

September 27th, 2022

P.N. 17-11313B

Innovative Planning Solutions

150 Dunlop Street East
Suite 201
Barrie, Ontario
L4M 1B1

**Reference: Residential Townhouse Development
844 Veterans Drive, City of Barrie
Functional Servicing & Storm Water Management Report**

1.0 INTRODUCTION & BACKGROUND

The proposed development site is located at 844 Veterans approximately 670m north of the McKay Road West and Veterans Drive intersection. The property is legally described as north part, Lot 5, Concession 10, of Registered Plan 51R-7968 in the City of Barrie.

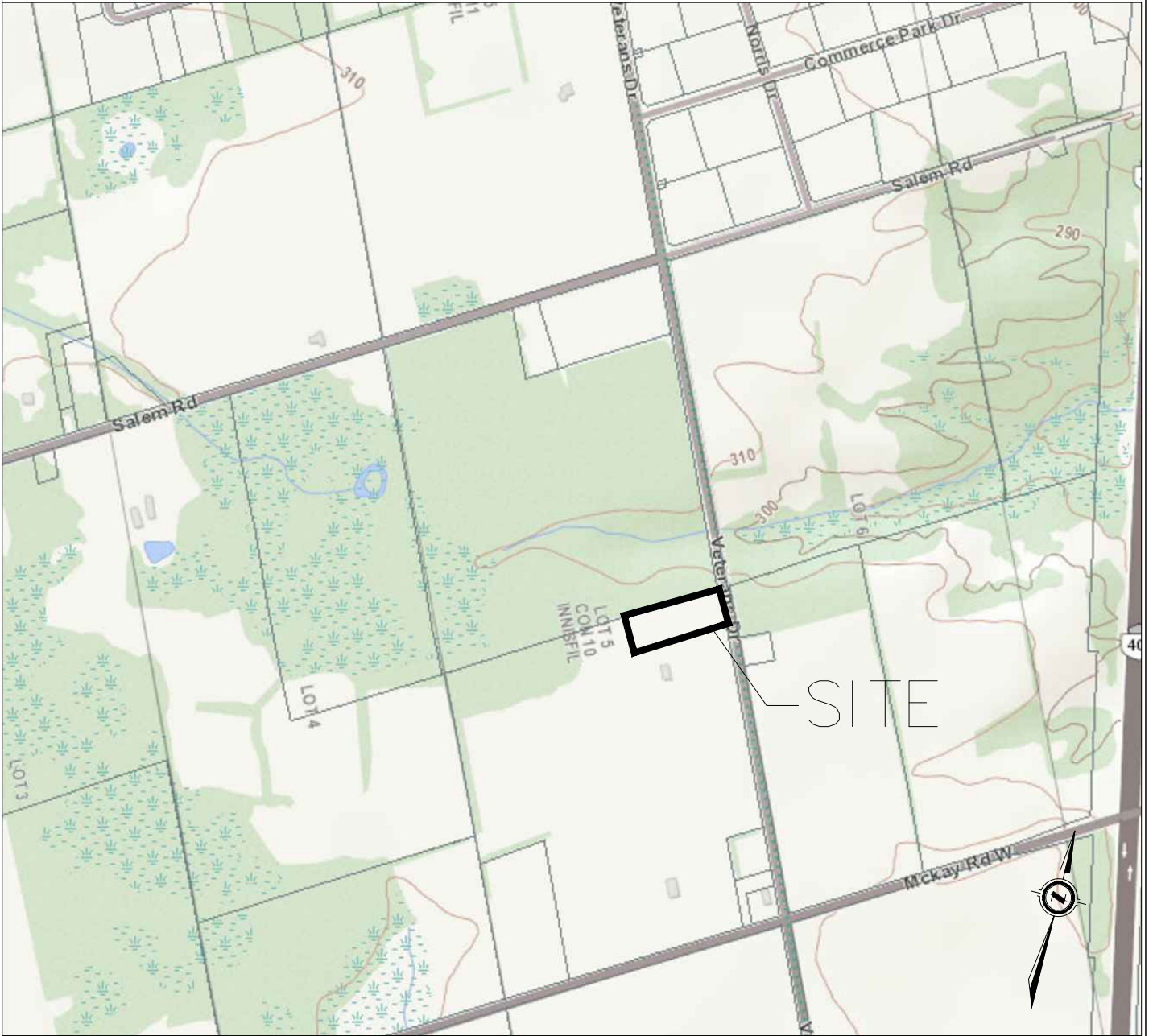
The subject site is 1.63 hectares (3.98 acres) in area and was incorporated into the City of Barrie boundary by the Barrie-Innisfil Boundary Adjustment Act, 2009. It is a part of the proposed Salem neighbourhood within the Annexed Lands and is currently undeveloped. Development of the subject lands will require coordination with adjacent land owners contributing to the land owners group to determine cost sharing arrangements.

The site location is illustrated on Figure 1.

PEL has been retained by the by the property owner to complete a Functional Servicing and Storm Water Management Brief in support of a Draft Plan Application. The draft plan includes 10 blocks of row townhouse units, consisting of 8 units per block, totaling 80 residential units. Access to the development will be provided directly from Veterans Drive providing a through link to the future residential lands located at the east limit of the property.

A reduced copy of the draft plan prepared by Innovative Planning Solutions is included as Figure 2.

The purpose of this brief is to describe the existing servicing infrastructure in the vicinity of the site, and provide recommendations for the provision of sanitary drainage, water distribution and stormwater management in accordance with City of Barrie criteria in support of Draft Plan Approval.

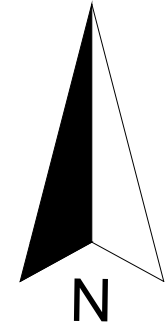



PEL
 PINESTONE ENGINEERING LIMITED | www.pel.co

844 VETERAN'S DRIVE

LOCATION PLAN

DATE: NOV 2017	SCALE: N.T.S.	PROJECT No. 17-11313B	FIGURE No. FIGURE 1
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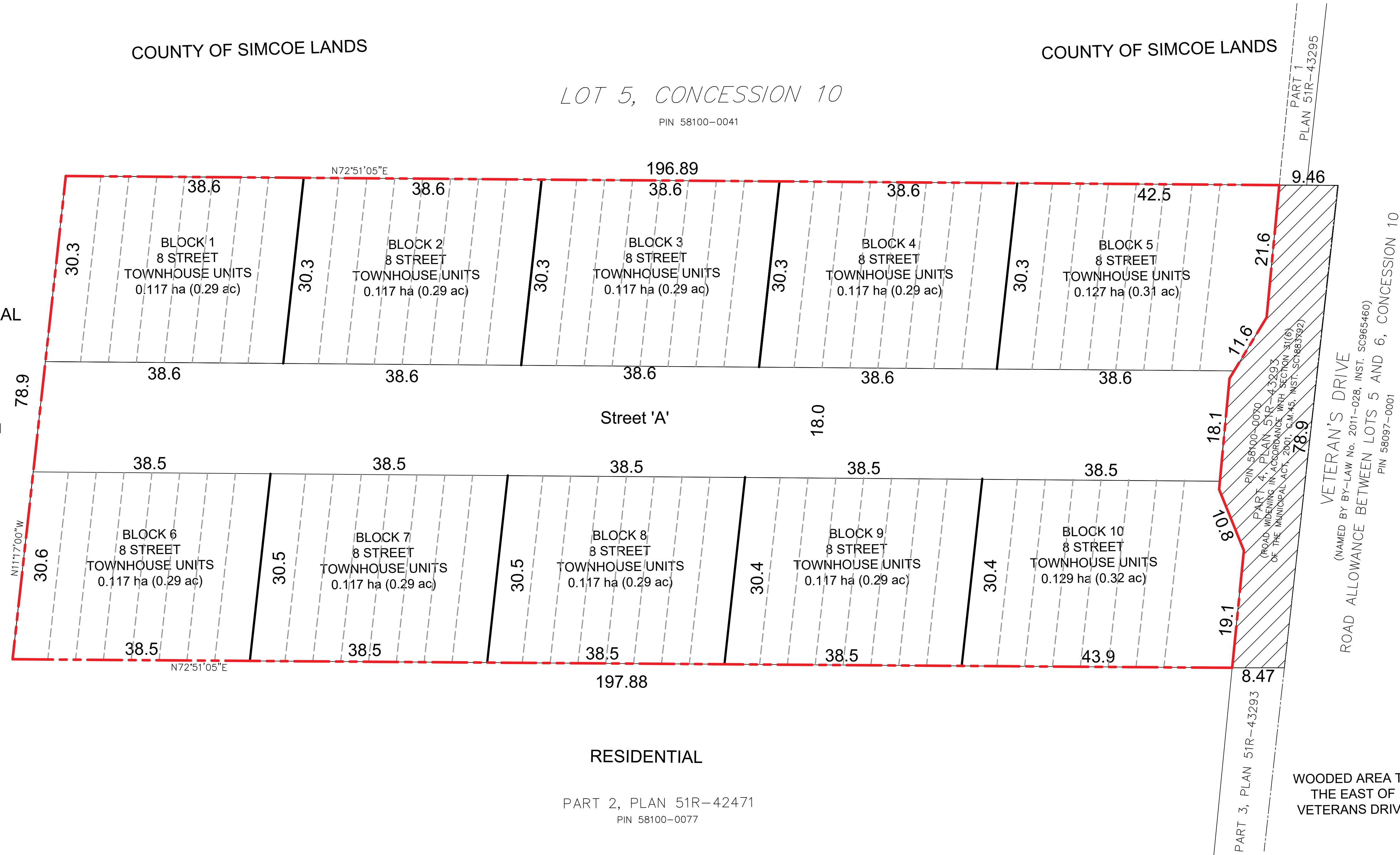


COUNTY OF SIMCOE LANDS

COUNTY OF SIMCOE LANDS

LOT 5, CONCESSION 10

PIN 58100-0041



RESIDENTIAL

RESIDENTIAL

PART 2
PLAN 51R-42471
PIN 58100-0077

PART 2, PLAN 51R-42471
PIN 58100-0077

PART 1
PLAN 51R-43295

VETERAN'S DRIVE
(NAMED BY BY-LAW No. 2011-028, INST. SC965460)
ROAD ALLOWANCE BETWEEN LOTS 5 AND 6, CONCESSION 10
PIN 58097-0001

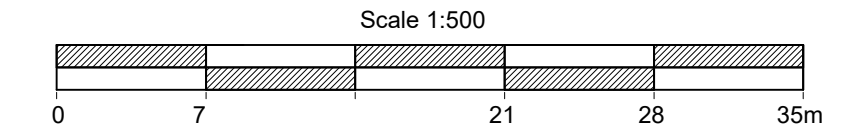
PART 3, PLAN 51R-43293

WOODED AREA TO THE EAST OF VETERANS DRIVE



DRAFT PLAN OF SUBDIVISION

844 Veterans Drive
PART OF LOT 5, CONCESSION 10
(GEOGRAPHIC TOWNSHIP OF INNISFIL)
CITY OF BARRIE
COUNTY OF SIMCOE



- LEGEND**
- SUBJECT LANDS (1.53ha/3.78ac)
 - LOTS

OWNER'S CERTIFICATE
I HEREBY AUTHORIZE INNOVATIVE PLANNING SOLUTIONS TO PREPARE THIS DRAFT PLAN OF SUBDIVISION AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

DATE _____ OWNER'S NAME:
2528286 Ontario Inc. &
2431805 Ontario Inc.

SURVEYOR'S CERTIFICATE
I CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE _____ SURVEYOR'S NAME:
Gary B. Vanderveen

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT

- | | |
|------------------|-----------------------------|
| a) SHOWN ON PLAN | g) SHOWN ON PLAN |
| b) SHOWN ON PLAN | h) MUNICIPAL WATER |
| c) SEE KEY PLAN | i) SAND, SILT GLACIAL TILL |
| d) RESIDENTIAL | j) SHOWN ON PLAN |
| e) SHOWN ON PLAN | k) MUNICIPAL WATER & SEWAGE |
| f) SHOWN ON PLAN | l) NONE |

LAND USE STATISTICS

LAND USE	BLOCK No.	UNITS	AREA (ha)
RESIDENTIAL	1-10	80	1.19
STREET 'A'			0.34

IPS INNOVATIVE PLANNING SOLUTIONS
PLANNERS • PROJECT MANAGERS • LAND DEVELOPERS
647 WELHAM ROAD, UNIT 9, BARRIE, ON, L4N 0B7
tel: 705 • 812 • 3281 fax: 705 • 812 • 3438 e: info@ipsconsultinginc.com www.ipsconsultinginc.com

Date: July 26, 2022 Drawn By: JV
File: 16-664 Checked: DV



2.0 EXISTING SITE CONDITIONS

The subject site is 1.63 hectares (3.98 acres) in land area and is located approximately 670m north of the McKay Road West and Veterans Drive intersection. The subject lands are located within the Salem Secondary Plan Area in the City of Barrie. Currently a single family residential home with features including a tennis court and pool exist on the property. The site is vegetated with several deciduous tree stands and native grasses. The site is bounded by forested area to the north, agricultural lands to the west, Veterans Drive to the east, and existing residential to the south.

Topography through the site is generally flat and site drainage is conveyed to the north and south in the form of overland sheet flow. Based on our review of the online soil maps provided by the Ontario Government AG Maps, site soils conditions consist of loamy sand with good drainage properties and are classified as hydrological soil group B.

Under the Salem Secondary Plan, a residential subdivision is proposed south and west of the subject property.

3.0 SANITARY SERVICING

3.1 Existing Sanitary Servicing

No municipal sanitary servicing is readily available for connection. Upon review of the *Wastewater Collection Master Plan* by amec sewage flows from the site will be directed south through the proposed residential subdivision and towards the McKay Road trunk sewer. Sewer design grades within the proposed subdivision south and west of the subject are unknown at this time.

3.2 Proposed Sanitary Servicing

Contributing sanitary flows from the proposed development were calculated using City of Barrie design criteria as follows:

- A residential average sewage flow of 225 litres/capita/day
- A residential population density of 2.34 persons/unit
- An extraneous flow rate of 0.1 litres/sec/ha
- A peaking factor based on Harmon's equation

With a total residential count of 134 persons and incorporating extraneous flows, the combined peak sewage flow generated by the proposed development is calculated to be approximately 2.1 L/sec. Detailed sanitary calculations are appended.

The proposed sanitary sewer will be connected to a future road at the west limit of the subject property. The future road and sanitary sewer will be constructed by others. Coordination with the adjacent land owner will be required to ensure compatibility between sanitary inverts at the detailed design stage. A conceptual sanitary servicing layout is provided in Appendix B.



4.0 WATER SERVICING

4.1 Existing Water Servicing

No municipal water servicing is readily available for connection. Upon review of the *Water Storage and Distribution Master Plan* by amec a 500mm diameter watermain is planned to be constructed adjacent to the subject site along Veteran's Drive from Salem Road to McKay Road West.

4.2 Proposed Water Demands

The domestic water demands for the proposed development are listed in Table 1 below:

Table 1: Domestic Water Demand

Population	Per Capita Flow (L/day)	Peaking Factors (based on MOECC Guidelines)		Flows (L/sec)	
		Peak Hour	Maximum Day	Peak Hour	Maximum Day
134	225	2.25	1.5	0.79	0.52

Fire demands for the proposed development in accordance with the City of Barrie's Water Transmission and Distribution Policies and Design Guidelines is 57 l/sec for residential development.

4.3 Proposed Water Servicing

The proposed development will be serviced using a 150mm diameter service connection from the future 500mm diameter watermain located on Veteran's Drive. Coordination with the adjacent land owner will be required to ensure compatibility between water servicing designs.

A conceptual water servicing layout is provided in Appendix B.

5.0 STORM DRAINAGE

5.1 Existing Storm Drainage

Currently no storm infrastructure exists on the property or along Veterans Drive. Topography through the site is generally flat and site drainage is conveyed to the north and south in the form of overland sheet flow to adjacent properties with no quality or quantity control.

5.2 Pre and Post Development Flow Rates

A preliminary hydrological storm water model using Visual Otthymo was created to quantify pre and post development peak flows. The 2-yr through 100-yr Chicago Storms and Regional Storm Hazel were selected for this preliminary assessment. A single catchment area encompassing the entire property was used for modelling purposes. Pre-development and post development



catchment areas are illustrated on Figures 3 and 4 respectively. The results from the 2 through 100 year peak storm event and Regional Storm Hazel are listed in Table 2 below:

Table 2: Peak Flows

	2Yr	5Yr	10Yr	25Yr	50Yr	100Yr	Hazel
Pre-Development (m³/sec)							
Catchment 101	0.02	0.04	0.06	0.08	0.10	0.12	0.17
Post Development (m³/sec)							
Catchment 201	0.27	0.39	0.46	0.55	0.61	0.68	0.24

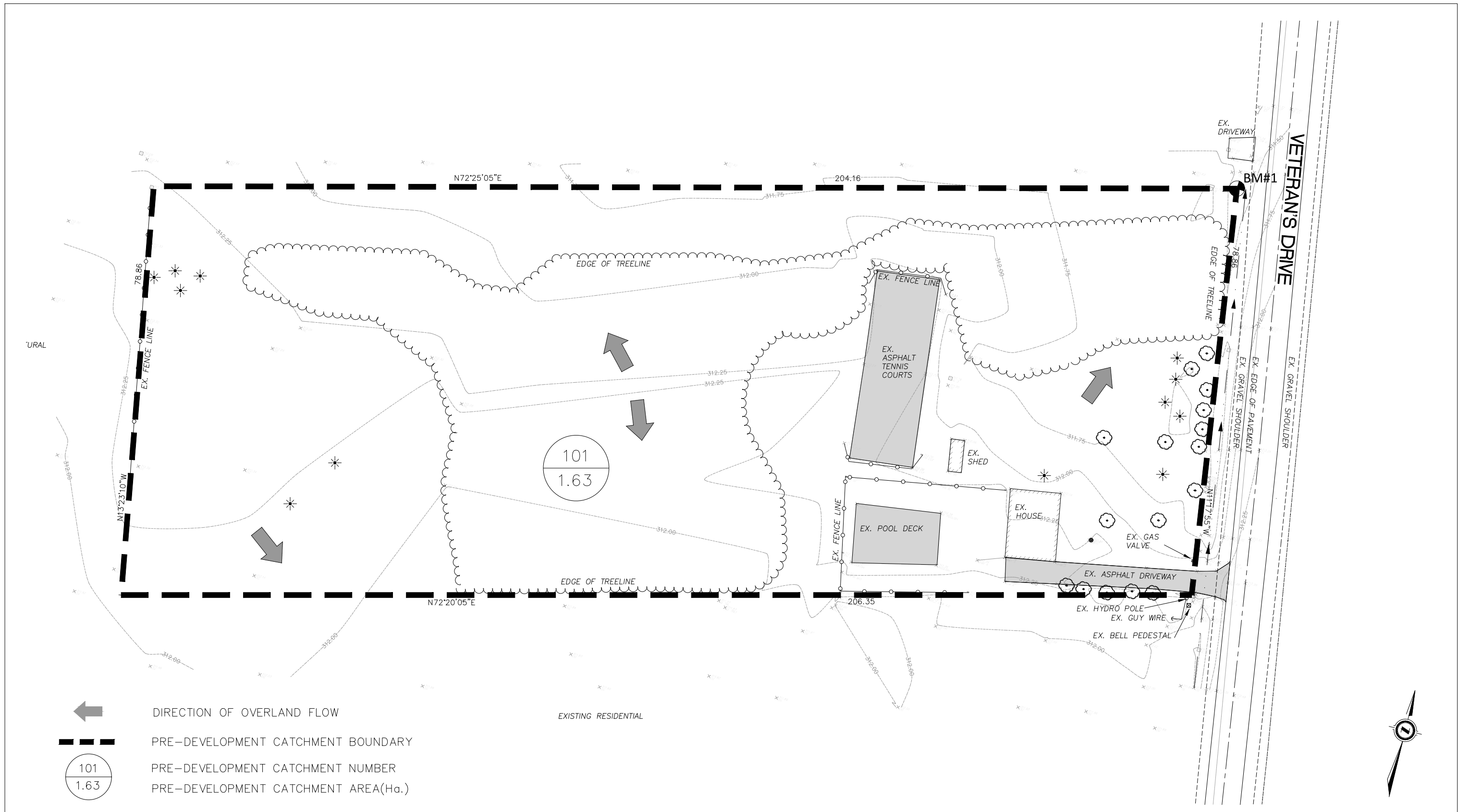
Based on the preliminary Visual Otthymo results, post development peak flows and runoff volumes will increase as a result of the proposed development and increased site imperviousness. Visual Otthymo summary output files are included in Appendix A.

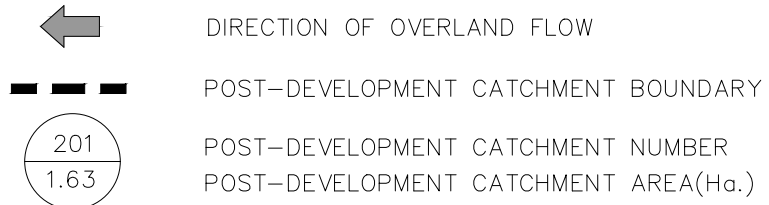
A storm sewer will be constructed along the access road sized to convey storm water westerly towards the proposed future sub-division.

5.4 Storm Water Management

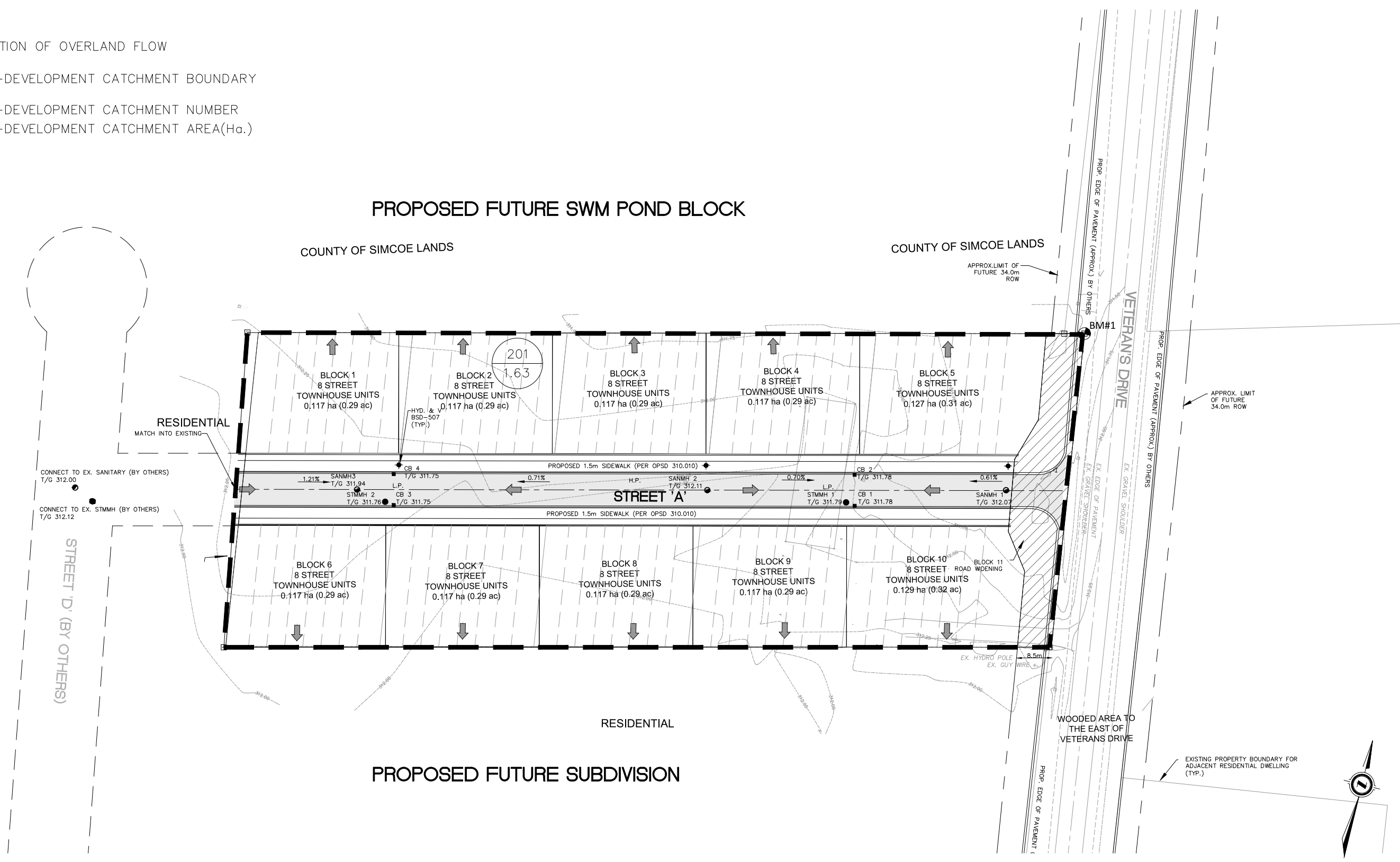
Based on the SIS Report, it is understood that a storm water management (SWM) facility (SWM F) will be constructed north of the subject site. The SWM facility will be sized appropriately to provide quantity and quality control of storm water per the approved SIS Report. The owner of the subject property will be required to cost share with the land owners group to ensure the SWM facility is sized to accommodate post development runoff from the subject site.

The use of Low Impact Development (LID) measures such as soak away pits located in the rear yards to infiltrate roof water will be examined at the detailed design stage.





PROPOSED FUTURE SWM POND BLOCK



844 VETERAN'S DRIVE

POST DEVELOPMENT CATCHMENT PLAN

PROJECT NO. 17-11313B
 SCALE: 1:1000 DATE: NOV 2017

FIGURE 4



6.0 ROAD STANDARD

Currently the subject site is accessed via an asphalt driveway from Veterans Drive. Veterans Drive is currently a 2-lane rural road cross-section. A Municipal Class EA Schedule C was prepared by Stantec Consulting Ltd. to provide alternatives to address transportation improvements in the Salem Secondary Plan area. The preferred alternative provided in the EA proposed to expand Veterans Drive to a 34m right of way along from Salem to McKay and along the frontage of the subject site. Existing and proposed road elevations are further illustrated on an excerpt from the EA included in Appendix A.

The draft plan proposes an 18.0m road allowance per City of Barrie road allowance standard BSD-301. A preliminary grading design for the proposed street is provided on the attached engineering plans. The final grading design is contingent on the grading design proposed for the adjacent street located in the future residential development to the west. A copy of the road standard is included in Appendix A.

7.0 UTILITIES

The Salem Secondary Plan (OPA No. 38) indicates the following with reference to utility design:

- a) Prior to approval of development within the Salem Secondary Plan Area, all interested telecommunications providers and required utilities providers shall work with the landowner(s) and the City to confirm their plans for services to support the proposed development. The City shall work with the providers to determine appropriate locations for large equipment or cluster sites.
- b) All telecommunications services and utilities should be located within an initial common trench, whenever possible, to avoid unnecessary digging and disruption on municipal rights of way.
- c) Consideration shall be given to the location of telecommunication facilities and utilities within public rights of way as well as on private property. Utilities and telecommunications facilities shall be grouped/clustered or combined where possible and feasible to maximize the use of land and, where applicable, to minimize visual impact. Utilities and telecommunications facilities shall be placed in such a manner so as to not visually detract from the streetscape. The City shall encourage utility and telecommunications providers to consider innovative methods to make these facilities less noticeable including containing such services on or within streetscape features such as gateways, light standards, bulk water meters and transit shelters where it is feasible.

Hydro, gas and cable are proposed to be available to service the subject site. Coordination with local utilities companies will be required to obtain utility servicing drawings at the detailed design stage.

8.0 CONCLUSION

Based on the above findings, the proposed development located with the Salem Secondary Area can be serviced when external infrastructure upgrades are complete and the proposed residential sub-division to be located to the south and west of the property is serviced.



We trust this is satisfactory and should you have any questions, please call.

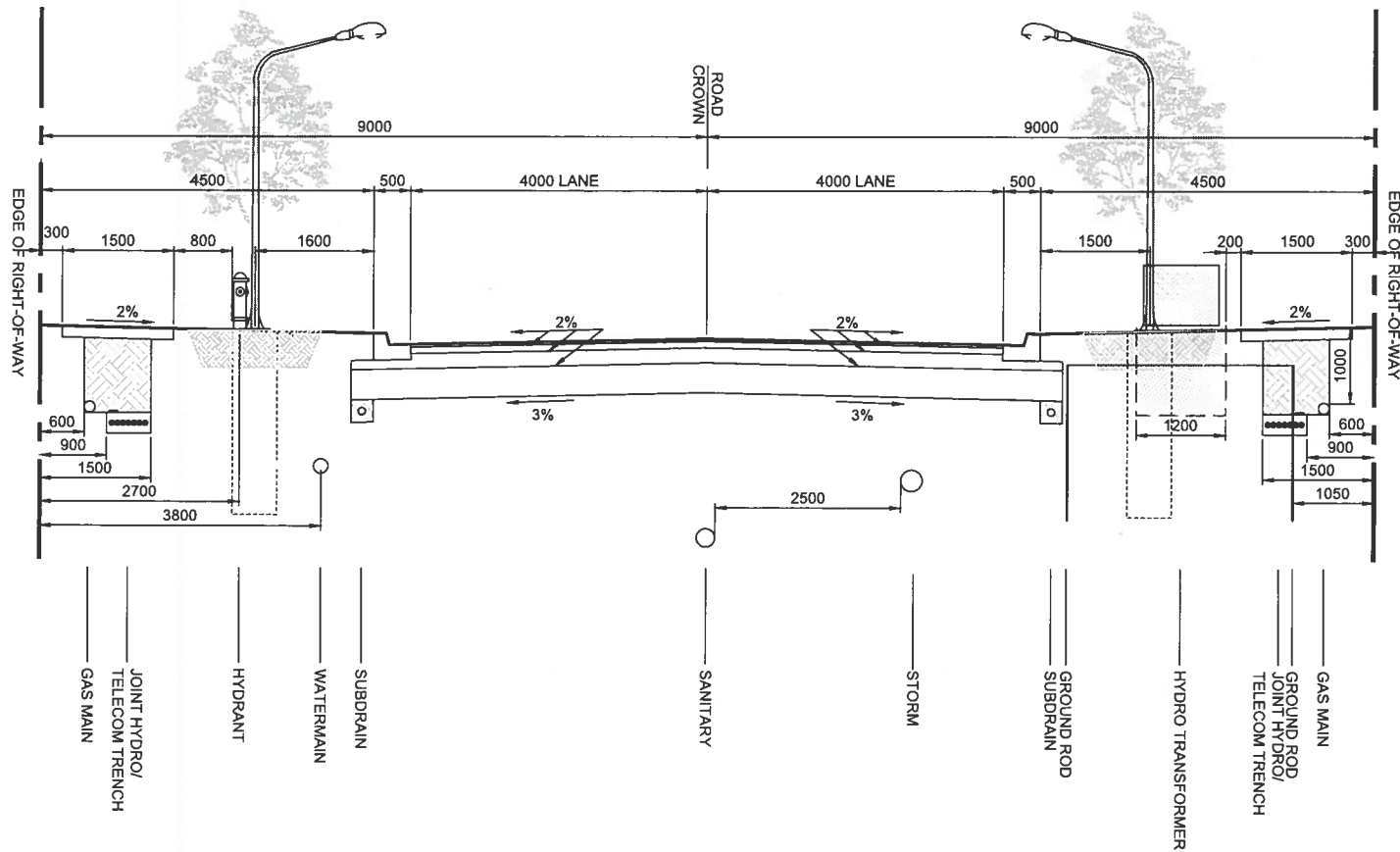
All of which is respectfully submitted by:



Joe Voisin, P.Eng., C.E.T.
Senior Engineer, Partner

APPENDIX A

Preliminary Design Calculations and Background Information



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. WASTEWATER SYSTEMS, STORMWATER SYSTEMS, INCLUDING LOW IMPACT DEVELOPMENT FACILITIES, AND WATER DISTRIBUTION AND TRANSMISSION SYSTEMS TO BE DESIGNED IN ACCORDANCE WITH CITY OF BARRIE ENGINEERING GUIDELINES AND STANDARDS.
3. REFER TO THE CITY OF BARRIE ROADWAY ILLUMINATION POLICIES AND DESIGN GUIDELINES AND ASSOCIATED BSD'S FOR LIGHT STANDARD AND POLE BASE LOCATION AND DEPTH.
4. REFER TO TRANSPORTATION DESIGN MANUAL FOR PAVEMENT DESIGN METHODOLOGY.
5. TREES TO BE PLACED IN LOCATIONS APPROVED BY THE PARKS, PLANNING, AND DEVELOPMENT BRANCH. (SEE BSD-1315)




**18.0 m LOCAL ROAD
ALLOWANCE - RESIDENTIAL
8.0 m ASPHALT**

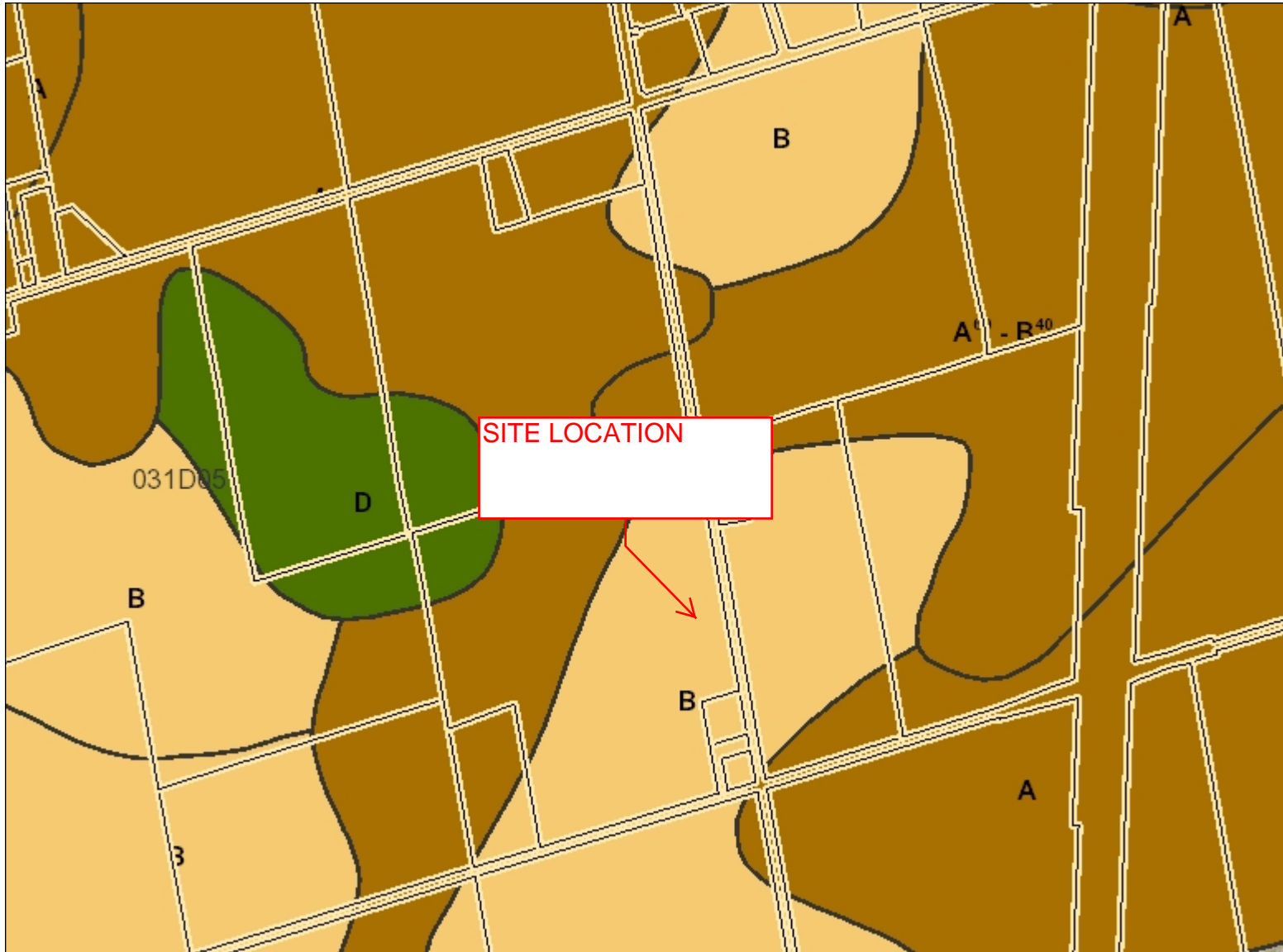
REV No. 1	DATE: OCT 2017
	SCALE: N.T.S.

BSD-301

APPROVED
DATE *Oct 28 117*
R. Sutter
DIRECTOR OF ENGINEERING

844 Veterans Drive City of Barrie				SANITARY SEWER DESIGN SHEET ENGINEERING AND PUBLIC WORKS				Design Parameters																						
Project Number: 17-11313B Date: June, 2017 Design By: LPB Checked By: JHV File: Z:\Project Documents\11313B 844 Veterans Drive FSR\FSR\Sanitary Sewer Design Sheet.xls								Drainage Area Plan No: N/A				Average Daily Flow Residential 0.0026 L/s/c Commercial 0.326 L/s/ha				Mannings "n" 0.0130 Min. Velocity 0.75 m/sec Max. Velocity 3.0 m/sec Residential Harmon Peaking Factor (F) Infiltration 0.10 L/s/ha														
LOCATION				RESIDENTIAL AREAS and POPULATION				SCHOOL, INSTITUTIONAL			COMMERCIAL			INDUSTRIAL			INFILTRATION			DESIGN										
STREET	AREA NO.	MANHOLE LOCATION		AREA	UNITS	POPUL.	CUMUL POPUL.	PEAK FACTOR "F"	PEAK RES. FLOW	HECTARES AND FLOW OF EACH ZONING									TOTALS C-I FLOW	AREA	CUMUL AREA	INFIL FLOW	TOTAL VOLUME FLOW	LENGTH	SLOPE	PIPE SIZE	CAPACITY	FULL FLOW VELOCITY	ACTUAL VELOCITY	
		FROM MH	TO MH							0.00 L/s/ha			0.326 L/s/ha			0.00 L/s/ha														AREA
				ha		1000s	1000s		L/sec	ha	ha	L/sec	ha	ha	L/sec	ha	ha	L/sec	L/sec	ha	ha	L/sec	L/sec	m	%	mm	L/sec.	m/s	m/s	
Proposed Development (80 Townhouse Units)				1.60	80.00	0.187	0.187	4	1.9500								1.60	1.60	0.1600	2.1100										

Soils Map



Legend

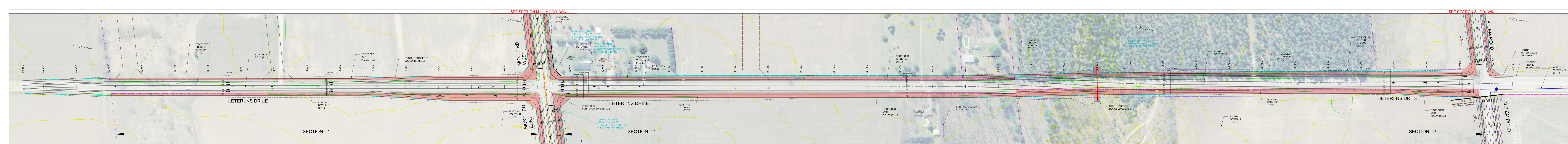
- Parcels**
- Assessment Parcel
 - Farm Tax Rated Parcels - Current Year
 - Farm Tax Rated Parcels - Previous Year
- Live Data**
- Administrative**
- Conservation Authority
 - Geographic Township
 - Lots
 - Ontario Public Sector Region
- Municipality**
- Lower or Single Tier Municipality
 - Upper Tier or District Municipality
- Crown Land**
- Primary Land Use Area**
- Conservation Reserve
 - Enhanced Management Area
 - Forest Reserve
 - General Use Area
 - Protected Area - Far North
 - Provincial Park
 - Provincial Wildlife Area
 - Recommended Conservation Reserve
 - Recommended Provincial Park
 - Wilderness Area
- Soils - CLI**
- Class 1
 - Class 2
 - Class 3
 - Class 4
 - Class 5
 - Class 6
 - Class 7
 - Organic Soil
 - Unclassified
 - Water
- Environment/Base**
- Drain Connection
 - ANSI
 - NTS 50K Gnd
 - Quaternary Watersheds
 - Tertiary Watersheds
 - Secondary Watersheds
 - Soils - Outline
- Soils - Drainage**
- Not Applicable
 - Imperfectly Drained
 - Moderately Well Drained
 - Poorly Drained
 - Rapidly Drained
 - Variable
 - Very Poorly Drained
 - Very Rapidly Drained
 - Well Drained
 - Water
- Agricultural Tile Drainage - System Type**
- Random
 - Systematic
- Constructed Drain Type**
- Closed/Tiled
 - Open or Unknown
- Controlled Drainage Class**
- Fair
 - Good
 - Poor
- Soils - Hydrologic Soil Group**
- A
 - B
 - C
 - D



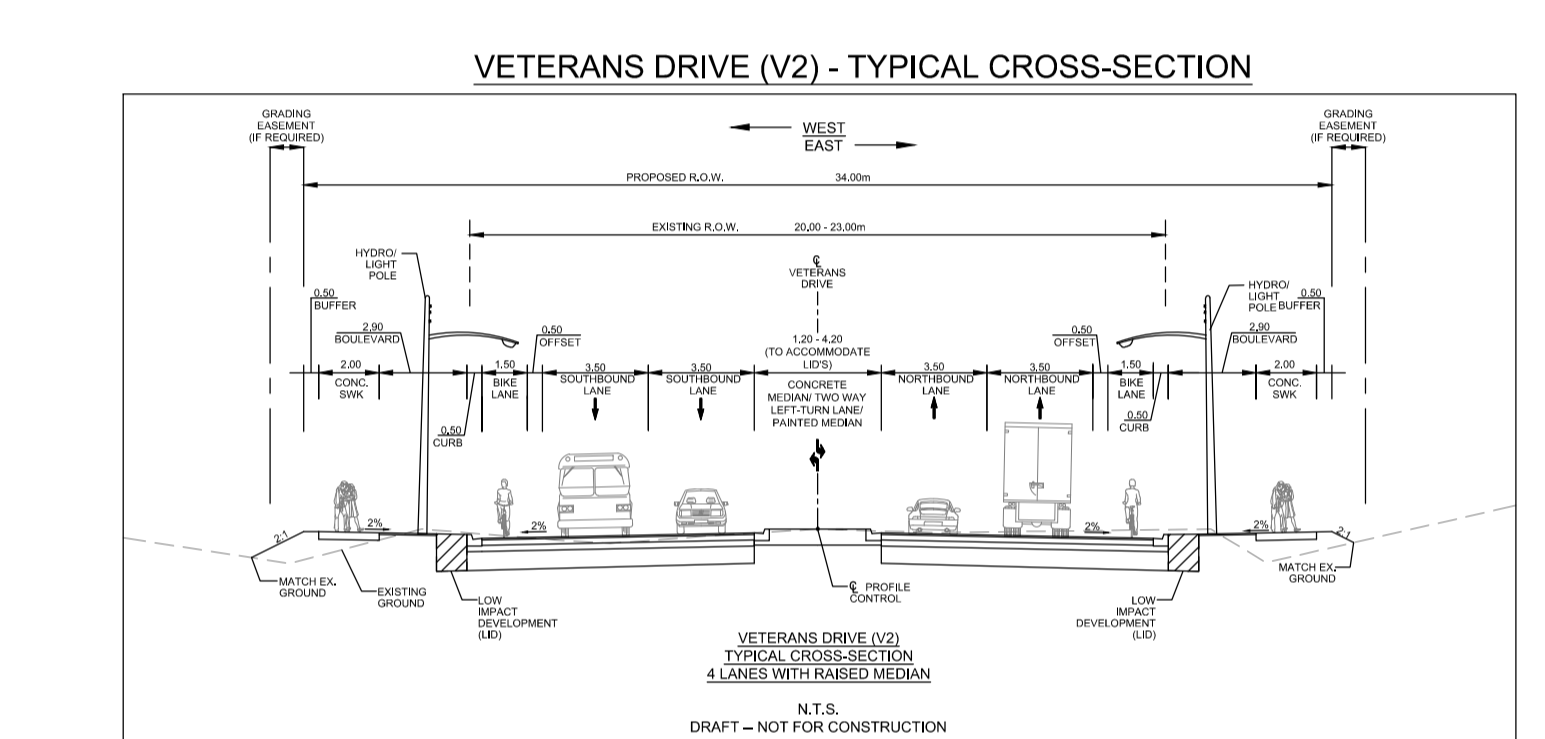
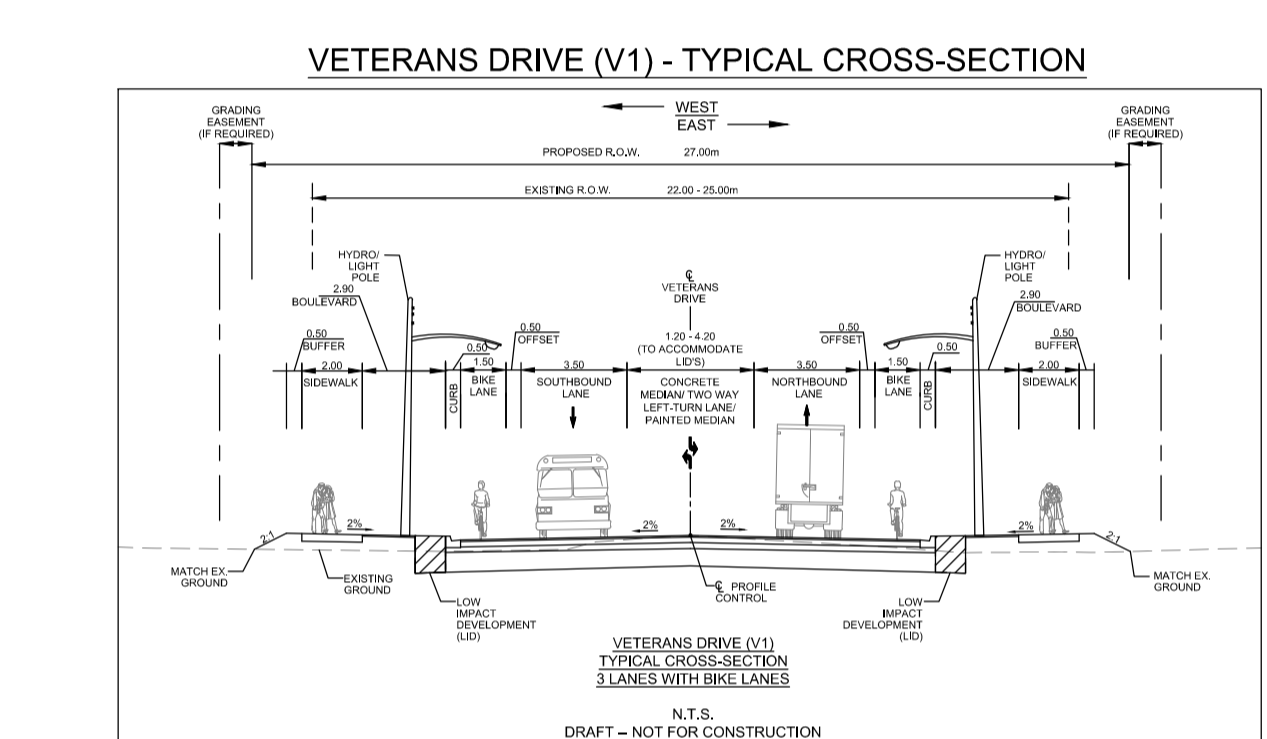
0 0.7 km



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

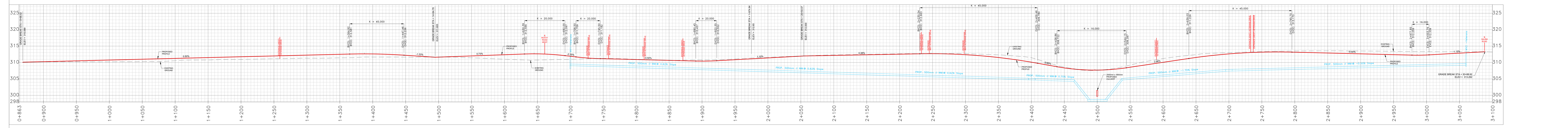


- LE- END
- PROPOSED S. INT. R. SEWER
 - PROPOSED W. TERMIN
 - EXISTING W. TERMIN
 - EXISTING CREEK
 - EXISTING RO. RT. BOUND. R.
 - EXISTING DITCH
 - EXISTING CONTOUR
 - PROPOSED CULVERT
 - PROPOSED 2031 R.O.W
 - PROPOSED 2051 R.O.W
 - TEMPORARY ROAD EASEMENT
 - FUTURE ROAD CONNECTIONS
 - RO. RT. LOCATION RE. 2031



- LE- END
- PROPOSED S. INT. R. SEWER
 - PROPOSED W. TERMIN
 - EXISTING W. TERMIN
 - EXISTING CREEK
 - EXISTING RO. RT. BOUND. R.
 - EXISTING DITCH
 - EXISTING CONTOUR
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- LE- END
- PROPOSED S. INT. R. SEWER
 - PROPOSED W. TERMIN
 - EXISTING W. TERMIN
 - EXISTING CREEK
 - EXISTING RO. RT. BOUND. R.
 - EXISTING DITCH
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 - PROPOSED CULVERT
 - PROPOSED 2031 R.O.W
 - PROPOSED 2051 R.O.W
 - TEMPORARY ROAD EASEMENT
 - FUTURE ROAD CONNECTIONS
 - RO. RT. LOCATION RE. 2031



SECTION 01

SECTION 02

SECTION 02

844 VETERANS DRIVE
PRE DEVELOPMENT SWM INPUT PARAMETERS
 City of Barrie, Ontario

Project Number: 17-11313B
 Date: November 1, 2017
 Design By: JHV
 File: \\PINESTONESERVER\Shared Folders\Company\Project Documents\11313B 844 Veterans Drive FSR\FSR\HYMO SWM Calculations.xls



Runoff Coefficients	
Land Use - Type B Soils	"C"
Green Field & Parks	0.16
Unimproved / Woodlot areas	0.20
Single Family	0.40
Semi-detached	0.60
Townhouses	0.60
Apartments, school, churches	0.60
Industrial	0.75
Commercial	0.70
Paved areas	0.95

Post Development Runoff Coefficients:

Catchment	Total Area (m ²)	Green Field & Parks Area (m ²)	Unimproved / Woodlot Area (m ²)	Single Family Residential Area (m ²)	Semi-detached Residential Area (m ²)	Townhouse Area (m ²)	Apartment, School & Church Area (m ²)	Industrial Area (m ²)	Commercial Area (m ²)	Paved Area (m ²)	Weighted C
101	16,300	3,550	11,800	125						825	0.23

Runoff Coefficient Adjustment for 25-100 yr Storm Events:

Catchment	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
101	0.23	0.23	0.23	0.25	0.28	0.29

Time of Concentration Calculations:

Catchment Parameters		
Catchment ID	=	101
Catchment Area	=	1,6300 ha
Flow Length	=	50 m
Slope	=	0.015 m/m
Weighted Runoff Coefficient	=	0.23
Time of Concentration Results		
Bransby Williams Formula (use for C>=0.4)	=	2.5 min.
Airport Formula (use for C<0.4)	=	17.5 min.
Time to Peak		
2/3 of Time of Concentration	=	0.19 hr

Pre-Development Curve Number (CN):

Catchment	Hydrologic Soil Group	Soil Texture	Total Area (m ²)	Lakes / Wetlands / SWMF's (m ²)	Forest / Woodlot Area (m ²)	Meadow / Field Area (m ²)	Lawn / Grass Area (m ²)	Crop Area (m ²)	Impervious Area (m ²)	Weighted CN
101	B	Sand / Loam	16,300		11,800		3,550		950	61.9

Cover	SCS Curve Numbers						
	Hydrologic Soil Group						
	A	AB	B	BC	C	CD	D
Wetlands / Lakes/ SWMF's	100	100	100	100	100	100	100
Forest/Woodlot	30	44	58	65	71	74	77
Meadow/Field	39	50	61	68	74	78	80
Lawn/Grass	44	55	65	71	76	79	82
Crop	66	71	76	79	82	84	86
Impervious Areas	98	98	98	98	98	98	98

Pre Development Initial Abstraction (IA)

Catchment	Total Area (m ²)	Lawn/Grass Area (m ²)	Forest/Woodlot Area (m ²)	Lakes / Wetlands SWMF (m ²)	Meadow/Field Area (m ²)	Crop Area (m ²)	Impervious Area (m ²)	Weighted IA
101	16,300	3,550	11,800				950	8.4

Initial Abstraction / Depression Storage	
Cover	Depth (mm)
Wetlands / Lakes/ SWMF	0
Forest/Woodlot	10
Meadow/Field	8
Lawn/Grass	5
Crop	7
Impervious Areas	2

844 VETERANS DRIVE
POST DEVELOPMENT SWM INPUT PARAMETERS
 City of Barrie, Ontario

Project Number: 17-11313B
 Date: November 1, 2017
 Design By: JHV
 File: \\PINESTONESERVER\Shared Folders\Company\Project Documents\11313B 844 Veterans Drive FSR\FSR\HYMO SWM Calculations.xls



Runoff Coefficients	
Land Use -Type B Soils	"C"
Green Field & Parks	0.16
Unimproved areas	0.20
Single Family	0.40
Semi-detached	0.60
Townhouses	0.60
Apartments, school, churches	0.60
Industrial	0.75
Commercial	0.70
Paved areas	0.95

Post Development Runoff Coefficients:

Catchment	Total Area (m ²)	Green Field & Parks Area (m ²)	Unimproved Area (m ²)	Single Family Residential Area (m ²)	Semi-detached Residential Area (m ²)	Townhouse Area (m ²)	Apartment, School & Church Area (m ²)	Industrial Area (m ²)	Commercial Area (m ²)	Paved Area (m ²)	Weighted C
201	16,300					16,300					0.60

Runoff Coefficient Adjustment for 25-100 yr Storm Events:

Catchment	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
201	0.60	0.60	0.60	0.66	0.72	0.75

Time of Concentration Calculations:

Catchment Parameters		
Catchment ID	=	201
Catchment Area	=	1.6300 ha
Flow Length	=	80 m
Slope	=	0.01 m/m
Weighted Runoff Coefficient	=	0.60
Time of Concentration Results		
Bransby Williams Formula (use for C>=0.4)	=	4.3 min.
Airport Formula (use for C<0.4)	=	14.6 min.
Time to Peak		
2/3 of Time of Concentration	=	0.05 hr

Post Development Curve Number (CN):

Catchment	Hydrologic Soil Group	Soil Texture	Total Area (m ²)	Lakes / Wetlands / SWMF's (m ²)	Forest / Woodlot Area (m ²)	Meadow / Field Area (m ²)	Lawn / Grass Area (m ²)	Crop Area (m ²)	Impervious Area (m ²)	Weighted CN
201	B	Sand / Loam	16,300				4,800		11,500	88.3

Cover	SCS Curve Numbers						
	Hydrologic Soil Group						
	A	AB	B	BC	C	CD	D
Wetlands / Lakes / SWMF's	100	100	100	100	100	100	100
Forest/Woodlot	30	44	58	65	71	74	77
Meadow/Field	39	50	61	68	74	78	80
Lawn/Grass	44	55	65	71	76	79	82
Crop	66	71	76	79	82	84	86
Impervious Areas	98	98	98	98	98	98	98

Post Development Initial Abstraction (IA):

Catchment	Total Area (m ²)	Lawn/Grass Area (m ²)	Forest/Woodlot Area (m ²)	Lakes / Wetlands SWMF (m ²)	Meadow/Field Area (m ²)	Crop Area (m ²)	Impervious Area (m ²)	Weighted IA
201	16,300	4,800		0			11,500	2.9

Initial Abstraction / Depression Storage	
Cover	Depth (mm)
Wetlands / Lakes / SWMF	0
Forest/Woodlot	10
Meadow/Field	8
Lawn/Grass	5
Crop	7
Impervious Areas	2

For STANDHYD Command in Otthymo:

Pervious Area Calculations:	Catchment	Total Pervious Area (m ²)				
	201	4,800				
Impervious Area Calculations:	Catchment	Total Directly Connected Area (m ²)	Total Indirectly Connected Area (m ²)	Total Impervious Area (m ²)	% Ximp	% Timp
	201	11,500	0	11,500	70.6	70.6

```

V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y Y M M O O
000 T T H H Y M M 000

```

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***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
 Output filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\f77e532c-
 Summary filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\f77e532c-

DATE: 11-20-2017 TIME: 03:27:26

USER:

COMMENTS: _____

 ** A - 2YR CHI **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
-------------	--------	--------	---------	-----------	-----------	---------	------	-----------

START @ 0.00 hrs

READ STORM 10.0
 [Ptot= 36.96 mm]
 fname : C:\Users\jvoisin\AppData\Local\Temp\0a2be51c-b2df-4fe9-ac81-f6061af5399f\73033a41-2a3b-49ed-8552
 remark:

** CALIB NASHYD	0001	1	5.0	1.63	0.02	1.58	4.40	0.12	0.000
[CN=61.9									
[N = 3.0:Tp 0.19]									

```

V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y Y M M O O
000 T T H H Y M M 000

```

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***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
 Output filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\b677e0d7-
 Summary filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\b677e0d7-

DATE: 11-20-2017 TIME: 03:27:26

USER:

COMMENTS: _____

 ** B - 5YR CHI **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

READ STORM		10.0						
[Ptot= 50.52 mm]								
fname : C:\Users\jvoisin\AppData\Local\Temp\0a2be51c-b2df-4fe9-ac81-f6061af5399f\3e756ef-0235-45c6-93de								
remark:								

*
 ** CALIB NASHYD 0001 1 5.0 1.63 0.04 1.50 8.92 0.18 0.000
 [CN=61.9]
 [N = 3.0:Tp 0.19]
 *

```

V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
000 T T H H Y M M 000
  
```

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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
 Output filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\744f6583-
 Summary filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\744f6583-

DATE: 11-20-2017 TIME: 03:27:26

USER:

COMMENTS: _____

 ** C - 10YR CHI **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

READ STORM		10.0						
[Ptot= 59.69 mm]								
fname : C:\Users\jvoisin\AppData\Local\Temp\0a2be51c-b2df-4fe9-ac81-f6061af5399f\bed0926b-b319-406c-a3b7								
remark:								

*
 ** CALIB NASHYD 0001 1 5.0 1.63 0.06 1.50 12.64 0.21 0.000
 [CN=61.9]
 [N = 3.0:Tp 0.19]
 *

```

V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
  
```

***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
 Output filename: C:\Users\jvoisin\AppData\Local\Civica\vh5\c14981b4-fefb-4863-a473-3cf0cba082dc\ele2c7a5-
 Summary filename: C:\Users\jvoisin\AppData\Local\Civica\vh5\c14981b4-fefb-4863-a473-3cf0cba082dc\ele2c7a5-

DATE: 11-20-2017 TIME: 03:27:26
 USER:

COMMENTS: _____

 ** D - 25YR CHI **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

READ STORM		10.0						
[Ptot= 71.24 mm]								
fname : C:\Users\jvoisin\AppData\Local\Temp\0a2be51c-b2df-4fe9-ac81-f6061af5399f\738e69b0-0f5e-4c73-8e9b								
remark:								
** CALIB NASHYD	0001	1 5.0	1.63	0.08	1.50	17.97	0.25	0.000
[CN=61.9]								
[N = 3.0:Tp 0.19]								

```

V V I SSSS U U A L
V V I SS U U A A L
V V I SS U U A A A A L
V V I SS U U A A L
VV I SSSS UUUU A A LLLLL

000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
000 T T H H Y M M 000
    
```

***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
 Output filename: C:\Users\jvoisin\AppData\Local\Civica\vh5\c14981b4-fefb-4863-a473-3cf0cba082dc\c8b208fc-
 Summary filename: C:\Users\jvoisin\AppData\Local\Civica\vh5\c14981b4-fefb-4863-a473-3cf0cba082dc\c8b208fc-

DATE: 11-20-2017 TIME: 03:27:26
 USER:

COMMENTS: _____

 ** E - 50YR CHI **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

READ STORM		10.0						

[Ptot= 79.45 mm]
fname : C:\Users\jvoisin\AppData\Local\Temp\0a2be51c-b2df-4fe9-ac81-f6061af5399f\95f55bc3-dd3d-4f35-8864
remark:

** CALIB NASHYD 0001 1 5.0 1.63 0.10 1.50 22.15 0.28 0.000
[CN=61.9]
[N = 3.0:Tp 0.19]

```
V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y Y M M O O
000 T T H H Y Y M M 000
```

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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
Output filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\7a8ffd1e-
Summary filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\7a8ffd1e-

DATE: 11-20-2017 TIME: 03:27:26

USER:

COMMENTS: _____

** F - 100YR CHI **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
-------------	--------	--------	---------	-----------	-----------	---------	------	-----------

START @ 0.00 hrs

READ STORM 10.0
[Ptot= 87.58 mm]
fname : C:\Users\jvoisin\AppData\Local\Temp\0a2be51c-b2df-4fe9-ac81-f6061af5399f\8c31280e-a43b-4c30-8d12
remark:

** CALIB NASHYD 0001 1 5.0 1.63 0.12 1.50 26.56 0.30 0.000
[CN=61.9]
[N = 3.0:Tp 0.19]

```
V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y Y M M O O
000 T T H H Y Y M M 000
```

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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
Output filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\d5aaaa9e-
Summary filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\d5aaaa9e-


```

=====
V   V   I   SSSSS U   U   A   L
V   V   I   SS   U   U   A A  L
V   V   I   SS   U   U   AAAAA L
V   V   I   SS   U   U   A   A  L
  VV    I   SSSSS UUUUU A   A  LLLLL

  000  TTTTT  TTTTT  H   H   Y   Y   M   M   000   TM
O   O   T     T     H   H   Y   Y   MM  MM  O   O
O   O   T     T     H   H   Y   M   M   O   O
  000  T     T     H   H   Y   M   M   000

```

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***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voim.dat
 Output filename: C:\Users\jvoisin\AppData\Local\Civica\vh5\c14981b4-fefb-4863-a473-3cf0cba082dc\c93314f4-
 Summary filename: C:\Users\jvoisin\AppData\Local\Civica\vh5\c14981b4-fefb-4863-a473-3cf0cba082dc\c93314f4-

DATE: 11-20-2017 TIME: 03:27:46

USER:

COMMENTS: _____

 ** A - 2YR CHI **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								
READ STORM		10.0						
[Ptot= 36.96 mm]								
fname : C:\Users\jvoisin\AppData\Local\Temp\9f925ffc-0d4b-43b9-9ea9-009460ce0e75\73033a41-2a3b-49ed-8552								
remark:								
* CALIB STANDHYD	0001	1 5.0	1.63	0.27	1.33	30.06	0.81	0.000
[I%=71.0:S%= 2.00]								

```

=====
V   V   I   SSSSS U   U   A   L
V   V   I   SS   U   U   A A  L
V   V   I   SS   U   U   AAAAA L
V   V   I   SS   U   U   A   A  L
  VV    I   SSSSS UUUUU A   A  LLLLL

  000  TTTTT  TTTTT  H   H   Y   Y   M   M   000   TM
O   O   T     T     H   H   Y   Y   MM  MM  O   O
O   O   T     T     H   H   Y   M   M   O   O
  000  T     T     H   H   Y   M   M   000

```

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***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voim.dat
 Output filename: C:\Users\jvoisin\AppData\Local\Civica\vh5\c14981b4-fefb-4863-a473-3cf0cba082dc\673de638-
 Summary filename: C:\Users\jvoisin\AppData\Local\Civica\vh5\c14981b4-fefb-4863-a473-3cf0cba082dc\673de638-

DATE: 11-20-2017 TIME: 03:27:46

USER:

COMMENTS: _____

 ** B - 5YR CHI **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

READ STORM		10.0						
[Ptot= 50.52 mm]								
fname : C:\Users\jvoisin\AppData\Local\Temp\9f925ffc-0d4b-43b9-9ea9-009460ce0e75\f3e756ef-0235-45c6-93de								
remark:								
* CALIB STANDHYD	0001	1 5.0	1.63	0.39	1.33	42.58	0.84	0.000
[I%=71.0:S%= 2.00]								

```

V  V  I  SSSSS  U  U  A  L
V  V  I  SS     U  U  A  A  L
V  V  I  SS     U  U  AAAAA L
V  V  I  SS     U  U  A  A  L
VV   I  SSSSS  UUUUU  A  A  LLLLL

000  TTTTT  TTTTT  H  H  Y  Y  M  M  000  TM
O  O  T  T  H  H  Y  Y  MM MM  O  O
O  O  T  T  H  H  Y  M  M  O  O
000  T  T  H  H  Y  M  M  000

```

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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
 Output filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\3db7fd6a-
 Summary filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-feb-4863-a473-3cf0cba082dc\3db7fd6a-

DATE: 11-20-2017 TIME: 03:27:46
 USER:

COMMENTS: _____

 ** C - 10YR CHI **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

READ STORM		10.0						
[Ptot= 59.69 mm]								
fname : C:\Users\jvoisin\AppData\Local\Temp\9f925ffc-0d4b-43b9-9ea9-009460ce0e75\bed0926b-b319-406c-a3b7								
remark:								
* CALIB STANDHYD	0001	1 5.0	1.63	0.46	1.33	51.20	0.86	0.000
[I%=71.0:S%= 2.00]								

```

V  V  I  SSSSS  U  U  A  L
V  V  I  SS     U  U  A  A  L
V  V  I  SS     U  U  AAAAA L
V  V  I  SS     U  U  A  A  L
VV   I  SSSSS  UUUUU  A  A  LLLLL

000  TTTTT  TTTTT  H  H  Y  Y  M  M  000  TM
O  O  T  T  H  H  Y  Y  MM MM  O  O
O  O  T  T  H  H  Y  M  M  O  O
000  T  T  H  H  Y  M  M  000

```

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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
Output filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-fefb-4863-a473-3cf0cba082dc\01c1e58b-
Summary filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-fefb-4863-a473-3cf0cba082dc\01c1e58b-

DATE: 11-20-2017 TIME: 03:27:46

USER:

COMMENTS: _____

** D - 25YR CHI **

Table with columns: W/E COMMAND, HYD ID, DT min, AREA ha, Qpeak cms, Tpeak hrs, R.V. mm, R.C., Qbase cms. Includes rows for START @ 0.00 hrs, READ STORM, and CALIB STANDHYD.

V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL
000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
000 T T H H Y M M 000

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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
Output filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-fefb-4863-a473-3cf0cba082dc\3377e371-
Summary filename: C:\Users\jvoisin\AppData\Local\Civica\XH5\c14981b4-fefb-4863-a473-3cf0cba082dc\3377e371-

DATE: 11-20-2017 TIME: 03:27:47

USER:

COMMENTS: _____

** E - 50YR CHI **

Table with columns: W/E COMMAND, HYD ID, DT min, AREA ha, Qpeak cms, Tpeak hrs, R.V. mm, R.C., Qbase cms. Includes rows for START @ 0.00 hrs, READ STORM, and remark.

* CALIB STANDHYD 0001 1 5.0 1.63 0.61 1.33 70.05 0.88 0.000
[I%=71.0:S%= 2.00]

```
V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y Y M M O O
000 T T H H Y M M 000
```

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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
Output filename: C:\Users\jvoisin\AppData\Local\Civica\VH5\c14981b4-fefb-4863-a473-3cf0cba082dc\464d1da8-
Summary filename: C:\Users\jvoisin\AppData\Local\Civica\VH5\c14981b4-fefb-4863-a473-3cf0cba082dc\464d1da8-

DATE: 11-20-2017 TIME: 03:27:47

USER:

COMMENTS: _____

** F - 100YR - CHI **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								
READ STORM		10.0						
[Ptot= 87.58 mm]								
fname : C:\Users\jvoisin\AppData\Local\Temp\9f925ffc-0d4b-43b9-9ea9-009460ce0e75\8c31280e-a43b-4c30-8d12								
remark:								

* CALIB STANDHYD 0001 1 5.0 1.63 0.68 1.33 77.88 0.89 0.000
[I%=71.0:S%= 2.00]

```
V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
000 T T H H Y M M 000
```

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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\VH Suite 5.0\VO2\voin.dat
Output filename: C:\Users\jvoisin\AppData\Local\Civica\VH5\c14981b4-fefb-4863-a473-3cf0cba082dc\6da00af8-
Summary filename: C:\Users\jvoisin\AppData\Local\Civica\VH5\c14981b4-fefb-4863-a473-3cf0cba082dc\6da00af8-

DATE: 11-20-2017 TIME: 03:27:47

USER:

COMMENTS: _____

** HAZEL **

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
-------------	--------	-----------	------------	--------------	--------------	------------	------	--------------

START @ 0.00 hrs

READ STORM 12.0
[Ptot=212.00 mm]
fname : C:\Users\jvoisin\AppData\Local\Temp\9f925ffc-0d4b-43b9-9ea9-009460ce0e75\7f1414d3-4c29-40c4-87d9
remark:

*
* CALIB STANDHYD 0001 1 5.0 1.63 0.24 10.00 200.13 0.94 0.000
* [I%=71.0:S%= 2.00]

*
FINISH

=====

**844 VETERNS DRIVE – CITY OF BARRIE
RESIDENTIAL TOWNHOUSE DEVELOPMENT**

APPENDIX B

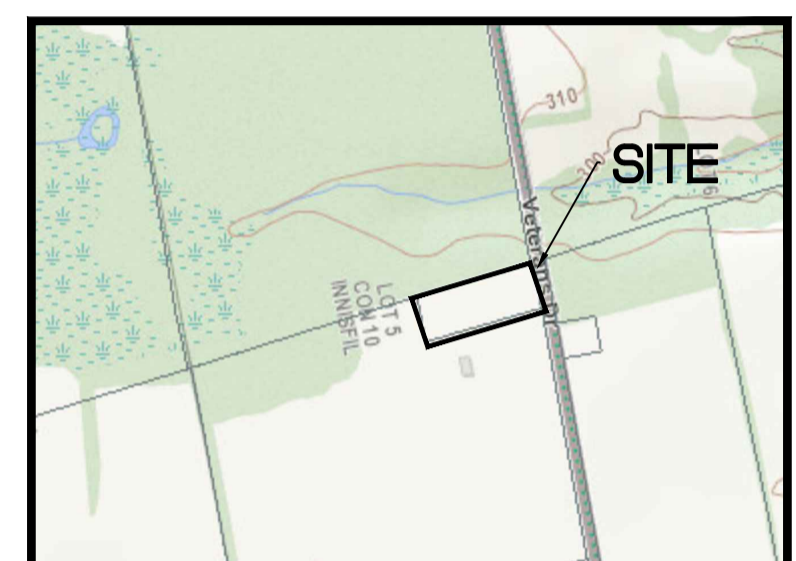
Preliminary Engineering Drawings



The position of existing above ground and underground utilities and facilities are not necessarily shown on the drawings, and where shown, the accuracy of the position of such utilities and facilities is not guaranteed. Before starting work, the contractor shall confirm the exact location of all existing utilities and facilities, and shall assume all liability for damage to them.

Drawings shall not be used for construction unless sealed and signed. All work to be performed in accordance with the Occupational Health & Safety Act 1990.

Any errors and/or omissions shall be reported to Pinestone Engineering Ltd. without delay.



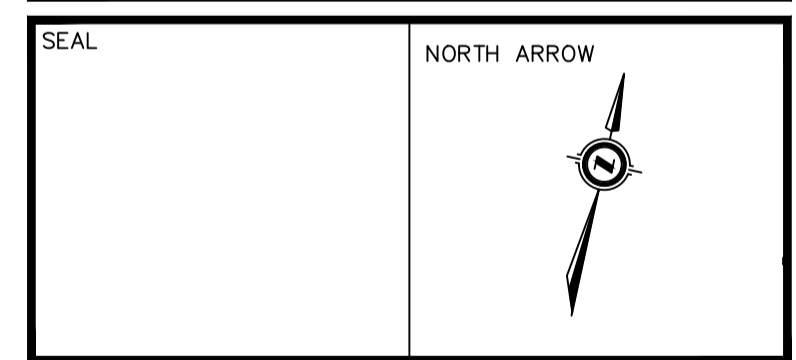
KEY MAP
NOTES

1. TOPOGRAPHIC SURVEY COMPLETED BY JOE TOPO APRIL 16 2017
2. SITE PLAN PROVIDED BY INNOVATIVE PLANNING SOLUTIONS OCTOBER 18 2017
3. PLACEMENT OF MUNICIPAL INFRASTRUCTURE APPROXIMATED BASED ON FUTURE ROW EXPANSION PLANS OF VETERAN'S DRIVE
4. SERVICING PLAN FOR CONCEPTUAL PURPOSES ONLY. FINAL SERVICING ARRANGEMENT TO BE COORDINATED WITH ADJACENT SUBDIVISION DESIGN.

BENCHMARK

BM#1 TOP OF I.D. NE CORNER OF LOT
ELEVATION 311.36

NO.	YY.MM.DD	REVISION	BY



DESIGN BY:	L.B.
DRAWN BY:	L.B.
CHECKED:	J.V.
DATE:	NOV 2017
SCALE:	1:500

CLIENT/PROJECT

**844 VETERAN'S DRIVE
2528286 ONTARIO INC.**

DRAWING TITLE

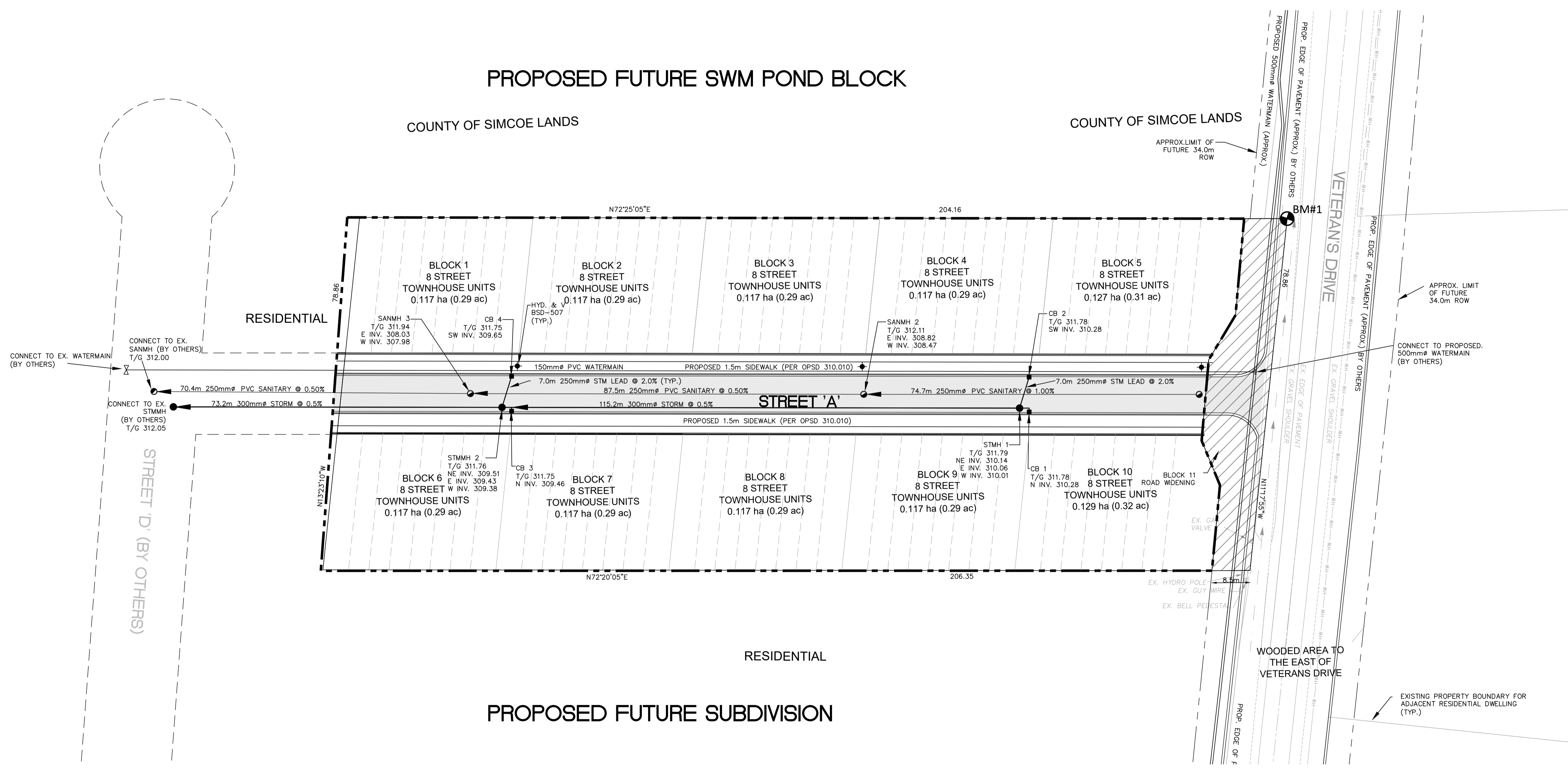
**PRELIMINARY
GENERAL SERVICING PLAN**

PROJECT NO.	DRAWING NO.	REVISION
17-11313B	SERV-1	0

PROPOSED FUTURE SWM POND BLOCK

COUNTY OF SIMCOE LANDS

COUNTY OF SIMCOE LANDS



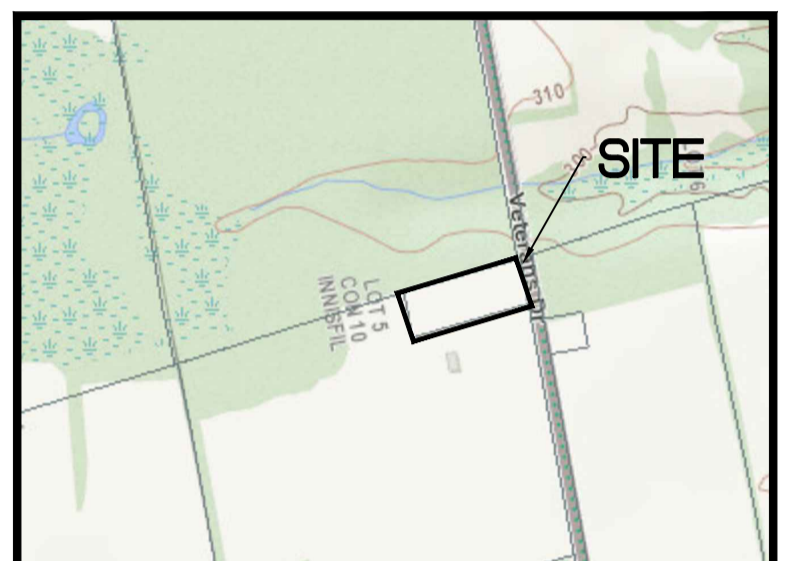
LEGEND

- PROPOSED CATCHBASIN
- PROPOSED STORM MANHOLE
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED SANITARY MANHOLE/CLEANOUT
- PROPOSED SANITARY GRAVITY SEWER
- PROPOSED STORM SEWER
- PROPOSED WATERMAIN
- ◆ PROPOSED DRY HYDRANT
- ⊥ PROPOSED TAPPING SLEEVE AND VALVE

The position of existing above ground and underground utilities and facilities are not necessarily shown on the drawings, and where shown, the accuracy of the position of such utilities and facilities is not guaranteed. Before starting work, the contractor shall confirm the exact location of all existing utilities and facilities, and shall assume all liability for damage to them.

Drawings shall not be used for construction unless sealed and signed. All work to be performed in accordance with the Occupational Health & Safety Act 1990.

Any errors and/or omissions shall be reported to Pinestone Engineering Ltd. without delay.



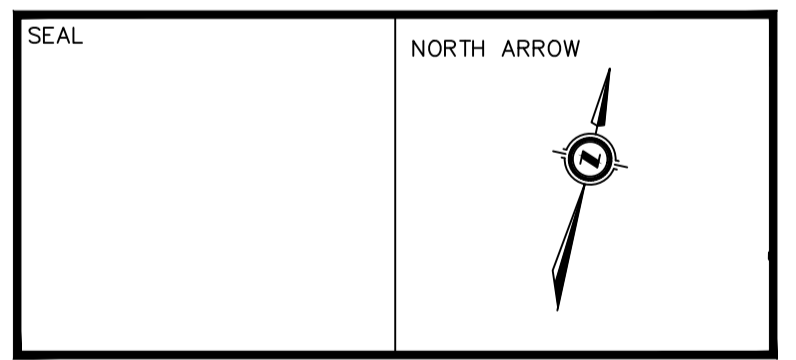
KEY MAP NOTES

1. TOPOGRAPHIC SURVEY COMPLETED BY JOE TOPO APRIL 16 2017
2. SITE PLAN PROVIDED BY INNOVATIVE PLANNING SOLUTIONS OCTOBER 18 2017
3. GRADING PLAN FOR CONCEPTUAL PURPOSES ONLY. FINAL GRADING DESIGN TO BE COORDINATED WITH ADJACENT SUBDIVISION DESIGN.

BENCHMARK

BM#1 TOP OF 1B, NE CORNER OF LOT ELEVATION 311.36

NO.	YY.MM.DD	REVISION	BY



DESIGN BY:	L.B.
DRAWN BY:	L.B.
CHECKED:	J.V.
DATE:	NOV 2017
SCALE:	1:500

CLIENT/PROJECT

**844 VETERAN'S DRIVE
2528286 ONTARIO INC.**

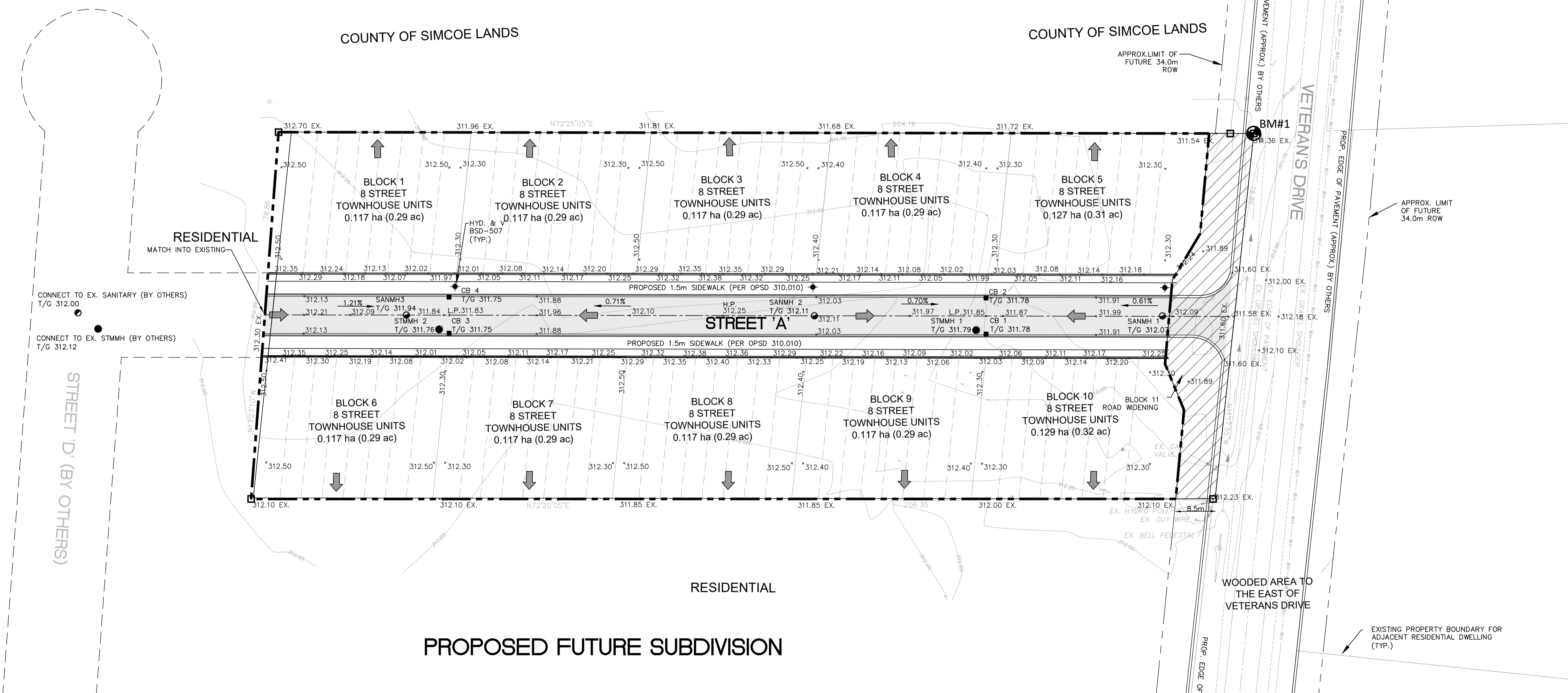
DRAWING TITLE

**PRELIMINARY
SITE GRADING PLAN**

PROJECT NO.	DRAWING NO.	REVISION
17-11313B	GP-1	0

DWG NAME

PROPOSED FUTURE SWM POND BLOCK



LEGEND

- PROPOSED CATCHBASIN
- PROPOSED STORM MANHOLE
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPERTY BOUNDARY
- x 318.00 PROPOSED ELEVATION
- y (318.00) PROPOSED SWALE ELEVATION
- 318.00 EX. EXISTING ELEVATION
- x 318.00 T/G TOP OF CURB
- ↑ DIRECTION OF OVERLAND FLOW
- ▭ PROPOSED ASPHALT
- 0.63% PROPOSED ROAD GRADE

PROPOSED FUTURE SUBDIVISION