



ENGINEERING
CONSULTANTS LTD

**FUNCTIONAL SERVICING AND STORMWATER
MANAGEMENT REPORT**

**345 and 355 Balmy Beach Road
Plan 447, Lots 51, 52 and 52A
Township of Georgian Bluffs
Dr Mehran Shahabi**

August, 2021
(original version August 2020)

19-001

Prepared for:

Dr Mehran Shahabi
Township of Georgian Bluffs

TABLE OF CONTENTS

1.0	Introduction	1
2.0	Sanitary Servicing.....	2
2.1	Groundwater	2
2.2	Surface Water	2
2.2	Septic Sizing	2
2.3	Lot Sizing	3
2.4	Lot Configuration with Tree Retention Areas	4
3.0	Water Supply and Distribution	5
4.0	StormWater Management	6
4.1	Existing Conditions	6
4.2	Proposed Conditions	6
4.3	Low Impact Development (LID) System	7
4.4	Municipal Easements	8
5.0	Summary.....	9

APPENDICES

APPENDIX A	August 2021 Subdivision Drawings
APPENDIX B	Sieve Analysis Report
APPENDIX C	GSCA Comments

Functional Servicing and Stormwater Management Report
345 and 355 Balmy Beach Road, Plan 447 Lots 51, 52 & 52a
Dr. Mehran Shahabi
Georgian Bluffs

Updated August, 2021

19-001

1.0 INTRODUCTION

The subject property is located along the shores of Georgian Bay, on Balmy Beach Road in the Township of Georgian Bluffs. The existing property consists of 3 lots. The northern end of the subject lands consists of a large lot and a small wedge-shaped triangle lot. The street number of the northern and triangle lot is 355 Balmy Beach Road, and the legal description is Plan 447 Lot 52 Lot 52A. The southern lot is located at 345 Balmy Beach Road with a legal description of Plan 447 Part Lot 51.

The total property contains historic garages, cottages and various other buildings. These buildings are currently in various states of condition with some having recent renovations and others appear to have been abandoned for a considerable amount of time. The subject lands are adjacent to a municipally owned shore road allowance along Georgian Bay. The shore road allowance contains various structures including a boathouse, tennis court, shuffleboard pad and concrete retaining walls.

Drawing 19001-02 shows the overall, existing condition of the property and proposed removals.

This Functional Servicing Report (FSR) is provided for the proposed subdivision. The proposed subdivision will consist of 6 new lots. The lots are not of uniform size or frontage to allow accommodation for existing conditions, including the 15 m flood allowance from the 100-year flood level of 177.9 m asl. The proposed lots are shown on Drawing 19001-03.

The existing topography of the subject lands and surrounding area is relatively flat on the east side of Balmy Beach Road, sloping from the edge of the road easterly towards Georgian Bay. The northern portion of the subject lands contains a low area towards the eastern property boundary. The low area at the north end increases the non-developable area as per Grey Sauble Conservation Area (GSCA) 15 m allowance requirements for the 100 year flood level.

2.0 SANITARY SERVICING

There are no communal sanitary sewers present. Therefore, each lot is to be serviced by a private septic system. During the field study, soil and subgrade conditions were assessed using test pits. The assessment for sanitary servicing using private septic systems is presented in the following subsections.

As per the following sections, potable water service will be provided by extending the adjacent East Linton water distribution system. The end of the existing, 200 mm dia. watermain is at the immediate north end of the subdivision.

2.1 Groundwater

As per previous sections, the lands slope down to Georgian Bay. At the Georgian Bay shoreline is a 66' wide shore road allowance owned by the Township. The road allowance is undevelopable for dwellings due to GSCA flood allowance requirements from the 100 year flood level.

Therefore, no nitrate calculations for the proposed septic systems were performed due to the lack of downstream users. The bottom of the test pit located closest to Georgian Bay (TP#3) revealed some water seeping through the clay soil in the lower portion of the test pit. Water was visible at 1.5 meters below ground surface (mbgs). The remaining test pits contained dry soil and did not reveal any water.

2.2 Surface Water

Provincial policies do not include limits on surface water nitrate concentrations. As such, there are no required surface water quality requirements for nitrates at this location.

The area of Georgian Bay immediately offshore, as well as the lots themselves, are located within an intake protection zone (IPZ-1) for the Georgian Bluff East Linton water system intake. This intake protection zone has requirements to protect the drinking water.

As per the approved Source Water Protection Plan for the Grey Sauble and Saugeen River watershed, there are no identified significant threats related to the construction of new septic systems within an IPZ. Therefore, individual septic systems are not prohibited in this IPZ.

2.2 Septic Sizing

To determine the percolation "T" time of the existing soil, test pits were dug at select locations within the overall property. Four test pits were completed on July 19, 2019 and two samples were submitted to a recognized laboratory for grain size analysis. The samples submitted consisted of one sample representative of the sand and gravel layer and one sample representative of the clay layer. The test pit locations are shown on Drawing 19001-04.

Each test pit was completed to an approximate depth of 1.5 mbgs to 1.7 mbgs. Water was encountered in one test pit (TP#3). It was present in a lower clay layer so only a small amount of water was present in the pit before the pit was backfilled. Each test pit encountered a clay type layer at the bottom. In between the topsoil and the clay type layer is a mixture of gravel and sand. The gravel and sand layer varied in thickness from 0.8 m to 1.5 m.

The results of the sieve analysis revealed an estimated “T” time of 2 to 3 minutes/cm for the gravel and sand layer. The estimated “T” time for of the clay type layer was 40-50 minutes/cm. Based on the estimated “T” time of the clay layer, the clay layer would not be suitable for a septic system.

OBC Section 8.7.3.2. specifies that the bottom of absorption trenches must be 900 mm above a restrictive layer, such as a water table or soil with high percolation time. For this site, the restrictive layer is the clay type layer with a high percolation time of 40 to 50 minutes/cm. At final design, each septic system must be designed to maintain the 900 mm clearance above the restricted layer.

The presence of the clay type layer will require a partially raised septic system in those locations where the gravel and sand layer does not have sufficient depth. As per OBC 8.7.4.2.11, for any raised or partially raised systems, the minimum clearances from OBC Table 8.2.1.6.B. will be increased by twice the raised height.

Assuming a four (4) bedroom home, the given design flow as per Table 8.2.1.3.A of the OBC is 2,000 L/day. Based on the estimated percolation time and design flow, the distribution pipe length for the system is determined from OBC 8.7.3.1.2. for a conventional, non-tertiary, filter bed.

$$L = QT/200$$

$L = (2,000 \text{ L/day} \times 3 \text{ min/cm}) / 200$ using a T time of 3 for the gravel and sand layer.

$$L = 30 \text{ m}$$

The required loading area for the filter medium is calculated to meet the requirement as specified in OBC 8.7.5.2.3.

$$A = Q/75$$

$$A = (2,000 \text{ L/day})/75$$

$$A = 26.7 \text{ m}^2 \text{ (minimum of } 30 \text{ m}^2 \text{ recommended).}$$

A calculation was performed for the required area for the dispersal bed filter medium to achieve the minimum area as specified in OBC 8.7.5.3.6. Since the area calculated below is less than the loading area above, the filter medium does not need to extend beyond the loading area.

$$A = QT/850$$

$A = (2,000 \text{ L/day} \times 3 \text{ min/cm}) / 850$ using a T time of 3 for the gravel and sand layer.

$$A = 7 \text{ m}^2$$

As per OBC 8.7.2.1.1.B.ii., the gravel and sand layer has an allowable “T time” so the existing material can be used as the 15 m mantle, as required by OBC 8.7.4.2.1.B. This mantle is part of the septic system treatment system. To prevent possible damage to the treatment system, the 15 m mantle will be located outside of the GSCA regulated area.

2.3 Lot Sizing

The proximity to the lake, and the 100 year flood level of 177.9 m asl, requires that lot creation be in accordance with Grey Sauble Conservation Authority (GSCA) lot creation policies (Hazard Land Policies and Guidelines, July 1994). The policy states that all development must be outside of identified hazard areas. For the subject properties, the hazard area consists of the 100-year

flood level and the required 15 m flood allowance. To accommodate the existing topography, the proposed lots have been established to ensure buildings and septic systems are located upslope of the GSCA regulated area (including the 15 m flood allowance).

To determine lot areas, the land outside the GSCA hazard areas is combined with municipal set back requirements (front yard, rear yard and side yard setbacks) to determine developable areas. The developable area for each of the six lots is shown on Drawing 19001-03. The lot with the smallest developable area is Lot 1 with a total developable area of 755 m².

Assuming a four (4) bedroom house with a garage has an approximate footprint area of 270 m² (2,900 sq. ft.), the remaining developable area is 485 m² (755 m² – 270 m² = 485 m²).

The required 26.7 m² (30 m² recommended) septic loading area would result in an approximate rectangle with dimensions of ± 5m by ± 6 m (± 30 m²). This rectangular shape would require an additional mantle area of 15 m by ± 6 m, or ± 90 m².

The total septic area is ± 120 m². The remaining developable area of Lot 1 is 365 m² (485 m² – 120 m² = 365 m²). The relatively large, remaining area allows for flexibility for the septic system, house size and overall layout, as well as area for the stormwater system. Conceptual lot layouts are shown in drawings 19001-08 and 19001-09.

2.4 Lot Configuration with Tree Retention Areas

To accommodate EIS requirements, some of the building envelopes will be reduced from the developable area as described in Section 2.3. By limiting the building envelopes as shown in Drawing 19001-05, tree retention will be maximized as the building envelopes are mostly placed in existing open areas. As much as possible, septic systems and any other cause of tree removal shall be located within the building envelope.

The tree retention area is limited to the larger, southern lots (lots 3, 4, 5 and 6). The tree retention area does not affect lots 1 and 2 as these lots currently have minimal tree cover. Any area outside of the proposed building envelopes shall retain as much tree cover as possible.

3.0 WATER SUPPLY AND DISTRIBUTION

Water servicing for the proposed lots will be provided by extending the existing, 200 mm diameter Georgian Bluffs watermain that is currently capped at the north end of the subject lands. To achieve the requirements of the municipality, the watermain will be extended the full length of the subject lands and terminate at the south end of the development with a fire hydrant and a cap on the watermain. An additional fire hydrant will be located midway to accommodate the suggested maximum fire hydrant spacing of 120 m.

Individual services will be connected to the watermain for each of the six proposed lots. Individual services and watermain requirements will be designed as per by Georgian Bluffs' watermain standards. 20 mm diameter Type K copper tube with an approved working pressure of 1120 kPa service pipes (with tracing wire) is recommended for the new lots. A curb stop shall be installed at each house.

The watermain extension will be serviced by the East Linton Drinking Water System. Upon review of the 2017 Summary Report, prepared by the Ontario Clean Water Agency, the system has a maximum capacity of 2,600 m³/day. The maximum daily flow in 2017 was 863 m³/day and the maximum monthly daily average was 431 m³/day. These values indicate there is adequate reserve capacity to accommodate the proposed 6 residential lots. Staff from the Municipality of Georgian Bluffs have supported the required East Linton watermain extension.

4.0 STORMWATER MANAGEMENT

The proposed development consists of only 6 lots and the down gradient portions of each lot is undevelopable (due to the municipal shore road allowance, 100 year flood level and 15 m flood allowance from the 100 year flood level). As such, it is proposed to treat the stormwater at the lot level. Any overflow will be passed across the shore road allowance and outlet to Georgian Bay. Note that no additional stormwater management reports were referenced nor available for this subject area.

4.1 Existing Conditions

Based on site topography, stormwater originating onsite will flow easterly into Georgian Bay. However, ditching on the west side of Balmy Beach road intercepts stormwater originating from the upslope area west of Balmy Beach Road.

There is an existing culvert crossing the road from the west side to the east side, bringing some of the runoff from the west ditch onto the east side of the road to travel through the subject lands and reach Georgian Bay. This culvert is located near the north end of the property. The location of the culvert is shown on Drawing 02.

The culvert is partially buried and does not carry a large amount of flow. The existing culvert is a corrugated steel pipe (CSP) with a diameter of ± 350 mm. There is currently no easement provided for the flow from the culvert to travel through the subject lands.

There is also a small culvert at the east side of the road near the northern portion of the subject lands. This culvert is a polyvinyl chloride (PVC) pipe with a diameter of 150 mm. This pipe carries flow from a catch basin located in front of #361 Balmy Beach Road. The catch basin contains a ± 50 mm pipe outlet from the east, suggesting some stormwater drainage from #361 enters the catch basin. This 150 mm culvert is also shown on Drawing 02. Flow from this culvert discharges to the north end of the subject lands. The volume of flow from this culvert is typically minimal.

The stormwater flowing from the two culverts, described above, and the stormwater from the road centreline easterly, is the only stormwater flowing into the property. Observations after major storm events indicate that the flow from these areas is considered minimal. With limited flow from outside areas, the main source of stormwater is from the water falling directly on the lots.

4.2 Proposed Conditions

The existing surface water drainage travels mostly over grass and does not convey large amounts of contamination or sediment to Georgian Bay. The lands on the west side of Balmy Beach road are largely forested and are undeveloped. Runoff from new hard surfaces (roofs and driveways) is the main concern for generation of sediment from the subject property.

Due to the large undevelopable area of each of the proposed lots (flood level allowance and shore road allowance), a large area of each lot will remain as is with generally permeable surfaces. However, it is proposed that storm water generated by the construction of new impermeable surfaces (roofs and driveways) will be passed through individual stormwater systems to limit the amount of sediment being discharged into Georgian Bay and to infiltrate, at the lot level, a reasonable amount of the local runoff. A Low Impact Development (LID) type stormwater system is proposed for each lot upslope of the 15 m flood allowance. The surplus stormwater that does

not infiltrate within the local LID will pass over grassed or natural area before reaching Georgian Bay.

GSCA has requested local lot stormwater be treated to an “enhanced” level. To achieve this level of stormwater quality, 80% of suspended solids are to be removed. For design of the lot level LID stormwater system, a conservative estimate of 35% impervious area, post development, has been assumed.

Using only infiltration, a stormwater generation rate of 25 m³/ha is required to achieve an “enhanced” level of treatment, based on the 35% impervious area (Table 3.2 of the Storm Water Management Planning and Design Manual, MOE 2003).

To determine the required infiltration volume, the total area of each lot was determined. The drainage area only considered lands up slope of the 15 m flood allowance. In addition, 10 m of the Balmy Beach road allowance width was included as part of the contributory area for each lot.

GSCA also requested that post development flows shall be controlled to predevelopment flows unless it can be proven there are no adverse effects on upstream or downstream areas. Since the only land crossing downstream from the subject properties is the shore road allowance, there are no anticipated negative effects due to possible slight increases in stormwater quantity flowing directly into Georgian Bay.

4.3 Low Impact Development (LID) System

A LID system is proposed to detain and infiltrate the stormwater for each individual lot. Each system is designed based on lot size. The style of LID proposed is an infiltration trench will have adjacent, small, grassed berms to direct stormwater into the trench.

Proposed locations and cross section details for the infiltration trenches are shown on drawing 19001-06. The chart on Drawing 06 indicates the length of trench required for each lot. A typical cross section detail is also provided on Drawing 06. The intent is for roof water and surface water drainage from driveways etc. to first flow over grassed areas and then be directed by the minor berms to the downslope infiltration trench.

Water will be retained temporarily within the bermed area and then soak through a surface mat of river stone to the infiltration trench below. The infiltration trench below consists of 19 mm ($\frac{3}{4}$ ”) washed clear stone featuring a void ratio of approximately 30%. The top mat of washed river stone overlays a portion of the infiltration trench below. The intent is for the stormwater to soak quickly through the river stone mat, and then into the clear stone trench below and fill the voids. The stored water will then soak at a slower rate into the native soils below. Any surplus water that cannot be stored will overflow the local berming and ultimately drain downslope to Georgian Bay. The retention time behind the berming will provide solids removal for the overland flow component.

When individual lots are designed, conflicts may occur with the proposed location of the infiltration trench. If conflicts occur, it is possible to adjust the location of the infiltration trench somewhat to accommodate the lot layout. However, the infiltration trench needs to be located at the downslope end of the building lot area and water must still be directed towards the infiltration trench. It is also possible to separate the infiltration trench into two locations. If separated, a proportionate amount of water must be directed to each trench. For example, if the specified length of the infiltration

trench is divided into two sections of each size, the berming needs to be adjusted to ensure about half of the total drainage drains to each infiltration trench.

4.4 Municipal Easements

The Township of Georgian Bluffs has requested the developer provide drainage easements through the property at two locations to convey stormwater from the west side of Balmy Beach Road through the subdivision and ultimately to Georgian Bay.

As such, Drawing 06 shows 6 m wide drainage easements between lots 1 and 2 and between lots 6 and adjacent lot at the South end. The easements will provide the municipality with locations to discharge stormwater from Balmy Beach Road.

At this time these easements are proposed to be grassed swales (6:1 side slopes) where slopes are less than 4% and to be grassed swales at 6:1 side slopes with a center, 1.8 m wide 50 mm dia. to 100 mm dia. river stone center swale where slopes exceed 4%.

Drawing 06 provides a cross section detail of the proposed swale.

5.0 SUMMARY

This report summarizes wastewater treatment, water supply and stormwater management features for the proposed subdivision. This report also provides a rationale for the proposed lot sizes and location of individual lot property lines. In summary, this report indicates that the proposed development can be serviced and developed with minimal environmental impact.

Prepared by;

GSS Engineering Consultants Ltd.



Jeff Graham, P. Eng., President
Designated Consulting Engineer

JTG/SNM/nc



Spencer Manoryk, EIT



APPENDIX A

August 2021 Subdivision Drawings

CONTRACT 19001

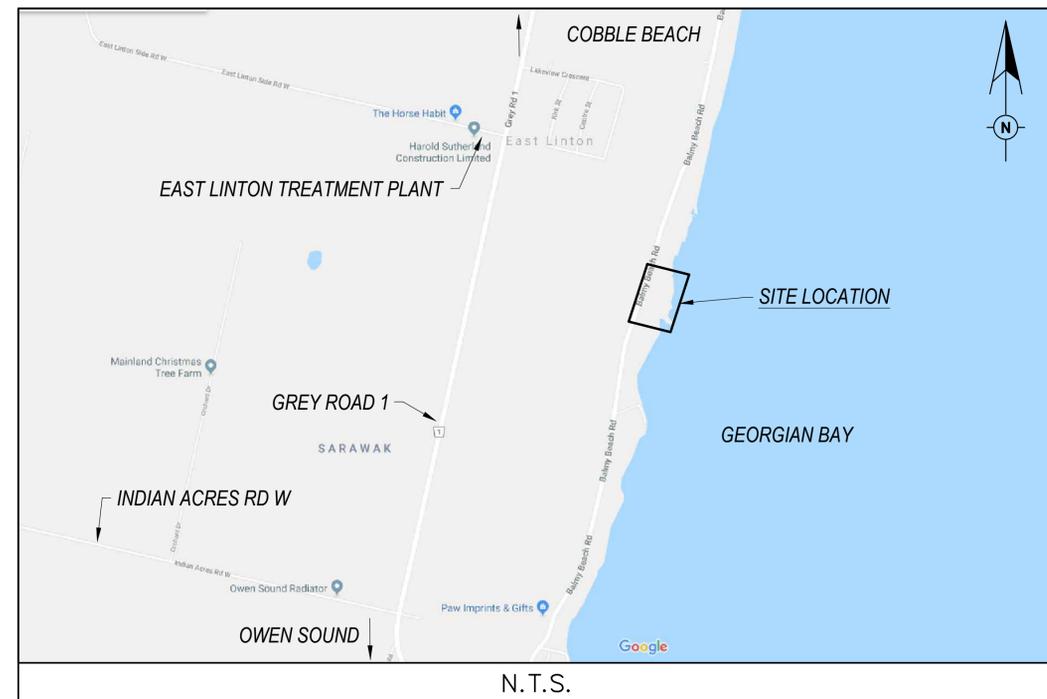
PLAN 447 LOTS 51, 52 & 52A SEVERANCE

345 & 355 BALMY BEACH ROAD (EAST LINTON)

DR. MEHRAN SHAHABI

TOWNSHIP OF GEORGIAN BLUFFS

AUGUST 2021



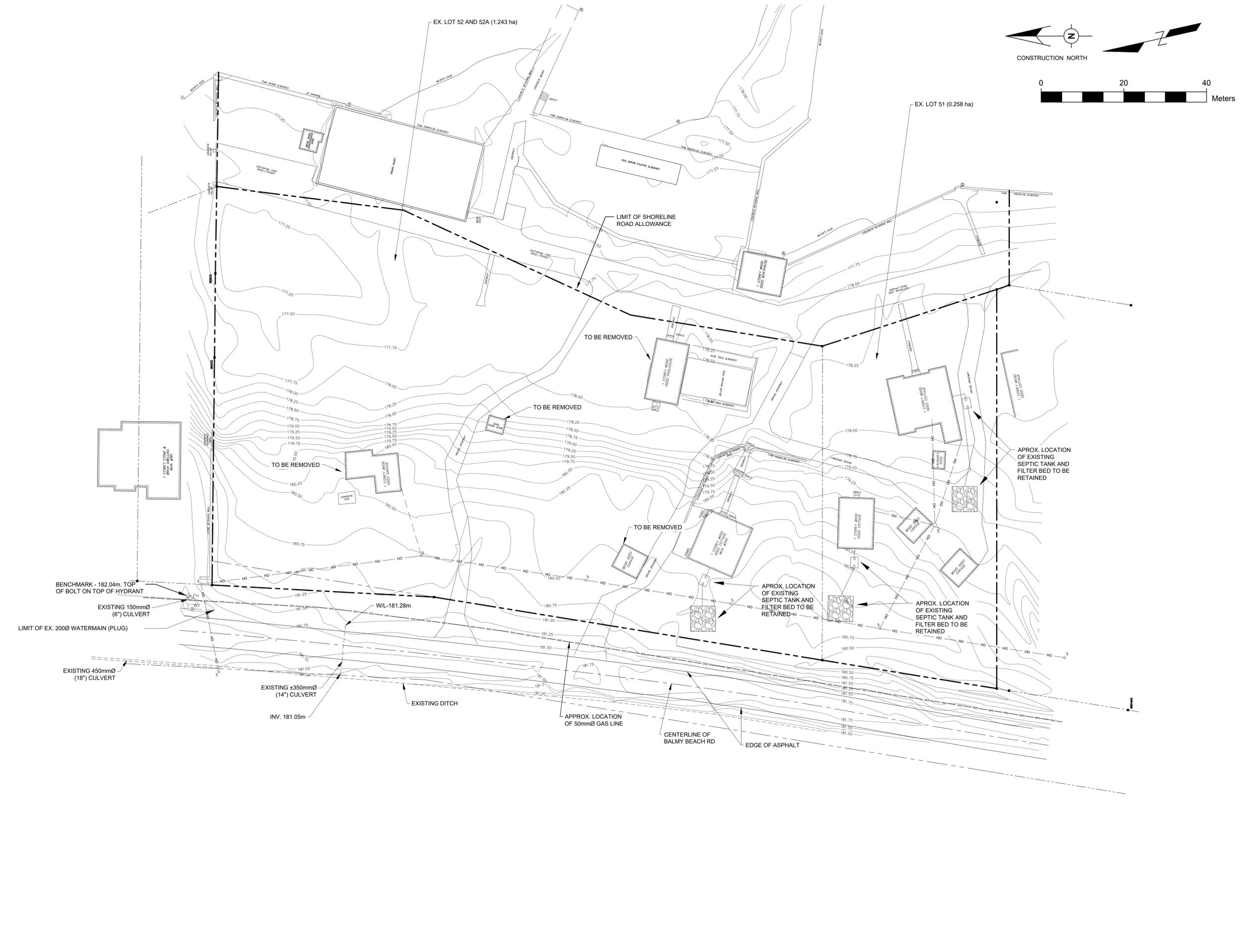
N.T.S.

DRAWING INDEX	
DRAWING No.	DRAWING NAME
19001-01	TITLE SHEET AND INDEX
19001-02	EXISTING CONDITIONS AND REMOVALS
19001-03	PROPOSED SEVERANCES
19001-04	TEST PIT LOCATIONS
19001-05	TREE RETENTION AREA
19001-06	DRAINAGE & STORMWATER MANAGEMENT
19001-07	PROPOSED WATER SERVICING
19001-08	SCHEMATIC HOUSE PLAN LOTS 1 TO 3
19001-09	SCHEMATIC HOUSE PLAN LOTS 4 TO 6

31/08/21	REVISIONS PER PEER REVIEW COMMENTS			
30/10/20	SOUTHERLY 6m DRAINAGE EASEMENT REMOVED			
10/08/20	REVISED LOT DIMENSIONS			
DD/MM/YY	REVISION / ISSUE			
DESCRIPTION				
Seal not valid unless signed and dated				
				
				
Unit 104D 1010 9th Avenue West, Owen Sound, ON, N4K 5R7 Telephone: (519) 372-4828				
Title: TITLE SHEET AND INDEX PLAN 447 LOTS 51, 52 & 52A BALMY BEACH RD GEORGIAN BLUFFS				
Client: DR. MEHRAN SHAHABI				
Design:	JTG	Scale:	NTS	
Drawn:	TDL	Approved:	 Design Engineer	
Checked:	JTG			
Date:	AUG. 2021			
Drawing No.		19001-01		

PLOTTED: August 31, 2021 11:21:08 AM

PLOTTED: August 31, 2021 11:22:21 AM



LEGEND

- IB IRON BAR
- SIB STANDARD IRON BAR
- PROPERTY LINE
- - - FENCING LINE
- ROAD CENTERLINE
- EX. BUILDING LAYOUT
- OVERHEAD WIRES
- UP UTILITY POLE (HYDRO)

GEORGIAN BAY WATER LEVEL = 177.05m. SURVEYED 24/05/19

ORIGINAL SURVEY PRODUCED BY EPLETT WOROBEC RAIKES SURVEYING LTD. ONTARIO LAND SURVEYORS. COMPLETED NOVEMBER 29th 2018

CAUTION: THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS, PROPERTY LINES AND OTHER UNDERGROUND AND OVERGROUND UTILITIES ARE STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES, PROPERTY LINES & STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES, PROPERTY LINES & STRUCTURES, AND SHOULD ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

DD/MM/YY	REVISION / ISSUE	DESCRIPTION
31/08/21	REVISIONS PER PEER REVIEW COMMENTS	
30/10/20	SOUTHERLY 6m DRAINAGE EASEMENT REMOVED	
10/08/20	REVISED LOT DIMENSIONS	



ENGINEERING CONSULTANTS LTD

Unit 104D 1010 9th Avenue West, Owen Sound, ON, N4K 5R7
Telephone: (519) 372-4828

Title: **EXISTING CONDITIONS & REMOVALS**

BALMY BEACH RD – GEORGIAN BLUFFS

Client: DR. MEHRAN SHAHABI

Design: JTG Scale: 1:400

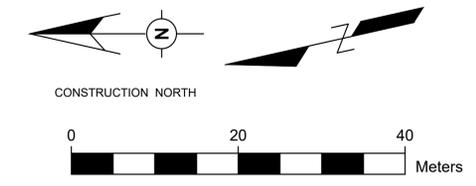
Drawn: TDL Approved: Design Engineer

Checked: JTG

Date: AUG. 2021

Drawing No. 19001-02

PLOTTED: August 31, 2021 11:22:33 AM



LEGEND

- IB IRON BAR
- SIB STANDARD IRON BAR
- PROPERTY LINE
- - - FENCELINE
- - - ROAD CENTERLINE
- EX. BUILDING LAYOUT
- OVERHEAD WIRES
- UP UTILITY POLE (HYDRO)
- ▨ DEVELOPABLE AREAS AS PER MUNICIPAL YARD SETBACKS AND OSCA SETBACK. TO INCLUDE RESIDENTIAL DWELLINGS, ALL GARAGES, OUTBUILDINGS AND SEPTIC SYSTEMS.

GEORGIAN BAY WATER LEVEL = 177.05m. SURVEYED 24/05/19

ORIGINAL SURVEY PRODUCED BY EPLETT WOROBEC RAIKES SURVEYING LTD. ONTARIO LAND SURVEYORS. COMPLETED NOVEMBER 29th 2018

CAUTION: THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS, PROPERTY LINES AND OTHER UNDERGROUND AND OVERGROUND UTILITIES ARE STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES, PROPERTY LINES & STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES, PROPERTY LINES & STRUCTURES, AND SHOULD ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

DD/MM/YY	REVISION / ISSUE
31/08/21	REVISIONS PER PEER REVIEW COMMENTS
30/10/20	SOUTHERLY 6m DRAINAGE EASEMENT REMOVED
10/08/20	REVISED LOT DIMENSIONS



ENGINEERING CONSULTANTS LTD

Unit 104D 1010 9th Avenue West, Owen Sound, ON, N4K 5R7
Telephone: (519) 372-4828

Title: **PROPOSED SEVERANCES**
PLAN 447 LOTS 51, 52 & 52A
BALMY BEACH RD – GEORGIAN BLUFFS

Client: **DR. MEHRAN SHAHABI**

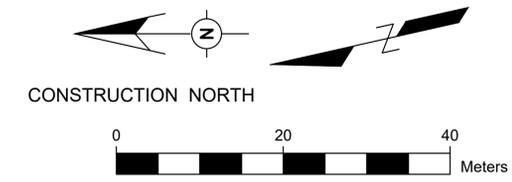
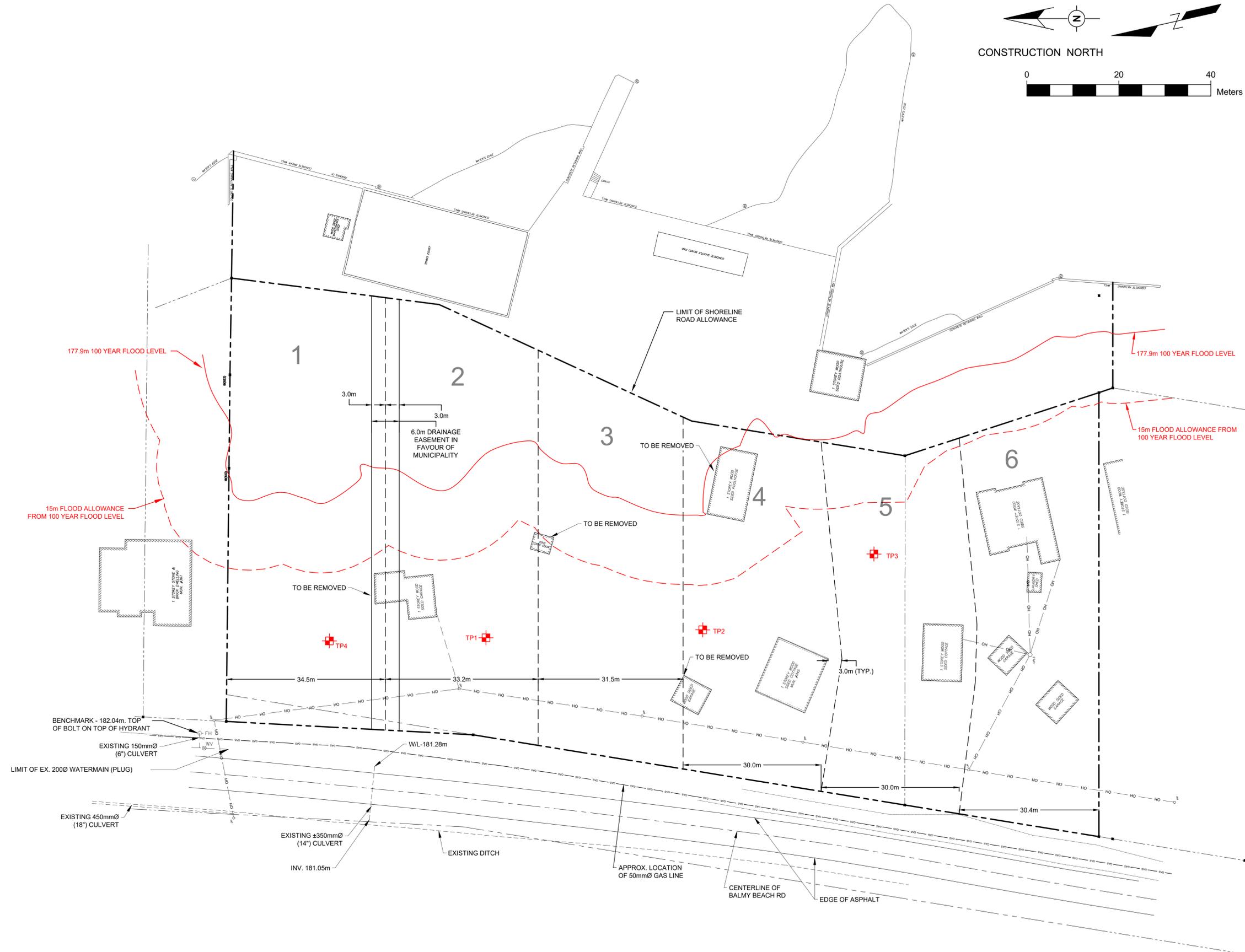
Design: JTG Scale: 1:400
Drawn: TDL Approved: Design Engineer
Checked: JTG
Date: AUG. 2021

Drawing No. 19001-03

LOT SUMMARY				
LOT #	LOT FRONTAGE (m)	AVERAGE LOT WIDTH (m)	AVERAGE LOT DEPTH (m)	AREA (m ²)
1	34.5m	34.5m	94.7m	3267.15m ²
2	33.2m	33.2m	89.4m	2968.08m ²
3	31.5m	31.5m	80.6m	2538.90m ²
4	30.0m	31.5m	75.8m	2387.70m ²
5	30.0m	29.7m	77.5m	2301.75m ²
6	30.4m	28.4m	89.0m	2527.60m ²

AREA SUMMARY		
DESCRIPTION	LOTS	AREA (m ²)
RESIDENTIAL	1-6	15,991.18m ²
OPEN SPACE	-	-
STORMWATER MANAGEMENT	-	-
TOTAL	6	15,991.18m²

PLOTTED: August 31, 2021 11:23:01 AM



LEGEND

- IB IRON BAR
- SIB STANDARD IRON BAR
- PROPERTY LINE
- - - FENCELINE
- ROAD CENTERLINE
- - - EX. BUILDING LAYOUT
- OVERHEAD WIRES
- UP UTILITY POLE (HYDRO)
- ⊕ TP3 STAKED FIELD TP LOCATION FOR SEPTIC SYSTEM DESIGN (24/05/19)

GEORGIAN BAY WATER LEVEL = 177.05m. SURVEYED 24/05/19

ORIGINAL SURVEY PRODUCED BY EPLETT WOROBEC RAIKES SURVEYING LTD. ONTARIO LAND SURVEYORS. COMPLETED NOVEMBER 29th 2018

CAUTION: THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS, PROPERTY LINES AND OTHER UNDERGROUND AND OVERGROUND UTILITIES ARE STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES, PROPERTY LINES & STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES, PROPERTY LINES & STRUCTURES, AND SHOULD ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

DD/MM/YY	REVISION / ISSUE
31/08/21	REVISIONS PER PEER REVIEW COMMENTS
30/10/20	SOUTHERLY 6m DRAINAGE EASEMENT REMOVED
10/08/20	REVISED LOT DIMENSIONS

Seal not valid unless signed and dated

Unit 104D 1010 9th Avenue West, Owen Sound, ON, N4K 5R7
Telephone: (519) 372-4828

Title: **TEST PIT LOCATIONS FOR SEPTIC DESGIN**

BALMY BEACH RD – GEORGIAN BLUFFS

Client: DR. MEHRAN SHAHABI

Design: JTG Scale: 1:400

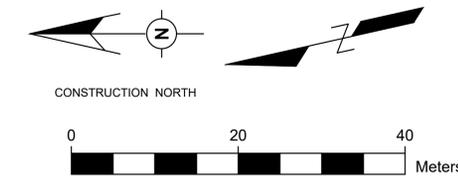
Drawn: TDL Approved: Design Engineer

Checked: JTG

Date: AUG. 2021

Drawing No. 19001-04

PLOTTED: August 31, 2021 11:23:12 AM



LEGEND

- IB IRON BAR
- SIB STANDARD IRON BAR
- PROPERTY LINE
- - - FENCELINE
- ROAD CENTERLINE
- EX. BUILDING LAYOUT
- OVERHEAD WIRES
- UP UTILITY POLE (HYDRO)
- ▭ PROPOSED BUILDING ENVELOPE

GEORGIAN BAY WATER LEVEL = 177.05m. SURVEYED 24/05/19
 ORIGINAL SURVEY PRODUCED BY EPLETT WOROBEC RAIKES SURVEYING LTD. ONTARIO LAND SURVEYORS. COMPLETED NOVEMBER 29th 2018

CAUTION: THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS, PROPERTY LINES AND OTHER UNDERGROUND AND OVERGROUND UTILITIES ARE STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES, PROPERTY LINES & STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES, PROPERTY LINES & STRUCTURES, AND SHOULD ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

DD/MM/YY	REVISION / ISSUE	DESCRIPTION
31/08/21	REVISIONS PER PEER REVIEW COMMENTS	
30/10/20	SOUTHERLY 6m DRAINAGE EASEMENT REMOVED	
10/08/20	REVISED LOT DIMENSIONS	

Seal not valid unless signed and dated

ENGINEERING CONSULTANTS LTD
 Unit 104D 1010 9th Avenue West, Owen Sound, ON, N4K 5R7
 Telephone: (519) 372-4828

Title: **BLDG ENVELOPES FOR TREE RETENTION AREA PLAN 447 LOTS 51, 52 & 52A BALMY BEACH RD – GEORGIAN BLUFFS**

Client: DR. MEHRAN SHAHABI
 Design: JTG Scale: 1:400
 Drawn: TDL Approved: Design Engineer
 Checked: JTG
 Date: AUG. 2021
 Drawing No. 19001-05

TABLE 1
Stormwater Retention Volume and Infiltration Trench Summary
Balmly Beach Subdivision
Dr. Shahabi

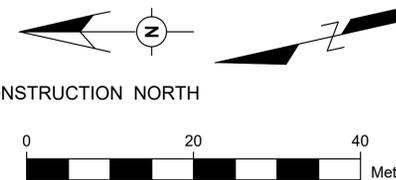
July 22, 2020

19-001

Lot Number	Width	Depth *	Area	Storage Volume Required **	Length of Infiltration Trench (based on 0.45 m ³ /m Storage Volume in Trench)
1	34.5 m	48 m	1,650 m ²	4 m ³	9 m
2	33.2 m	50 m	1,660 m ²	3 m ³	7 m
3	31.5 m	60 m	1,890 m ²	4 m ³	9 m
4	30 m	55 m	1,650 m ²	6 m ³	13 m
5	30 m	70 m	2,100 m ²	4 m ³	9 m
6	30.4 m	85 m	2,580 m ²	3 m ³	7 m
Total			11,530 m²	24 m³	

* Includes 10 m of road allowance. Measured to 15 m wave setback (15 m from 100-year flood line of 177.9 m).

** Based on 25 m³/ha for infiltration system providing Enhanced Protection (Table 3.2 of Storm Water Management Planning and Design Manual – MOE 2003)



LEGEND

- IB IRON BAR
- SB STANDARD IRON BAR
- PROPERTY LINE
- FENCELINE
- ROAD CENTERLINE
- EX. BUILDING LAYOUT
- OVERHEAD WIRES
- PROPOSED DRAINAGE SWALE
- UP UTILITY POLE (HYDRO)
- ⊕ TP3 STAKED FIELD TP LOCATION FOR SEPTIC SYSTEM DESIGN (24/05/19)
- ▨ PROPOSED INFILTRATION TRENCH
- ~ OVERLAND STORM FLOW

GEORGIAN BAY WATER LEVEL = 177.05m. SURVEYED 24/05/19

ORIGINAL SURVEY PRODUCED BY EPLETT WOROBEK RAIKES SURVEYING LTD. ONTARIO LAND SURVEYORS. COMPLETED NOVEMBER 29th 2018

CAUTION: THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS, PROPERTY LINES AND OTHER UNDERGROUND AND OVERGROUND UTILITIES ARE STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES, PROPERTY LINES & STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES, PROPERTY LINES & STRUCTURES, AND SHOULD ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

DD/MM/YY	REVISION / ISSUE
31/08/21	REVISIONS PER PEER REVIEW COMMENTS
30/10/20	SOUTHERLY 6m DRAINAGE EASEMENT REMOVED
10/08/20	REVISED LOT DIMENSIONS
DD/MM/YY	DESCRIPTION

Seal not valid unless signed and dated



Unit 104D 1010 9th Avenue West, Owen Sound, ON, N4K 5R7
Telephone: (519) 372-4828

Title:
DRAINAGE & STORMWATER MANAGEMENT
PLAN 447 LOTS 51, 52 & 52A
BALMLY BEACH RD – GEORGIAN BLUFFS

Client: DR. MEHRAN SHAHABI

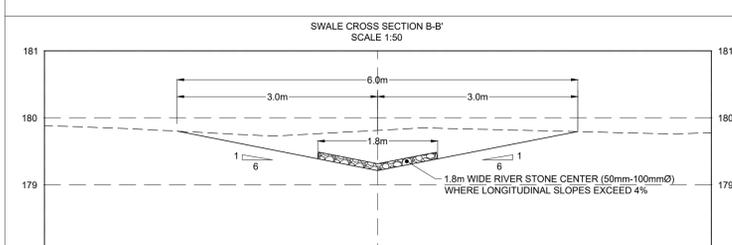
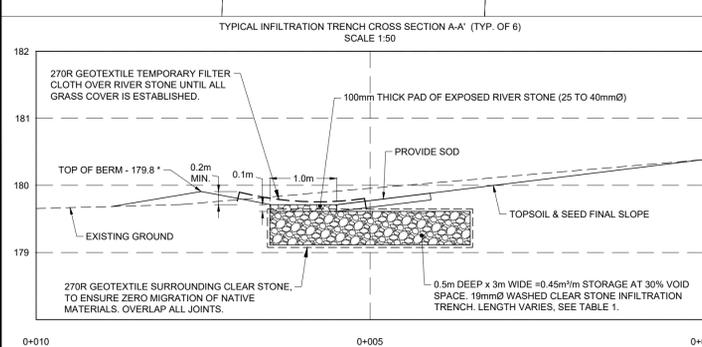
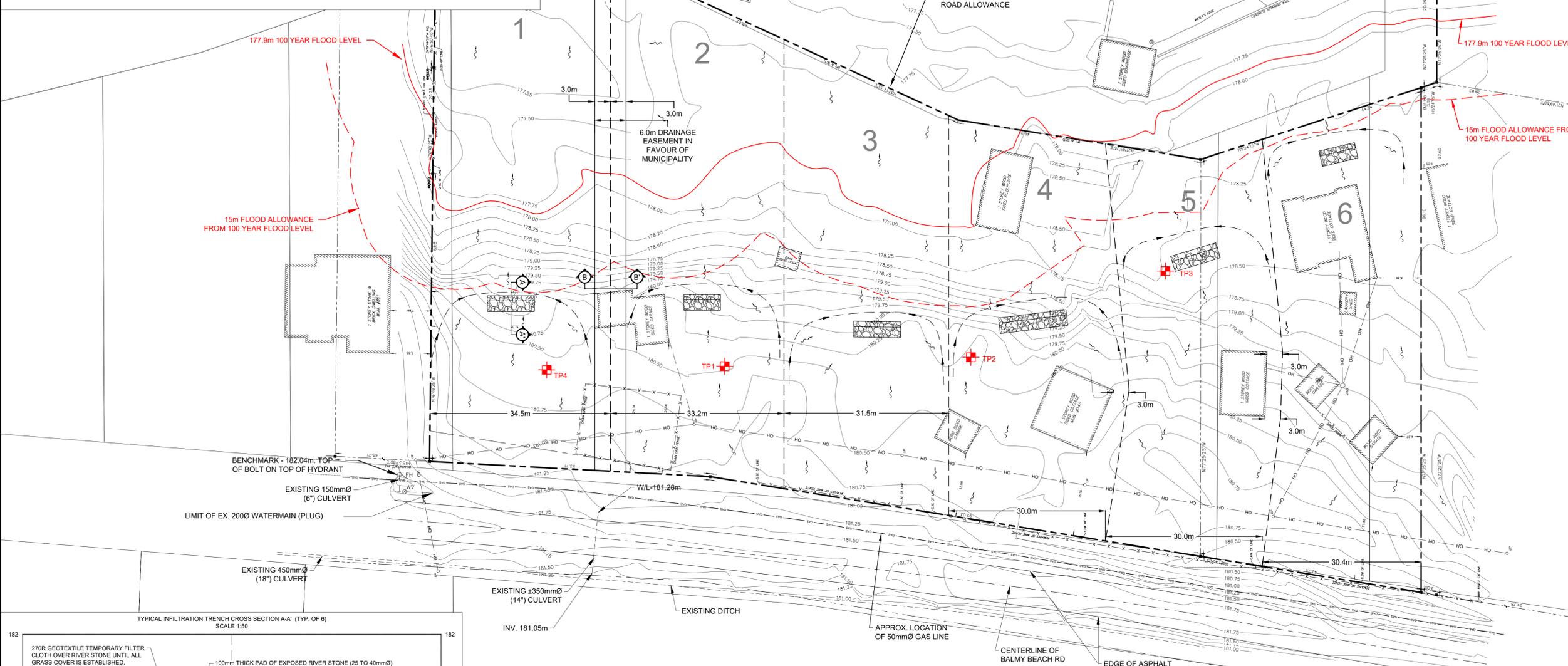
Design: JTG Scale: 1:400

Drawn: TDL Approved: Design Engineer

Checked: JTG

Date: AUG. 2021

Drawing No. 19001-06

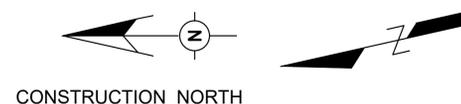
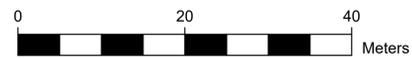


* LOCATION OF INFILTRATION TRENCH MAY BE ADJUSTED TO ACCOMMODATE FINAL BUILDING LOCATIONS. DRAINAGE MUST BE DIRECTED TO THE INFILTRATION TRENCH. TWO SMALLER INFILTRATION TRENCHES MAY BE USED IN LIEU OF ONE, HOWEVER, THE TOTAL STORAGE VOLUME/LENGTH MUST BE EQUIVALENT TO THE VOLUMES SPECIFIED IN TABLE 1. BOTTOM OF INFILTRATION TRENCH NOT TO BE LOWER THAN 178.2m. NOTE: ADD CLEAN, PIT RUN GRAVEL FILL FOR LOTS 5 AND 6 TO RAISE INFILTRATION TRENCHES AS REQUIRED.

PLOTTED: August 31, 2021 11:23:25 AM

WATERMAIN

1. ALL WATERMAIN AND ASSOCIATIVE INFRASTRUCTURE TO BE CONSTRUCTED TO GEORGIAN BLUFFS MUNICIPAL ENGINEERING STANDARDS AS PER SCHEDULE "C" OF THE SUBDIVISION AGREEMENT.
2. INSTALLATION SHALL BE IN ACCORDANCE WITH OPSD 1100 SERIES DRAWINGS AND OPSS 701.
3. WATERMAIN PIPE SHALL BE 1120 kPa (D.R.18) PVC (POLY VINYL CHLORIDE) WITH RUBBER GASKET JOINT FITTINGS.
4. SERVICES SHALL BE 20mm DIAMETER TYPE K COPPER TUBE WITH AN APPROVED WORKING PRESSURE OF 1120 kPa. A CURB STOP SHALL BE INSTALLED FOR EACH HOUSE. MAIN STOPS SHALL BE USED ON EACH SERVICE. ALL CURB STOPS WILL INCLUDE A STAINLESS STEEL EXTENSION ROD TO WITHIN 450mm OF THE SURFACE. FITTINGS TO BE USED ARE AS FOLLOWS: MAIN STOP ~ MUELLER H-1500B, CURB STOP ~ MUELLER H-15207, SERVICE BOX ~ MUELLER A-726, OR EQUIVALENTS.
5. THE MINIMUM COVER ON WATERMANS AND SERVICES SHALL BE 1.7m AT ALL POINTS.
6. HYDRANTS SHALL BE CANADA VALVE "CENTURY" OR APPROVED EQUAL. HYDRANT LEADS SHALL BE 150mm DIAMETER AND SHALL HAVE A SHUT-OFF VALVE, DARLING 55 OR APPROVED EQUAL. PLACED 1m FROM THE HYDRANT. ALL HYDRANTS TO BE EQUIPPED WITH PUMPER PORT AND A STORZ QUICK CONNECT FITTING. ALL HYDRANTS SHOULD NORMALLY BE FOR A 2m DEPTH OF TRENCH WITH PROVISION FOR EXTENSION AT SURFACE FOR ADJUSTMENT TO STREET LINE GRADES. HYDRANTS SHALL BE BEDDED IN 19mm SCREENED, CRUSHED STONE AND BRACED WITH POURED CONCRETE TO THE SATISFACTION OF THE MUNICIPALITY'S ENGINEER.
7. PRESSURE LEAKAGE TESTS SHALL BE PERFORMED ON THE COMPLETED WATERMAIN. A PRESSURE OF 1035 kPa SHALL BE APPLIED TO THE SECTION OF THE PIPE BEING TESTED AND MAINTAINED FOR A PERIOD OF 1 HOUR. ANY LEAKS DETECTED DURING THE PRESSURE TESTS SHALL BE REPAIRED AND THE MAIN RE-TESTED.
8. FOLLOWING THE SUCCESSFUL COMPLETION OF THE PRESSURE TEST, A LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH OPSS 701. MINIMUM TEST PRESSURE TO BE 105 psi.
9. BEFORE PLACING INTO SERVICE, THE WATER SYSTEM SHALL BE DISINFECTED BY THE DEVELOPER IN ACCORDANCE WITH THE REQUIREMENTS OF THE MINISTRY OF THE ENVIRONMENT FOR CHLORINATION OF A POTABLE WATER SUPPLIES AND TO THE SATISFACTION OF THE MUNICIPALITY'S ENGINEER.
10. A MINIMUM OF TWO SAMPLES FROM THE DISINFECTED MAIN WILL BE TESTED AT AN APPROVED LABORATORY AND FOUND TO MEET ACCEPTABLE STANDARDS PRIOR TO ANY SERVICE BEING CONNECTED TO A SOURCE FOR POTABLE WATER.



LEGEND

- IB IRON BAR
- SIB STANDARD IRON BAR
- PROPERTY LINE
- - - FENCELINE
- ROAD CENTERLINE
- EX. BUILDING LAYOUT
- OVERHEAD WIRES
- UP UTILITY POLE (HYDRO)
- CS PRO. CURB STOP
- ⊗ PRO. VALVE
- ⊙ PRO. FIRE HYDRANT

GEORGIAN BAY WATER LEVEL = 177.05m. SURVEYED 24/05/19

ORIGINAL SURVEY PRODUCED BY EPLETT WOROBEC RAIKES SURVEYING LTD. ONTARIO LAND SURVEYORS. COMPLETED NOVEMBER 29th 2018

CAUTION: THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS, PROPERTY LINES AND OTHER UNDERGROUND AND OVERGROUND UTILITIES ARE STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES, PROPERTY LINES & STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES, PROPERTY LINES & STRUCTURES, AND SHOULD ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

31/08/21 REVISIONS PER PEER REVIEW COMMENTS

DD/MM/YY	DESCRIPTION
	REVISION / ISSUE

Seal not valid unless signed and dated



Unit 104D 1010 9th Avenue West, Owen Sound, ON, N4K 5R7
Telephone: (519) 372-4828

Title: **PROPOSED WATER SERVICING
PLAN 447 LOTS 51, 52 & 52A
BALMY BEACH RD - GEORGIAN BLUFFS**

Client: DR. MEHRAN SHAHABI

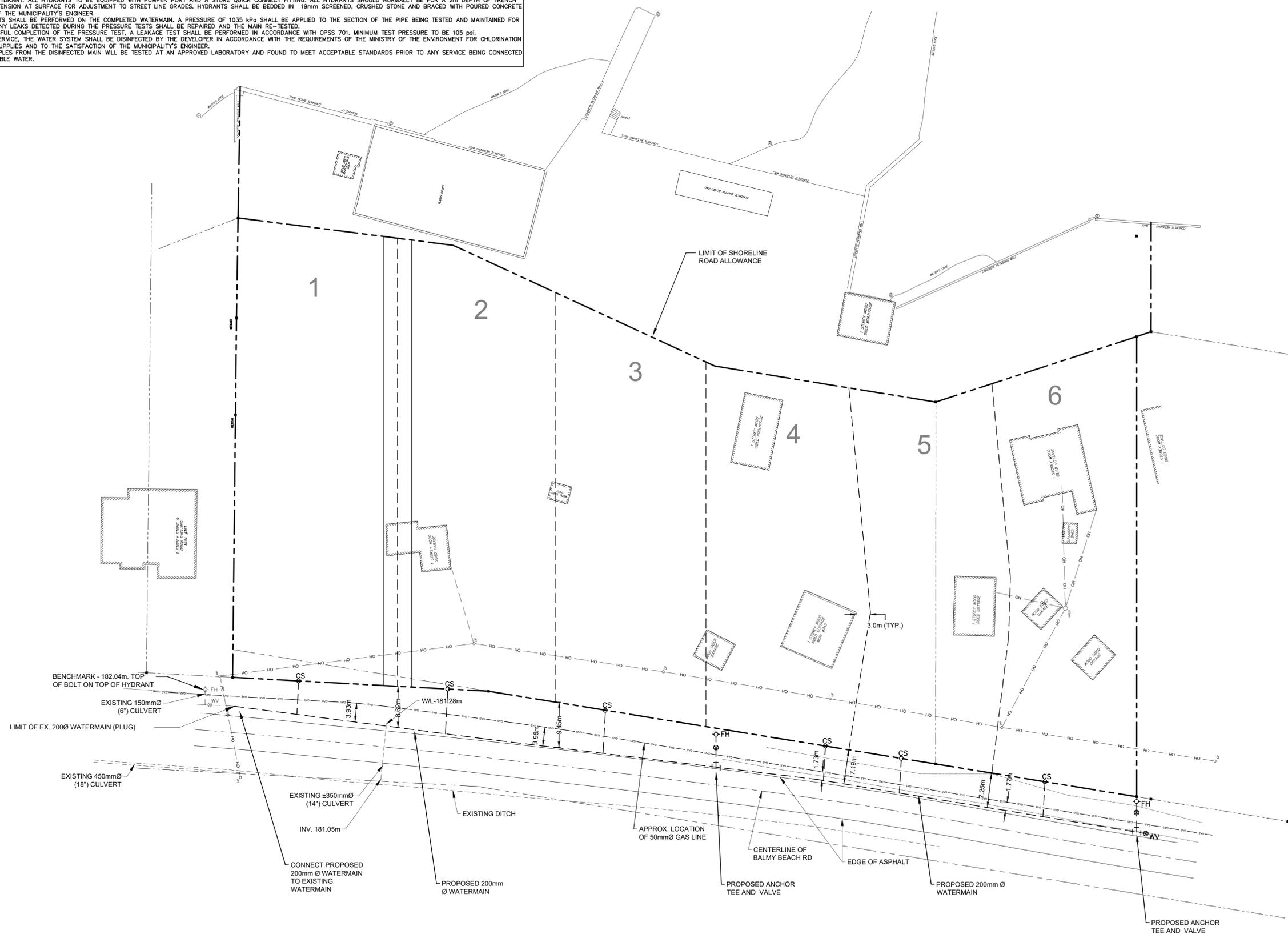
Design: JTG Scale: 1:400

Drawn: SNM Approved: Design Engineer

Checked: JTG

Date: AUG. 2021

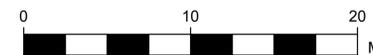
Drawing No. 19001-07



LOT COVERAGES			
LOT (#)	LOT SIZE (m ²)	BUILDING SIZE (m ²)	BUILDING COVERAGE (%)
1	3,325	250	7.52
2	3,000	245	8.17
3	2,546	210	8.25

SEPTIC SYSTEM NOTES

- 1) PER GM BLUEPLAN TEST PIT SAMPLE ANALYSIS, SILT AND CLAY PRESENCE IN TP1 AND TP2 PROVIDE A HIGH PERCOLATION TIME UNSUITABLE FOR IN-GROUND FILTER BED. PROPOSED SEPTIC SYSTEMS ON LOTS 1-3 WILL REQUIRE PARTIALLY RAISED SEPTIC SYSTEMS. SEPTIC CLEARANCES BASED ON A 0.6m RAISED FILTER BED IN ACCORDANCE WITH OBC REQUIREMENTS.
- 2) PROPOSED SEPTIC TANK LOCATIONS NOT SHOWN.
- 3) FILTER BEDS ARE TO BE ±30m² (4.5m x 6.8m) *



LEGEND

- IB IRON BAR
- SIB STANDARD IRON BAR
- PROPERTY LINE
- - - FENCELINE
- - - ROAD CENTERLINE
- - - EX. BUILDING LAYOUT
- - - OVERHEAD WIRES
- - - PROPOSED DRAINAGE SWALE
- UP UTILITY POLE (HYDRO)
- TP3 STAKED FIELD TP LOCATION FOR SEPTIC SYSTEM DESIGN (24/05/19)
- ▨ PROPOSED INFILTRATION TRENCH
- ▭ PROPOSED BUILDING ENVELOPE
- FFE FINISHED FLOOR ELEVATION
- FBE TOP OF FILTER BED ELEVATION
- CS PRO. CURB STOP
- ⊗ PRO. VALVE
- ⊙ PRO. FIRE HYDRANT

GEORGIAN BAY WATER LEVEL = 177.05m. SURVEYED 24/05/19

ORIGINAL SURVEY PRODUCED BY EPLETT WOROBEC RAIKES SURVEYING LTD. ONTARIO LAND SURVEYORS. COMPLETED NOVEMBER 29th 2018

CAUTION: THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS, PROPERTY LINES AND OTHER UNDERGROUND AND OVERGROUND UTILITIES ARE STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES, PROPERTY LINES & STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES, PROPERTY LINES & STRUCTURES, AND SHOULD ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

DD/MM/YY	REVISIONS PER PEER REVIEW COMMENTS
31/08/21	REVISIONS PER PEER REVIEW COMMENTS
	DESCRIPTION
	REVISION / ISSUE



ENGINEERING CONSULTANTS LTD

Unit 104D 1010 9th Avenue West, Owen Sound, ON, N4K 5R7
Telephone: (519) 372-4828

Title: **SCHEMATIC HOUSE PLAN LOTS 1 TO 3 BALMY BEACH RD - GEORGIAN BLUFFS**

Client: **DR. MEHRAN SHAHABI**

Design: JTG Scale: 1:200

Drawn: SNM Approved: Design Engineer

Checked: JTG

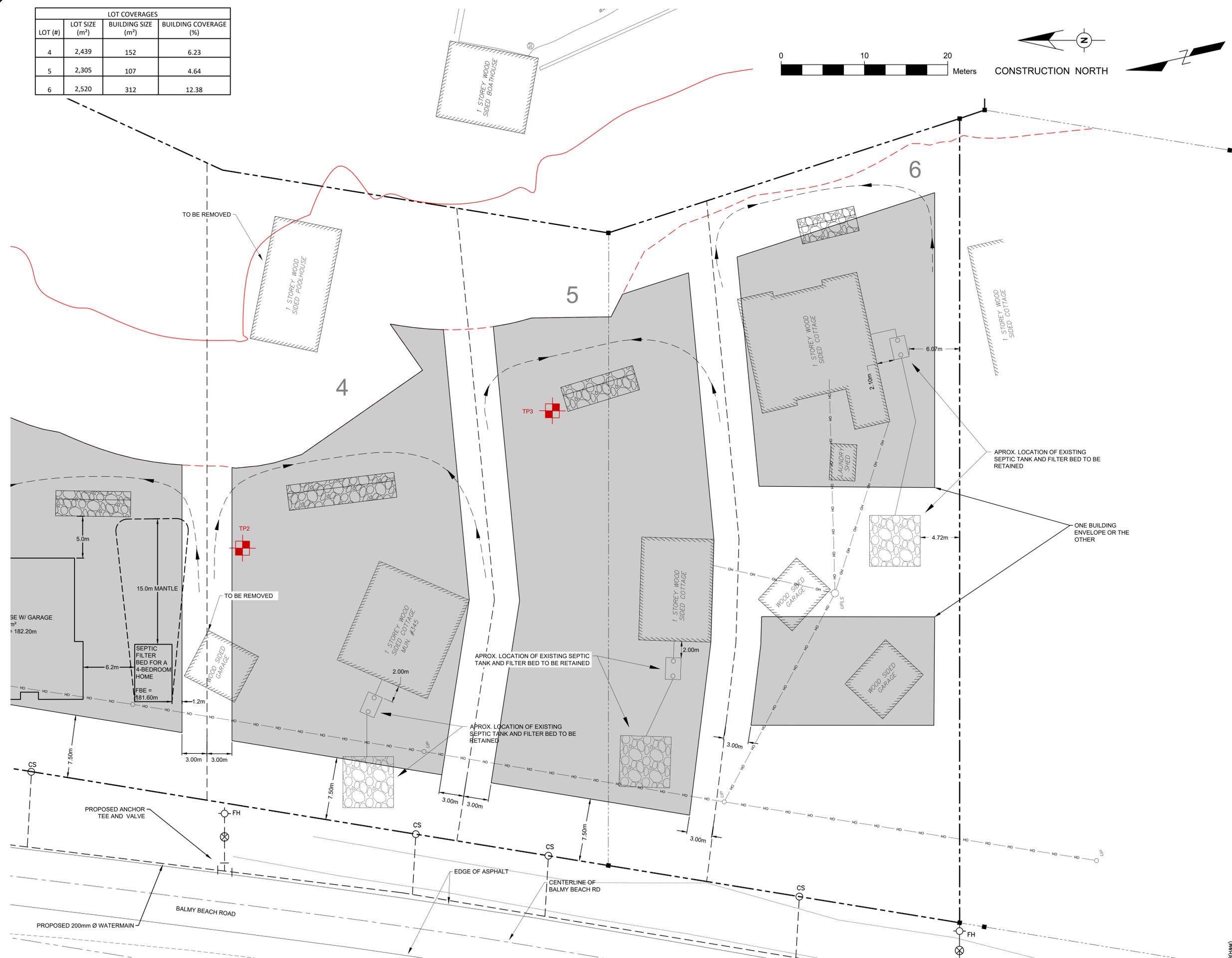
Date: AUG. 2021

Drawing No. 19001-08



* FILTER BED BASED ON A 4 BEDROOM HOME WITH A DAILY FLOW OF 2000 L/DAY. USE A = Q/75 = 2000/75 = 26.72 m² (MINIMUM OF 30 m² RECOMMENDED).

LOT COVERAGES			
LOT (#)	LOT SIZE (m ²)	BUILDING SIZE (m ²)	BUILDING COVERAGE (%)
4	2,439	152	6.23
5	2,305	107	4.64
6	2,520	312	12.38



LEGEND

- IB IRON BAR
- SIB STANDARD IRON BAR
- PROPERTY LINE
- - - FENCELINE
- - - ROAD CENTERLINE
- - - EX. BUILDING LAYOUT
- - - OVERHEAD WIRES
- - - PROPOSED DRAINAGE SWALE
- UP UTILITY POLE (HYDRO)
- TP3 STAKED FIELD TP LOCATION FOR SEPTIC SYSTEM DESIGN (24/05/19)
- ▨ PROPOSED INFILTRATION TRENCH
- ▨ PROPOSED BUILDING ENVELOPE
- FFE FINISHED FLOOR ELEVATION
- TOB TOP OF FILTER BED ELEVATION
- CS PRO. CURB STOP
- ⊗ PRO. VALVE
- ⊙ PRO. FIRE HYDRANT

GEORGIAN BAY WATER LEVEL = 177.05m. SURVEYED 24/05/19

ORIGINAL SURVEY PRODUCED BY EPLETT WOROBEC RAIKES SURVEYING LTD. ONTARIO LAND SURVEYORS. COMPLETED NOVEMBER 29th 2018

CAUTION: THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS, PROPERTY LINES AND OTHER UNDERGROUND AND OVERGROUND UTILITIES ARE STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES, PROPERTY LINES & STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES, PROPERTY LINES & STRUCTURES, AND SHOULD ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

DD/MM/YY	REVISIONS PER PEER REVIEW COMMENTS	DESCRIPTION
		REVISION / ISSUE

Seal not valid unless signed and dated



Unit 104D 1010 9th Avenue West, Owen Sound, ON, N4K 5R7
Telephone: (519) 372-4828

Title: **SCHEMATIC HOUSE PLAN**
LOTS 4 TO 6
BALMY BEACH RD – GEORGIAN BLUFFS

Client: **DR. MEHRAN SHAHABI**

Design: JTG Scale: 1:200
Drawn: SNM Approved: Design Engineer

Checked: JTG
Date: AUG. 2021

Drawing No. 19001-09

APPENDIX B

Sieve Analysis Report



August 13, 2019
Our File: 218194-6

Via Email: briannacollins@gssengineering.ca

GSS Engineering Consultants Ltd.
1010 9th Avenue West, Unit 104D
Owen Sound, ON N4K 5R7

Attention: Brianna Collins

Re: Soil Testing for Sewage System
345 & 355 Balmy Beach Road
Township of Grey Bruce

Dear Brianna,

As requested, we have performed a grading analysis on the two soil samples delivered to us on July 24, 2019. It is understood that the samples were collected from a depth of 0.6m and 1.1m from Testpit (TP-3, TP-4) respectively and excavated in the areas where leaching or filters are potentially to be constructed.

The first soil sample is a well graded gavel with traces of silt. From the attached Grain-Size Distribution Curve and based on The Hazen Formula, the co-efficient of permeability was calculated to be 9.6×10^{-2} cm/second. The second sample is a silty sand and gravel with a trace of clay. From the attached Grain-Size Distribution Curve and based on 11.0% clay content, we estimated the co-efficient of permeability to be in the order of 0×10^{-6} cm/second. Based on these results and the relationship of soil types to percolation times as per the Ontario Building Code (OBC), we have assessed a percolation time, "T" of 40 to 50 minutes/cm for the second sample and 2 to 3 minutes/cm for the first sample.

Because of the silt and clay in the soil, the "T" time is somewhat elevated, for the TP-4 sample and therefore, it is not feasible to construct an in-ground leaching or filter bed in such soil. A raised leaching or filter bed constructed of approved imported material must be considered.

Increased amounts of silt and clay will negatively affect the percolation time and the performance of the leaching or filter bed. The percolation time is also dependent upon the density, structure, and moisture content of the soil and the installation methods utilized. Therefore, it is the responsibility of the owner, system designer, and contractor to monitor the quality of the soils across the site and any imported material to assure themselves that the design criteria are met and if necessary, adjust the design of the system.

Should you have any questions, please do not hesitate to contact me.

Yours truly,

GM BLUEPLAN ENGINEERING LIMITED

Per:

Wm. E. Dubeau, P.Eng.
WED/br

Encl.

cc: File No: 218194-6



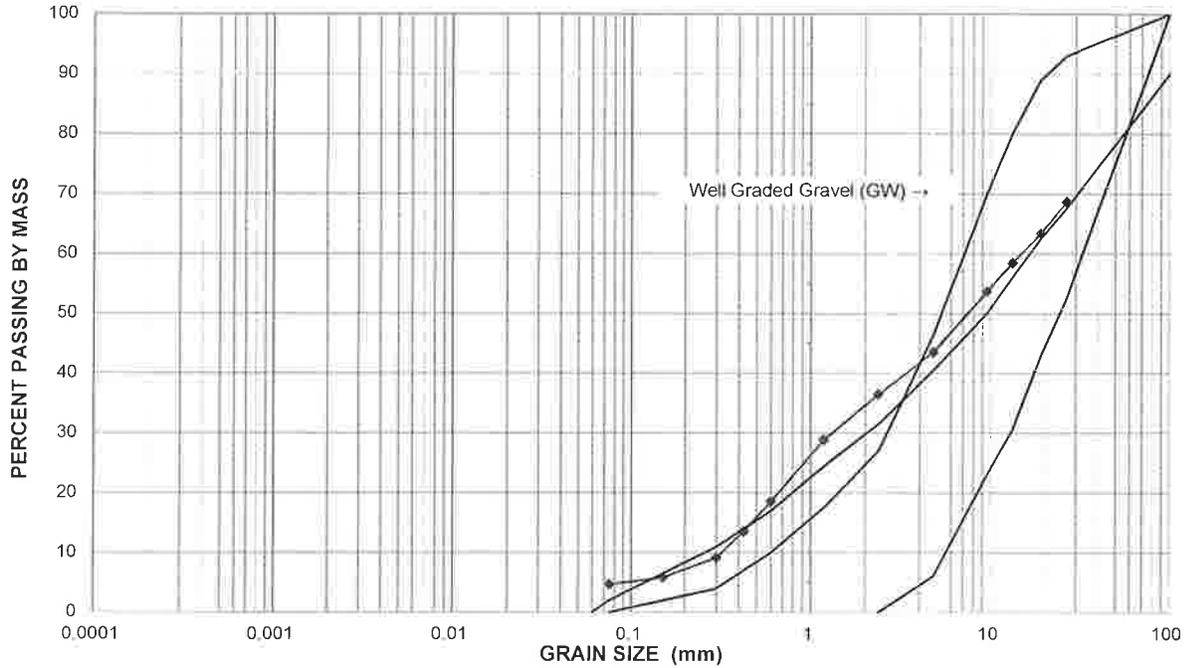
GM BluePlan Engineering Limited

Guelph, Owen Sound, Listowel, Kitchener, London, Hamilton, GTA
 1260 - 2nd Avenue E., Unit 1 Owen Sound, ON N4K 2J3
 Phone 519-376-1805 Fax 519-376-8977 www.GMBluePlan.ca

PARTICLE SIZE ANALYSIS

PROJECT:	M.T. - GSS Engineering (Project No. 19-001)	FILE NO.:	218194-6
LOCATION:	345 & 355 Balmy Beach Road, Georgian Bluffs	LAB SAMPLE NO.:	S-3346
CLIENT :	GSS Engineering	SAMPLE DATE:	July 19, 2019
SOIL TYPE:	Sandy Gravel with a trace of Fines	SAMPLED BY:	Client
GRAPH #:	1 Well Graded Gravels, Gravel-Sand Mixtures Cu > 4	SOURCE:	TP 3 at 2' depth

PARTICLE SIZE DISTRIBUTION



←		FINE	MEDIUM	COARSE	FINE	COARSE
CLAY	SILT	SAND			GRAVEL	
SIEVE SIZE PARTICLE DIA. (mm)	PERCENT PASSING		HYDROMETER PARTICLE DIA. (mm)	PERCENT PASSING		
	SAMPLE			SAMPLE		
26.5	68.6		0.0600			
19	63.3		0.0400			
13.2	58.4		0.0300			
9.5	53.6		0.0250			
4.75	43.5		0.0200			
2.36	36.5		0.0120			
1.180	28.9		0.0090			
0.600	18.6		0.0060			
0.425	13.6		0.0045			
0.300	9.2		0.0032			
0.150	5.8		0.0023			
0.075	4.7		0.0013			

D₁₀: 0.31 mm D₆₀: 15 mm Cu: 47

Coefficient of Permeability: 9.6 x 10⁻² cm/sec "T" Time: 2 to 3 mins/cm

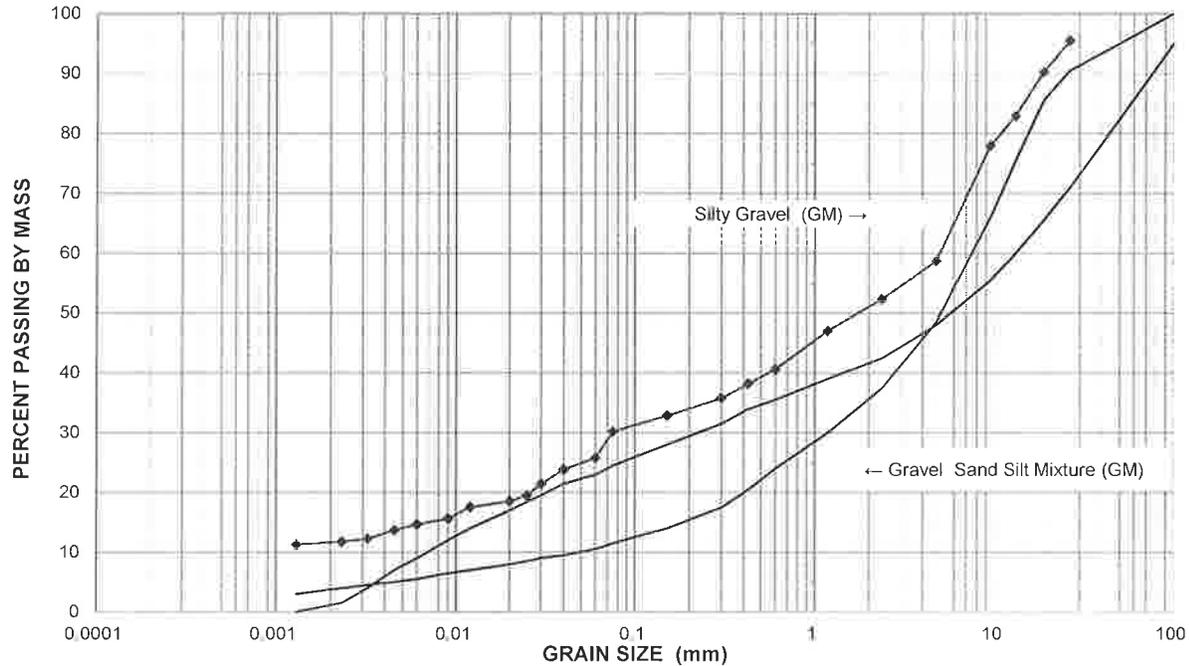
Comments:

PARTICLE SIZE ANALYSIS

PROJECT: M.T. - GSS Engineering (Project No. 19-001)
 LOCATION: 345 & 355 Balmy Beach Road, Georgian Bluffs
 CLIENT: GSS Engineering
 SOIL TYPE: Gravel with some Sand and Silt with a little Clay
 GRAPH #: 3 - Silty Gravels, Gravel Sand Silt Mixtures

FILE NO.: 218194-6
 LAB SAMPLE NO.: S-3347
 SAMPLE DATE: July 19, 2019
 SAMPLED BY: Client
 SOURCE: TP 4 at 3'7"

PARTICLE SIZE DISTRIBUTION



SIEVE SIZE PARTICLE DIA. (mm)	PERCENT PASSING		HYDROMETER PARTICLE DIA. (mm)	PERCENT PASSING	
	SAMPLE			SAMPLE	
26.5	95.5		0.0600	25.8	
19	90.2		0.0400	23.9	
13.2	82.9		0.0300	21.4	
9.5	78.0		0.0250	19.5	
4.75	58.7		0.0200	18.5	
2.36	52.4		0.0120	17.6	
1.180	47.1		0.0090	15.6	
0.600	40.7		0.0060	14.7	
0.425	38.2		0.0045	13.7	
0.300	35.8		0.0032	12.2	
0.150	32.9		0.0023	11.8	
0.075	30.2		0.0013	11.3	

D₁₀: 0.001 mm D₆₀: 5.1 mm Cu: 5100

Coefficient of Permeability: 1.0 x 10⁻⁶ cm/sec "T" Time: 40 to 50 mins/cm

Comments:

APPENDIX C
GSCA COMMENTS



237897 Inglis Falls Road, R.R.#4, Owen Sound, ON N4K 5N6
Telephone: 519.376.3076 Fax: 519.371.0437
www.greysauble.on.ca

May 27, 2019

Mr. Don Scott, Planner
Cuesta Planning Consultants
978 First Ave West
Owen Sound, ON
N4K 4K5

Dear Mr. Scott:

RE: Pre-consultation for Proposed Residential Development
Applicant: Mehran Shahabi
Part Lot 21 Concession 3; 345/355 Balmy Beach Road
Township of Georgian Bluffs, formerly Sarawak Township
Roll No.: 42-03-580-003-293-00 and 42-03-580-003-292-00
Our File: P13605

Grey Sauble Conservation Authority (GSCA) has reviewed this proposal in accordance with our provincial mandate and policies for natural hazards, for natural heritage issues as per the Provincial Policy Statement and relative to our policies for the implementation of Ontario Regulation 151/06. We offer the following comments.

Subject Proposal

The subject proposal is to create several lots for future development.

Site Description

The property is located on the east side of Balmy Beach Road in the Township of Georgian Bluffs, formerly Sarawak Township. The site is no longer in use, but currently features several older structures and accessory buildings. These features are all connected by a private road that connects into a path located along the shore road allowance on the far east property boundary in a north/south direction. There is some forest cover on the property consisting of maples, ashes, cedars, and spruce, among others, interspersed with some space that appears to have been previously manicured lawn.

GSCA Regulations

A portion of the subject site is regulated under Ontario Regulation 151/06: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses administered by the GSCA. The regulated area is associated with the 100-year lake flood level

1 of 4



Watershed Municipalities
Arran-Elderslie, Chatsworth, Georgian Bluffs, Grey Highlands
Meaford, Owen Sound, South Bruce Peninsula, Blue Mountains

of 177.9 GSC, a 15-metre setback from this lake level for wave uprush and other water related hazards as well as an additional 15-metre regulated allowance.

Under this regulation, a permit is required from this office prior to the construction and/or re-construction of buildings or structures, the temporary or permanent placement of fill within the affected area, interference with a wetland, and/or the straightening, changing, diverting or in any way interfering with an existing channel of a river, lake, creek, stream or watercourse.

Provincial Policy Statement (2014)

3.1 Natural Hazards

There were natural hazards identified on the site related to the shoreline flood and erosion associated with Georgian Bay. These hazard lands include the lands below the 100-year flood lake level of 177.9 metres Geodetic Survey of Canada (GSC), and a 15-metre inland setback to account for wave uprush and other water related hazards. Our regulation policies do not permit filling below the 100-year flood elevation and new development shall be directed to the areas outside of the natural hazard area. The following policies from the GSCA Hazard Land Policies and Guidelines 1994 apply.

7.1 Applications for Consent

- (i) New lots created through consent may include hazard areas provided that on both the severed and the retained parcel, there is sufficient land outside of the hazard to accommodate the proposed development; and where that development will not create or aggravate any hazardous conditions or diminish the natural values of the hazard area.*
- (ii) Where the limits of the hazard lands are not clearly identifiable, engineered floodline mapping or geotechnical slope assessment may be required, at the applicant's expense, to substantiate the extent of developable lands.*
- (iii) Where the hazard lands are not already appropriately zoned (ie. hazard, environmental protection, open space), the Authority will require that a site specific zoning by-law be passed prior to issuance of a building permit or deed for the new lot. This may be specified as a condition of final approval.*
- (iv) The proposed lot and resulting retained parcel must both be able to accommodate access to the building site without causing problems in association with hazard lands or impact to neighbouring properties. The provision of access will also be subject to the access policies outlined in Section 8.0 of this document.*
- (v) Where more than two new lots are proposed or where the lot(s) that is being proposed is near a built-up area, the policies for subdivisions listed under Section 7.2 may be applied.*

We note that the natural hazard area is present in some capacity across the entire eastern boundary of the subject lands. The current proposal involves a seven-lot configuration where a portion of this hazard will be present on each of the lots. In the current configuration, there does

not appear to be sufficient room for a building envelope and septic placement outside of the identified hazard areas on Lots 1, 2, 3, 4 and possibly 5 given the current size of the proposed building envelopes and septic systems. GSCA recommends that alternate lot configurations are assessed in order to maintain the required setbacks from the identified natural hazards.

2.1 Natural Heritage

For a planning application under the Planning Act, the following policies under the provincial policy statement would need to be considered. We have provided comments on the applicable policies based on our site inspections.

2.1.5 *Development and site alteration* shall not be permitted in:

- a) *significant wetlands* in the Canadian Shield north of Ecoregions 5E, 6E and 7E₁;
- b) *significant woodlands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)₁;
- c) *significant valleylands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)₁;
- d) *significant wildlife habitat*;
- e) *significant areas of natural and scientific interest*; and
- f) *coastal wetlands* in Ecoregions 5E, 6E and 7E₁ that are not subject to policy 2.1.4(b)

₁ Ecoregions 5E, 6E and 7E are shown on Figure 1.

unless it has been demonstrated that there will be no *negative impacts* on the natural features or their *ecological functions*.

GSCA Comment: Although the subject lands previously featured seasonal recreational use, and many of the structures remain unused on-site, the property more recently has been largely undisturbed. Given the existing forest, and significant woodlands adjacent to the property, there is the potential for significant wildlife habitat to exist on the subject lands.

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

GSCA Comment: The proponents have indicated that municipal water services will be provided to the subject lands, as such individual shore wells will not be required, eliminating the potential impact shore wells could have had on fish habitat. However, with the close proximity of the subject lands to Georgian Bay, we would request that runoff directed towards the bay have quality controls in place to mitigate the potential negative impact on fish habitat due to the anticipated increase in the release of sediments and contaminants to the water with the new proposed development.

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

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

GSCA Comment: The subject lands are adjacent to significant woodland as identified in the Grey County Official Plan. The feature is located on the west side of Balmy Beach Road across from the subject lands. The significant woodland appears to contain similar species to the forest cover on the subject lands.

Stormwater Management

A stormwater management plan will be required for the proposed development to address both quantity and quality of stormwater leaving the property. GSCA policies require that runoff from the site must be controlled to pre-development levels unless it can be shown that there will be no adverse downstream or upstream impacts. If controls are required, the minor system should control up to the 1:5-year storm to predevelopment levels, the major system should control runoff to the Regulatory Flood. Runoff routes should be designed in such a way as to not cause erosion and the runoff must be treated to an “enhanced” level.

Summary of Recommendations

Based on our review, our office has confirmed issues from a natural hazard and a natural heritage perspective. However, there appears to still be opportunity for development on the subject lands.

- 1) The preliminary lot grading plans dated February 2019, provided to our office by GM BluePlan, confirm the extent of the hazard on the property. New development shall be directed to areas outside of this natural hazard area.
- 2) A stormwater management plan must be completed for the proposed development to the satisfaction of the Grey Sauble Conservation Authority and the Township.
- 3) We are of the opinion that further studies are required to demonstrate that development on any proposed severed lots will be consistent with the policies of the Provincial Policy Statement, 2014. In this regard, GSCA requests that a scoped Environmental Impact Study (EIS) be completed to the satisfaction of the GSCA, the Township and the County of Grey. Assessment of the natural heritage features and their adjacent lands are to be evaluated. We have reviewed the Terms of Reference for this study prepared by SAAR Environmental and it was acceptable to guide the study.

If any questions should arise, please contact our office.

Regards,



Justine Lunt
Environmental Planner

enclosure



CONSTRUCTION NORTH

0 20 40
Meters

KEY PLAN

- LEGEND**
- 88 810 BALK
 - 89 810 BALK
 - 90 810 BALK
 - 91 810 BALK
 - 92 810 BALK
 - 93 810 BALK
 - 94 810 BALK
 - 95 810 BALK
 - 96 810 BALK
 - 97 810 BALK
 - 98 810 BALK
 - 99 810 BALK
 - 100 810 BALK
 - 101 810 BALK
 - 102 810 BALK
 - 103 810 BALK
 - 104 810 BALK
 - 105 810 BALK
 - 106 810 BALK
 - 107 810 BALK
 - 108 810 BALK
 - 109 810 BALK
 - 110 810 BALK
 - 111 810 BALK
 - 112 810 BALK
 - 113 810 BALK
 - 114 810 BALK
 - 115 810 BALK
 - 116 810 BALK
 - 117 810 BALK
 - 118 810 BALK
 - 119 810 BALK
 - 120 810 BALK
 - 121 810 BALK
 - 122 810 BALK
 - 123 810 BALK
 - 124 810 BALK
 - 125 810 BALK
 - 126 810 BALK
 - 127 810 BALK
 - 128 810 BALK
 - 129 810 BALK
 - 130 810 BALK
 - 131 810 BALK
 - 132 810 BALK
 - 133 810 BALK
 - 134 810 BALK
 - 135 810 BALK
 - 136 810 BALK
 - 137 810 BALK
 - 138 810 BALK
 - 139 810 BALK
 - 140 810 BALK
 - 141 810 BALK
 - 142 810 BALK
 - 143 810 BALK
 - 144 810 BALK
 - 145 810 BALK
 - 146 810 BALK
 - 147 810 BALK
 - 148 810 BALK
 - 149 810 BALK
 - 150 810 BALK
 - 151 810 BALK
 - 152 810 BALK
 - 153 810 BALK
 - 154 810 BALK
 - 155 810 BALK
 - 156 810 BALK
 - 157 810 BALK
 - 158 810 BALK
 - 159 810 BALK
 - 160 810 BALK
 - 161 810 BALK
 - 162 810 BALK
 - 163 810 BALK
 - 164 810 BALK
 - 165 810 BALK
 - 166 810 BALK
 - 167 810 BALK
 - 168 810 BALK
 - 169 810 BALK
 - 170 810 BALK
 - 171 810 BALK
 - 172 810 BALK
 - 173 810 BALK
 - 174 810 BALK
 - 175 810 BALK
 - 176 810 BALK
 - 177 810 BALK
 - 178 810 BALK
 - 179 810 BALK
 - 180 810 BALK
 - 181 810 BALK
 - 182 810 BALK
 - 183 810 BALK
 - 184 810 BALK
 - 185 810 BALK
 - 186 810 BALK
 - 187 810 BALK
 - 188 810 BALK
 - 189 810 BALK
 - 190 810 BALK
 - 191 810 BALK
 - 192 810 BALK
 - 193 810 BALK
 - 194 810 BALK
 - 195 810 BALK
 - 196 810 BALK
 - 197 810 BALK
 - 198 810 BALK
 - 199 810 BALK
 - 200 810 BALK

ORIGINAL SURVEY PRODUCED BY DELTA WORKS MARKS
 COMPLETED NOVEMBER 2018

CAUTION BE BOSTON OR POLICE JURISDICTION
 WATERMANS, SEWER, PROPERTY LINES AND OTHER
 UTILITIES SHOWN ON THIS PLAN ARE NOT TO BE
 CONSIDERED AS GUARANTEED. THE ACCURACY OF THE POSITION OF
 UTILITIES SHOWN ON THIS PLAN IS NOT GUARANTEED.
 THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL
 UTILITIES AND SHALL BE RESPONSIBLE FOR DAMAGE TO THEM.

NO./REV./DATE	REVISION / ISSUE

DRAFT



1041 1040 1010 8th Avenue, Suite 200, St. John's, NL, A1B 3P7
 Telephone: (519) 372-4822

**PROPOSED SEWERAGE & GRADING
 PLAN 447 LOTS 51, 52 & 52A
 BALMY BEACH RD - GEORGIAN BLUFFS**

Client: **DR. MEHRAN SHAHABI**

Project: JTC
 Date: FEB 2019

Drawing No: **19001-03**