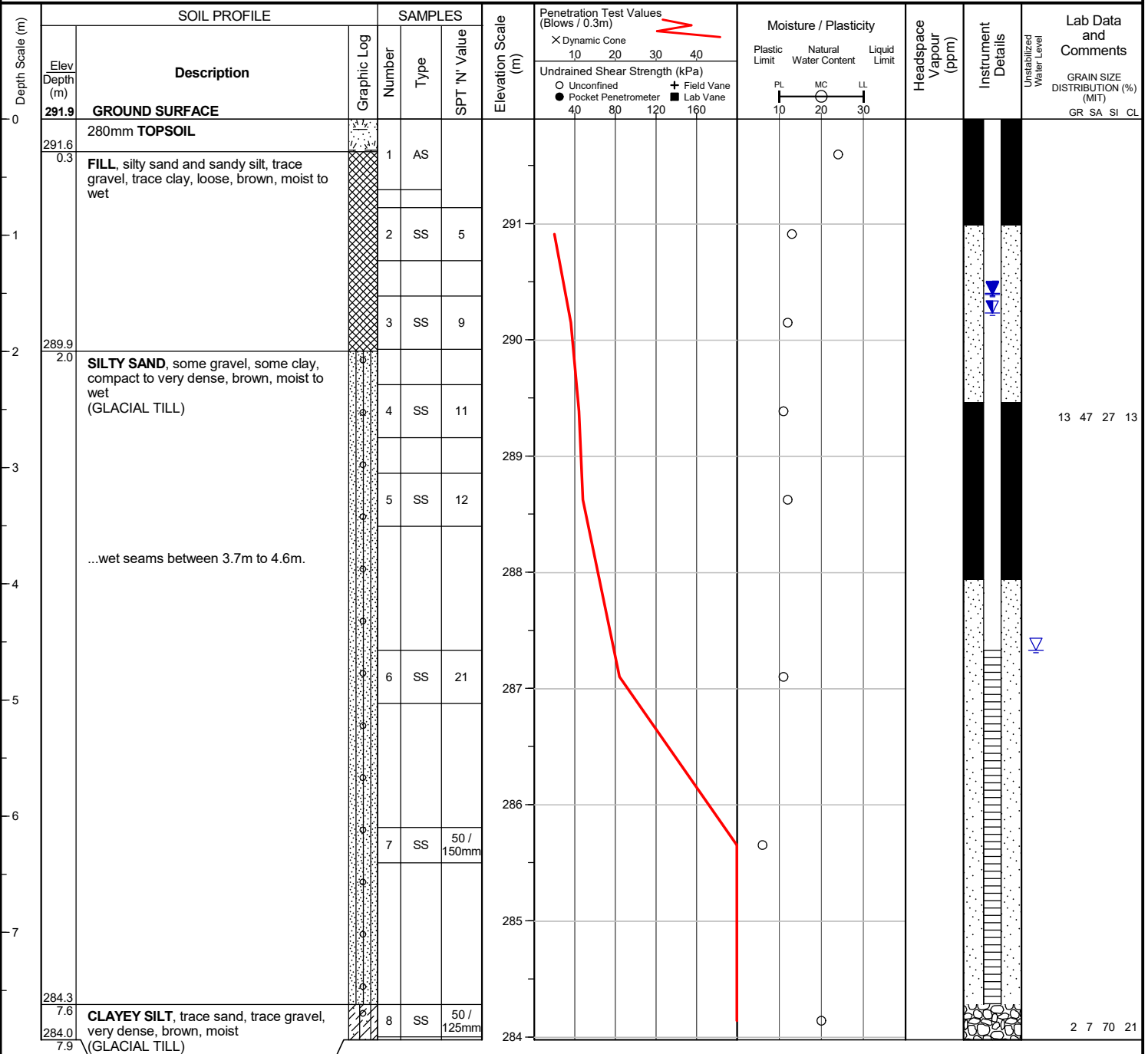
Checked by : SO

Position : Dipoce Property

Elevation Datum : Geodetic

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers



END OF BOREHOLE

Unstabilized water level measured at 4.6 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed. 3.0m screen installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Feb 15, 2018	1.7	290.2
Feb 20, 2018	1.5	290.4
Feb 22, 2018	1.5	290.4

Project No. : 3-17-0047-03

Client : PRATT DEVELOPMENT INC.

Originated by : BH

Date started : January 29, 2018

Project : BEAR CREEK RIDGE

Compiled by : BH

Sheet No. : 1 of 1

Location : Barrie

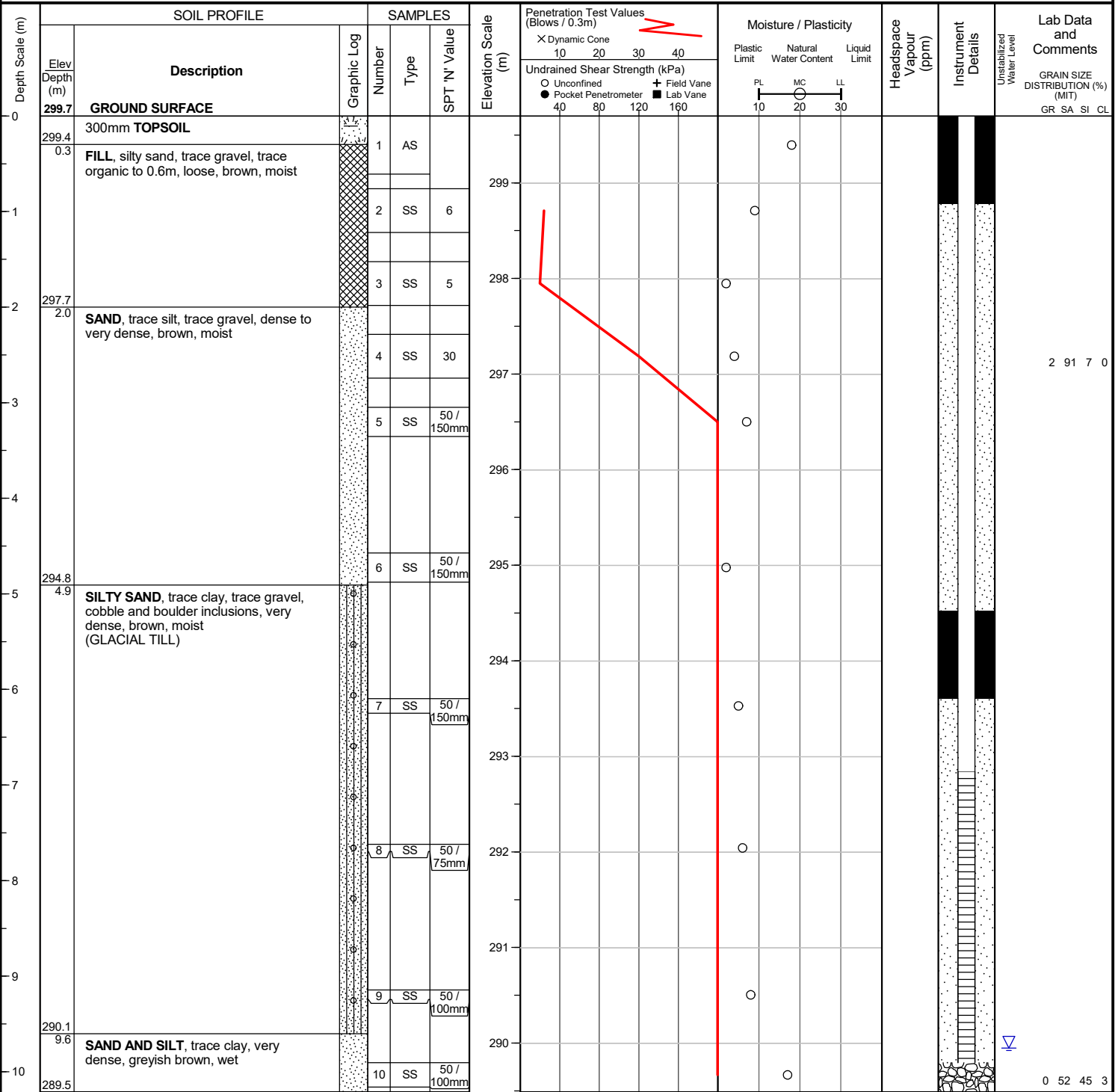
Checked by : SO

Position : Dipole Property

Elevation Datum : Geodetic

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers



END OF BOREHOLE

Unstabilized water level measured at 9.8 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.
3.0m screen installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Feb 15, 2018	dry	n/a
Feb 20, 2018	dry	n/a
Feb 22, 2018	dry	n/a



Project No. : 3-17-0047-03

Client : PRATT DEVELOPMENT INC.

Originated by : BH

Date started : January 30, 2018

Project : BEAR CREEK RIDGE

Compiled by : BH

Sheet No. : 1 of 1

Location : Barrie

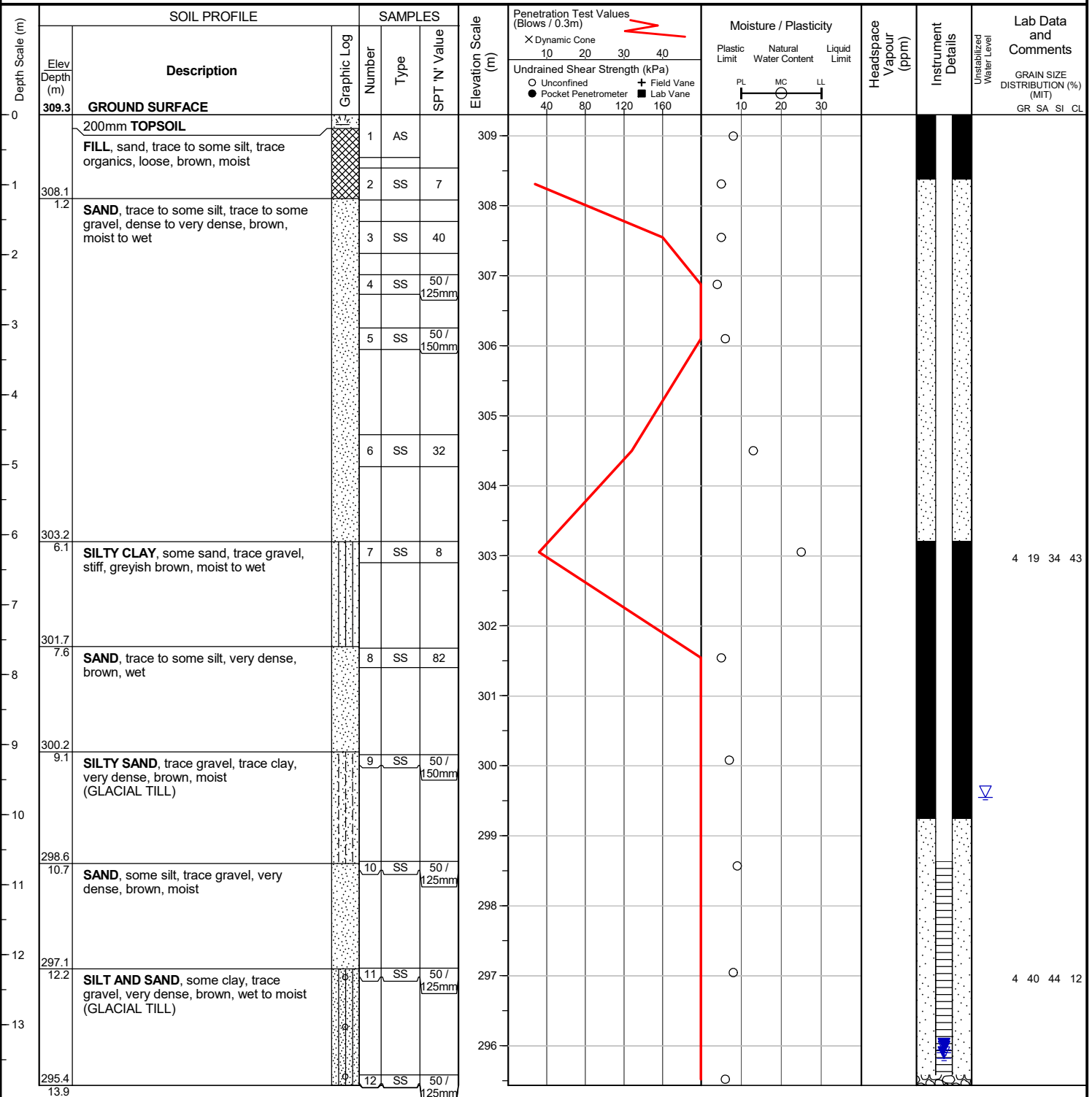
Checked by : SO

Position : Dipoce Property

Elevation Datum : Geodetic

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers





Project No. : 3-17-0047-03

Client : PRATT DEVELOPMENT INC.

Originated by : BH

Date started : January 24, 2018

Project : BEAR CREEK RIDGE

Compiled by : BH

Sheet No. : 1 of 1

Location : Barrie

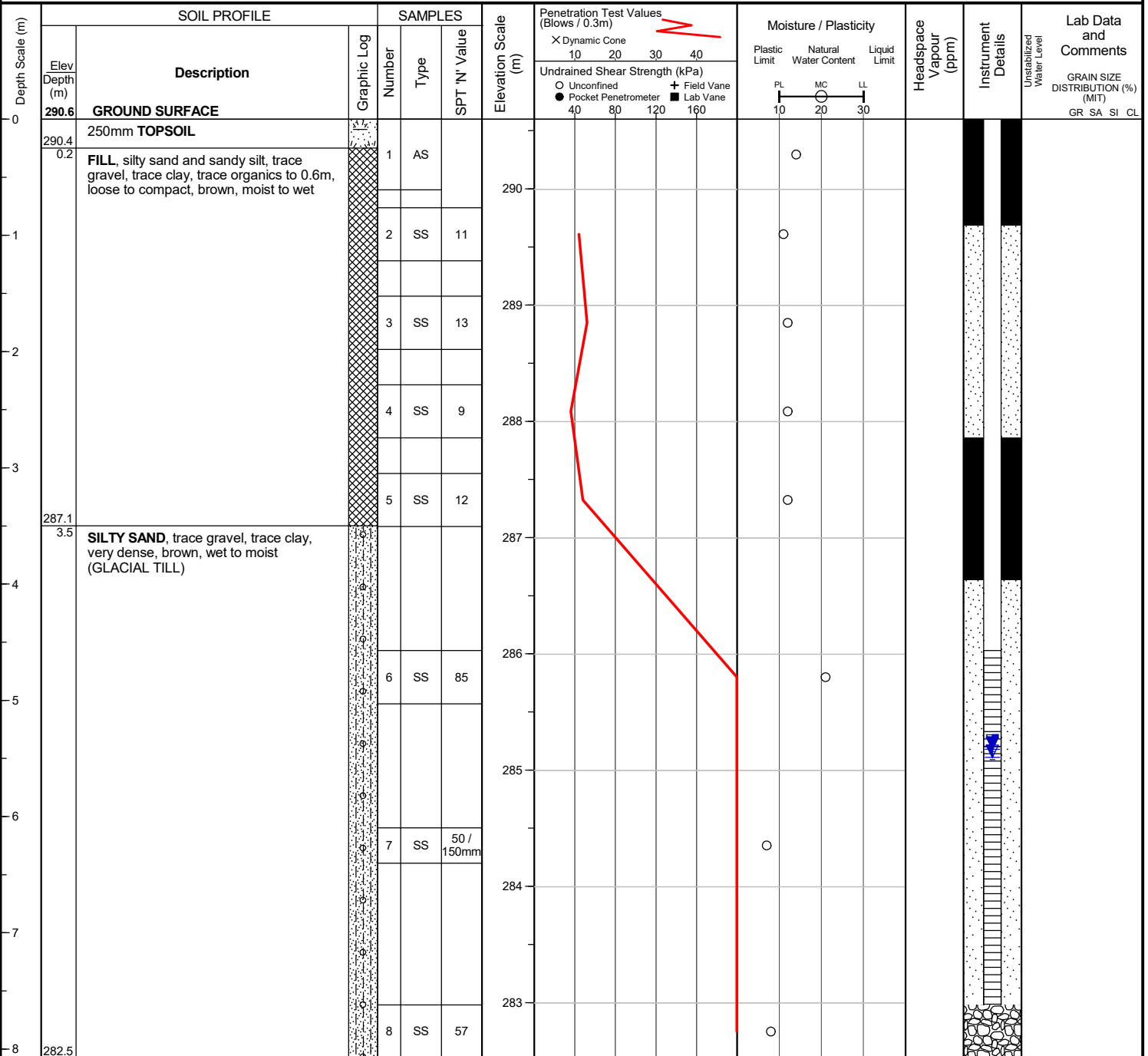
Checked by : SO

Position : Dipoce Property

Elevation Datum : Geodetic

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers



END OF BOREHOLE

Borehole was dry upon completion of drilling.

50 mm dia. monitoring well installed.
3.0m screen installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Feb 15, 2018	5.5	285.1
Feb 20, 2018	5.4	285.2
Feb 22, 2018	5.4	285.2



Terraprobe

PROJECT NAME: Annex Lands, Barrie

CLIENT: Pratt Development

LOCATION: Barrie, Ontario

LOG OF BOREHOLE ..MW3..

PROJECT No.: 33-11-7130

BORING DATE: October 19, 2011

ELEVATION DATUM:

BORING METHOD DEPTH SCALE IN METRES	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE PLOT $\times \times \times$				WATER CONTENT (%)	INSTALLATION INFORMATION
	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	"N" VALUE	20 40 60 80					
							SHEAR STRENGTH kPa					
							nat.V - +	Q - ●	rem.V - ⊕	U - ○		
							20 40 60 80			10 20 30		
0	GROUND SURFACE											
	150mm - Topsoil											Bentonite Seal
	Orange to Brown	Compact to Dense	Moist to Wet	1	AS					○		Concrete
1	SAND, fine to medium, trace to some gravel, trace to some silt			2	SS	5	x			○		Bentonite Seal
				3	SS	12	x			○		
				4	SS	55		x		○		
				5	SS	50/150mm				○		
2												
				6	SS	61		x		○		
3												
4												
5												
6												
	Grey	Compact	Wet	7	SS	25	x			○		
7	SAND & SILT											
	Brown	Very Dense	Wet									
	SAND, fine, some silt			8	SS	50/150mm						
8	End of Borehole											
9												

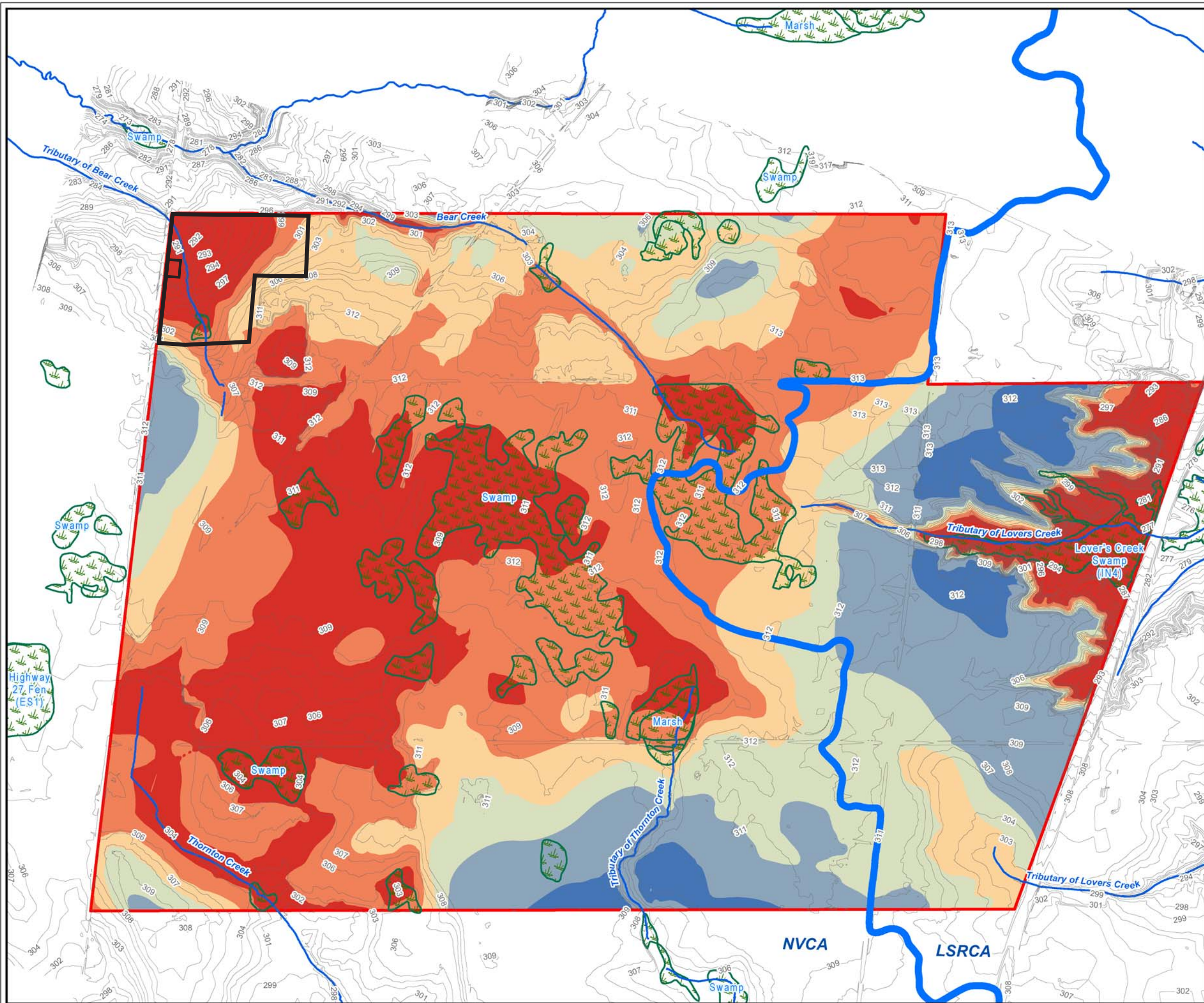
5. gas probe well depth to 6.9m with 5m screen. - 6. No detectable gas measured on October 24, 2011.

5.0m

6.6m

1. Borehole caved at 5.5m during drilling. - 2. Water level noted at 5.0m upon completion of drilling. - 3. Borehole was installed with 3m screen tip at 8.1m. - 4. Water level measured on October 24, 2011 at 6.6m.

SHEET 1 OF 1



LEGEND

SALEM SECONDARY PLAN AREA (STUDY AREA)

WATERSHED BOUNDARY

CONTOUR (1m intervals - masl)

Wetland Unit

Depth to Watertable

0 and above grade

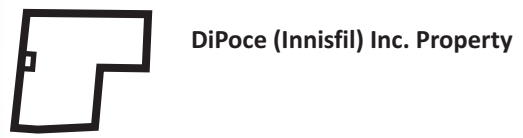
0 to 2m below grade

2 to 4m below grade

4 to 6m below grade

6 to 10m below grade

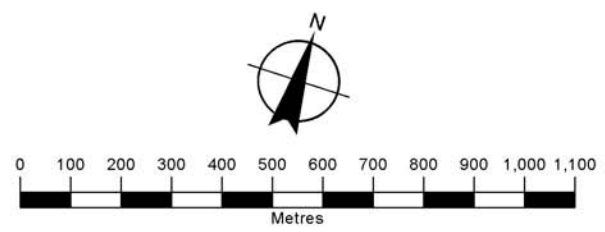
>10m below grade



Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario

2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.



Client / Report

SALEM LANDOWNERS GROUP
BARRIE, ONTARIO

HYDROGEOLOGICAL ASSESSMENT

Figure Title

**INTERPRETED
DEPTH TO WATERTABLE**

Drawn	Checked	Date	Figure No.
S.K.	S.C.	November 2017	C.12
Scale		Project No.	
1:15,000		300035640.000	

APPENDIX B – MASTER PLANT LIST

Appendix B. List of Vascular Plants Observed on the Di Poce (Innisfil) Inc. Property, 8001 County Road 27, City of Barrie

SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	SARA, 2002	ESA, 2007	Simcoe County*
<i>Acer negundo</i>	Manitoba maple	G5	S5			
<i>Acer platanoides</i>	Norway maple	GNA	SNA			
<i>Acer rubrum</i>	red maple	G5	S5			
<i>Acer saccharum</i>	sugar maple	G5	S5			
<i>Acer saccharinum</i>	silver maple	G5	S5			
<i>Achillea millefolium</i>	common yarrow	G5	SNA			
<i>Actaea rubra</i>	red baneberry	G5	S5			
<i>Agrimony gryposepala</i>	hooked agrimony	G5	S5			
<i>Agrostis gigantea</i>	redtop	G5	S5			
<i>Agrostis stolonifera</i>	creeping bent grass	G5	SNA			
<i>Alisma triviale</i>	large-flowered water plantain	G5	S5			
<i>Alliaria petiolata</i>	garlic mustard	GNR	SNA			
<i>Alnus rugosa</i>	speckled alder	G5	S5			
<i>Amaranthus powelli</i>	green pigweed	G5T5	SNA			
<i>Ambrosia artemisiifolia</i>	annual ragweed	G5	S5			
<i>Amelanchier arborea</i>	downy serviceberry	G5	S5			
<i>Anemone canadensis</i>	Canada anemone	G5	S5			
<i>Apocynum androsaemifolium</i>	spreading dogbane	G5	S5			
<i>Aralia nudicaulis</i>	wild sarsaparilla	G5	S5			
<i>Arctium minus</i>	common burdock	GNR	SNA			
<i>Argentina anserina</i>	silverweed	GNR	S5			
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit	G5	S5			
<i>Artemisia biennis</i>	biennial wormwood	G5	SNA			
<i>Asclepias incarnata</i>	swamp milkweed	G5	S5			
<i>Asclepias syriaca</i>	common milkweed	G5	S5			
<i>Athyrium filix-femina</i>	northeastern lady fern	G5T5	S5			
<i>Barbarea vulgaris</i>	yellow rocket	GNR	SNA			
<i>Betula alleghaniensis</i>	yellow birch	G%	S5			
<i>Betula papyrifera</i>	white birch	G5	S5			

Appendix B. List of Vascular Plants Observed on the Di Poce (Innisfil) Inc. Property, 8001 County Road 27, City of Barrie

SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	SARA, 2002	ESA, 2007	Simcoe County*
<i>Bidens frondosa</i>	beggar-ticks	G5	S5			
<i>Boehmeria cylindrica</i>	false wood-nettle	G5	S5			
<i>Brassica kaber</i>	field mustard	GNR	SNA			
<i>Bromus inermis</i>	awnless brome brass	G5TNR	SNA			
<i>Calamagrostis canadensis</i>	Canada bluejoint grass	G5	S5			
<i>Capsella bursa-pastoris</i>	common shepherd's purse	GNR	SNA			
<i>Carex bebbii</i>	Bebb's sedge	G5	S5			
<i>Carex deweyana</i>	Dewey's sedge	G5	S5			
<i>Carex gracillima</i>	graceful sedge	G5	S5			
<i>Carex granularis</i>	meadow sedge	G5	S5			
<i>Carex rosea</i>	stellate sedge	G5	S5			
<i>Carex stipata</i>	awl-fruited sedge	G5	S5			
<i>Carex stricta</i>	tussock sedge	G5	S5			
<i>Carex vulpinoidea</i>	fox sedge	G5	S5			
<i>Caulophyllum thalictroides</i>	blue cohosh	G4G5	S5			
<i>Centaurea jacea</i>	brown knapweed	GNR	SNA			
<i>Cerastium vulgare</i>	mouse-eared chickweed	GNR	SNA			
<i>Chenopodium album</i>	lamb's quarters	G5	SNA			
<i>Chrysanthemum leucanthemum</i>	ox-eye daisy	GNR	SNA			
<i>Cichorium intybus</i>	chicory	GNR	SNA			
<i>Cicuta bulbifera</i>	bulb-bearing water hemlock	G5	S5			
<i>Circaea lutetiana</i>	enchanters' nightshade	G5T5	S5			
<i>Cirsium arvense</i>	Canada thistle	GNR	SNA			
<i>Cirsium vulgare</i>	bull thistle	GNR	SNA			
<i>Clematis virginiana</i>	virgin's-bower	G5	S5			
<i>Clinopodium vulgare</i>	wild basil	G5	S5			
<i>Convolvulus arvensis</i>	field bindweed	GNR	SNA			
<i>Cornus alternifolia</i>	alternate-leaved dogwood	G5	S5			
<i>Cornus rugosa</i>	round-leaved dogwood	G5	S5			
<i>Cornus stolonifera</i>	red-osier dogwood	G5	S5			

Appendix B. List of Vascular Plants Observed on the Di Poce (Innisfil) Inc. Property, 8001 County Road 27, City of Barrie

SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	SARA, 2002	ESA, 2007	Simcoe County*
<i>Corylus cornuta</i>	beaked hazel	G5	S5			
<i>Crataegus spp.</i>	hawthorn	GNRTNR	SU			
<i>Cynanchum rossicum</i>	black swallowwort	GNR	SNA			
<i>Cypripedium reginae</i>	showy lady slipper	G5	S5			
<i>Cystopteris bulbifera</i>	bulblet fern	G5	S5			
<i>Cystopteris tenuis</i>	fragile fern	G5	S5			
<i>Dactylis glomerata</i>	orchard grass	GNR	SNA			
<i>Daucus carota</i>	wild carrot	GNR	SNA			
<i>Dianthus armeria</i>	Deptford pink	GNR	SNA			
<i>Digitaria ischaemum</i>	smooth crabgrass	GNR	SNA			
<i>Dipsacus fullonum</i>	common teasel	GNR	SNA			
<i>Dryopteris carthusiana</i>	spinulose wood-fern	G5	S5			
<i>Echinochloa crus-galli</i>	large barnyard grass	GNR	SNA			
<i>Echinocystis lobata</i>	wild cucumber	G5	S5			
<i>Echium vulgare</i>	common viper's-bugloss	GNR	SNA			
<i>Eleocharis erythropoda</i>	red-stemmed spike-rush	G5	S5			
<i>Elymus repens</i>	quackgrass	GNR	SNA			
<i>Epilobium hirsutum</i>	hairy willowherb	GNR	SNA			
<i>Epilobium parviflorum</i>	small-flowered willowherb	GNR	SNA			
<i>Epipactis helleborine</i>	helleborine	GNR	SNA			
<i>Equisetum arvense</i>	field horsetail	G5	S5			
<i>Equisetum fluviatile</i>	water horsetail	G5	S5			
<i>Equisetum hymale</i>	common scouring-rush	G5	S5			
<i>Erigeron canadensis</i>	Canada horseweed	G5	S5			
<i>Erigeron hyssopifolius</i>	daisy fleabane	G5	S5			
<i>Erigeron philadelphicus</i>	Philadelphia fleabane	G5	S5			
<i>Erysimum cheiranthoides</i>	wormseed mustard	G5	SNA			
<i>Erythronium americanum</i>	yellow trout-lily	G5	S5			
<i>Eupatorium perfoliatum</i>	common boneset	G5	S5			
<i>Eurybia macrophylla</i>	large-leaved aster	G5	S5			

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SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	SARA, 2002	ESA, 2007	Simcoe County*
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	G5	S5			
<i>Eutrochium maculatum</i>	spotted Joe-pye weed	G5T5	S5			
<i>Fagus grandifolia</i>	beech	G5	S5			
<i>Fallopia scandens</i>	climbing false buckwheat	G5	S4S5			
<i>Festuca pratensis</i>	meadow fescue	G5	SNA			
<i>Fragaria vesca</i>	woodland strawberry	G5	S5			
<i>Fragaria virginiana</i>	common strawberry	G5	S5			
<i>Frangula alnus</i>	glossy buckthorn	GNR	SNR			
<i>Fraxinus americana</i>	white ash	G5	S4			
<i>Fraxinus nigra</i>	black ash	G5	S4			
<i>Fraxinus pennsylvanica</i>	green ash	G5	S4			
<i>Galium triflorum</i>	fragrant bedstraw	G5	S5			
<i>Geranium robertianum</i>	herb-robert	G5	S5			
<i>Geum aleppicum</i>	yellow avens	G5	S5			
<i>Geum canadense</i>	white avens	G5	S5			
<i>Glyceria striata</i>	fowl mannagrass	G5	S5			
<i>Glycine max</i>	soybean	GNR	SNA			
<i>Gymnocarpium dryopteris</i>	oak fern	G5	S5			
<i>Hesperis matronalis</i>	dame's rocket	G4G5	SNA			
<i>Hieracium lachenalii</i>	common hawkweed	GNR	SNA			
<i>Hypericum perforatum</i>	common St. John's-wort	GNR	SNA			
<i>Impatiens capensis</i>	spotted jewelweed	G5	S5			
<i>Inula helenium</i>	elecampane	GNR	SNA			
<i>Juncus effusus</i>	soft rush	G5	S5			
<i>Juncus tenuis</i>	path rush	G5	S5			
<i>Lactuca serriola</i>	prickly lettuce	GNR	SNA			
<i>Laportea canadensis</i>	wood nettle	G5	S5			
<i>Lemna minor</i>	common duckweed	G5	S5			
<i>Leonurus cardiaca</i>	motherwort	GNR	SNA			
<i>Lepidium campestre</i>	field peppergrass	GNR	SNA			

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SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	SARA, 2002	ESA, 2007	Simcoe County*
<i>Lithospermum officinale</i>	European gromwell	GNR	SNA			
<i>Lonicera morrowii</i>	Morrow's honeysuckle	GNR	SNA			
<i>Lonicera tatarica</i>	tartarian honeysuckle	GNR	SNA			
<i>Lotus corniculatus</i>	bird's-foot trefoil	GNR	SNA			
<i>Lycopus americanus</i>	water horehound	G5	S5			
<i>Lycopus europaeus</i>	European water-horehound	GNR	SNA			
<i>Lysimachia ciliata</i>	fringed loosestrife	G5	S5			
<i>Lysimachia nummularia</i>	moneywort	GNR	SNR			
<i>Lythrum salicaria</i>	purple loosestrife	G5	SNA			
<i>Maianthemum canadense</i>	wild lily-of-the-valley	G5	S5			
<i>Maianthemum racemosum</i>	false Solomon's-seal	G5	S5			
<i>Maianthemum stellatum</i>	starry false Solomon's-seal	G5	S5			
<i>Malus coronaria</i>	sweet crabapple	G5	SNA			
<i>Malus pumila</i>	common apple	G5	SNA			
<i>Malva neglecta</i>	cheeses	GNR	SNA			
<i>Matricaria matricarioides</i>	pineapple-weed	G5	SNA			
<i>Matricaria perforata</i>	scentless camomile	G5	SNA			
<i>Matteuccia struthiopteris</i>	ostrich fern	G5	S5			
<i>Medicago lupulina</i>	black medic	GNR	SNA			
<i>Medicago sativa</i>	alfalfa	GNR	SNA			
<i>Melilotus albus</i>	white sweet-clover	G5	SNA			
<i>Melilotus officinalis</i>	yellow sweet-clover	GNR	SNA			
<i>Mentha arvensis</i>	field mint	G5	S5			
<i>Myosotis laxa</i>	small forget-me-not	G5	S5			
<i>Nepeta cataria</i>	catnip	GNR	SNA			
<i>Oenothera biennis</i>	common evening primrose	G5	S5			
<i>Onoclea sensibilis</i>	sensitive fern	G5	S5			
<i>Oxalis montana</i>	common wood-sorrel	G5	S5			
<i>Oxalis stricta</i>	European wood-sorrel	G5	S5			
<i>Oxybasis glauca ssp. glauca</i>	oak-leaved goosefoot	G5	SNA			

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SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	SARA, 2002	ESA, 2007	Simcoe County*
<i>Panicum capillare</i>	common panic grass	G5	S5			
<i>Parthenocissus inserta</i>	Virginia creeper	G5	S4?			
<i>Penstemon digitalis</i>	foxglove beardtongue	G5	S4S5			
<i>Persicaria maculosa</i>	lady's-thumb	G3G5	SNA			
<i>Phalaris arundinacea</i>	reed canary grass	G5	S5			
<i>Phleum pratense</i>	timothy	GNR	SNA			
<i>Phragmites australis</i>	common reed	G5	S5			
<i>Picea abies</i>	Norway spruce	GNR	SNA			
<i>Picea glauca</i>	white spruce	G5	S5			
<i>Pilosella aurantiaca</i>	orange hawkweed	GNR	SNA			
<i>Pinus resinosa</i>	red pine	G5	S5			
<i>Pinus strobus</i>	white pine	G5	S5			
<i>Pinus sylvestris</i>	Scotch pine	GNR	SNA			
<i>Plantago lanceolata</i>	English plantain	G5	SNA			
<i>Plantago major</i>	common plantain	G5	S5			
<i>Platanthera hyperborea</i>	northern green orchid	G5	S4S5			
<i>Poa annua</i>	annual bluegrass	GNR	SNA			
<i>Poa compressa</i>	Canada bluegrass	GNR	SNA			
<i>Poa palustris</i>	fowl bluegrass	G5	S5			
<i>Poa pratensis ssp. pratensis</i>	Kentucky bluegrass	G5T5	S5			
<i>Podophyllum peltatum</i>	may-apple	G5	S5			
<i>Populus balsamifera</i>	balsam poplar	G5	S5			
<i>Populus grandidentata</i>	large-tooth aspen	G5	S5			
<i>Populus tremuloides</i>	trembling aspen	G5	S5			
<i>Potentilla recta</i>	common cinquefoil	GNR	SNA			
<i>Prunella vulgaris</i>	self-heal	G5TU	SNA			
<i>Prunus serotina</i>	black cherry	G5	S5			
<i>Prunus virginiana</i>	choke cherry	G5	S5			
<i>Pteridium aquilinum</i>	eastern bracken fern	G5	S5			
<i>Quercus rubra</i>	red oak	G5	S5			

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SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	SARA, 2002	ESA, 2007	Simcoe County*
<i>Ranunculus acris</i>	common buttercup	G5	SNA			
<i>Ranunculus repens</i>	creeping buttercup	GNR	SNA			
<i>Rhamnus cathartica</i>	common buckthorn	GNR	SNA			
<i>Rhus radican</i>	poison ivy	G5	S5			
<i>Rhus typhina</i>	staghorn sumac	G5	S5			
<i>Ribes cynosbati</i>	pasture gooseberry	G5	S5			
<i>Rosa multiflora</i>	multiflora rose	GNR	SNA			
<i>Rubus idaeus</i>	wild red raspberry	G5T5	SNA			
<i>Rubus occidentalis</i>	black raspberry	G5	S5			
<i>Rumex crispus</i>	curly dock	GNR	SNA			
<i>Rumex orbiculatus</i>	water dock	G5	S4S5			
<i>Salix alba</i>	white willow	G5	SNA			
<i>Salix bebbiana</i>	Bebb's willow	G5	S5			
<i>Salix discolor</i>	pussy willow	G5	S5			
<i>Salix eriocephala</i>	Missouri river willow	G5	S5			
<i>Salix petiolaris</i>	slender willow	G5	S5			
<i>Salix x rubens</i>	reddish willow	GNR	SNA			
<i>Sambucus canadensis</i>	common elderberry	G5T5	S5			
<i>Sambucus pubens</i>	red-berried elder	G5	S5			
<i>Saponaria officinalis</i>	bouncing bet	GNR	SNR			
<i>Schedonorus pratensis</i>	meadow fescue	G5	SNA			
<i>Scirpus atrovirens</i>	dark-green bulrush	G5?	S5			
<i>Setaria glauca</i>	yellow foxtail	GNR	SNA			
<i>Setaria viridis</i>	green foxtail	GNR	SNA			
<i>Silene cucubalus</i>	baldder campion	GNR	SNA			
<i>Silene noctiflora</i>	night-flowering catchfly	GNR	SNA			
<i>Sisyrinchium montanum</i>	blue-eyed grass	G5T4T5	S5			
<i>Solanum dulcamara</i>	deadly nightshade	GNR	SNA			
<i>Solidago altissima</i>	tall goldenrod	GNR	S5			
<i>Solidago canadensis</i>	Canada goldenrod	G5T5	S5			

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SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	SARA, 2002	ESA, 2007	Simcoe County*
<i>Solidago flexicaulis</i>	zig-zag goldenrod	G5	S5			
<i>Sonchus oleraceus</i>	common sow-thistle	GNR	SNA			
<i>Spiraea alba</i>	meadowsweet	G5	S5			
<i>Stellaria graminifolia</i>	grass-leaved stitchwort	GNR	SNA			
<i>Symphyotrichum cordifolium</i>	heart-leaved aster	G5	S5			
<i>Symphyotrichum lateriflorum</i>	calico aster	G5	S5			
<i>Symphyotrichum novae-angliae</i>	New England aster	G5	S5			
<i>Symphyotrichum puniceum</i>	swamp aster	G5	S5			
<i>Syringa vulgaris</i>	common lilac	GNR	SNA			
<i>Tanacetum vulgare</i>	common tansy	GNR	SNA			
<i>Taraxacum officinale</i>	common dandelion	G5	SNA			
<i>Thalictrum dioicum</i>	early meadow-rue	G5	S5			
<i>Thalictrum pubescens</i>	tall meadow-rue	G5	S5			
<i>Thlaspi arvense</i>	field penny-cress	GNR	SNA			
<i>Thuja occidentalis</i>	eastern white cedar	G5	S5			
<i>Tiarella cordifolia</i>	foam flower	G5	S5			
<i>Tilia americana</i>	basswood	G5	S5			
<i>Toxicodendron radicans</i>	poison ivy	G5	S5			
<i>Tragopogon pratensis</i>	goat's-beard	GNR	SNA			
<i>Trientalis borealis</i>	starflower	G5	S5			
<i>Trifolium campestre</i>	low hop clover	GNR	SNA			
<i>Trifolium pratense</i>	red clover	GNR	SNA			
<i>Trifolium repens</i>	white clover	GNR	SNA			
<i>Tussilago farfara</i>	coltsfoot	GNR	SNA			
<i>Typha angustifolia</i>	narrow-leaved cattail	GNR	SNA			
<i>Typha latifolia</i>	broad-leaved cattail	GNR	SNA			
<i>Ulmus americana</i>	American elm	G5?	S5			
<i>Urtica dioica</i>	European stinging nettle	G5T5?	SNA			
<i>Verbascum thapsus</i>	common mullein	GNR	SNA			
<i>Verbena hastata</i>	blue vervain	G5	S5			

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SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	SARA, 2002	ESA, 2007	Simcoe County*
<i>Veronica officinalis</i>	common speedwell	G5	SNA			
<i>Viburnum acerifolium</i>	maple-leaved viburnum	G5	S5			
<i>Viburnum lentago</i>	nannyberry	G5	S5			
<i>Vicia cracca</i>	cow vetch	GNR	SNA			
<i>Viola cucullata</i>	marsh blue violet	G4G5	S5			
<i>Viola pubescens</i>	downy yellow violet	G5T5	S5			
<i>Viola sororia</i>	woolly blue violet	G5	S5			
<i>Vitis riparia</i>	riverbank grape	G5	S5			
<i>Zea mays</i>	corn	GNR	SNA			

Legend			
Provincial Rank (SRANK)	SARA, 2002	ESA, 2007	Regional
S1 - Critically Imperiled	NAR - Not at Risk	NAR - Not at Risk	R - Native Species Present and
S2 - Imperiled	SC - Special Concern	SC - Special Concern	Rare; number of stations indicated
S3 - Vulnerable	T - Threatened	THR - Threatened	
S4 - Apparently Secure	E - Endangered	END - Endangered	* Riley (1989)
S5 - Secure			
SNA - Non Applicable or equivalent to non-native			

**APPENDIX C – TREE INVENTORY AND PRESERVATION
PLAN REPORT**

**Tree Inventory and Preservation Plan Report
DiPoce Subdivision
Barrie, Ontario**

prepared for

**DiPoce (Innisfil) Inc.
175 Sun Pac Boulevard, Unit 1A
Brampton, Ontario L6S 5Z6**

prepared by



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8 November 2018, revised 27 November 2018

KUNTZ FORESTRY CONSULTING INC Project P1821

Introduction

Kuntz Forestry Consulting Inc. was retained by DiPoce (Innisfil) Inc. to complete a Tree Inventory and Preservation Plan Report in support of a development application for a property located on the northeast side of County Road 27 and Salem Road in Barrie, Ontario.

The work plan for this tree preservation study included the following:

- Prepare inventory of the tree resources over 10cm on and within six metres of the proposed development and trees of all sizes within the road right-of-way;
- Prepare 100% tally of trees in wooded areas over 10cm DBH;
- Evaluate potential tree saving opportunities based on the proposed development plans; and
- Document the findings in a Tree Inventory and Preservation Plan Report.

Tree resources were assessed utilizing the following parameters:

Tree # - number assigned to tree that corresponds to Figures 1-3.

Species - common and botanical names provided in the inventory table.

DBH - diameter (centimetres) at breast height, measured at 1.4 m above the ground.

Dripline – radius of tree crown, measures from the stem to the outermost branches

Condition - condition of tree considering trunk integrity, crown structure, and crown vigour. Condition ratings include poor (P), fair (F) and good (G).

Comments - additional relevant detail.

The results of the evaluation are provided below.

Methodology

Trees greater than 10cm DBH on and within six metres of the proposed development and trees of all sizes within the road right-of-way were included in the tree inventory. Trees were located using a handheld GPS unit (Trimble GeoExplorer® 6000 series) accurate to ± 1 m. Trees inventoried individually were tagged with numbers 32-309. Tree polygons were numbered P1-P4. Polygons (groups of trees) were inventoried using 100% tally of trees over 10cm DBH (categorizing trees by species, size category, and condition [AGS (Acceptable Growing Stock) and UGS (Unacceptable Growing Stock)]). Refer to Table 1 for the results of the tree inventory, Table 2 for the results of 100% tallies, and Figures 1-3 for the location of the trees.

Existing Site Conditions

The subject property is currently occupied by a farm land on the north side of the subject property. Bear Creek runs from the northwest corner of the subject property to the south. Natural heritage features exist to the south side of the subject property. Refer to Figures 1-3 for the existing site conditions.

Tree Resources

The tree inventory was conducted on 18 April 2018 and 1 November 2018. The inventory documented 327 individual trees and 4 tree polygons on and within six metres of the

proposed development. Refer to Table 1 for the full tree inventory, Table 2 for the results of 100% tally and Figures 1-3 for the location of trees reported in the tree inventory.

Tree resources included in the inventory are comprised of Balsam Fir (*Abies balsamea*), Manitoba Maple (*Acer negundo*), Black Maple (*Acer nigrum*), Red Maple (*Acer rubrum*), Silver Maple (*Acer saccharinum*), Sugar Maple (*Acer saccharum*), Yellow Birch (*Betula alleghaniensis*), White Birch (*Betula papyrifera*), American Beech (*Fagus grandifolia*), White Ash (*Fraxinus americana*), Green Ash (*Fraxinus pennsylvanica*), Apple Species (*Malus spp.*), Ironwood (*Ostrya virginiana*), White Spruce (*Picea glauca*), Colorado Blue Spruce (*Picea pungens*), Austrian Pine (*Pinus nigra*), Red Pine (*Pinus resinosa*), White Pine (*Pinus strobus*), Scots Pine (*Pinus sylvestris*), Eastern Cottonwood (*Populus deltoides*), Poplar Species (*Populus spp.*), Black Cherry (*Prunus serotina*), Choke Cherry (*Prunus virginiana*), Pear Species (*Pyrus spp.*), Red Oak (*Quercus rubra*), Willow Species (*Salix spp.*), Mountain Ash (*Sorbus spp.*), Eastern White Cedar (*Thuja occidentalis*), Basswood (*Tilia americana*), Eastern Hemlock (*Tsuga canadensis*), and White Elm (*Ulmus americana*).

Proposed Development

The proposed development includes the construction of residential subdivision with one stormwater management pond, one school, one park, and a commercial block. The existing creek will be protected with a 30m buffer on both side of the creek. Part of the existing woodlot to the south side of the subject property will be retained. Refer to Figures 1-3 for the proposed development.

Discussion

The following sections provide a discussion and analysis of development impacts and tree preservation relative to the proposed development and existing conditions.

Development Impacts/Tree Removals

The removal of 94 individual trees and 3 polygons is required to accommodate the proposed development. The removal of additional 22 trees is recommended due to their poor and/or hazardous condition. Refer to Table 3 below for the list of tree numbers designated for removal and Figures 1-3 for the locations of tree removals.

Table 3. The List of Proposed Tree Removals

Required Tree Removals due to the Development	Trees 35-38, 44-47, 97, 99, 102, 113-133, 135-137, 152-158, 161, 165-173, 176, 179, 183, 184, 187, 192, 196, 198, 201, 204, 207, 208, 219-221, 228, 232, 233, 235, 239, 241, 242, 245, 249, 250, 253, 254, 261, 265, 272, 275-277, 279, 280, 295, 298, 306, P2, P3, P4, A, and B
Recommended Tree Removals due to poor and/or hazardous condition	Trees 34, 39, 42, 43, 51, 66, 67, 72, 78, 79, 83-85, 98, 100, 101, 134, 149, 211, 212, AA, and AS

Tree Preservation

Preservation of 211 individual trees and 1 tree polygon will be possible with the use of appropriate tree protection measures as indicated on Figure 1. Tree protection measures will have to be implemented prior to the proposed earth works to ensure tree resources

designated for retention are not impacted by the development. Sediment control fencing will suffice as tree preservation fencing. Refer to Figures 1-3 for the location of required tree preservation fencing and general Tree Protection Plan Notes, and Appendix A for the tree preservation fence detail.

Summary and Recommendations

Kuntz Forestry Consulting Inc. was retained by DiPoce (Innisfil) Inc. to complete a Tree Inventory and Preservation Plan in support of a development application for the property located on the northeast side of County Road 27 and Salem Road in Barrie, Ontario. A tree inventory was conducted and reviewed in the context of the proposed work.

The findings of the study indicate a total of 327 individual trees and 4 tree polygons on and within six metres of the proposed development. The removal of 94 trees and 3 tree polygons will be required to accommodate the proposed development. The removal of additional 22 trees is recommended due to their poor and/or hazardous condition. The remaining 211 individual trees and 1 tree polygon can be preserved provided appropriate tree protection measures are followed throughout construction.

The following recommendations are suggested to minimize impacts to trees identified for preservation. Refer to Figures 1-3 for general Tree Protection Plan Notes and Appendix A for the tree preservation fence detail.

- Tree protection barriers and fencing should be erected at locations as prescribed on Figures 1-3. All tree protection measures should follow the guidelines as set out in the tree preservation plan notes and the tree preservation fencing detail.
- No construction activity including surface treatments, excavations of any kind, storage of materials or vehicles, unless specifically outlined above, is permitted within the area identified on Figures 1-3 as a tree protection zone (TPZ) at any time during or after construction.
- Branches and roots that extend beyond prescribed tree protection zones that require pruning must be pruned by a qualified Arborist or other tree professional. All pruning of tree roots and branches must be in accordance with Good Arboricultural Standards.
- Site visits, pre, during and post construction is recommended by either a certified consulting arborist (I.S.A.) or registered professional forester (R.P.F.) to ensure proper utilization of tree protection barriers. Trees should also be inspected for damage incurred during construction to ensure appropriate pruning or other measures are implemented.

Respectfully Submitted,

Kuntz Forestry Consulting Inc.

Kaho Hayashi

Kaho Hayashi, B.Sc., M.Sc.F.

Associate Forest Ecologist

ISA Certified Arborist #ON-2153A

Table 1. Tree Inventory

Location: DiPoce Subdivision, Barrie

Date: 18 April 2018 & 1 November 2018

Surveyors: KH

Tree #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	DL	Comments	Action
A	Black Cherry	<i>Prunus serotina</i>	~25, 20	F	F/G	F/G		5	Union at base	Remove
B	Apple Species	<i>Malus spp.</i>	~25, 20	F	F/G	F/G		4	Union at 0.5m	Remove
C	Apple Species	<i>Malus spp.</i>	10-16 (avg. 13)	F	F	F		4	Union at base (3 stems)	Preserve
32	Sugar Maple	<i>Acer saccharum</i>	10.5, 9, 8	F/G	F/G	F/G		3	Union at base, asymmetrical crown (L)	Preserve
33	Sugar Maple	<i>Acer saccharum</i>	10, 6	F	F	F		3	Stem wound (M), union at 0.6m with included bark (M)	Preserve
34	Sugar Maple	<i>Acer saccharum</i>	12	P/F	F	P/F	20	3	Stem wound (M) at base, canker (M)	Remove (condition)
35	Apple Species	<i>Malus spp.</i>	13.5	F	F	F		3	Lean (L), asymmetrical crown (M)	Remove
36	Basswood	<i>Tilia americana</i>	12, 10.5	F	F	F/G		4	Union at base, crook (L), bow (L), stem wound (L)	Remove
37	Sugar Maple	<i>Acer saccharum</i>	16, 11.5	F	F	P/F	25	3	Union at 0.6m with included bark (H), canker (M), 1 stem almost dead	Remove
38	Sugar Maple	<i>Acer saccharum</i>	18	G	G	G		3		Remove
39	Pear Species	<i>Pyrus spp.</i>	~38	P/F	F	F		6	Stem wound (H) at base, asymmetrical crown (M), union at 1.7m ==> hazard	Remove (condition)
40	Sugar Maple	<i>Acer saccharum</i>	93.5	F/G	F/G	F/G		10	Co-dominance at 3m, bow (L), asymmetrical crown (L)	Preserve
41	Sugar Maple	<i>Acer saccharum</i>	98	G	G	F.		8		Preserve
42	American Beech	<i>Fagus grandifolia</i>	~62	P	P/F	P/F	20	8	Stem wound (H) at base, bow (L), dead branches (M)	Remove (condition)
43	Chokecherry	<i>Prunus virginiana</i>	13.5, 10	P	P/F	P/F	20	3	Stem wound (H) at base, union at 1m with included bark (M), dead branches (L)	Remove (condition)
44	Sugar Maple	<i>Acer saccharum</i>	10.5	G	F/G	F		3	Asymmetrical crown (M)	Remove
45	Basswood	<i>Tilia americana</i>	14, 11	F/G	F/G	F/G		4	Union at base, lean (L), asymmetrical crown (M)	Remove
46	Black Cherry	<i>Prunus serotina</i>	16.5	F/G	F	F/G		4	Stem wound (L), crook (L), asymmetrical crown (M)	Remove
47	Sugar Maple	<i>Acer saccharum</i>	13.5	G	G	F/G		3		Remove
48	American Beech	<i>Fagus grandifolia</i>	21, 16, 13	F	F	F/G		5	Union at 0.3m and 0.6m, bow (M) to west	Preserve
49	Ironwood	<i>Ostrya virginiana</i>	17.5	G	F	G		4	Asymmetrical crown (H)	Preserve
50	American Beech	<i>Fagus grandifolia</i>	51	F	F	P/F	20	8	Bow (M) to west, dead branches (M)	Preserve
51	Basswood	<i>Tilia americana</i>	47	P	P/F	P	75	5	Canker (H), wood pecker damage (H), dead branches (M) ==> hazard	Remove (condition)
52	Sugar Maple	<i>Acer saccharum</i>	62	F/G	F/G	F/G		8	Co-dominance in crown, asymmetrical crown (M)	Preserve
53	Sugar Maple	<i>Acer saccharum</i>	67	G	F/G	G		8	Asymmetrical crown (M)	Preserve
54	Ironwood	<i>Ostrya virginiana</i>	17, 11	F	F	F		4	Union at 0.2m with included bark (M), bow (M) to west	Preserve
55	Ironwood	<i>Ostrya virginiana</i>	11.5	F/G	F	F/G		4	Lean (L), asymmetrical crown (M)	Preserve
56	Ironwood	<i>Ostrya virginiana</i>	11	F/G	F/G	F/G		4	Bow (L) to west, asymmetrical crown (M)	Preserve
57	White Pine	<i>Pinus strobus</i>	100	G	F/G	G		8	Asymmetrical crown (L)	Preserve
58	Ironwood	<i>Ostrya virginiana</i>	21	G	F/G	G		4	Asymmetrical crown (M)	Preserve
59	Sugar Maple	<i>Acer saccharum</i>	78	G	G	G		10		Preserve
60	Sugar Maple	<i>Acer saccharum</i>	47	G	F/G	F/G	15	6	Asymmetrical crown (M), dead branches (L)	Preserve
61	Red Maple	<i>Acer rubrum</i>	39	G	G	G		6		Preserve
62	Sugar Maple	<i>Acer saccharum</i>	52	G	G	G		8	Deadwood	Preserve
63	Black Maple	<i>Acer nigrum</i>	59.5	G	G	F/G		8	Deadwood	Preserve
64	Black Maple	<i>Acer nigrum</i>	45	F/G	F/G	F/G		6	Bow (L) to east, asymmetrical crown (M)	Preserve
65	Black Maple	<i>Acer nigrum</i>	29	G	G	G		6		Preserve
66	American Beech	<i>Fagus grandifolia</i>	58, 17.5	P	P	P	80	8	Included fence (M), union at 0.8m with included bark (M), dead leader	Remove (condition)
67	White Ash	<i>Fraxinus americana</i>	67	P	P	P	90	3		Remove (condition)
68	Basswood	<i>Tilia americana</i>	41.5	F	F/G	F	20	6	Cavity at 3m, dead branches (L), asymmetrical crown (M)	Preserve
69	Black Maple	<i>Acer nigrum</i>	68.5	G	G	F/G		8	Asymmetrical crown (L), cavity at base (L)	Preserve
70	Sugar Maple	<i>Acer saccharum</i>	21.5	G	G	G		4		Preserve
71	Sugar Maple	<i>Acer saccharum</i>	71.5	F	G	F/G		8	Cavity at base	Preserve
72	American Beech	<i>Fagus grandifolia</i>	~64	P	P	P	80	6	Lost leader at 5m	Remove (condition)
73	Black Maple	<i>Acer nigrum</i>	16	G	G	G		4		Preserve
74	Ironwood	<i>Ostrya virginiana</i>	12.5	F/G	F/G	F/G		4	Co-dominance at 1.6m, bow (M)	Preserve
75	Black Maple	<i>Acer nigrum</i>	52	G	G	G		8	Asymmetrical crown (L)	Preserve
76	Black Maple	<i>Acer nigrum</i>	31.5	G	G	G		6		Preserve
77	Basswood	<i>Tilia americana</i>	13, 8, 6	F	F	F		5	Union at base, bow (M) to west	Preserve
78	Green Ash	<i>Fraxinus pennsylvanica</i>	18.5	-	-	-	100	-		Remove (condition)
79	Green Ash	<i>Fraxinus pennsylvanica</i>	14	-	-	-	100	-		Remove (condition)
80	White Elm	<i>Ulmus americana</i>	24	F/G	F/G	F/G		6	Bow (L)	Preserve
81	Black Maple	<i>Acer nigrum</i>	50.5	G	F/G	F/G		6	Lean (VL), asymmetrical crown (M), deadwood	Preserve
82	Black Maple	<i>Acer nigrum</i>	49.5	F/G	G	F/G		6	Co-dominance in crown	Preserve
83	Black Maple	<i>Acer nigrum</i>	55	P	P	P	80	8	Dead leader	Remove (condition)

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84	Black Maple	<i>Acer nigrum</i>	49	P	P	P	90	6	Lost leader at 5m	Remove (condition)
85	Black Maple	<i>Acer nigrum</i>	73.5	P	P	P	90	6	Lost leader at 7m	Remove (condition)
D	Eastern Hemlock	<i>Tsuga canadensis</i>	~13	G	F/G	G		4	Asymmetrical crown (M)	Preserve
E	Ironwood	<i>Ostrya virginiana</i>	~12	G	G	G		5		Preserve
F	Sugar Maple	<i>Acer saccharum</i>	~12	G	G	G		4		Preserve
86	Red Oak	<i>Quercus rubra</i>	53	F/G	G	F	20	8	Co-dominance in crown, dead branches (L)	Preserve
G	Sugar Maple	<i>Acer saccharum</i>	~18	G	G	G		5		Preserve
H	Basswood	<i>Tilia americana</i>	5	F/G	G	G		4		Preserve
87	White Elm	<i>Ulmus americana</i>	16	F	F	P/F	25	4	Stem wound (L), crook (L), dead branches (L)	Preserve
I	Sugar Maple	<i>Acer saccharum</i>	~16	G	G	G		3		Preserve
J	Sugar Maple	<i>Acer saccharum</i>	~20	G	G	G		4		Preserve
K	Basswood	<i>Tilia americana</i>	~24, 20, 18	P	P	F		6	Union at base, all stems lost leader, broken branches (M), epicormic branches (H)	Preserve
88	Sugar Maple	<i>Acer saccharum</i>	~80	F/G	F/G	F/G		10	Co-dominance in crown, asymmetrical crown (M)	Preserve
89	Black Maple	<i>Acer nigrum</i>	~40	F/G	F/G	F	15	6	Co-dominance in crown, pruning wounds (L), deadwood	Preserve
90	Black Maple	<i>Acer nigrum</i>	52	F	F	P/F	25	8	Union at 4m, pruning wounds (L), deadwood	Preserve
91	Black Maple	<i>Acer nigrum</i>	~70, 26	F/G	F	P/F	25	8	Union at 1m, deadwood	Preserve
92	Black Maple	<i>Acer nigrum</i>	53	G	G	G		6		Preserve
93	Black Maple	<i>Acer nigrum</i>	~40, 35	F/G	F/G	F	25	8	Co-dominance at base, deadwood, pruning wounds (L)	Preserve
94	Black Maple	<i>Acer nigrum</i>	~70	F/G	F/G	F	15	8	Stem wound (L), deadwood, asymmetrical crown (M)	Preserve
95	Black Maple	<i>Acer nigrum</i>	71	F/G	F/G	F/G		8	Lean (L) to south, union at 3m, asymmetrical crown (M)	Preserve
96	Sugar Maple	<i>Acer saccharum</i>	~85	F/G	F/G	F	20	8	Union at 3m, deadwood	Preserve
97	Sugar Maple	<i>Acer saccharum</i>	63	G	G	G		8		Remove
98	Sugar Maple	<i>Acer saccharum</i>	46	P/F	F	F	15	6	Stem wound (H) at base with cavity, broken branches (M)	Remove (condition)
L	White Spruce	<i>Picea glauca</i>	~13	G	G	G		3		Preserve
M	White Spruce	<i>Picea glauca</i>	~21	G	G	F/G		3		Preserve
99	Mountain Ash	<i>Sorbus spp.</i>	14, 11.5	F/G	G	G		4	Union at base	Remove
100	Manitoba maple	<i>Acer negundo</i>	19, 16	P	F/G	P/F	10	5	Union at 0.3m, stem wound (H), deadwood	Remove (condition)
101	Sugar Maple	<i>Acer saccharum</i>	~110	P	P	P	75	6	Stem wound (H), cavity (H), fruiting bodies, broken branches (H) ==> hazard	Remove (condition)
N	Austrian Pine	<i>Pinus nigra</i>	~20	G	F/G	F/G		3		Preserve
O	Austrian Pine	<i>Pinus nigra</i>	~18	F/G	G	G		3	Sweep (L)	Preserve
102	Sugar Maple	<i>Acer saccharum</i>	83	P/F	G	F/G		8	Co-dominance at 3m (3 stems), poor union	Remove
P	White Spruce	<i>Picea glauca</i>	~15	G	G	G		2		Preserve
Q	White Spruce	<i>Picea glauca</i>	~16	G	G	F/G		2		Preserve
R	White Birch	<i>Betula papyrifera</i>	~16, 16, 16, 13	F/G	G	G		4		Preserve
S	Colorado Blue Spruce	<i>Picea pungens</i>	~15	G	G	G		2		Preserve
T	Colorado Blue Spruce	<i>Picea pungens</i>	~25	G	G	G		3	Pruning wounds (L)	Preserve
U	White Birch	<i>Betula papyrifera</i>	~25, 16	F/G	G	G		5		Preserve
V	White Spruce	<i>Picea glauca</i>	~30	G	G	G		4		Preserve
W	Colorado Blue Spruce	<i>Prunus virginiana</i>	~25	G	G	G		3		Preserve
X	White Spruce	<i>Picea glauca</i>	~18	G	G	G		2		Preserve
Y	Colorado Blue Spruce	<i>Prunus virginiana</i>	~22	G	G	G		2		Preserve
Z	White Spruce	<i>Picea glauca</i>	~16	F/G	G	G		2	Sweep (L)	Preserve
AA	Black Cherry	<i>Prunus serotina</i>	~45, 40, 35	F/G	F/G	P/F	25	6	Union at base, 1 stem dead	Remove (condition)
AB	Green Ash	<i>Fraxinus pennsylvanica</i>	~30	G	G	F	10	5		Preserve
AC	Willow Species	<i>Salix spp.</i>	3-18 (avg. 12)	F	F/G	F/G		6	Union at 0.6m (~15 stems)	Preserve
AD	Willow Species	<i>Salix spp.</i>	~30	P	P	F		4	Co-dominance at 1.8m, both stems lost leader at 4m, coppice growth (M), vertical crack	Preserve
AE	Willow Species	<i>Salix spp.</i>	~32, 30, 22, 20	F	G	F/G		5	Union at 0.5m with included bark (L), broken branches (L), epicormic branches (M)	Preserve
AF	Sugar Maple	<i>Acer saccharum</i>	~80	G	G	F/G		8		Preserve
AG	Balsam Fir	<i>Abies balsamea</i>	~18	G	G	G		2		Preserve
AH	Balsam Fir	<i>Abies balsamea</i>	~16	G	G	G		2		Preserve
AI	Colorado Blue Spruce	<i>Picea pungens</i>	~20	G	G	G		2		Preserve
AJ	Balsam Fir	<i>Abies balsamea</i>	~16	G	G	G		2		Preserve
AK	Balsam Fir	<i>Abies balsamea</i>	~12	G	G	F/G		2	Sparse crown (L)	Preserve
AL	Balsam Fir	<i>Abies balsamea</i>	~12	G	G	F/G		2	Sparse crown (L)	Preserve
AM	Balsam Fir	<i>Abies balsamea</i>	~20	G	G	G		2		Preserve
AN	White Spruce	<i>Picea glauca</i>	~20	G	G	G		2		Preserve
AO	Balsam Fir	<i>Abies balsamea</i>	~14	G	G	G		2		Preserve
AP	Scots Pine	<i>Pinus sylvestris</i>	~24	F/G	F/G	F/G		5	Crook (L), asymmetrical crown (M)	Preserve
103	Manitoba maple	<i>Acer negundo</i>	11, 11, 9, 8	F	G	G		5	Union at base, sweep (L), crook (L)	Preserve
104	Manitoba maple	<i>Acer negundo</i>	17.5, 15, 14, 14, 13	F	G	G		5	Union at base, crook (M)	Preserve
105	Willow Species	<i>Salix spp.</i>	53, 16.5	F/G	G	G		6	Union at 0.6m and 4m	Preserve
106	Willow Species	<i>Salix spp.</i>	15	F/G	G	G		4	Sweep (L)	Preserve
107	Willow Species	<i>Salix spp.</i>	27	F/G	F/G	F/G		5	Crook (L), broken branches (L), epicormic branches (M)	Preserve
108	Willow Species	<i>Salix spp.</i>	30	F/G	G	G		5	Crook (L)	Preserve

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109	Willow Species	<i>Salix spp.</i>	21, 12	F	G	F/G		5	Union at 1m, lean (L)	Preserve
110	Willow Species	<i>Salix spp.</i>	22	F/G	G	F/G		5	Sweep (L), broken branches (L), epicormic branches (M)	Preserve
111	Willow Species	<i>Salix spp.</i>	28	F/G	G	F/G		5	Union at 4m, epicormic branches (L)	Preserve
112	Willow Species	<i>Salix spp.</i>	19	P	P	F		8	Stem half snapped at 1m, epicormic branches (H)	Preserve
113	White Spruce	<i>Picea glauca</i>	~30	G	G	G		4		Remove
114	White Spruce	<i>Picea glauca</i>	~28	G	G	G		4		Remove
115	White Spruce	<i>Picea glauca</i>	~17	G	G	G		3		Remove
116	White Spruce	<i>Picea glauca</i>	16	G	G	G		3		Remove
117	White Spruce	<i>Picea glauca</i>	~23	G	G	G		4		Remove
118	White Spruce	<i>Picea glauca</i>	16	G	G	G		3		Remove
119	White Spruce	<i>Picea glauca</i>	~29	G	G	G		4		Remove
120	White Spruce	<i>Picea glauca</i>	~24, 15	F/G	G	G		4	Union at base	Remove
121	White Spruce	<i>Picea glauca</i>	~19	G	G	G		3		Remove
122	White Spruce	<i>Picea glauca</i>	~30	G	G	G		4		Remove
123	White Spruce	<i>Picea glauca</i>	29	G	G	G		4		Remove
124	Manitoba maple	<i>Acer negundo</i>	64, 42	P	F	F	25	8	Union at 0.3m, cavity on larger stem, dead branches (M)	Remove
AQ	Sugar Maple	<i>Acer saccharum</i>	57	F/G	G	F/G		6	Union at 1.6m with included bark (M)	Preserve
125	White Spruce	<i>Picea glauca</i>	35	G	G	G		6		Remove
126	White Spruce	<i>Picea glauca</i>	26	G	G	G		5		Remove
127	White Spruce	<i>Picea glauca</i>	32	G	G	G		5		Remove
128	White Spruce	<i>Picea glauca</i>	21.5	G	G	G		5		Remove
129	White Spruce	<i>Picea glauca</i>	27	G	G	G		5		Remove
130	White Spruce	<i>Picea glauca</i>	23.5	G	G	G		5		Remove
131	White Spruce	<i>Picea glauca</i>	28	G	G	G		5		Remove
132	White Spruce	<i>Picea glauca</i>	37	G	G	G		6		Remove
133	White Spruce	<i>Picea glauca</i>	41.5	G	G	G		6		Remove
134	White Spruce	<i>Picea glauca</i>	12, 7.5	F/G	F	P/F	60	3	Union at 0.2m, smaller stem dead, asymmetrical crown ((H)	Remove (condition)
135	White Spruce	<i>Picea glauca</i>	22	G	G	F/G		5	Sparse crown (L)	Remove
136	White Spruce	<i>Picea glauca</i>	48	G	G	G		6		Remove
AR	Silver Maple	<i>Acer saccharinum</i>	~80, 60	F	F	F		10	Union at 0.6m and 2m, 1 stem lost leader at 5m, broken branches (M), lean (L) to north	Remove
137	Austrian Pine	<i>Pinus nigra</i>	11.5	G	G	G		3		Remove
138	Austrian Pine	<i>Pinus nigra</i>	13.5	G	G	G		3		Preserve
AS	White Ash	<i>Fraxinus americana</i>	36, 31	-	-	-	100	-		Remove (condition)
AT	White Spruce	<i>Picea glauca</i>	31, 19	F/G	G	G		6	Union at 0.6m with included bark (M)	Preserve
139	Black Cherry	<i>Prunus serotina</i>	~35m 16	F	G	F		6	Union at base, crook (M), sweep (L), grape vine competition (H)	Preserve
P1	Apple Species	<i>Malus spp.</i>	10-25 (avg. 15)	P/F	F	P/F		5	9 trees, crook (H), dead branches (L), union at base	Preserve
140	Apple Species	<i>Malus spp.</i>	32, 29	F	F	F		6	Union at base, crook (M), deadwood	Preserve
141	Willow Species	<i>Salix spp.</i>	~36	F/G	G	F/G		6	Included fence (L), bow (L)	Preserve
142	Willow Species	<i>Salix spp.</i>	46	G	G	F/G		6	Asymmetrical crown (L)	Preserve
143	Manitoba maple	<i>Acer negundo</i>	18.5	F	F/G	G		6	Lean (M) to east, crook (M)	Preserve
144	Willow Species	<i>Salix spp.</i>	~75	F	G	F/G		8	Co-dominance at 1.5m, lean (L) to east	Preserve
145	Willow Species	<i>Salix spp.</i>	~45, 40	F	F/G	F/G		6	Union at base, broken branches (M)	Preserve
146	Willow Species	<i>Salix spp.</i>	~70	G	G	F/G		8	Crook (L)	Preserve
147	Willow Species	<i>Salix spp.</i>	~45, 40	F	G	F/G		8	Union at 0.6m with included bark (H), crook (L)	Preserve
148	Willow Species	<i>Salix spp.</i>	50, 50	F	F	F/G		8	Union at 1.2m, broken branches (M)	Preserve
149	Willow Species	<i>Salix spp.</i>	~70, 70, 60	P/F	P/F	F	30	8	Union at base, lost leader at 3m and 6m, dead branches (L)	Remove (condition)
150	Willow Species	<i>Salix spp.</i>	38, 36	F	P/F	F		4	Union At base, crook (M), broken branches (M)	Preserve
151	White Pine	<i>Pinus strobus</i>	38	F	G	F/G		5	Cavity at base	Preserve
152	Yellow Birch	<i>Betula alleghaniensis</i>	48, 29, 21, 16	F/G	G	F/G		6	Union at base	Remove
153	Eastern White Cedar	<i>Thuja occidentalis</i>	23	G	G	G		2		Remove
154	Eastern White Cedar	<i>Thuja occidentalis</i>	27, 15	F/G	G	F/G		3	Lean (L)	Remove
155	Yellow Birch	<i>Betula alleghaniensis</i>	27, 16	F/G	G	F/G		5	Union at base, sweep (L)	Remove
156	Black Cherry	<i>Prunus serotina</i>	17	G	G	F/G		4		Remove
157	Eastern White Cedar	<i>Thuja occidentalis</i>	26, 19	F/G	G	G		3	Union at base	Remove
158	Yellow Birch	<i>Betula alleghaniensis</i>	47, 43	F	F/G	F		6	Union at base	Remove
159	Eastern White Cedar	<i>Thuja occidentalis</i>	16	G	G	G		2		Preserve
160	Eastern White Cedar	<i>Thuja occidentalis</i>	19, 16	F/G	G	G		3	Union at base	Preserve
161	Eastern Cottonwood	<i>Populus deltoides</i>	20	G	G	G		4		Remove
162	Eastern White Cedar	<i>Thuja occidentalis</i>	19	G	G	G		2		Preserve
163	Eastern White Cedar	<i>Thuja occidentalis</i>	17, 15, 13	F/G	G	F/G		2	Union at base	Preserve
164	Eastern White Cedar	<i>Thuja occidentalis</i>	21	G	G	G		3		Preserve
165	Eastern White Cedar	<i>Thuja occidentalis</i>	16, 15, 15	F/G	G	G		3	Union at base	Remove
166	Eastern White Cedar	<i>Thuja occidentalis</i>	18	G	G	G		3		Remove
167	White Elm	<i>Ulmus americana</i>	17	G	G	G		4		Remove
168	Eastern White Cedar	<i>Thuja occidentalis</i>	18	F/G	G	G		3	Sweep (L)	Remove
169	Eastern White Cedar	<i>Thuja occidentalis</i>	21	G	G	G		3		Remove
170	Eastern White Cedar	<i>Thuja occidentalis</i>	20	G	G	G		3		Remove
171	Eastern White Cedar	<i>Thuja occidentalis</i>	23, 17, 16	F/G	G	G		3	Union at base	Remove
172	Eastern White Cedar	<i>Thuja occidentalis</i>	22	G	G	G		3		Remove
173	Eastern White Cedar	<i>Thuja occidentalis</i>	21, 11, 10	F/G	G	G		3	Union at base	Remove
174	Eastern White Cedar	<i>Thuja occidentalis</i>	16	G	G	G		3		Preserve
175	Eastern White Cedar	<i>Thuja occidentalis</i>	17	G	G	G		3		Preserve

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176	Yellow Birch	<i>Betula alleghaniensis</i>	~45, 40	F	G	F/G	6	Union at 1.2m with included bark (M)	Remove
177	Eastern White Cedar	<i>Thuja occidentalis</i>	19	G	G	G	3		Preserve
178	Yellow Birch	<i>Betula alleghaniensis</i>	~22, 12	F	F/G	F/G	5	Union at base, spiral stems	Preserve
179	Eastern White Cedar	<i>Thuja occidentalis</i>	18	G	G	G	2		Remove
180	Yellow Birch	<i>Betula alleghaniensis</i>	17	F/G	G	F/G	3	Lean (L), union at 2.5m	Preserve
181	Eastern White Cedar	<i>Thuja occidentalis</i>	16	G	G	G	2		Preserve
182	Eastern White Cedar	<i>Thuja occidentalis</i>	20.5	G	G	G	2		Preserve
183	Eastern White Cedar	<i>Thuja occidentalis</i>	23	G	G	G	3		Remove
184	Eastern White Cedar	<i>Thuja occidentalis</i>	21	G	G	G	2		Remove
185	Eastern White Cedar	<i>Thuja occidentalis</i>	22	G	G	G	3		Preserve
186	Eastern White Cedar	<i>Thuja occidentalis</i>	17	F/G	G	G	2		Preserve
187	Yellow Birch	<i>Betula alleghaniensis</i>	41, 17	F/G	G	G	6	Union at base	Remove
188	White Elm	<i>Ulmus americana</i>	23	G	G	F/G	5		Preserve
189	Yellow Birch	<i>Betula alleghaniensis</i>	28	F	F	F	25	6 Co-dominance at 2.5m, dead branches (L)	Preserve
190	Eastern White Cedar	<i>Thuja occidentalis</i>	18	G	G	G	2		Preserve
191	Eastern White Cedar	<i>Thuja occidentalis</i>	14.5	G	G	G	2	Lean (M)	Preserve
192	Eastern White Cedar	<i>Thuja occidentalis</i>	15	F	G	F/G	4		Remove
193	Eastern White Cedar	<i>Thuja occidentalis</i>	20	G	G	G	2		Preserve
194	Eastern White Cedar	<i>Thuja occidentalis</i>	21	G	G	G	2		Preserve
195	Eastern White Cedar	<i>Thuja occidentalis</i>	15, 10.5	F/G	G	G	2	Union at base	Preserve
196	Eastern White Cedar	<i>Thuja occidentalis</i>	16, 14, 13, 13, 11	F/G	G	G	3	Union at base	Remove
197	Eastern White Cedar	<i>Thuja occidentalis</i>	24	G	G	G	3		Preserve
198	Eastern White Cedar	<i>Thuja occidentalis</i>	20, 19	F/G	G	G	3	Union at base	Remove
199	Eastern White Cedar	<i>Thuja occidentalis</i>	~15, 14, 14	F/G	G	G	2	Union at base	Preserve
200	Eastern White Cedar	<i>Thuja occidentalis</i>	16	G	G	G	2		Preserve
201	Eastern White Cedar	<i>Thuja occidentalis</i>	14.5	G	G	G	2		Remove
202	Eastern White Cedar	<i>Thuja occidentalis</i>	17	G	G	G	2		Preserve
203	Eastern White Cedar	<i>Thuja occidentalis</i>	16	G	G	G	2		Preserve
204	Eastern White Cedar	<i>Thuja occidentalis</i>	~30, 30	P/F	F	F	25	3 Union at base, lean (L), frost crack (M), sparse crown (L)	Remove
205	Black Cherry	<i>Prunus serotina</i>	21	F/G	G	F/G	4	Lean (L), crook (L)	Preserve
206	Eastern White Cedar	<i>Thuja occidentalis</i>	23	F	P	P	60	2 Frost crack (M)	Preserve
207	Eastern White Cedar	<i>Thuja occidentalis</i>	21	F/G	F	P/F	40	2 Co-dominance at 2.5m	Remove
208	Eastern White Cedar	<i>Thuja occidentalis</i>	17	F	F	F	4	Lean (L), sweep (M)	Remove
209	Eastern White Cedar	<i>Thuja occidentalis</i>	~40, 30, 30	F/G	G	F/G	10	4 Union at base and 1.2m	Preserve
210	Eastern White Cedar	<i>Thuja occidentalis</i>	23, 14	F/G	G	F/G	4	Union at base, sweep (L)	Preserve
211	Eastern White Cedar	<i>Thuja occidentalis</i>	~42, 18, 15	P	F	P/F	6	Union at base, uprooted at 45 degree	Remove (condition)
212	Eastern White Cedar	<i>Thuja occidentalis</i>	~30	P	P	P	80	4 Uprooted at 45 degree	Remove (condition)
213	Eastern White Cedar	<i>Thuja occidentalis</i>	22, 12, 11, 10	F/G	G	F	3	Union at base	Preserve
214	Eastern White Cedar	<i>Thuja occidentalis</i>	14, 8	F	F	F	2	Union at base, smaller stem lost leader at 3m	Preserve
215	Eastern White Cedar	<i>Thuja occidentalis</i>	16, 13	F	F	F	3	Union at base, lean (M)	Preserve
216	Willow Species	<i>Salix spp.</i>	17	F	G	G	4	Crook (M)	Preserve
217	Eastern White Cedar	<i>Thuja occidentalis</i>	18, 16	F/G	G	F/G	2	Union at base, lean (L)	Preserve
218	Eastern White Cedar	<i>Thuja occidentalis</i>	31, 21, 16	F/G	G	F/G	3	Union at base and 0.5m with included bark (M)	Preserve
219	Eastern White Cedar	<i>Thuja occidentalis</i>	15, 14, 12	F/G	G	F	2	Union at base, sweep (L)	Remove
220	Eastern White Cedar	<i>Thuja occidentalis</i>	17, 14	F	G	F/G	3	Union at 0.6m with included bark (M), sweep (M)	Remove
221	Eastern White Cedar	<i>Thuja occidentalis</i>	~16, 16, 14	F/G	G	F/G	2	Union at base	Remove
222	Eastern White Cedar	<i>Thuja occidentalis</i>	21, 18	F/G	G	F/G	2	Union at base	Preserve
223	Eastern White Cedar	<i>Thuja occidentalis</i>	16	G	G	G	2		Preserve
224	Eastern White Cedar	<i>Thuja occidentalis</i>	17, 13	F/G	G	F/G	3	Union at base	Preserve
225	Eastern White Cedar	<i>Thuja occidentalis</i>	17	F/G	G	F/G	2	Lean (L)	Preserve
226	Eastern White Cedar	<i>Thuja occidentalis</i>	20, 18	F/G	G	F/G	2	Union at base	Preserve
227	Eastern White Cedar	<i>Thuja occidentalis</i>	17, 16, 15, 13	F/G	G	F	3	Union at base, sparse crown (M)	Preserve
228	Eastern White Cedar	<i>Thuja occidentalis</i>	15	F/G	G	F/G	2	Spiral stem	Remove
229	Eastern White Cedar	<i>Thuja occidentalis</i>	18	G	G	F	2		Preserve
230	Eastern White Cedar	<i>Thuja occidentalis</i>	16	G	G	F/G	2		Preserve
231	Eastern White Cedar	<i>Thuja occidentalis</i>	22	F/G	G	F/G	2	Lean (L)	Preserve
232	Eastern White Cedar	<i>Thuja occidentalis</i>	15, 14	F/G	G	F/G	2	Union at base	Remove
233	Eastern White Cedar	<i>Thuja occidentalis</i>	16, 16	F/G	G	F/G	3	Union at base, co-dominance in crown	Remove
234	Eastern White Cedar	<i>Thuja occidentalis</i>	17, 14	F	F	P/F	30	3 Lean (M), union at base	Preserve
235	Eastern White Cedar	<i>Thuja occidentalis</i>	~21, 18, 11	F/G	G	F/G	3	Union at base	Remove
236	Eastern White Cedar	<i>Thuja occidentalis</i>	16, 13	F/G	G	F/G	3	Union at base	Preserve
237	Eastern White Cedar	<i>Thuja occidentalis</i>	~22, 20, 20, 18	F/G	G	F/G	3	Union at base	Preserve
238	Eastern White Cedar	<i>Thuja occidentalis</i>	20	G	G	F/G	2		Preserve
239	Eastern White Cedar	<i>Thuja occidentalis</i>	22	G	G	F/G	3		Remove
240	Eastern White Cedar	<i>Thuja occidentalis</i>	23, 14, 13	F/G	G	F/G	3	Union at base and 0.6m	Preserve
241	Eastern White Cedar	<i>Thuja occidentalis</i>	~34, 18	F/G	G	F/G	3	Union at base, sweep (L)	Remove
242	Apple Species	<i>Malus spp.</i>	~40, 25	P/F	F	F	5	Union at base, lean (M), bow (M), crook (M), asymmetrical crown (H)	Remove
243	Eastern White Cedar	<i>Thuja occidentalis</i>	18	G	G	G	2		Preserve
244	Eastern White Cedar	<i>Thuja occidentalis</i>	16	G	G	F/G	2		Preserve
245	Eastern White Cedar	<i>Thuja occidentalis</i>	23	G	G	F/G	3		Remove
246	Eastern White Cedar	<i>Thuja occidentalis</i>	36	G	G	F/G	4		Preserve
247	Eastern White Cedar	<i>Thuja occidentalis</i>	~40, 30, 20	F/G	G	F/G	4	Union at base	Preserve
248	Eastern White Cedar	<i>Thuja occidentalis</i>	22	G	G	G	2		Preserve

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249	Eastern White Cedar	<i>Thuja occidentalis</i>	31, 27	F/G	G	G		3		Remove
250	Eastern White Cedar	<i>Thuja occidentalis</i>	15	G	G	F/G		2		Remove
251	Eastern White Cedar	<i>Thuja occidentalis</i>	~23, 23, 22, 15	F/G	G	F/G		3	Union at base	Preserve
252	Eastern White Cedar	<i>Thuja occidentalis</i>	~22, 20	F/G	G	F/G		2	Union at base	Preserve
253	Eastern White Cedar	<i>Thuja occidentalis</i>	~22, 19	F/G	G	F/G		2	Union at base	Remove
254	Eastern White Cedar	<i>Thuja occidentalis</i>	~32, 22	F/G	G	F/G		3	Union at base	Remove
255	Eastern White Cedar	<i>Thuja occidentalis</i>	21	G	G	F/G		2		Preserve
256	Eastern White Cedar	<i>Thuja occidentalis</i>	~26, 21	F/G	G	F/G		3	Union at base	Preserve
257	Eastern White Cedar	<i>Thuja occidentalis</i>	~32, 30	F/G	G	F/G		3	Union at base	Preserve
258	Eastern White Cedar	<i>Thuja occidentalis</i>	~20, 19	F/G	G	F/G		3	Union at base	Preserve
259	Eastern White Cedar	<i>Thuja occidentalis</i>	5-25 (avg. 18)	F/G	G	F/G		4	Union at base (11 stems)	Preserve
260	Eastern White Cedar	<i>Thuja occidentalis</i>	17.5	G	G	F/G		2		Preserve
261	Eastern White Cedar	<i>Thuja occidentalis</i>	~35, 24, 16, 15, 13	F/G	G	F/G		4	Union at base	Remove
262	Eastern White Cedar	<i>Thuja occidentalis</i>	~20, 18	F/G	G	F/G		3	Union at base	Preserve
263	Eastern White Cedar	<i>Thuja occidentalis</i>	~32, 22	F/G	G	F/G		3	Union at base	Preserve
264	Eastern White Cedar	<i>Thuja occidentalis</i>	25	F/G	G	F/G		2	Co-dominance at 1.5m	Preserve
265	Eastern White Cedar	<i>Thuja occidentalis</i>	12-35 (avg. 22)	F/G	G	F/G		4	Union at base (8 stems)	Remove
266	Eastern White Cedar	<i>Thuja occidentalis</i>	20, 17, 15	F	F/G	F/G		3	Union at base, sweep (M), crook (M)	Preserve
267	Eastern White Cedar	<i>Thuja occidentalis</i>	~40, 34, 13, 12	F/G	G	F/G		3	Union at base and 1.5m	Preserve
268	Eastern White Cedar	<i>Thuja occidentalis</i>	~22, 20	F/G	G	F/G		2	Union at base	Preserve
269	Eastern White Cedar	<i>Thuja occidentalis</i>	~26, 24, 22	F/G	G	F/G		2	Union at base	Preserve
270	Eastern White Cedar	<i>Thuja occidentalis</i>	26	G	G	F/G		2		Preserve
271	Eastern White Cedar	<i>Thuja occidentalis</i>	26, 23, 13	F/G	G	F/G		2	Union at base	Preserve
272	Eastern White Cedar	<i>Thuja occidentalis</i>	~34, 22, 16	F/G	G	F/G		3	Union at base and 0.6m	Remove
273	Eastern White Cedar	<i>Thuja occidentalis</i>	~24, 22, 13	F/G	G	F/G		3	Union at base	Preserve
274	Eastern White Cedar	<i>Thuja occidentalis</i>	~15, 14, 10	F/G	G	F/G		2	Union at base	Preserve
275	Apple Species	<i>Malus spp.</i>	~19, 17, 17	F	F	F		5	Union at 0.6m with included bark (M), lean (L), crook (M)	Remove
276	Eastern White Cedar	<i>Thuja occidentalis</i>	10-25 (avg. 18)	F/G	G	F/G		3	Union at base (7 stems)	Remove
277	Eastern White Cedar	<i>Thuja occidentalis</i>	~23, 17, 12	F/G	G	F/G		3	Union at base	Remove
278	Eastern White Cedar	<i>Thuja occidentalis</i>	~25, 13, 13, 12	F/G	G	F/G		3	Union at base	Preserve
279	Apple Species	<i>Malus spp.</i>	21, 13	F	F/G	F		4	Union at 0.2m, bow (L), crook (M)	Remove
280	Eastern White Cedar	<i>Thuja occidentalis</i>	7-24 (avg. 16)	F/G	G	F/G		4	Union at base (7 stems)	Remove
281	Eastern White Cedar	<i>Thuja occidentalis</i>	20.5	F/G	G	F/G		3	Lean (L), asymmetrical crown (M)	Preserve
282	Eastern White Cedar	<i>Thuja occidentalis</i>	24, 22, 10	F/G	G	F/G		3	Union at base	Preserve
283	Eastern White Cedar	<i>Thuja occidentalis</i>	22	G	G	F/G		2		Preserve
284	Eastern White Cedar	<i>Thuja occidentalis</i>	23, 20, 11	F/G	G	F/G		3	Union at base	Preserve
285	Eastern White Cedar	<i>Thuja occidentalis</i>	22	G	G	F/G		2		Preserve
286	Eastern White Cedar	<i>Thuja occidentalis</i>	22, 15	F/G	G	F/G		3	Union at base and 2m with included bark (M)	Preserve
287	Eastern White Cedar	<i>Thuja occidentalis</i>	~20, 20	F/G	G	F/G		3	Union at base	Preserve
288	Eastern White Cedar	<i>Thuja occidentalis</i>	~21, 20, 17	F/G	G	F/G		3	Union at base	Preserve
289	Eastern White Cedar	<i>Thuja occidentalis</i>	18	G	G	F/G		2		Preserve
290	Eastern White Cedar	<i>Thuja occidentalis</i>	17, 16	F/G	G	F/G		2	Union at base	Preserve
291	Eastern White Cedar	<i>Thuja occidentalis</i>	17	G	G	F/G		2		Preserve
292	Eastern White Cedar	<i>Thuja occidentalis</i>	~26, 22, 12	F/G	G	F/G		3	Union at base	Preserve
293	Black Cherry	<i>Prunus serotina</i>	26	F/G	G	F/G		4	Co-dominance in crown	Preserve
294	Eastern White Cedar	<i>Thuja occidentalis</i>	13-25 (avg. 18)	F/G	G	F/G		4	Union at base (6 stems)	Preserve
295	Eastern White Cedar	<i>Thuja occidentalis</i>	7-25 (avg. 17)	F	F/G	F/G		4	Union at base (9 stems)	Remove
296	Eastern White Cedar	<i>Thuja occidentalis</i>	18	G	G	G		3		Preserve
297	Red Pine	<i>Pinus resinosa</i>	30	G	G	F		4	Diplodia (L)	Preserve
298	Scots Pine	<i>Pinus sylvestris</i>	~30	G	F/G	F		3	Crook (L)	Remove
299	Scots Pine	<i>Pinus sylvestris</i>	26	G	G	G		3		Preserve
300	Scots Pine	<i>Pinus sylvestris</i>	19	G	G	G		2		Preserve
301	Scots Pine	<i>Pinus sylvestris</i>	17	G	G	F/G		2		Preserve
302	Scots Pine	<i>Pinus sylvestris</i>	15, 13	F/G	G	F/G		2	Union at base	Preserve
303	Scots Pine	<i>Pinus sylvestris</i>	23	G	G	F/G		3		Preserve
304	Scots Pine	<i>Pinus sylvestris</i>	16	G	F	F		2	Asymmetrical crown (H)	Preserve
305	Scots Pine	<i>Pinus sylvestris</i>	19.5, 13	F/G	F/G	F		3	Union at base, crook (M)	Preserve
AU	Colorado Blue Spruce	<i>Picea pungens</i>	~25	G	G	F/G		3		Remove
AV	Colorado Blue Spruce	<i>Picea pungens</i>	~15	G	G	G		2		Preserve
AW	Colorado Blue Spruce	<i>Picea pungens</i>	~40	G	G	F/G		4		Preserve
306	Eastern White Cedar	<i>Thuja occidentalis</i>	15.5	G	P	P/F	30	2	Dead leader	Remove
307	Eastern White Cedar	<i>Thuja occidentalis</i>	22.5, 18	F/G	G	F/G		4	Union at base, sweep (L)	Preserve
308	Eastern White Cedar	<i>Thuja occidentalis</i>	22	G	G	G		3		Preserve
309	Eastern White Cedar	<i>Thuja occidentalis</i>	6-17 (avg. 13)	F/G	G	F/G		3	Union at base (9 stems)	Preserve
P2	see tally sheet									Remove
P3	see tally sheet									Remove
P4	see tally sheet									Remove

Codes		
DBH	Diameter at Breast Height	(cm)
TI	Trunk Integrity	(G, F, P)
CS	Crown Structure	(G, F, P)
CV	Crown Vigor	(G, F, P)
CDB	Crown dieback	%
DL	Dripline	(m)
~ = Estimate, (VL) = very light, (L) = light, (M) = moderate, (H) = heavy		

Table 2. 100% Tally Sheet**P2**

Location: DiPoce Subdivision, Barrie
Date: 18 April 2018 & 1 November 2018
Surveyor: KH

Stand Analysis Tally (by Species, Size Class and Quality Class) P2 - 100%

Tree Size >>>>>	Class	Polewood 10-24 cm	Sawtimber Sizes						Total All Sizes		
			Small 26-36 cm		Medium 38-48 cm		Large 50 cm +				
Species		AGS	UGS	AGS	UGS	AGS	UGS	AGS	UGS	AGS	UGS
Red Maple (<i>Acer rubrum</i>)									1	0	1
Sugar Maple (<i>Acer saccharum</i>)						1		1	1	2	1
Yellow Birch (<i>Betula alleghaniensis</i>)		1		5				1		7	0
Green Ash (<i>Fraxinus pennsylvanica</i>)			3							0	3
Apple Species (<i>Malus spp.</i>)		2	28		4					2	32
Red Pine (<i>Pinus resinosa</i>)		2								2	0
White Pine (<i>Pinus strobus</i>)						1				1	0
Scots Pine (<i>Pinus sylvestris</i>)					1					0	1
Eastern Cottonwood (<i>Populus deltoides</i>)		2	6	3	1	2	1			7	8
Black Cherry (<i>Prunus serotina</i>)		13	22	9	6	1	4			23	32
Willow Species (<i>Salix spp.</i>)			23		3					0	26
Eastern White Cedar (<i>Thuja occidentalis</i>)		~950	244	321	21	40	29	4	3	1315	297
Basswood (<i>Tilia americana</i>)								1		1	0
White Elm (<i>Ulmus americana</i>)		3		1						4	0
Total Number of Trees		23	326	339	36	45	34	7	5	1364	401

Description Cedar forest; very few regeneration; few ground cover or shrubs

P3

Location: DiPoce Subdivision, Barrie
Date: 18 April 2018 & 1 November 2018
Surveyor: KH

Stand Analysis Tally (by Species, Size Class and Quality Class) P3 - 100%

Tree Size >>>>>	Class	Polewood 10-24 cm		Sawtimber Sizes						Total All Sizes	
				Small 26-36 cm		Medium 38-48 cm		Large 50 cm +			
Species		AGS	UGS	AGS	UGS	AGS	UGS	AGS	UGS	AGS	UGS
Manitoba Maple (<i>Acer negundo</i>)			1							0	1
White Spruce (<i>Picea glauca</i>)		1		9						10	0
Willow Species (<i>Salix spp.</i>)									2	0	2
Eastern White Cedar (<i>Thuja occidentalis</i>)		4								4	0
Total Number of Trees		5	1	9	0	0	0	0	2	14	3

Description Proposed Bridge on both side of the creek

P4

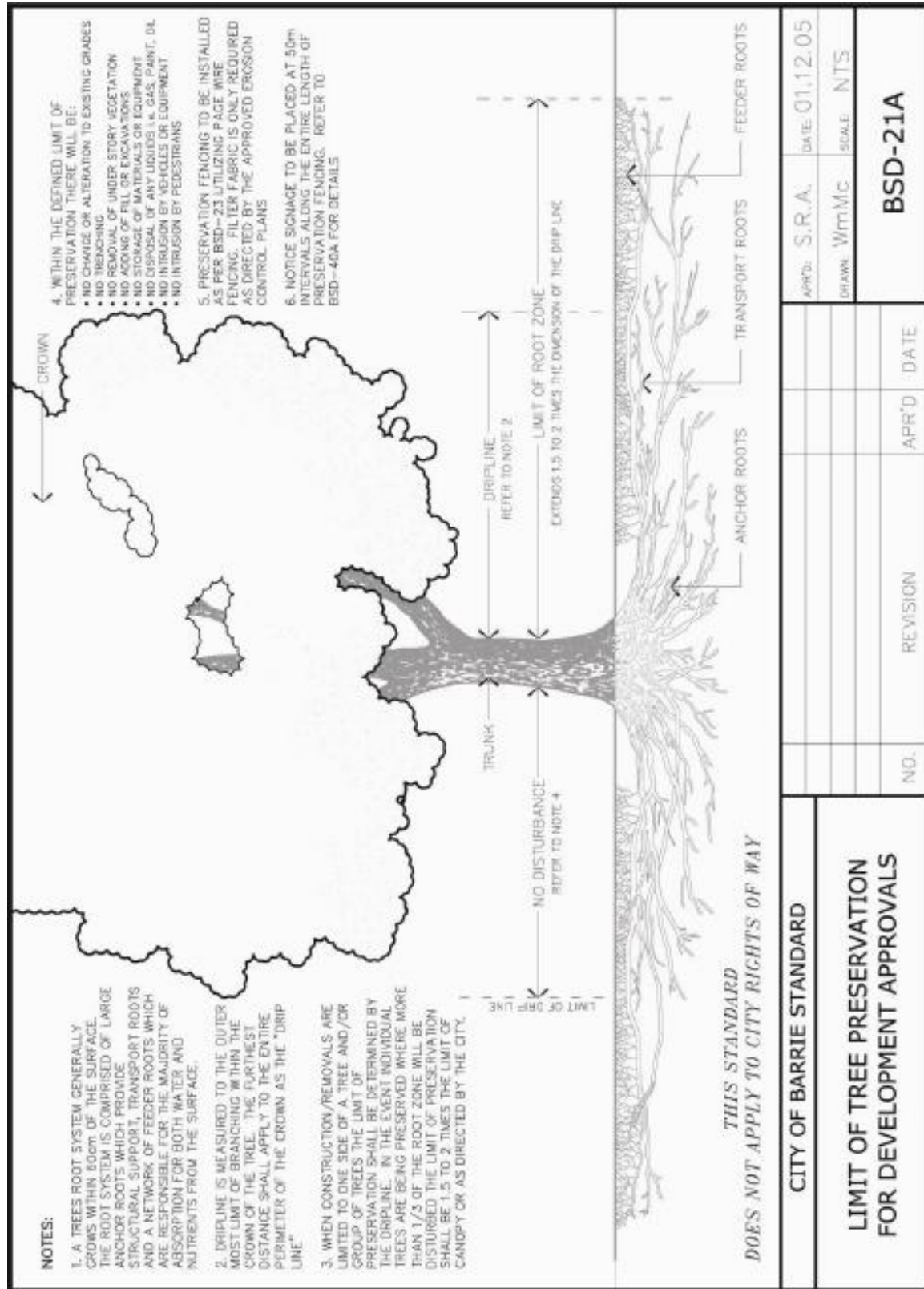
Location: DiPoce Subdivision, Barrie
Date: 18 April 2018 & 1 November 2018
Surveyor: KH

Stand Analysis Tally (by Species, Size Class and Quality Class) P4 - 100%

Tree Size >>>>>	Class	Polewood 10-24 cm		Sawtimber Sizes						Total All Sizes	
				Small 26-36 cm		Medium 38-48 cm		Large 50 cm +			
Species		AGS	UGS	AGS	UGS	AGS	UGS	AGS	UGS	AGS	UGS
White Birch (<i>Betula papyrifera</i>)		1		3						4	0
Apple Species (<i>Malus spp.</i>)			5							0	5
White Spruce (<i>Picea glauca</i>)		15	1	4		1				20	1
White Pine (<i>Pinus strobus</i>)		6	1			1			1	7	2
Scots Pine (<i>Pinus sylvestris</i>)		12		4		1				17	0
Poplar Species (<i>Populus spp.</i>)		18								18	0
Black Cherry (<i>Prunus serotina</i>)		3	3							3	3
Willow Species (<i>Salix spp.</i>)				1			1			1	1
Eastern White Cedar (<i>Thuja occidentalis</i>)	~500			3			1			504	1
White Elm (<i>Ulmus americana</i>)		3	5	2						5	5
Total Number of Trees		58	15	17	0	3	2	0	1	579	18

Description Very young cedar forest; most trees are smaller than 10cm
Other tree species Black Ash, Lilac

Appendix A. Tree Preservation Fence Detail



Tree Removal Template

Note to Owner: This Notice to be 24 inches high x 36 inches long and posted in a visible location seven days prior to injuring or destroying any vegetation.

NOTICE OF TREE REMOVALS

All vegetation removal work shall occur in accordance with
By-law 2005-120.

Owner: *Name of Owner*

Removals completed by: *Name of person or company retained to work on the vegetation removal on the land.*

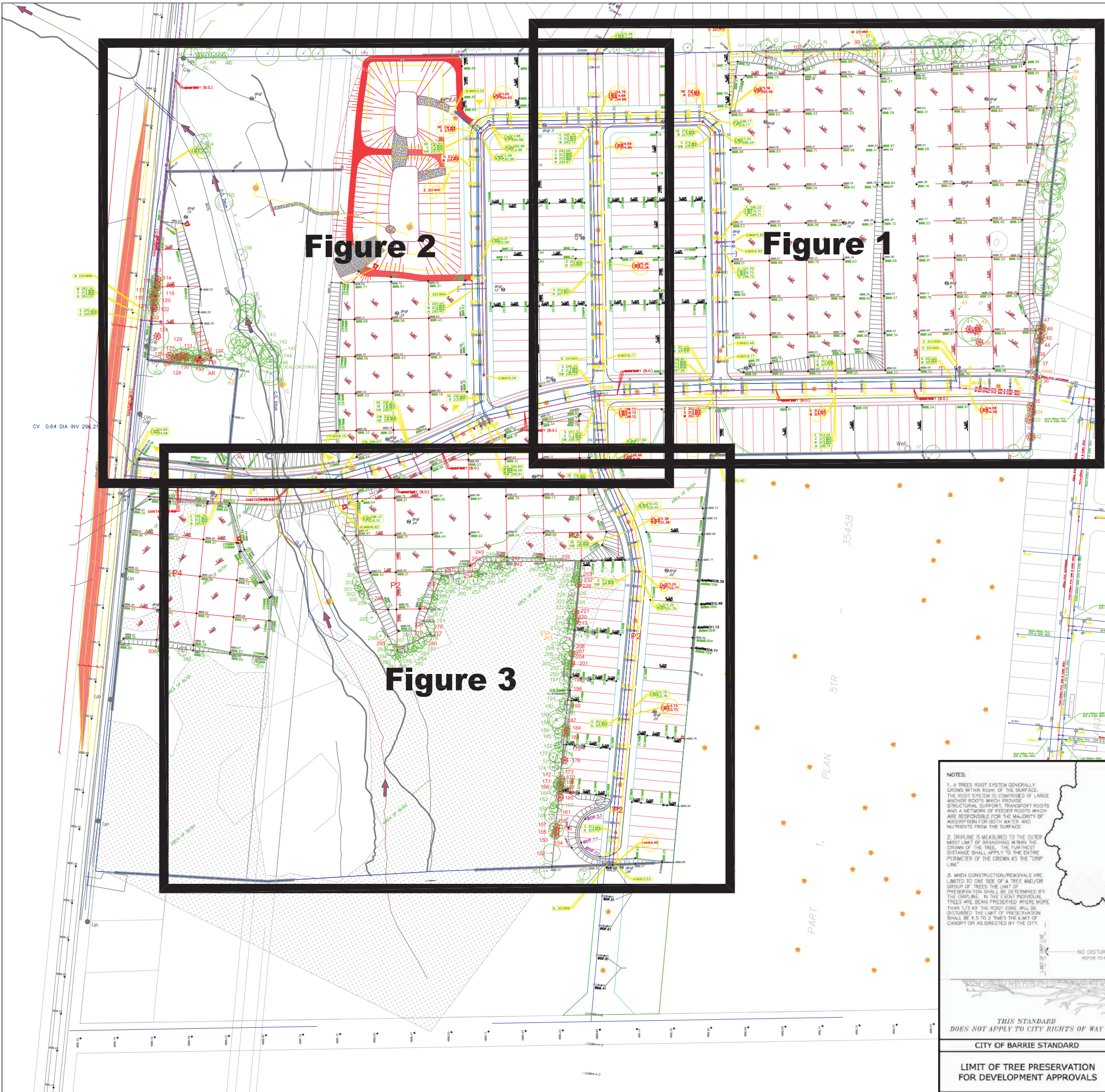
For Further Information, please contact: *Address and telephone number of a person action on behalf of the owner from whom further information on the proposed vegetation removal work may be obtained.*

Tree Preservation Area sign template

Note to Owner: This sign to be 11 inches high by 17 inches long and posted at 50 metre intervals along tree preservation fencing, as per the Tree Removal Permit.

TREE PRESERVATION AREA

NO UNAUTHORIZED TREE CUTTING
PERMITTED IN THIS AREA



Tree Removal Template
Note to Owner: This notice to be 24 inches high x 36 inches long and posted in a visible location seven days prior to injuring or destroying any vegetation.

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All vegetation removal work shall occur in accordance with
By-law 2005-120.

Owner: *Name of Owner*
Removals completed by: *Name of person or company retained to work on the vegetation removal on the land.*
For Further Information, please contact: *Address and telephone number of a person action on behalf of the owner from whom further information on the proposed vegetation removal work may be obtained.*

Tree Preservation Zone sign template.
Note to Owner: This sign to be 11 inches high by 17 inches long and posted at 50 metre intervals along tree preservation fencing, as per the Tree Removal Permit.

TREE PRESERVATION AREA

NO UNAUTHORIZED TREE CUTTING PERMITTED IN THIS AREA

NOTES:
1. A TREE'S ROOT SYSTEM GENERALLY GROWS WITHIN 50CM OF THE SURFACE. THE ROOT SYSTEM IS COMPOSED OF LARGE ANCHOR ROOTS WHICH PROVIDE STRUCTURAL SUPPORT, TRANSPORT ROOTS AND A NETWORK OF FEEDER ROOTS WHICH ARE RESPONSIBLE FOR THE MAJORITY OF ABSORPTION FOR BOTH WATER AND NUTRIENTS FROM THE SURFACE.
2. DRIPLINE IS MEASURED TO THE OUTER MOST LIMIT OF BRANCHING WITHIN THE CROWN OF THE TREE. THE FURTHEST DISTANCE SHALL APPLY TO THE ENTIRE PERIMETER OF THE CROWN AS THE "DRIP LINE".
3. WHEN CONSTRUCTION/REMOVALS ARE LIMITED TO ONE SIDE OF A TREE AND/OR GROUP OF TREES, THE LIMIT OF PRESERVATION SHALL BE DETERMINED BY THE DRIPLINE. IN THE EVENT INDIVIDUAL TREES ARE BEING PRESERVED WHERE MORE THAN 1/3 OF THE ROOT ZONE WILL BE DISTURBED, THE LIMIT OF PRESERVATION SHALL BE 1.5 TO 2 TIMES THE LIMIT OF CROWN OR AS DIRECTED BY THE CITY.
4. WITHIN THE DEFINED LIMIT OF PRESERVATION THERE, WILL BE:
• NO TREES
• NO CHANGES OR ALTERATIONS TO EXISTING GRADIES
• NO TREES
• NO REMOVAL OF UNDER-STORY VEGETATION
• NO ADDING OF FILL OR EXCAVATIONS
• NO STORAGE OF MATERIALS OR EQUIPMENT
• NO DISPOSAL OF ANY LIQUIDS (e.g. GAS, PAINT, OIL)
• NO INTRUSION BY VEHICLES OR EQUIPMENT
• NO INTRUSION BY PEDESTRIANS
5. PRESERVATION FENCING TO BE INSTALLED AS PER BSD-23 UTILIZING PLYWOOD CLAD HOARDING OR AN EQUIVALENT APPROVED BY THE CITY OF BARRIE. ALL SUPPORTS AND BRACING USED TO SECURE THE BARRIER SHOULD BE LOCATED OUTSIDE THE TPZ. ALL SUCH SUPPORTS AND BRACING SHOULD MINIMIZE DAMAGE TO TREES OUTSIDE THE TPZ. THE AREA(S) IDENTIFIED AS A TPZ MUST REMAIN UNDISTURBED AT ALL TIMES.
6. NOTICE SIGNAGE TO BE PLACED AT 50M INTERVALS ALONG THE ENTIRE LENGTH OF PRESERVATION FENCING. REFER TO BSD-45A FOR DETAILS.

THIS STANDARD DOES NOT APPLY TO CITY RIGHTS OF WAY

CITY OF BARRIE STANDARD		APPROVED: S.R.A. DATE: 01.12.05	
LIMIT OF TREE PRESERVATION FOR DEVELOPMENT APPROVALS		DRAWN: WmMc SCALE: NTS	
NO.	REVISION	APPROVED	DATE
		BSD-21A	

LEGEND

Tree Inventory
Refer to Table 1 of report dated 8 November 2018 and revised 27 November 2018. Trees greater than 15cm DBH and within six metres of the proposed development, and trees of all sizes within the road right-of-way were included in the Inventory.

Tree Removals
The removal of 94 individual trees and 3 polygons is required to accommodate the proposed development as indicated with RED labels. The removal of additional 22 trees is recommended regardless of the site plan due to their poor and/or hazardous condition as indicated with ORANGE Labels.

Tree Preservation
Preservation of remaining 211 individual trees and 1 tree polygon will be possible with appropriate tree protection measures. Trees identified for preservation are indicated with GREEN labels. Tree protection measures will have to be implemented prior to the construction phase (earth works). Minimum tree preservation zones and required tree preservation fencing is indicated in MAGENTA. Refer to Tree Protection Plan Notes for preservation details.

TREE PROTECTION PLAN NOTES

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No.	Issue/Revisions	Date	By
1	Report Submission	8 Nov. '18	KH
2	Report Revision	27 Nov. '18	KH

Base Data: Rodney Geyer (topo); MHBC Planning (site plan)

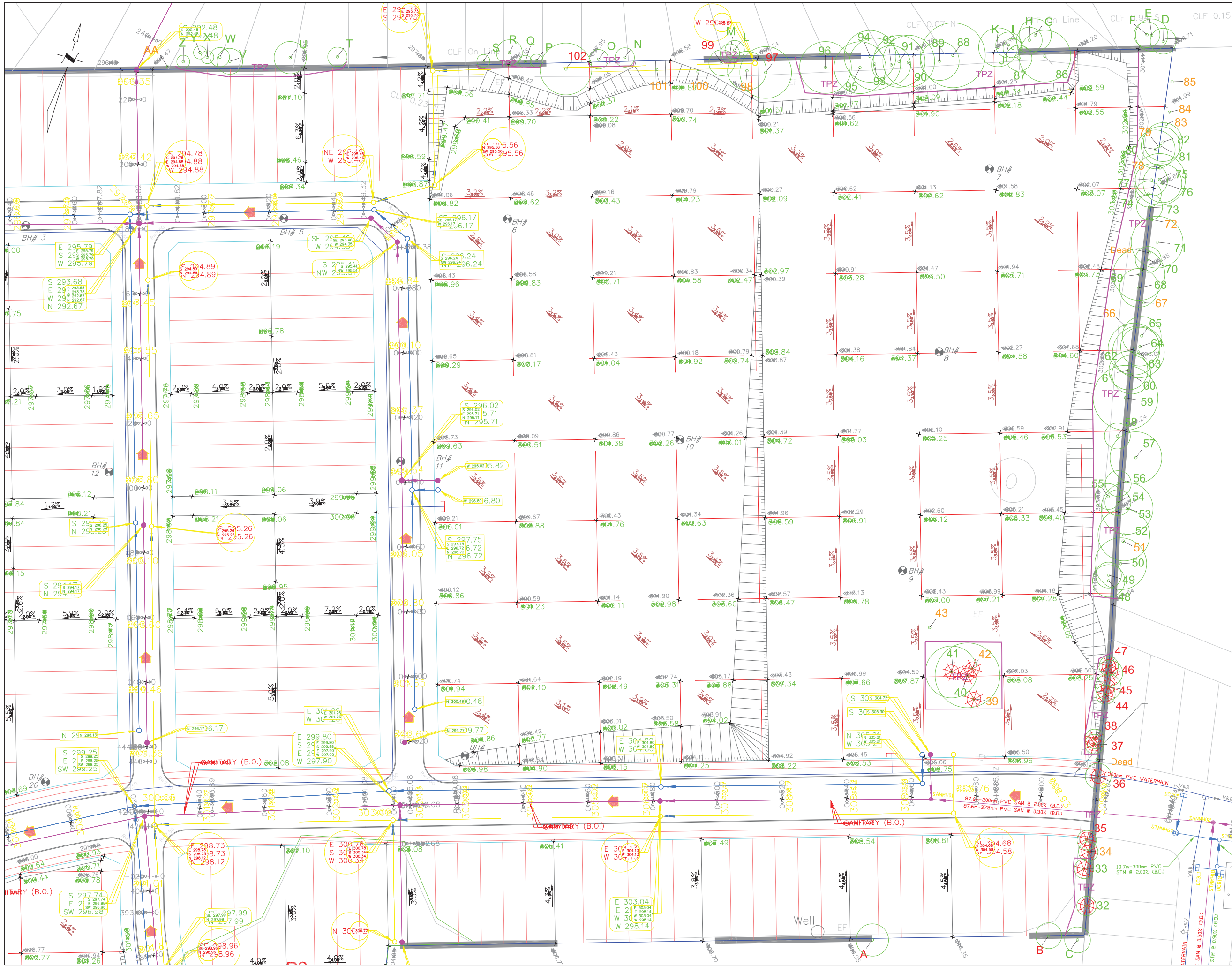
KUNTZ FORESTRY CONSULTING Inc.

Client:
DiPoce (Innisfil) Inc.
175 Sun Pac Boulevard, Unit 1A
Brampton, Ontario L6S 5Z6

Property:
DiPoce Subdivision
Barrie, Ontario

Existing Conditions, Proposed Site Plan
Tree Inventory and Preservation Plan

Project	P1821	Figure
Date	8 November 2018	0
Scale	1:1200	



LEGEND

Tree Inventory

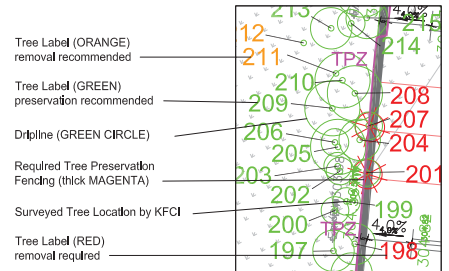
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2	Report Revision	27 Nov. '18	KH

Base Data: Rodney Geyer (topo); MHBC Planning (site plan)



**KUNTZ
FORESTRY
CONSULTING Inc.**

146 Lakeshore Road West
PO Box 1287 Lakeshore W. PO
Oakville ON L6K 0B3
T: 289.637.1871 F: 866.693.6390
e: consult@kuntzforestry.ca
web: www.kuntzforestry.ca

Client:
DiPoce (Innisfil) Inc.
175 Sun Pac Boulevard, Unit 1A
Brampton, Ontario L6S 5Z6

Property:
DiPoce Subdivision
Barrie, Ontario

Existing Conditions, Proposed Site Plan
Tree Inventory and Preservation Plan

Project	P1821	Figure	1
Date	8 November 2018		
Scale	1:500		

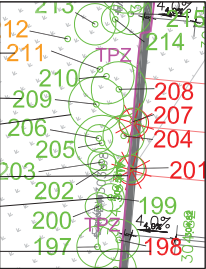


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- Tree Label (ORANGE) removal recommended
- Tree Label (GREEN) preservation recommended
- Ditchline (GREEN CIRCLE)
- Required Tree Preservation Fencing (thick MAGENTA)
- Surveyed Tree Location by KFCI
- Tree Label (RED) removal required

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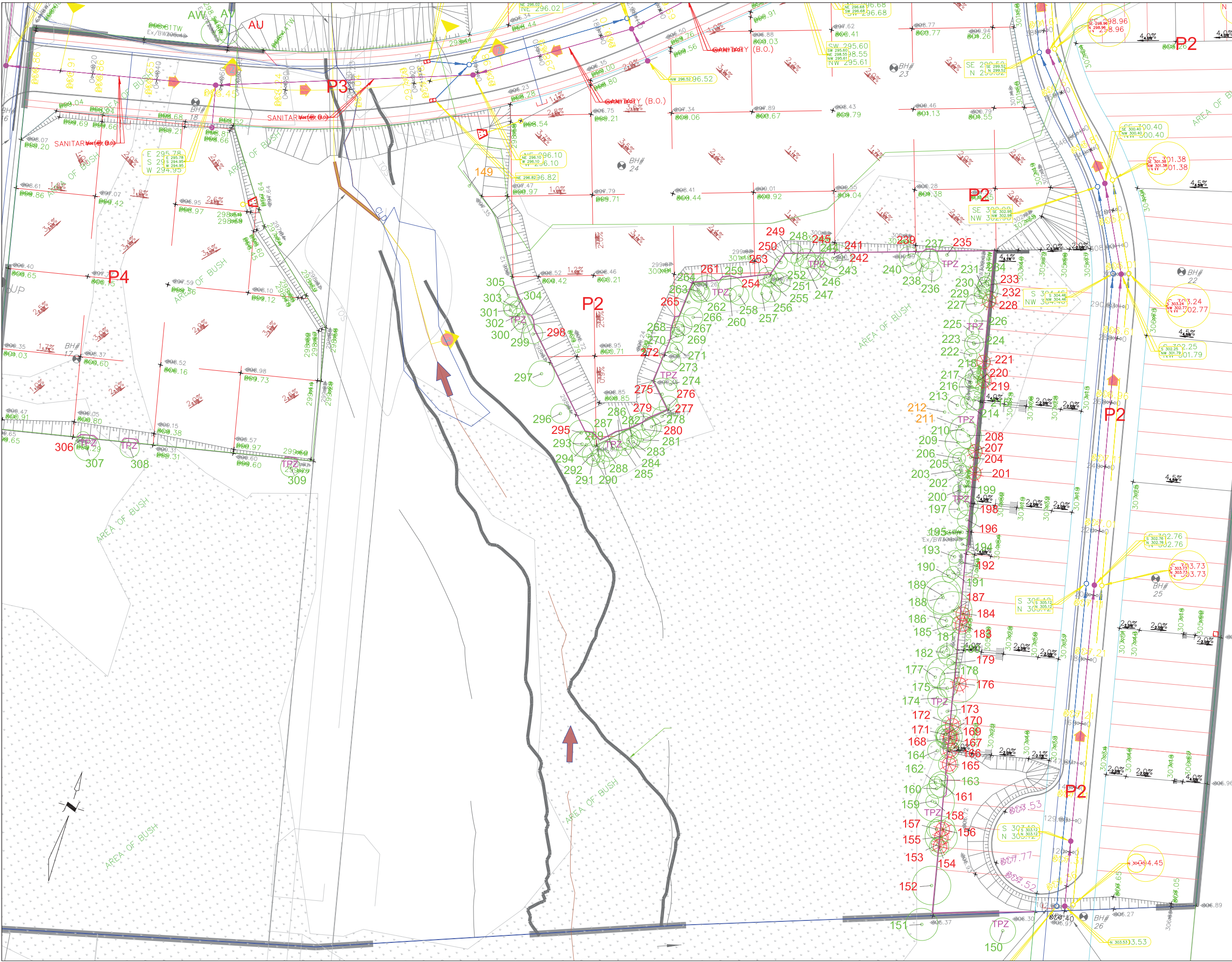
KUNTZ FORESTRY CONSULTING Inc.
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Property:
DiPoce Subdivision
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Existing Conditions, Proposed Site Plan
Tree Inventory and Preservation Plan

Project	P1821	Figure	2
Date	8 November 2018		
Scale	1:500		



LEGEND

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Tree Label (ORANGE) removal recommended

Tree Label (GREEN) preservation recommended

Ditchline (GREEN CIRCLE)

Required Tree Preservation Fencing (thick MAGENTA)

Surveyed Tree Location by KFCI

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Existing Conditions, Proposed Site Plan
Tree Inventory and Preservation Plan

Project	P1821	Figure	3
Date	8 November 2018		
Scale	1:500		

**APPENDIX D – SPECIES AT RISK BAT HABITAT SURVEY
PREPARED BY BEACON
ENVIRONMENTAL (JULY 5, 2018)**

January 11, 2019

BEL 217184

Mr. Michael Michalski
Limnologist /Senior Adviser
Michalski Nielsen Associates Limited
16 Robert Boyer Lane
Bracebridge, ON P1L 1R9

Re: Species at Risk Bat Habitat Survey for the Di Poce Property, City of Barrie.

Dear Mr. Michalski:

Beacon Environmental Limited (Beacon) was retained by Michalski Nielsen Associates Limited (MNAL) to undertake an evaluation of potential bat habitat within proposed development lands located east of County Road 27 and north of Salem Road, in the City of Barrie (subject property). The purpose of this exercise was to assess the quantity and quality of bat habitat to be removed or retained in the forested portions of the subject property.

Methodology

A Beacon ecologist visited the site on May 3, 2017. The site was surveyed for potential bat habitat using the Ministry of Natural Resources and Forestry (MNR), Midhurst District, Maternity Roost Surveys – Treed Habitats protocol (April, 2017). The forested community was sampled using at least one 500m² sample plot per hectare. Circular plots, with a radius of 12.6m were randomly located on an air photo and the actual locations were recoded with a GPS accuracy of +/- 3 metres (**Figure 1**).

Existing Conditions

The subject property contains approximately 7.7 hectares of forested habitat located in the southern portion. Following the MNR protocol, ten sample plots were used to estimate the average number of bat habitat cavity trees (snags) per hectare. The majority of the forested area is characterized as a dense, closed canopy of immature to mid-aged Eastern White Cedar (*Thuja occidentalis*) forest with scattered Trembling Aspen (*Populus tremuloides*) and some Yellow Birch (*Betula alleghaniensis*). This forested community is classified as an FOC4-1 Fresh-Moist White Cedar Coniferous Forest. The remainder of the forest community on the subject property consists of a SWC1-1 White Cedar Mineral Coniferous Swamp.

The total area sampled for snags was 0.5 ha (0.05 ha x 10 plots). Only four (4) low quality snags were counted in all of the plots. Based on these sample plot results, there is an estimated 8 snags per hectare. Only two of the 10 plots recorded any snag trees (see **Table 1**).

Table 1. Summary of Bat Snag Survey

Plot #	Tree #	Species	# of Cavities	DBH (cm)	Cavity Height (m)	Tree Height	% Loose Bark	Decay Class	Comments
3	3	Poplar species	21	22	8	8	2	5	Most cavities <5m height
3	4	Poplar species	10	26	3	3	20	6	
4	1	Yellow Birch	8	35, 30, 16	1 to 4	15	10	1	3 stems
4	2	White Cedar	0	24	7	8	0	1	Leaf nest at top of tree

Analysis

The MNRF's Technical Note Species at Risk (SAR) Bats (2015) states "If the snag density is calculated to be ≥ 10 snags/hectare then this ELC polygon should be considered high quality potential maternity roost habitat", and "All high quality maternity roost habitat should be monitored to ensure full coverage of the ELC polygon".

Using the results of the snag density survey and the MNRF's Guidelines for Bat and Bat Habitat Surveys of Treed Habitats, it was determined the immature treed habitats in the study area do not represent high quality potential maternity roost habitat due to the lack of suitable snags/cavity trees. Thus, acoustic monitoring to determine the presence of bats was deemed not required.

Based on the most recent Concept Plan 'H' (dated March 13, 2018), the proposed development would result in the removal of approximately 2.7 ha of the existing 7.7 ha of forested area, as shown in **Figure 1**. Although we conclude that the forested communities are not high quality potential maternity roost habitat, if there are bats utilizing these forests, the proposed development would retain approximately 5 ha of forest habitat for use by any bats that may be utilizing the general area.

All tree and vegetation removal should occur during the period of October 1st to April 15th when this species is potentially hibernating and would not be using the forested areas. If tree and vegetation removal occurs outside of the period of October 1 to April 15, a snag survey should be undertaken during leaf off to identify habitat trees.

Given that the exiting forest is low quality potential maternity roosting habitat, and that approximately two thirds of the forest will remain protected, we are of the opinion that the proposed development will not have a significant adverse effect on species at risk bats.

Report prepared by:
Beacon Environmental



Geri Poisson, B.A. (Hon), CAN-CISEC
Terrestrial Ecologist, ISA Certified Arborist

Report reviewed by:
Beacon Environmental



Jamie Nairn, M.Sc., P.Ag.
Senior Ecologist



Bat Snag Survey

Figure 1

Dipoce
Subdivision, Barrie

Legend

-  Subject Property
-  Proposed Development
-  Snag Plots
-  Watercourse (MNRF 2018)

First Base Solutions
Web Mapping Service 2016

UTM Zone 17 N, NAD 83

0 30 60 120 Metres



1:3,300



BEACON
ENVIRONMENTAL

Project 217184
April 2018

DRAFT

217184 DiPoce Property

Bat Snag Plot Survey

Legend

- Plots (12.6m radius)
- Woodland





LEGAL DESCRIPTION

PART OF SOUTH HALF LOT 1
CONCESSION 11
GEOGRAPHIC TOWNSHIP OF INNISFIL
TOWN OF INNISFIL
COUNTY OF SIMCOE

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: _____

JOHN DIPOCE
DIPOCE (INNISFIL) INC.

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: _____

RODNEY H. GEYER - O.L.S.
GEYER SURVEYS

KEY PLAN

ADJACENT LANDS OWNED BY APPLICANT

SUBJECT SITE

SCALE

0 0.5 1.0 1.5 2km

LEGEND

--- PROJECT BOUNDARY LINE

--- RIGHT OF WAY LINE

--- BLOCK LINE

--- LOT LINE

--- PARCEL FABRIC

REVISION No. DATE ISSUED / REVISION BY

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990 C.P.13 AS AMENDED

A. AS SHOWN
B. AS SHOWN
C. AS SHOWN
D. AS SHOWN
E. AS SHOWN

F. AS SHOWN
G. AS SHOWN
H. MUNICIPAL WATER SUPPLY
I. SILT LOAM
J. AS SHOWN

K. ALL SERVICES AS REQUIRED
(WATER, SANITARY, STORMWATER, HYDRO)
L. AS SHOWN

STAMP

DATE DEC. 5, 2018

FILE No. 0853F

SCALE 1:1,400 (ARCH D)

DRAWN BY M.M.

CHECKED BY D.A.

OTHER

PROJECT

DIPOCE BARRIE
DIPOCE (INNISFIL) INC.

FILE NAME DRAFT PLAN OF SUBDIVISION

DWG No. 1 of 1

SCALE BAR

0 7 14 21 28 35 70 105 140m

MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

N:\Barrie\DiPoce - Barrie Expansion Lands - 0853F\Drawings\Draft Plan\CAD\DraftPlan_Colour_2018-12-05.dwg

LAND USE	LOTS / BLOCKS	UNITS	AREA (ha)
TOWNHOUSE - 7.0m UNITS	001-193	193	4.97ha
FUTURE TOWNHOUSE - 7.0m UNITS	194-199	6	0.10ha
MEDIUM DENSITY RESIDENTIAL	38-41	-	3.46ha
COMMERCIAL	42	-	0.28ha
SCHOOL	43	-	2.21ha
STORMWATER MANAGEMENT AREA	44	-	1.25ha
PARK	45	-	2.48ha
OPEN SPACE	46-50	-	6.69ha
PIPELINE	51-52	-	0.90ha
WALKWAY	53-55	-	0.09ha
WALKWAY & DRAINAGE	56	-	0.04ha
TEMPORARY CUL-DE-SAC	57	-	0.05ha
RIGHT OF WAY	-	-	3.30ha
TOTALS	-	199	25.82ha

**APPENDIX E – LETTER,
MICHALSKI TO BULL
APRIL 23, 2018**



Michalski Nielsen

ASSOCIATES LIMITED

April 23, 2018

Ms. Lee Bull, MCIP, RPP
Manager, Planning Services
Nottawasaga Valley Conservation Authority
8195 8th Line
Utopia, Ontario
L0M 1T0

Re: DiPoce Property, Proposed Wetland and Buffer Offset Plan; Our File 1714

Dear Ms. Bull:

David Cunningham and I have given considerable thought to the wetland and buffer offsetting guidelines that you communicated to me on February 23, 2018. In this regard, you indicated that your Nottawasaga Valley Conservation Authority (NVCA) was looking for a 2:1 ratio in terms of wetland area replacement, and a 1:1 offsetting for any loss in buffer area. While your Authority would prefer the replacements to occur on the DiPoce property, offsetting on another landholding within your Authority's watershed would be acceptable. As well, the NVCA would entertain a monetary settlement should insufficient lands be available on the subject property, based on guidelines prepared by the Lake Simcoe Region Conservation Authority (LSRCA).

In preparing our **Wetland and Buffer Compensation/Offset Plan**, David and I reviewed the land uses approved in the Salem Secondary Plan for the subject property; in this regard, Schedule 8C Land Use shows two uses, Residential and Natural Heritage System (i.e., Natural Linkage Area), with a stormwater management facility (optional) in the northwestern corner of the landholding. During our subsequent field investigations, the boundary of a quite large non-evaluated treed swamp wetland was mapped and surveyed in the southern part of the property; it was not included in the City of Barrie's Natural Heritage System; accordingly, it is not recognized in the Salem Secondary Plan. At a meeting on September 19, 2017, your Authority found generally acceptable our Concept Plan 'A-6' for developing the property; I am enclosing a graphic of Concept Plan 'A-6', as well as a second graphic which is an overlay of the environmental constraints. My notes summarizing highlights of the September 19, 2017 meeting are also enclosed.

The balance of this letter presents details on our **Wetland and Buffer Offset Plan**.

16 Robert Boyer Lane, Bracebridge, Ontario P1L 1R9
(705) 645-1413 Facsimile: (705) 645-1904 www.mnal.ca E-mail: info@mnal.ca

Compensation/Offset Plan represents a reasonable and practical balance between development objectives and protection of natural heritage features.

I appreciate that further details will need to be provided on matters such as potential impacts on the wetland features and functions, and particularly hydrologic functions, etc. Regardless, we look forward to meeting with you regarding the above, so that the draft plan of subdivision as well as our **EIS** can be completed and submitted. In this regard, do give either Dan Amadio or me a call to schedule a meeting date and time. Many thanks.

Yours truly,

MICHALSKI NIELSEN ASSOCIATES LIMITED

Per:

A handwritten signature in black ink, appearing to read "Michael Michalski". The signature is fluid and cursive, with the first name "Michael" and last name "Michalski" clearly distinguishable.

Michael Michalski
Limnologist

c.c.: Oksana Vialykh
Al Steedman
Nelson Lee
David Cunningham
Dan Amadio

FIGURE 1

WETLANDS TO BE REMOVED

AREA: 0.36ha

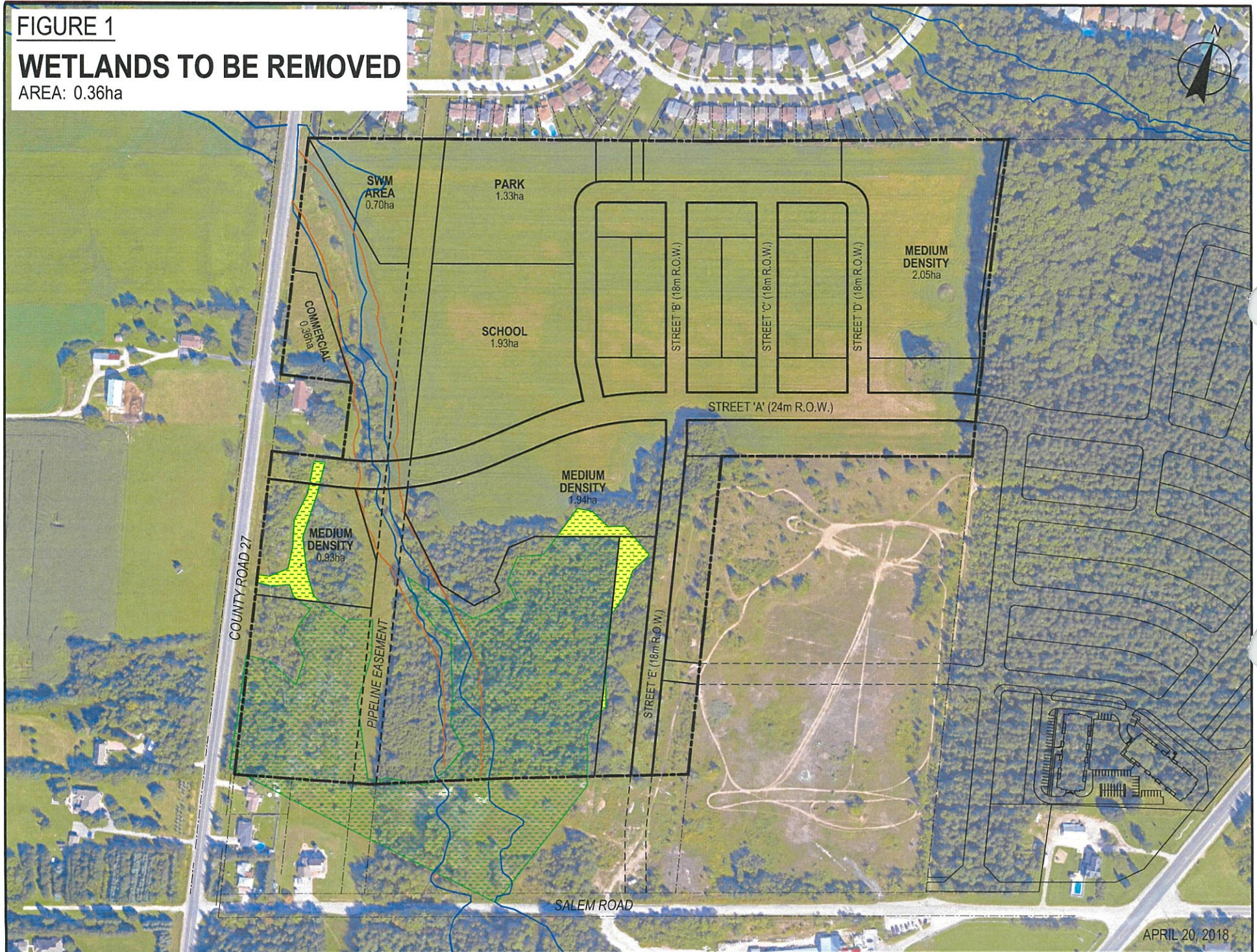


FIGURE 2

BUFFERS TO BE REMOVED (20m WIDTH)

AREA: 1.31ha

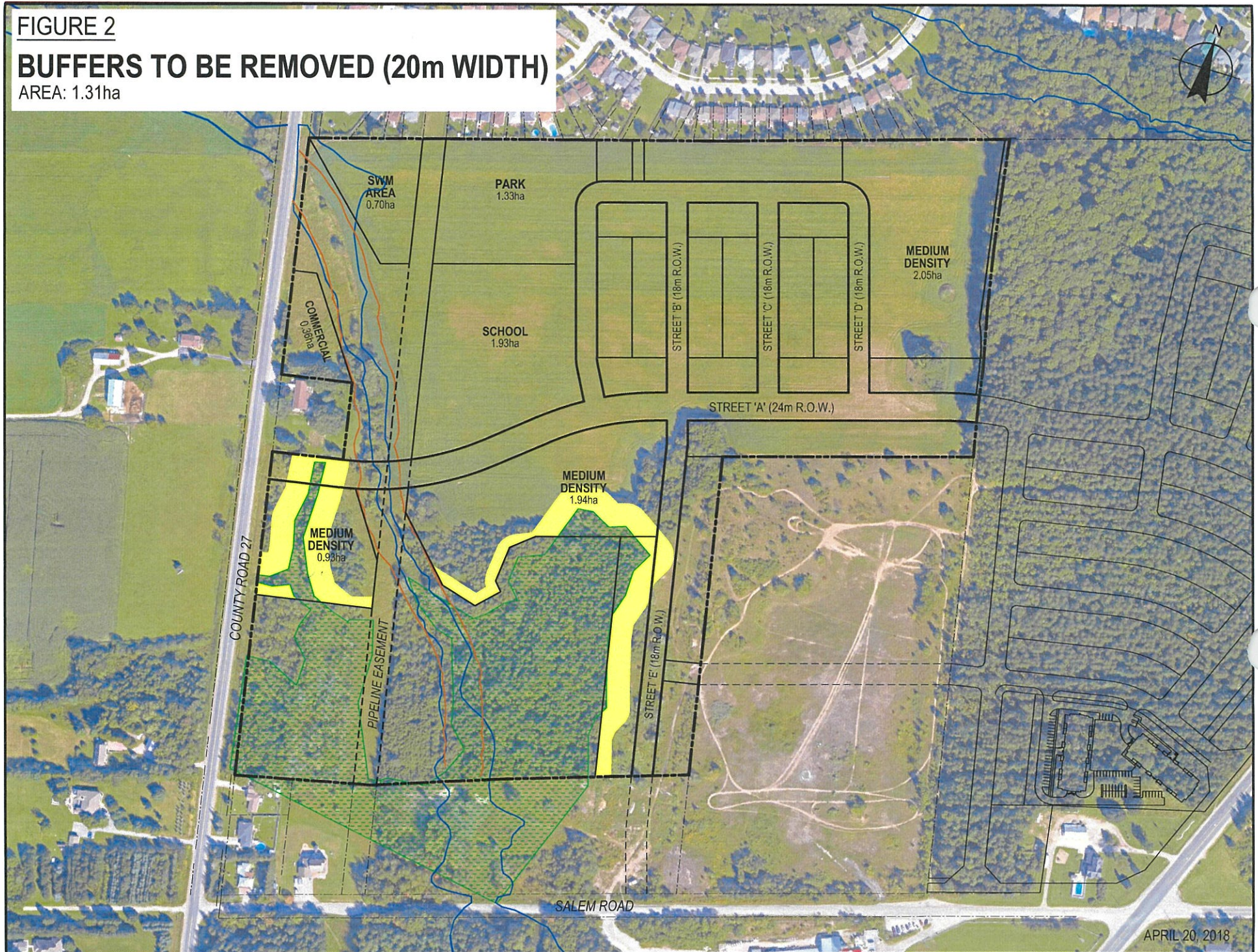
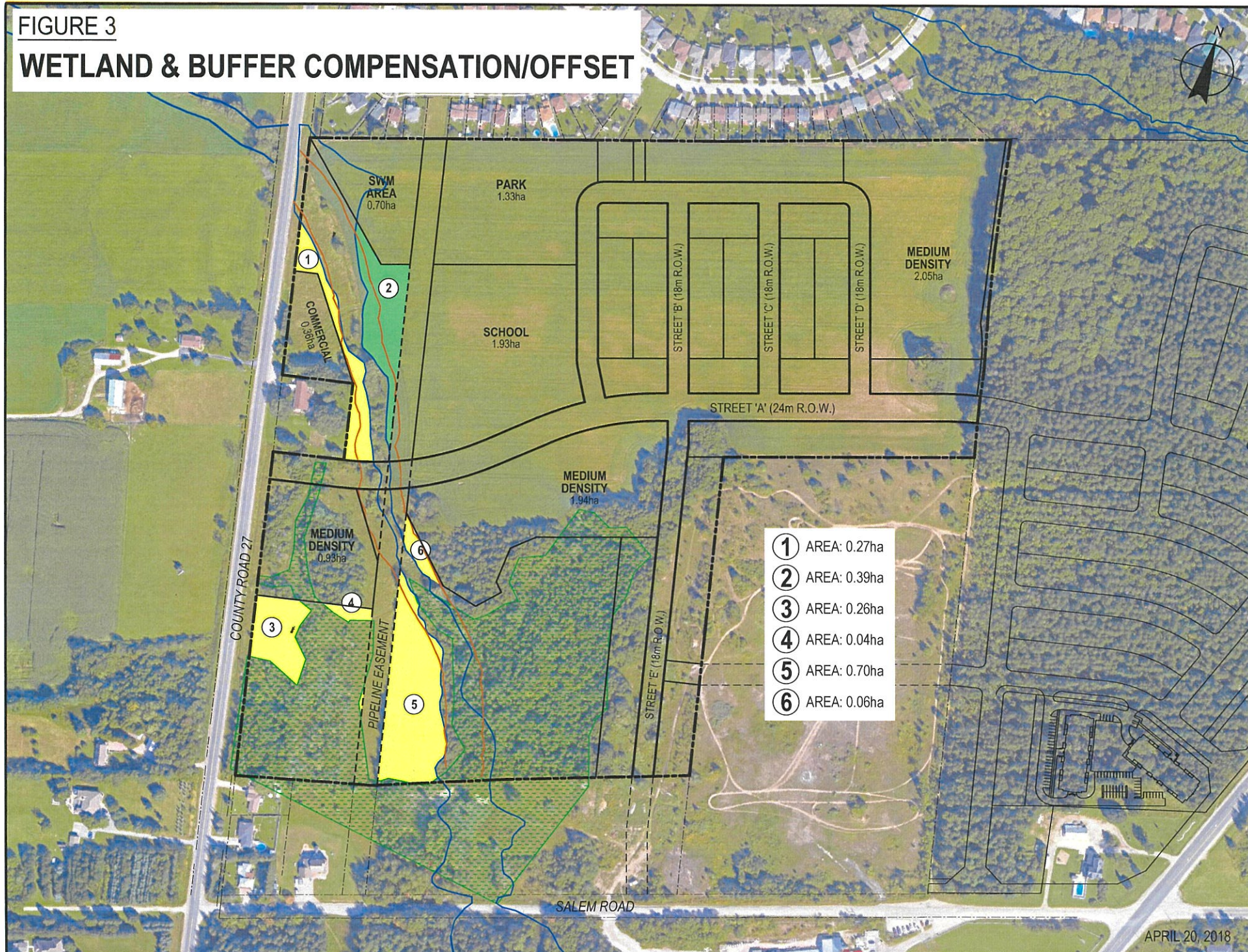


FIGURE 3

WETLAND & BUFFER COMPENSATION/OFFSET





Michalski Nielsen

ASSOCIATES LIMITED

Memorandum

Date: September 25, 2017

From: Michael Michalski

To: Chris Hibberd

c.c.: Lee Bull; David Featherstone; Peter Alm; Oksana Vialykh; Kris Menzies;
Dan Amadio; Al Steedman; Harold Reinthaler; Bailey Chabot; David
Cunningham

Our File: 1714

Re: Subdivision Concept Plan, Di Poce Property, Salem
Secondary Plan

Further to our meeting of September 19th, I am enclosing a Subdivision Concept Plan for the Di Poce Property, Salem Secondary Plan that was discussed at the meeting; as well, a second graphic is included with an overlay of environmental constraints. The following are highlights of the meeting insofar as environmental issues are concerned.

1. There is no encroachment into the non-evaluated wetland at the southern end of the property, except at its northern end, where parts of five residential lots encroach.
2. Offsetting of about 0.1 hectares of lost wetland is proposed, with details to be provided in the **Environmental Impact Study (EIS)**; this can be achieved on subdivision lands on the eastern side of Highway 27, which are not accessible from the highway. Further discussions with staff of NVCA will be required to confirm extent of offsetting.
3. A 30 metre buffer on either side of the north/southeast running tributary will be needed, with restoration/enhancements through riparian plantings. The extent of buffer naturalization will be determined through the **EIS** which is presently underway.
4. The flood plain and other natural hazards have not yet been recognized/evaluated as environmental constraints. However, initiatives are underway to carry out the necessary investigations.

16 Robert Boyer Lane, Bracebridge, Ontario P1L 1R9
(705) 645-1413 Facsimile: (705) 645-1904 www.mnal.ca E-mail: info@mnal.ca

ENVIRONMENTAL PLANNING BIOPHYSICAL ANALYSIS LAKE CAPACITY ASSESSMENT RESOURCE MANAGEMENT

5. Given that the Salem Secondary Plan did not recognize the presence of the unevaluated wetland, and showed development of virtually over the entire property (i.e., on both sides of the north/southeast tributary), Nottawasaga Valley Conservation Authority staff were of the opinion that the Subdivision Concept Plan represented a reasonable balance between environmental protection on the one hand and subdivision development on the other.

* * * * *

Do let me know if anything further should be added to the above list of key points. Many thanks.

**APPENDIX F – LETTER,
BULL TO GAMEIRO
AUGUST 8, 2018**



**Nottawasaga Valley
Conservation Authority**

8 August 2018

Mr. Andrew Gameiro
Planner
City of Barrie, Planning and Building Services Department
70 Collier Street
Barrie, ON L4M 4T5

Dear Mr. Gameiro,

**RE: Dipoce Property – Salem Secondary Planning Area
8001 County Road 27 - Part of Lot 1, Concession 3
City of Barrie
Wetland Offsetting and Concept Plan 'H'
NVCA ID #31659**

Nottawasaga Valley Conservation Authority [NVCA] staff has received a revised concept plan, along with three figures illustrating proposed wetland offsetting in support of the above noted future proposed development.

The 11.25 hectare property is located north of Salem Road and east of County Road 27 and is within the Salem Secondary Planning Area. We understand that the proposal is to facilitate the development of a 329 unit single family and medium density (townhouse) residential subdivision. Blocks have been set aside for commercial uses and a stormwater management facility.

Bear Creek traverses the property in a north-south direction. Due to the presence of this feature, associated wetland features and associated hazards, the subject property is partially regulated pursuant to Ontario Regulation 172/06 the Authority's Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation. Permits are required from NVCA prior to construction or grading on regulated portions of this property.

Nottawasaga Valley Conservation Authority staff has completed their review of the following submissions:

- MHBC Planning "Concept Plan H" dated March 3, 2018;
- Michalski Nielsen Associates Limited's letter 'Dipoce Property, Proposed Wetland and Buffer Offset Plan; Our File 1714' dated April 23 2018.
- Michalski Nielsen Associates Limited's drawings Figure 1 'Wetlands to be Removed', Figure 2 'Buffers to be Removed' and Figure 3 'Wetland & Buffer Compensation/Offset' dated April 20, 2018.

These plans have been attached to this letter for ease of reference.

Ecology

1. As a future reference, Concept Plans and Figures should include a complete legend.
2. **Wetland Encroachment, Offsetting and Buffers**

Concept Plan H (and accompanying Figures 1-3) depicts a significant increase in the area of proposed encroachment into wetlands and wetland buffers (from that depicted in former Concept Plan A-6). These new areas of encroachment have been proposed to accommodate the following additional/revised development features:

- The re-routing of the west end of Street 'A';
- A newly proposed 0.93ha Medium Density block on the south side of Street A (at the west end) on the west side of the pipeline easement;
- The southward expansion of the southwest portion of the 1.94ha Medium Density block associated with Street 'A'; and,
- The westward shift of Street 'B' (re-named Street 'E' in Concept Plan H) and the row of development on the west side of Street 'E'.

To address these newly proposed encroachment areas, the applicant has submitted a high-level concept plan for offsetting/compensation. Previous NVCA comments (issued Jan 10th, 2018), expressed a willingness to accept offsetting/compensation for an estimated 0.11ha of proposed wetland encroachment (as per Concept Plan A-6). The single affected wetland area was associated with Street 'C' (Concept Plan A-6) and was considered a small outlier portion of the wetland which extended into otherwise developable areas. NVCA staff's flexibility for allowing offsetting of this small area was offered on this basis, and was not intended to invite proposals for additional areas of wetland encroachment.

NVCA staff would like to remain flexible in discussing a compensation strategy for the minor area of encroachment associated with the extreme northeast corner of the wetland community as illustrated on the original concept plan A6. However, *NVCA staff do not support the newly proposed development expansions into wetlands and wetland buffers.* Details are outlined below.

- a) The medium density block associated with the western end of Street 'A', which represents significant feature and buffer encroachment, should be removed from the concept plan. In light of this recommendation, the west end of Street 'A' should be re-routed to the original location depicted in Concept Plan A-6.
- b) The development block along the west side of Street 'E' (density unknown due to lack of legend), which represents significant feature and buffer encroachment, should be removed from the concept plan.
- c) The medium density block on the south side of Street 'A' in the central portion of the concept plan should be revised to reflect the original configuration for proposed development in this area as illustrated on Concept Plan A-6.
- d) NVCA staff do not support the proposal to remove existing forested features to accommodate the creation of wetland. For example, Figure 3 ("Wetland and Buffer Compensation/Offset") proposes to remove 7,000 m² of forest cover and replace it with wetland plantings (presumably after undertaking significant

earthworks to adjust the hydrology of the site). Offsetting/compensation for wetland areas cannot come at the expense of another existing natural heritage feature, and must result in overall **net gain** of features.

- e) The wetland buffer offsetting calculation was based on a 20 m buffer width. However, for future reference, a standard 30m regulatory buffer should be used to calculate buffer loss. Further, NVCA currently uses a standard offsetting ratio of 2:1 for feature encroachment and 1:1 for buffer encroachment.

3. Natural Heritage System – Linkage Corridor

The following was previously noted in NVCA's January 10th, 2018 comment letter:

"Through previous review, NVCA staff have suggested some flexibility in the Secondary Plan-mapped 100m NHS linkage corridor width along the Bear Creek tributary downstream (north) of the wetland in return for significant protection of unmapped wetlands/core forest. We have suggested [that] a 60m corridor instead of 100m with a commitment to restore riparian habitat within the corridor may be satisfactory. The concept plan appears to delineate a corridor that is less than 60m wide. Some minor shifts in lot layout could bring the corridor closer to the 60m width".

It does not appear that Concept Plan H has taken these recommendations into consideration, with a NHS linkage corridor along the Bear Creek tributary that is estimated to be 40 m on average. NVCA staff believe that this is insufficient. Further, the relaxed NHS linkage corridor width (of ~60m) is to be accompanied by a plan for compensation plantings in this area. It is important to note that *compensation plantings associated with a reduction in the NHS corridor width cannot be used to provide credit for wetland encroachment compensation.*

FURTHER WORKS/NEXT STEPS

- 4. As stated in the MNAL letter, further details will need to be provided on the wetland features and functions and hydrologic functions. There will also be a need for the establishment of a wetland and buffer offset monitoring program which will monitor the health and success of the created wetland and buffer areas into the foreseeable future (exact timeline to be determined).

We note that in our comment letter dated January 10, 2018 we indicated that a natural hazards study, preliminary stormwater management report, preliminary Environmental Impact Study and constraints mapping should be submitted as part of the second conformity submission in order to appropriately inform the limits to development. These items have not been provided to NVCA staff for review and we note our January 10, 2018 comments below for reference purposes.

Natural Hazards

- 5. Concept Plan A6 illustrates lots abutting the Bear Creek corridor, some of which appear to be within the regulatory floodplain as illustrated on Schedule 8B of the Salem Secondary Plan [SSP]. All development should be outside of the natural hazards (including a 6 metre access allowance). A flood and erosion hazard study should be

completed in support of the proposed development in order to delineate the extent of the hazards. This study should be submitted as part of the second conformity submission.

Stormwater Management

6. A stormwater management [SWM] report and associated plans will be required to current standards. The stormwater management scheme should be in conformity with the City of Barrie Drainage and Stormwater Management Master Plan and the Salem Annex Lands Subwatershed Impact Study [SIS].
 - a. In order to accurately determine the limits to development, a preliminary stormwater management report should be submitted as part of the second conformity submission. This submission should include preliminary grading plans for the stormwater management pond, preliminary engineering drawings illustrating the outlet structure and a commitment from TransCanada Pipeline that they will permit SWM infrastructure to cross the pipeline corridor. NVCA staff would be pleased to further scope the study with the consulting engineer for the applicant.
 - b. A full stormwater management report and associated engineering drawings should be included as part of the formal submission for the application for a zoning by-law amendment and the application for draft plan of subdivision approval.
7. There are recent findings of significant unmapped natural heritage constraints on the property. While concept 'A6' protects core forest and wetland habitat associated with the Bear Creek tributary on the property, minor encroachments into the north edge of the core forest wetland east of the creek are proposed (approximately 0.11 ha) as well as encroachments into the wetland buffer.

Through previous review, NVCA staff have suggested some flexibility in the Secondary Plan-mapped 100 metre [m] NHS linkage corridor width along the Bear Creek tributary downstream (north) of the wetland in return for significant protection of unmapped wetlands/core forest. We have suggested a 60 m corridor instead of 100 m with a commitment to restore riparian habitat within the corridor may be satisfactory. The concept plan appears to delineate a corridor that is less than 60 m wide. Some minor shifts in lot layout could bring the corridor closer to the 60 m width.

- a. An Environmental Impact Study [EIS] is required in support of the proposed development and to appropriately delineate the limits to development. The EIS should identify all natural heritage features and functions on the property and should identify impacts and mitigation opportunities associated with the development. This should include consideration of potential Species at Risk [SAR] and SAR habitat on the property including consultation with the Ministry of Natural Resources and Forestry [MNRF] as required. Offsetting and restoration (as discussed at the September meeting) will be an important component of the EIS. We note that opportunities for offsetting and enhancement are present along the Bear Creek tributary corridor. This environmental impact study should be provided as part of the submission

package in support of the application for the zoning by-law amendment and application for draft plan of subdivision approval.

- b. As part of the second conformity submission, a preliminary EIS would be acceptable that addresses the following:
 - i. The delineation of the natural heritage limits and appropriate buffers;
 - ii. Provides a commitment for offsetting and restoration which will be outlined in further detail in the final report submitted in support of the zoning by-law amendment and draft plan of subdivision application submissions as noted above.

Land Use Planning – Constraints Mapping

- 8. In order to accurately determine the appropriate limits to development, NVCA staff request that a scaleable drawing be provided which illustrates the following:
 - i. The wetland boundaries
 - ii. The width of all wetland buffers;
 - iv. The erosion hazard limit plus the 6 metre access allowance;
 - v. The floodplain limit plus the 6 metre access allowance;
 - vi. Bear Creek plus 30 metre setback on each side;
 - vii. The proposed lot/block fabric.

This drawing should be produced in colour and be accompanied by an appropriate and complete legend. Constraint lines, access allowances, and buffer setbacks should be labelled. Please confirm that all works are within the limits of development. This constraint mapping should be provided as part of the second conformity submission.

CONCLUSION

The matter of wetland offsetting has not been addressed to the satisfaction of NVCA staff. In addition, limits to development have not yet been delineated to the satisfaction to NVCA staff. Additional studies and mapping should form part of the next conformity submission or as outlined above as part of the formal submission for the application for a zoning by-law amendment and an application for draft plan of subdivision approval.

We trust the foregoing is in order. Should you require any further information, please feel free to contact the undersigned at extension 231.

Sincerely,



Lee J. Bull, MCIP, RPP
Manager, Planning Services



CONCEPT PLAN 'A-6'

DIPOCE SUBDIVISION

Part of the South Half of Lot 1, Concession 3
Geographic Township of Simcoe
Formerly in the Town of Innes/Presently in the City of Barrie
County of Simcoe

LEGEND

10.0m (200) Single	100 Lots	3.02ha
13.0m (400) Single	80 Lots	3.18ha
6.0m (200) Townhouse	160 Units	3.02ha
Commercial		0.25ha
TOTAL	320 Units	11.25ha

Density: 72.8 units/ha (based on 14.4 Ha)

DATE: October 11, 2017

SCALE: 1:10,000 (Plan of Survey: 09/03/07)

MAP: 1 20 40 60 80 100

1:10,000 (Plan of Survey: 09/03/07)



DIPOCE SUBDIVISION, BARRIE
CONCEPT PLAN 'H'

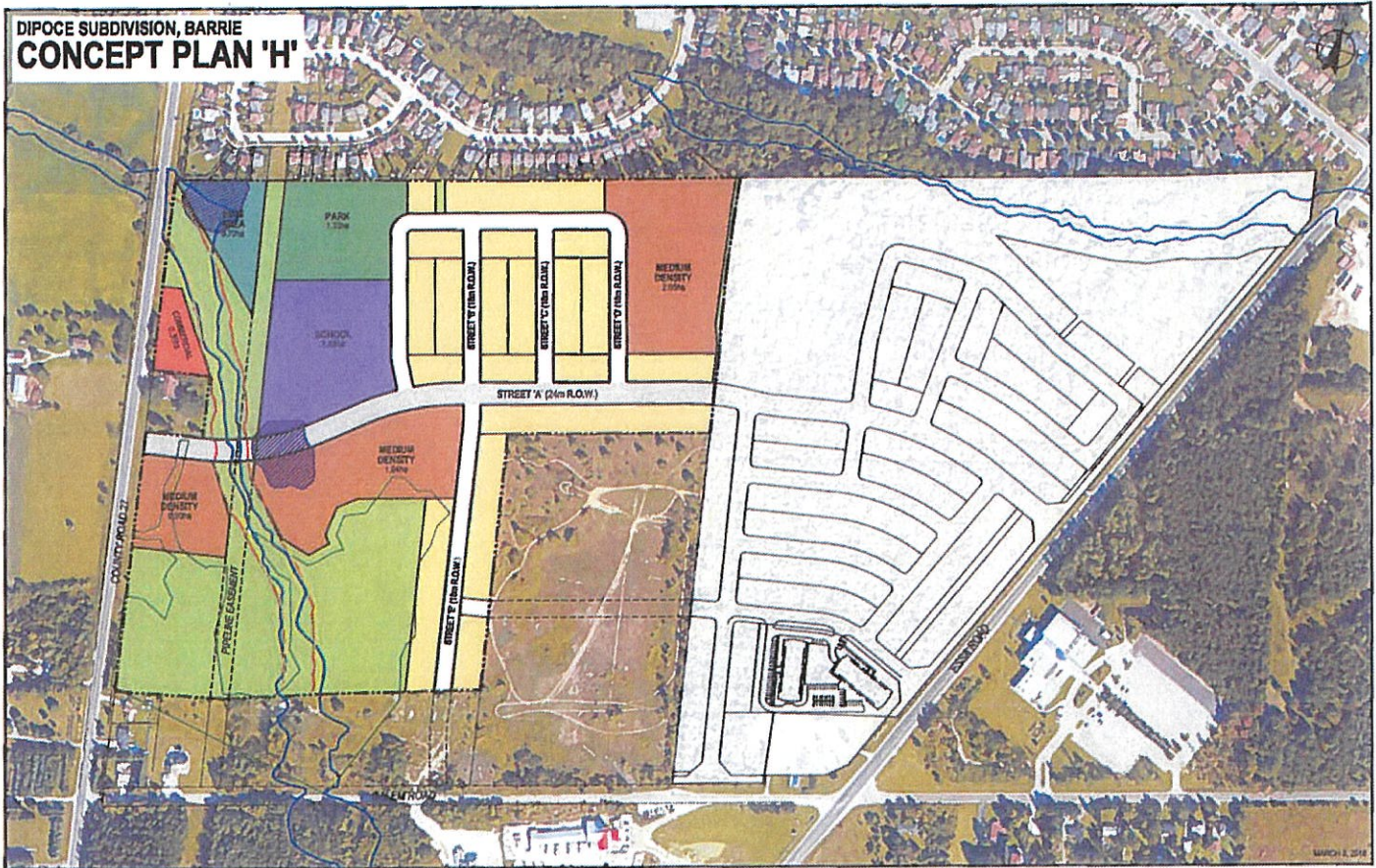


FIGURE 1

WETLANDS TO BE REMOVED

AREA: 0.36ha

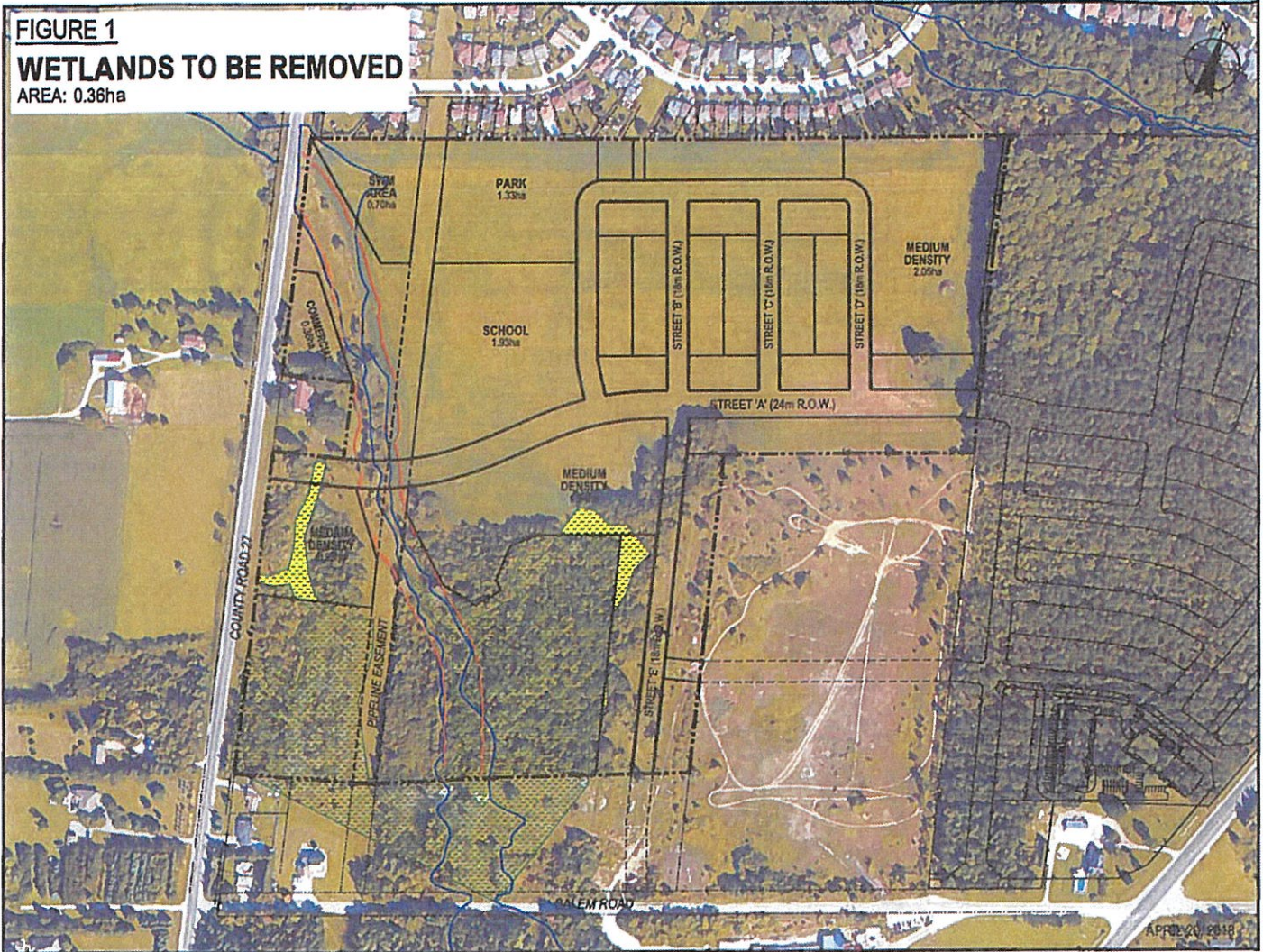


FIGURE 2

BUFFERS TO BE REMOVED (20m WIDTH)

AREA: 1.31ha



FIGURE 3

WETLAND & BUFFER COMPENSATION/OFFSET

