



**April 22, 2021**

Via: Email

**Corporation of the Township of Tiny  
130 Balm Beach Road West  
Tiny, Ontario  
L0L 2J0**

**Attention: Shawn Persaud,  
Director of Planning and Development**

**Re: Response to Engineering Submission Comments Feb. 5, 2021  
Overhead Bridge Road, Roll #8-375-05  
Proposed Subdivision and Rezoning Application  
WMI File No.: 20-644**

Dear Shawn,

The following provides a summary of how each of the Engineering Submission comments which pertain to our work have been addressed. The comment numbers correlate to the numbering scheme presented in letters from Dave Flewelling and Jean-Francois Robitaille dated February 5, 2021.

We are also attaching a copy of our revised Functional Servicing and Stormwater Management Report.

**Engineering Comments February 5, 2021**

1. 2. 3. All widenings, blocks, 0.3m reserves and daylighting has been provided and are outlined in the Draft Plan prepared by Celeste Phillips Planning, as well as on the engineering Figures in the WMI Functional Servicing Report.
4. The relatively tight radius of the curve just south of Concession Road 12 (radius is approx. 200m) is characteristic of a design speed in the range of 70-80km/h, based on minimum horizontal curve radii information provided in TAC and MTO geometric design guidelines. As such, it is our opinion that a design speed of 80km/hr is appropriate on the basis of determining safe sight-distances, despite the arterial designation of Overhead Bridge Road (a design speed of 90 km/hr would require a radius of +/- 380m). Note that the previously provided sight-distance analysis from Lot 6 was in error, since this driveway is proposed off of Concession Road 12. From a development standpoint, the critical sight-distance analysis measurement should therefore be from Lot 5, as such, this is what is included in the revised Report. The updated sight-distance measurement from Lot 5 is estimated to be 325m, which is in excess of the recommended minimum of 270m for the 80km/h design speed, and is also is approximately equal to the 320m sight-distance for a 90km/hr design speed. We note that the sight-distance calculation for the 90km/h design speed is not explicitly provided in the report since our opinion is that analyses for this design speed is not appropriate for this situation.

The actual critical sight-distance would be from the Concession Road 12 and Overhead Bridge Road intersection, however this is not impacted by development since it is a pre-existing condition. The existing sight distance from this intersection would be less than the condition D and E sight distance of 270km/hr, but it would be in excess of the minimum stopping sight distance (Condition A). The sight-distance can be considered sufficient based on meeting the minimum criteria, however decisions regarding the safety of an existing intersection and the appropriateness of controlling measures such as posted speed limits, warning signage, warning signals, lighting, etc. should be based on collision history and other operational factors. Further to discussions with the Township, we have also added a section on design speed.

5. Figure 4 Site Servicing and Grading Plan, has been revised to show drainage being directed internally and away from Overhead Bridge Road. This change is consistent with the flow calculations.
6. We confirm all entrances will conform to Township Entrance By-Law.
7. Figure 4 of our FSR indicates the required driveways to be abandoned (removed).

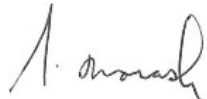
**Fire and Emergency Services Comments February 5, 2021**

1. We had discussions with the Fire Chief and agreed on the use of individual house sprinklers per NFPA 13D. The FSR section 2.4 has been revised to reflect this.
2. Celeste Phillips Planning will respond to this item.

Should you have any questions or require anything further, please contact the undersigned.

Yours truly,

**WMI & Associates Limited**



Stephen Morash, P. Eng.

Cc: Dave Flewelling, Director of Fire and Emergency Services/Fire Chief  
Jean-Francois Robitaille, The Corporation of the Township of Tiny  
Celeste Phillips, Celeste Phillips Planning

**Functional Servicing &  
Stormwater Management Report  
Overhead Bridge Road 6 Lots  
Township of Tiny**

**File 20-644  
April 2021**

*Prepared by*

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**WMI & Associates Limited  
119 Collier Street, Barrie Ontario L4M 1H5**



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- Appendix E – Traffic Calculations
- Appendix F – Project Correspondence

## **1.0 Introduction**

### **1.1 General**

WMI & Associates Ltd. has been retained by Charlebois Properties Inc. to prepare a Functional Servicing and Stormwater Management Report for the proposed Overhead Bridge Road 6 Lots, located in the Township of Tiny, County of Simcoe.

The proposed development is located on Overhead Bridge Road (formerly County Road 61) to the west of the Town of Penetanguishene. The Whip-poor-will Development is located to the west, with the Copeland Creek developments to the north. The proposed site location is a parcel of land between 584 and 564 Overhead Bridge Road. This development comprises 5.6ha and 6 residential lots. The property is legally referred to as Part of Lot 9, Concession 12 in the Township of Tiny, County of Simcoe.

The designs described herein are based on a Legal Survey prepared by Raikes (prepared November 2020), and the topographic ground information obtained from First Base Solutions.

The engineering analysis and design outlined in this report conforms with the following:

- Township of Tiny Engineering Standards (April 2003).
- Ministry of Environment (MOE) Stormwater Management Practices Planning and Design Manual (2003).
- MOE and MNR Best Management Practices Manual (1991).
- Hydrogeological Assessment Submissions Conservation Authority Guidelines for Development Applications (June, 2013).
- South Georgian Bay Lake Simcoe Source Protection Region, Approved South Georgian Bay Lake Simcoe Source Protection Plan (January 26, 2015, Amended February 15, 2018).
- Low Impact Development Stormwater Management Planning And Design Guide Version 1.0, CVCA & TRCA (2010).
- Ontario Building Code (Sept. 14, 2012 and current addendums).

### **1.2 Study Purpose and Context**

This report presents an investigation of existing storm drainage infrastructure and drainage patterns, and a design of proposed storm drainage systems to support the full build out of the Overhead Bridge Road 6 Lots development.

This report intends to demonstrate how the potable water supply, sewage disposal as well as the storm drainage and quality controls will be accommodated within the development and fit within the context of existing municipal infrastructure. Designs presented herein are in accordance with the Township of Tiny and Ontario Ministry of the Environment Conservation and Parks (MECP) design guidelines and regulations.

## **2.0 Site Servicing**

### **2.1 Servicing Options/Feasibility Overview**

The subject property is located in a privately-serviced rural area. This area of the Township is not close to either full municipal or private sewage treatment systems. The southern portion of the Whip-Poor-Will Development does operate a drinking water system comprised of one pumping station, two ground water wells and one storage reservoir. Given the potential significant cost to connect and upgrade the system it is cost prohibitive for 6 Lots. Given the significant distances and the inefficiency to connect to any existing municipal system it was concluded that this site is best developed using individual on-site water services and individual on-site sewage systems. The proposed servicing and overall feasibility of other various servicing options is discussed in the water servicing and sewage sections provided below.

In order to support the functionality of the potable water and sewage disposal, Wilson Associates completed a Hydrogeological Assessment which is included in **Appendix C**.

### **2.2 Water Servicing**

In order to demonstrate an adequate potable water supply is available, a hydrogeologic evaluation was undertaken by Wilson Associates Ltd. The Hydrogeologic Assessment Report summarizes as follows:

*“The average reported well within about 500 metres of the proposed development is of drilled construction, completed in the intermediate overburden to a depth of 57.2 metres and yields 78 litres of fresh-quality water per minute over an average period of 4.5 hours. This average yield significantly exceeds the maximum water demand of a normal four bedroom home specified by the MECP (i.e. 18L/min without inline storage). Overall groundwater conditions are very favorable for domestic water requirements. The high average well yield in the vicinity of the site is consistent with an aquifer setting that is more than capable of supplying domestic water demand with limited risk of adverse interference on the large lots proposed*

*Based on historical and on-going water quality analytical data from the nearby Whippoorwill wells, which are completed in the same overburden aquifer in which the on-site wells are likely to be completed, bacteriological and chemical quality of water from properly-constructed on-site drilled wells will be acceptable.”*

In summary, the site can be adequately supplied with water via individual drilled wells.

## **2.3 Sewage Disposal**

The subject area and surrounding lands are not currently supplied with municipal or private communal sanitary sewage services. There are no municipal or private communal sewage treatment systems in the vicinity of the subject area.

The local residences including the Whip-Poor-Will Development are serviced by individual on-site sewage disposal (septic) systems. We conclude that the best option for sewage is to service each lot by a single residential treatment system. Therefore, individual on-site sewage disposal systems are proposed for each of the 6 Lots within the subject development.

To determine the impact that 6 new septic systems may have on the environment and groundwater regime, a Hydrogeologic Evaluation Report was prepared by Wilson Associates Ltd. which included a septic system suitability and groundwater impact assessment. The assessment concluded:

*Under MECP procedure D-5-4, the nitrate impact of the proposed six lot development is 5.6 mg/L, and well within the maximum acceptable nitrate impact of 10 mg/L. The sewage impact of the proposed six privately-serviced lots will be acceptable.*

The findings of the evaluation determined that the subject development can be serviced by Class 4 individual septic systems. Each of the lots is of sufficient size to easily accommodate a private septic system. The Hydrogeological Evaluation is contained in **Appendix C** for reference.

As supported by the Terraprobe Test Pit Geotechnical Investigation, the existing soils have a T time between 4 to 6 min/cm and there was no groundwater in any of the 6 test pits that were completed.

In addition to the above, the appropriate setbacks to both existing and proposed private wells located in the vicinity will be provided in accordance with Ontario Building Code ("OBC").

## **2.4 Fire Protection**

Based on our experience with the Copeland Creek South project, it was agreed in principle that the Township's current tanker truck supply capabilities, in combination with individual home sprinklers, are adequate to service that proposed development, in addition to other existing developments and residents in the surrounding community. Therefore, the existing wells and the proposed wells on the subject site have not been, and do not need to be, designed to provide fire flows or storage.

Construction of the proposed six residential buildings and attached garages will require a residential fire sprinkler system design plan prepared by persons qualified in the design and installation of residential fire sprinkler systems. All homes constructed in the development must include a residential fire sprinkler system that meets or exceeds the requirements of the Ontario Building Code (OBC), the National Fire Protection Association's Standard NFPA 13D, and must include reservoir capacity providing 20 minutes of fire flow and sprinkler protection for attached garages, and be approved by the Township Fire Chief.

### **3.0 Existing Conditions**

#### **3.1 Topography and Drainage Patterns**

The subject site is currently undeveloped and is comprised almost entirely of wooded cover. All site runoff drains gently northward and ultimately sheet flows towards Copeland Creek, which ultimately discharges into Penetang Bay.

There is a well-defined open ditch along the west side of Overhead Bridge Road. This ditch drains a very small frontage of the subject property but mainly conveys runoff from the Overhead Bridge Road, ROW and asphalt surface. Drainage patterns on the site generally flow from south to north. This site is extremely stable given the existing vegetation.

Refer to the Drainage Plans (Figures 2 and 3) contained in **Appendix A**.

#### **3.2 Subsurface Conditions**

The Soils Map of Simcoe County (Soil Survey Report), published by the Canada Department of Agriculture (1959), reveals that the native soils throughout the subject site area are a Tioga sandy loam, which are classified within hydrologic soils group A.

A test pit investigation has been conducted by Terraprobe Inc. to verify the composition of the native soils. Six test pits which were dug in the probable location of the future septic systems to a depth of approx. 1.4m - 1.8m confirms that the native soils are a sandy material. A standing water elevation was not encountered in any of the test pits upon completion.

Since the vast majority of the subject site are within the Tioga Sandy Loam deposit, and the test pit investigations confirm that the native deposit is a sandy material, all drainage areas will be classified within Hydrologic Soils group 'A' for the purpose of establishing stormwater modelling parameters.

The Subsurface Observations and Geotechnical Comments Report, prepared by Terraprobe, Inc. is contained in **Appendix D** for reference.



## **4.0 Post-Development Drainage**

Post-development drainage patterns will resemble existing drainage patterns as closely as possible. Various low-impact development techniques are also proposed within the drainage system to minimize downstream impacts and disturbance of the wooded landscape.

The Post-Development Drainage Plan (Figure 3) is contained in **Appendix A** for reference. For runoff conveyance design calculations, refer to **Appendix B**.

## **5.0 Stormwater Management**

### **5.1 Design Criteria Guidelines**

The stormwater management design principles for the proposed Overhead Bridge Road 6 Lots Development incorporates the policies and criteria of the Ontario Ministry of the Environment Conservation and Parks (MECP), the Township of Tiny, and utilizes low impact development techniques in various aspects of the stormwater management system.

The stormwater management design criteria for the Overhead Bridge Road 6 Lots Development is as follows:

- The Ontario Government rainfall intensity-duration-frequency (IDF) curves (look up values) are to be used to determine the peak flow rates and runoff volumes generated on the site.
- Major and minor storm flows are to be drained side yard swale and by open ditches on Overhead Bridge Road cross section.
- Quantity controls are not proposed due to the site's close proximity to the discharge point of Copeland Creek into the receiving water body, Penetang Bay. Refer to the Stormwater Management Report, Copeland Creek South Project, Lot 115 Concession 2, Tiny Township, dated January 2016, WMI Project 11-173, for supporting documentation.
- Quality control is required to be provided to MECP 'enhanced' levels (80% total suspended solids removal) through the application of Low Impact Development techniques within the rural road cross section.
- Erosion and sediment control measures will be implemented prior to and during the construction of the development and maintained until the site is stabilized.

## 5.2 Hydrologic Analysis

### 5.2.1 Rainfall Data

The hydrologic modelling was completed using the Rational Method to assess the pre- and post-development peak flows for the site. Storm rainfall distribution was used for the 2, 5, 10, 25, 50, and 100 year storm event calculations.

Refer to **Appendix B** for related calculations.

### 5.2.2 Pre-Development Condition Results

Using the pre-development drainage area as illustrated in Figure 2 and the program Rational Method, the total flows were determined for the 2, 5, 10, 25, 50, and 100 year storm events. All of the above noted peak flows are summarized in Table 1 below. The hydrologic model runs for the SCS Type-II storm distribution can be found in **Appendix C**. A summary of SWMHYMO input parameters and output results are contained in **Appendix B**.

**Table 1: Pre-Development Peak Flows**

Catchment	Area (ha)	Rational Method Pre-Development Peak Flows					
		2 yr. m <sup>3</sup> /s	5 yr. m <sup>3</sup> /s	10 yr. m <sup>3</sup> /s	25 yr. m <sup>3</sup> /s	50 yr. m <sup>3</sup> /s	100 yr. m <sup>3</sup> /s
PRE, EX1, EX2	6.16	0.116	0.155	0.180	0.233	0.283	0.325

### 5.2.3 Post-Development Condition Results

The post-development peak flows for all catchments are summarized in **Table 2** below.

**Table 2: Post-Development Uncontrolled Peak Flows**

Catchment	Area (ha)	Rational Method Post-Development Peak Flows					
		2 yr. m <sup>3</sup> /s	5 yr. m <sup>3</sup> /s	10 yr. m <sup>3</sup> /s	25 yr. m <sup>3</sup> /s	50 yr. m <sup>3</sup> /s	100 yr. m <sup>3</sup> /s
PRE, EX1, EX2	6.16	0.155	0.206	0.240	0.311	0.377	0.433

In comparing Tables 1 and 2, it is evident that the post-development peak flows slightly exceed the pre-development levels. Quantity controls are not proposed to be provided, however, since the marginal increase in peak flow from this site will have negligible impact on the current capacity of downstream lands. This is due to the watershed's large drainage area of more than 1800ha of land located predominantly upstream of the proposed site area, and the corresponding peak flow 'time to peak' that is much longer than the time to peak from the subject site, therefore rendering the site's increased peak flow impact as minimal.

The post-development drainage recommendations are to control storm runoff on each individual lot. A soakaway pit has been designed for each lot to control flows generated from the impervious surface of the house as well as the driveway. The sizing of the soakaway pits has been based on a 1:5 year storm event. In our calculations we have not assumed any infiltration from the soakaway pits and this is a very conservative given the highly permeable sandy soils in this area. The house apron area in the driveway will be directed to soakaway pits via perimeter swells. In the event that there is a significant storm event such as the 1:100 year storm it is recommended that interception swales be installed on the upstream side of each individual house apron in order to direct any upstream flows from the upstream lot to the rear of the subject lands. It is our opinion that any runoff during a 1:100 year event will not adversely impact any downstream lands and inclusion of an interception swales is a very conservative measure. This drainage concept is outlined on Figure 4 in **Appendix A** of the report.

### **5.3 Quality Control**

#### **5.3.1 Lot Level Control**

To minimize any negative impacts the proposed subdivision may have on the quality of stormwater runoff, an integrated treatment train approach will be implemented.

Specifically, long length grassed swales which will be incorporated into the lot design (by virtue of the large lot sizes) which will promote infiltration of runoff from impervious surfaces into the native sandy soils. These swales will act as enhanced grass swales and serve to function as an LID system.

Additionally, roof downspouts and sump pump discharge from the proposed dwellings will be required to discharge to pervious lawn & landscape areas, so as to further promote infiltration of surface runoff and re-infiltration of groundwater. It should be noted that the proposed landscape features will also provide inherent water balance benefit by way of evapotranspiration and nutrient uptake through vegetation, thus further supporting the hydrologic cycle.

## **5.4 Source Water Protection**

From a source water protection perspective, and based on a review of the South Georgian Bay Lake Simcoe Source Protection Region (Approved South Georgian Bay Lake Simcoe Source Protection Plan, January 26, 2015 - amended February 15, 2018 - and MOECC's Source Protection Atlas), the subject site is located within a Wellhead Protection Area D with a vulnerability score of 2. The application is only for 6 Lots (no commercial), therefore the development and the associated engineering design is not subject to further design requirements related to source water protection (i.e. there are no water quantity threats and as a result a Section 59 Notice is not required).

A copy of an email from Severn Sound Environmental Association is included in **Appendix F**.

## **5.5 Storm Drainage System & Outlet Design Details**

The following summarizes the major features provided within the Stormwater Management system:

- Major and Minor storm flows will be conveyed by swales away from Overhead Bridge Road and to the rear of the lots. Diverting all flows away from Overhead Bridge Road may require some minor fill and tree removal close to the right of way of Overhead Bridge Road.
- Based on Table 4.4 of the MOE Stormwater Management Planning and Design Manual, March 2003, in order to provide stormwater quality control for a 25mm event over 48 hours the required total storage volume necessary for capture for each house is 5m<sup>3</sup>. Given we are providing 15m<sup>3</sup> per house we have exceeded this requirement.
- Driveway culverts are side based on 1:5 year events with the minimum size being 400mm Ø.

Refer to **Appendix B** for supporting calculations.

## **6.0 Storm Drainage System Maintenance**

The proposed storm soakaway system will require maintenance in order to function properly. The inlets should be inspected at a minimum on a quarterly basis, and after all significant rainfall events (>50mm) to ensure they are not clogged. Recommended operation & maintenance procedures are as follows:

- Sediment and trash deposition on the soakaway pit inlets should be frequently cleaned and disposed of to prevent migration into the roadside ditches, as required. In particular this should be done promptly following major storms and snow melts.
- Grass clippings should not be blown into the ditches to minimize organic loading and prevent clogging.

## **7.0 Sediment and Erosion Controls**

Effective erosion and sediment control must be established prior to construction commencement and maintained until the site has been stabilized. Pro-active measures will be required to limit the amount of sediment travelling down slope. Where site grading is required, exposure of the soil during construction should be minimized to avoid erosion and sedimentation.

Topsoil Stripping: Topsoil stripping will be reduced as much as possible on-site. Where grading is necessary, the exposed soil will be stabilized by seeding immediately upon being set to grade. Should topsoil stockpiling be required, the stockpiles will be kept to manageable levels for grass/weed cutting purposes.

Silt Fence: Silt fence will be placed along the down slope of all excavated material to prevent sediment transport. Periodic inspections and repairs to the silt fence should be performed regularly, as well as after every rainfall event.

Mud Mat: Mud tracking from construction traffic must be controlled through the use of a mud-mat consisting of clear stone located at the site's construction entrance/ exit.

Vegetated Buffers: Existing grassland vegetation/wooded areas along the development limits are to be maintained wherever possible. These areas will provide a natural barrier to filter potentially sediment-laden overland flow before it is released from the site.

Finally, the site Engineer Building Contractor will be responsible for completing routine inspections of the sediment and erosion control structures throughout the construction phase of the development, particularly after rainfall events. All damaged or clogged control devices or fencing must be repaired immediately.

## **8.0 Traffic Impact Brief**

### **8.1 Background**

The subject site is located at the northwest corner of Overhead Bridge Road and Concession Road 12 East and is to comprise 6 residential Lots.

It is bound by existing single family residential developments to the north, south and west, which front onto Overhead Bridge Road and local residential roads such as Whip-poor-will Drive and Kingfisher Crescent and Goldfinch Crescent. 5 of the 6 proposed lots are to have their driveway accesses directly onto Overhead Bridge Road. One Lot will have access to Concession 12.

## **8.2 Traffic Volume Impacts**

Trip generation rates were determined using the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10<sup>th</sup> Edition. The single family detached housing dataset (code # 210) provides a wide range of statistical data from a number of sites that are similar in nature to the proposed development; as such this data was utilized for the subject site. The data for the 'Weekday Peak hour of Adjacent Street Traffic, One Hour Between 7am and 9am' time period is utilized throughout this analysis since it results in conservative estimates of trips and is representative of peak travel periods in residential neighborhoods such as this.

Using the fitted curve equation from the 'Weekday Peak hour of Adjacent Street Traffic, One Hour Between 7am and 9am' report, ten (10) total vehicular trips (entering and exiting) are expected to be generated by this development. Refer to the Trip Generation Spreadsheet contained in **Appendix E** for calculation details.

From the review of the local road network and likely travel destinations such as shopping centers, employment lands, recreation facilities/attractions relative to the location of the primary arterial roads through the Township (namely County Roads 6, 25, 26, and 93), it is estimated that the majority of vehicular trips generated from the development will travel to/from the south via Overhead Bridge Road, Concession Road 11 East and Golf Link Road.

The minor increase in vehicular trips as a result of the proposed development is insignificant and will have little to no effect on traffic movements and capacities on existing roadways and the stop controlled intersections in the local area. Therefore, it is expected that the development can be accommodated by the existing transportation system without retrofits or improvements.

## **8.3 Sight-Distance Analysis**

Ontario's Ministry of Transportation (MTO) outlines specific sight-distance geometry criteria to ensure safe vehicular movement to and from intersecting roadways and to ensure that through traffic on the adjacent roadway will have adequate time and space for manoeuvrability and braking.

Based on the geometric characteristics of Overhead Bridge Road in the area of the subject site (the horizontal curve geometry in particular), it is estimated that the design speed would be 80km/hr (It is noted that the posted speed limit in this area is 70km/hr). Based on this design speed, the minimum required stopping sight-distance is approximately 130m (referenced from MTO Geometric Design Standards for Ontario Highways Manual, Figure E3-6). The minimum safe sight distance for vehicles turning left or right onto a two-lane highway and assuming the operating speeds before being overtaken by vehicles travelling in the same direction (condition D & E, as referenced from figure E3-6) is approximately 270m. Refer to Figure E3-6 figure contained in **Appendix E** for sight-distance calculation details.

From review of existing site conditions and sight-lines from the vantage point of the proposed Lots 1 to 5 driveway accesses onto Overhead Bridge Road, visibility is noted to be adequate to achieve the minimum stopping sight distance, since there are no notable obstructions and the road alignment is relatively straight from this location up to and including 130m away in either direction. There is a slight curve in Overhead Bridge Road to the south of the subject site which does restrict the available sight-distance to an estimated 325m from the vantage point of Lot #5 at Overhead Bridge Road, however this sight-distance is still well in excess of the Condition D & E minimum as described previously.

#### **8.4 Design Speed**

WMI did not undertake a complete geometric assessment of the Overhead Bridge Road in terms of speed limits. We did have a consultation with Township staff that indicated a concern with vehicles consistently exceeding the posted speed limit of 70km/hr. We did complete a cursory review of the horizontal curve south of the Concession 12 and Overhead Bridge Road intersection which is in the order of 200 m. Based on this radius as well as having regard of the concern from Township staff with the current rate of speed being travelled on this portion of the Overhead Bridge Road it is reasonable to consider methods of speed reduction including traffic calming and reducing the posted speed limit to 60 km/hr.

#### **8.5 Traffic Impact Summary**

This Traffic Impact Brief demonstrates that the proposed Charlebois development between 584 and 564 Overhead Bridge Road can be accommodated within the local community without adverse impacts on existing transportation systems. In particular, the estimated 10 peak hourly trips onto Overhead Bridge Road is relatively insignificant in terms of traffic volume, and should be easily accommodated by existing roads. Also, the sight-distance onto Overhead Bridge Road is noted to be generally adequate based on MTO design guidelines.

### **9.0 Summary and Conclusions**

This Functional Servicing and Stormwater Management Report demonstrates how the proposed Overhead Bridge Road 6 Lots can be serviced and integrated into the existing community, without imposing any adverse effects. Specifically, we note the following:

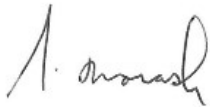
- The 6 Lots can be adequately supplied with potable drinking water via the installation of individual drilled wells located on each lot.
- Sewage disposal can be achieved by installing a conventional Class 4 disposal system on each lot.

- Stormwater quality control will be achieved in the conveyance system to MECP enhanced levels by retaining runoff in soakaway pits, for infiltration into the native sandy soil. These lot level controls will be provided to further promote infiltration of impervious surface runoff.
- The use of silt fence, mud mats, and existing vegetated buffers will ensure downstream stormwater quality is maintained during construction.

We confirm the development of the 6 Lots can be achieved and recommendations of this report can support the Planning Application.

Respectfully submitted,

**WMI & Associates Limited**



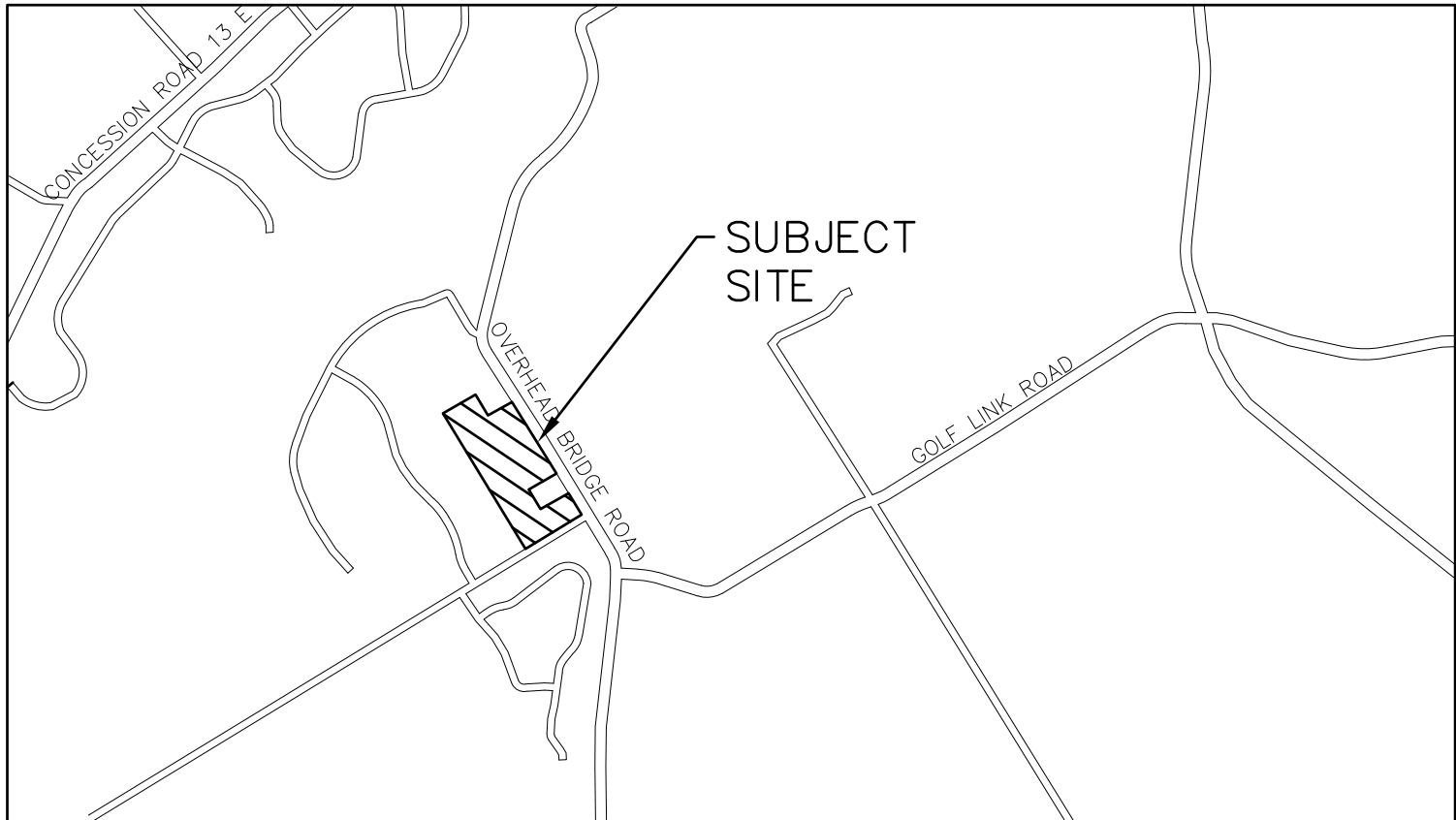
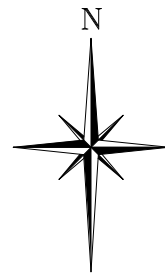
Stephen Morash, P.Eng.



## **APPENDIX A**

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### **Figures & Drawings**



Drawing Title  
SITE LOCATION PLAN

Project Title  
OVERHEAD BRIDGE ROAD LOTS

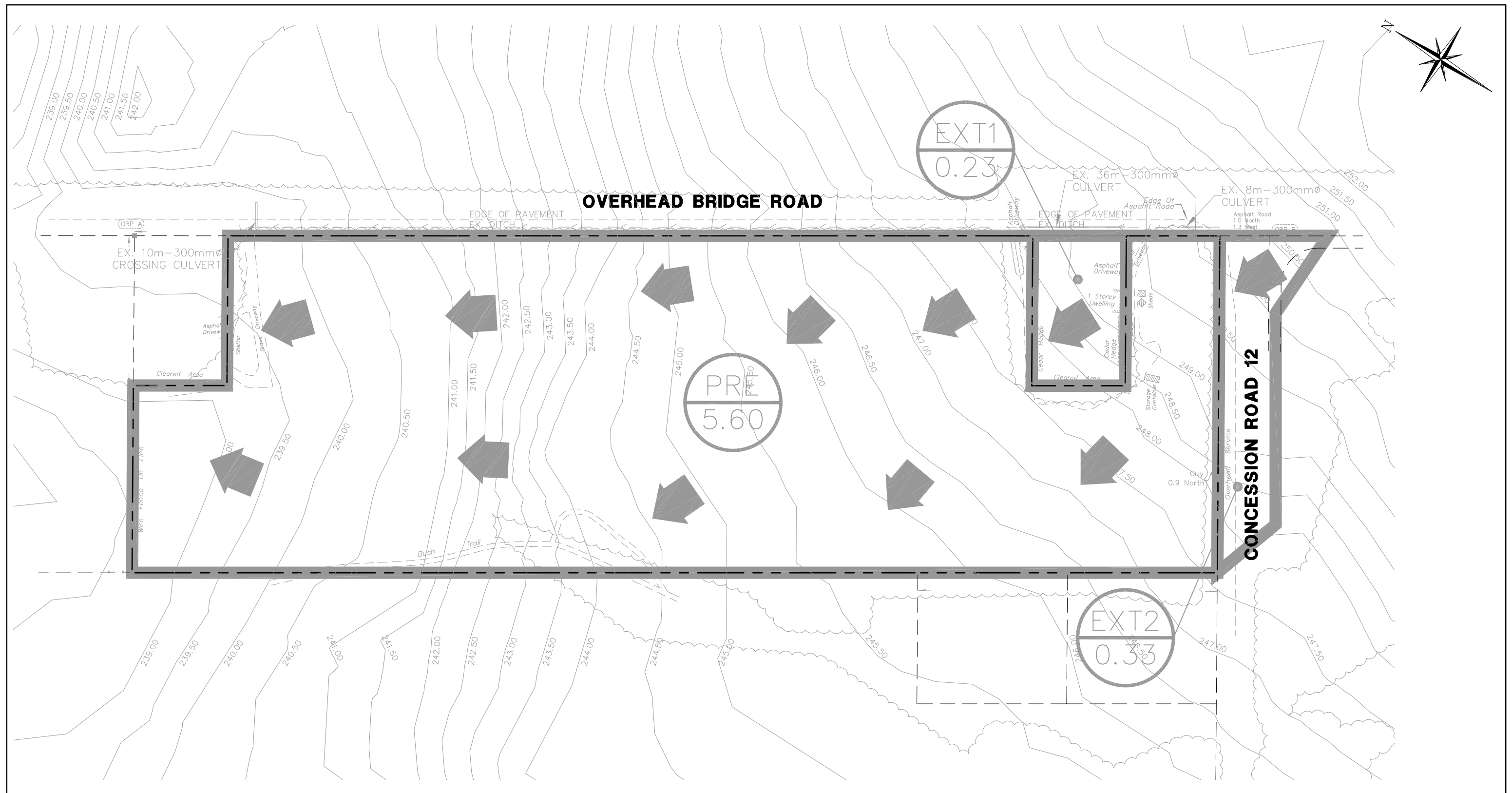
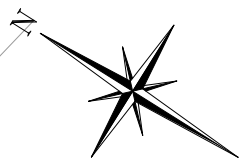


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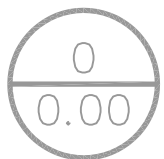
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Scale	N.T.S.

Checked By	SM
Project No.	20-644

Figure No.	<b>FIG1</b>
------------	-------------



**Legend:**



CATCHMENT IDENTIFICATION

CATCHMENT AREA (HA)



LIMITS OF CATCHMENT AREA



OVERLAND FLOW DIRECTION

**Drawing Title**

PRE-DEVELOPMENT  
DRAINAGE PLAN

**Project Title**

OVERHEAD BRIDGE ROAD LOTS



WMI & Associates Limited  
119 Collier Street  
Barrie, Ontario  
L4M 1H5  
705-797-2027  
www.wmiengineering.ca

DATE: MAR. 16, 2021

Drawn By  
AW

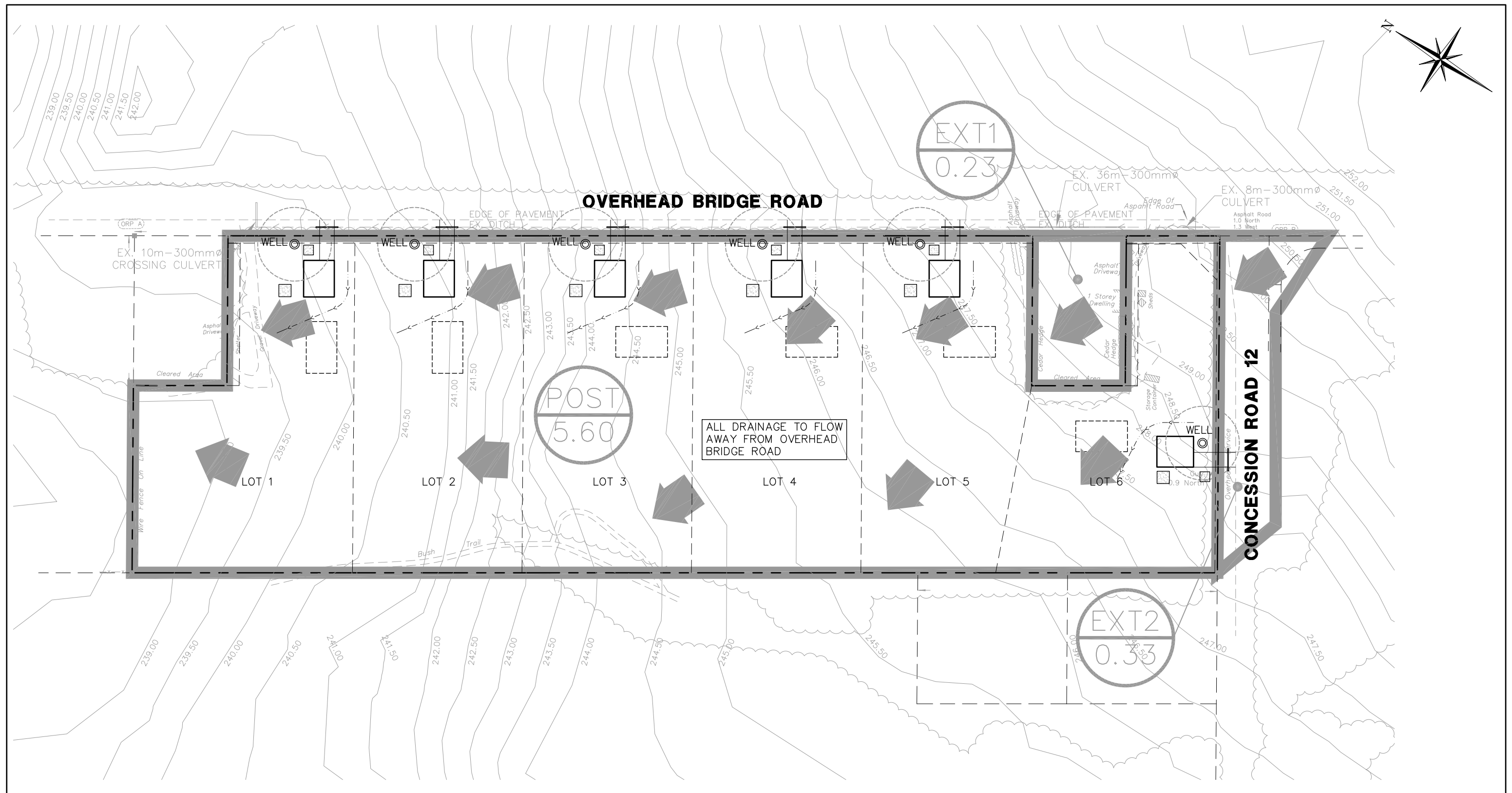
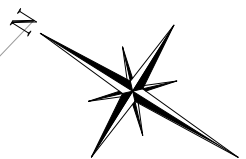
Checked By  
SM

Figure No.

Scale  
1:1500

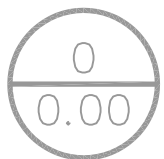
Project No.  
20-644

**FIG 2**



ALL DRAINAGE TO FLOW AWAY FROM OVERHEAD BRIDGE ROAD

**Legend:**



CATCHMENT IDENTIFICATION  
CATCHMENT AREA (HA)




OVERLAND FLOW DIRECTION



LIMITS OF CATCHMENT AREA

Drawing Title  
POST-DEVELOPMENT  
DRAINAGE PLAN

Project Title  
OVERHEAD BRIDGE ROAD LOTS

 <b>WMI &amp; Associates Limited</b> 119 Collier Street Barrie, Ontario L4M 1H5 705-797-2027 <a href="http://www.wmiengineering.ca">www.wmiengineering.ca</a>		DATE: MAR. 16, 2021
		Figure No. <b>FIG 3</b>
Drawn By AW	Checked By SM	
Scale 1:1500	Project No. 20-644	



**APPENDIX B**

---

**Stormwater Management  
Calculations**



**RUNOFF COEFFICIENT CALCULATIONS  
 "C" SPREADSHEET**

Date: 2020-12-07

Project No.: 20-644

Project: Overhead Bridge Road

Prepared By: BD

**RUNOFF COEFFICIENT NUMBERS**

Land Cover		Hydrologic Soil Groups		
		A-AB	B-BC	C-D
Cultivated Land	0 - 5% grade	0.22	0.35	0.55
	5 - 10% grade	0.3	0.45	0.6
	10 - 30% grade	0.4	0.65	0.7
Pasture Land	0 - 5% grade	0.1	0.28	0.4
	5 - 10% grade	0.15	0.35	0.45
	10 - 30% grade	0.22	0.4	0.55
Woodlot or Cutover	0 - 5% grade	0.08	0.25	0.35
	5 - 10% grade	0.12	0.3	0.42
	10 - 30% grade	0.18	0.35	0.52
Lakes and Wetlands		0.05	0.05	0.05
Impervious Area	(i.e. buildings, roads, parking lot, etc.)	0.95	0.95	0.95
Gravel	(not used for proposed parking or storage areas)	0.4	0.5	0.6
Residential	Single Family	0.3	0.4	0.5
	Multiple (i.e. semi, townhouse, apartment, etc.)	0.5	0.6	0.7
Industrial	Light	0.55	0.65	0.75
	Heavy	0.65	0.75	0.85
Commercial		0.6	0.7	0.8
Unimproved Areas		0.1	0.2	0.3
Lawn	< 2% grade	0.05	0.11	0.17
	2 - 7% grade	0.1	0.16	0.22
	> 7% grade	0.15	0.25	0.35

Ref: Runoff Coefficient Numbers - Adapted from Design Chart 1.07, Ontario Ministry of Transportation, "MTO Drainage Management Manual", MTO. (1997)

 <<< Elements Requiring Input Information

**PRE-DEVELOPMENT CONDITION**

Land Cover		Hydrologic Soil Groups		
		A-AB	B-BC	C-D
Cultivated Land	0 - 5% grade			
	5 - 10% grade			
	10 - 30% grade			
Pasture Land	0 - 5% grade			
	5 - 10% grade			
	10 - 30% grade			
Woodlot or Cutover	0 - 5% grade	5.73		
	5 - 10% grade			
	10 - 30% grade			
Lakes and Wetlands				
Impervious Area	(i.e. buildings, roads, parking lot, etc.)	0.30		
Gravel	(not used for proposed parking or storage areas)			
Residential	Single Family			
	Multiple (i.e. semi, townhouse, apartment, etc.)			
Industrial	Light			
	Heavy			
Commercial				
Unimproved Areas				
Lawn	< 2% grade	0.13		
	2 - 7% grade			
	> 7% grade			

Total Area (ha) = 6.16

Runoff Coefficient, C = 0.12

**POST-DEVELOPMENT CONDITION**

Land Cover		Hydrologic Soil Groups		
		A-AB	B-BC	C-D
Cultivated Land	0 - 5% grade			
	5 - 10% grade			
	10 - 30% grade			
Pasture Land	0 - 5% grade			
	5 - 10% grade			
	10 - 30% grade			
Woodlot or Cutover	0 - 5% grade	5.13		
	5 - 10% grade			
	10 - 30% grade			
Lakes and Wetlands				
Impervious Area	(i.e. buildings, roads, parking lot, etc.)	0.60		
Gravel	(not used for proposed parking or storage areas)			
Residential	Single Family			
	Multiple (i.e. semi, townhouse, apartment, etc.)			
Industrial	Light			
	Heavy			
Commercial				
Unimproved Areas				
Lawn	< 2% grade	0.43		
	2 - 7% grade			
	> 7% grade			

**Total Area (ha) = 6.16**

**Runoff Coefficient, C = 0.16**





**RATIONAL METHOD CALCULATIONS**

Date: 2020-12-07

Project No.: 20-644

Project: Overhead Bridge Road

Prepared By: BD

**Elements Requiring Input Information**

Rainfall Intensity-Duration-Frequency Coefficients from: [http://www.mto.gov.on.ca/IDF\\_Curves/terms.shtml](http://www.mto.gov.on.ca/IDF_Curves/terms.shtml)

2-year		5-year		10-year		25-year		50-year		100-year	
A =	21.5	A =	28.6	A =	33.3	A =	39.2	A =	43.6	A =	48.0
B =	-0.699	B =	-0.699	B =	-0.699	B =	-0.699	B =	-0.699	B =	-0.699

Rational Method Formula

$$Q = \frac{C \times I \times A}{360} \quad (\text{m}^3/\text{s})$$

where, C = Runoff Coefficient  
 I = Rainfall Intensity, (mm/hr)  
 A = Drainage Area, (ha)

Rainfall Intensity Equation (2-100 year storm events)

$$I_{2-100} = A \times (T_c / 60)^B \quad (\text{mm/hr})$$

where, A = Rainfall IDF Coefficient  
 B = Rainfall IDF Coefficient  
 T<sub>c</sub> = Time of Concentration, (min)

Runoff Coefficient Equations  
 Based on MTO Drainage Manual (1984), page BD-4

2-year C<sub>2</sub> = C  
 5-year C<sub>5</sub> = C  
 10-year C<sub>10</sub> = C  
 25-year C<sub>25</sub> = 1.10 x C  
 50-year C<sub>50</sub> = 1.20 x C  
 100-year C<sub>100</sub> = 1.25 x C

Rainfall Intensity Equation (25mm storm event)  
 Based on the MOE SWMP Manual (2003), Eq'n 4.9

$$I_{25\text{mm}} = (43 \times C) + 5.9 \quad (\text{mm/hr})$$

where, C = Runoff Coefficient

For storms having a return period of more than 10 years, the Runoff Coefficient, C, will be increased as indicated above, up to a maximum value of 1.

Catchment I.D.	A (ha)	T <sub>c</sub> (min.)	C	Q <sub>25mm</sub> (m <sup>3</sup> /s)	Q <sub>2</sub> (m <sup>3</sup> /s)	Q <sub>5</sub> (m <sup>3</sup> /s)	Q <sub>10</sub> (m <sup>3</sup> /s)	Q <sub>25</sub> (m <sup>3</sup> /s)	Q <sub>50</sub> (m <sup>3</sup> /s)	Q <sub>100</sub> (m <sup>3</sup> /s)
PRE	6.16	15.0	0.12	0.023	0.116	0.155	0.180	0.233	0.283	0.325
POST	6.16	15.0	0.16	0.035	0.155	0.206	0.240	0.311	0.377	0.433



**STORMWATER MANAGEMENT CALCULATIONS  
 SOAKAWAY PIT DESIGN**

Date: 2020-12-02

Project No.: 20-644

Project: Overhead Bridge Road

Prepared By: BD

**Purpose:** An soakaway pit is proposed on each lot to provide quality control, water balance, volume control and phosphorus reduction benefits. The soakaway pits will be sized to store the entire runoff volume generated by the contributing building rooftop area during a 25mm storm event while maintaining a maximum draw down time of 48 hours.

**Elements Requiring Input Information**

**Infiltration Volume:**

$$\begin{aligned} \text{Total Area} &= 0.02 \text{ ha} \\ \text{Runoff Volume} &= 25 \text{ mm} \\ \text{Infiltration Volume} &= A \text{ (ha)} \times \text{RV (mm)} \times 10 \text{ m}^3 \\ &= 0.02 \text{ ha} \times 25 \text{ mm} \times 10 \text{ m}^3 \\ &= 5 \text{ m}^3 \end{aligned}$$

**Max. Allowable Depth:**

Based on the Ministry of the Environment's (MOE) Stormwater Management Design Manual dated March 2003, Page 4-20, Equation 4.2: Maximum Allowable Depth is:

$$\begin{aligned} d &= \frac{PT}{1000} \quad \text{where,} \quad d = \text{maximum allowable depth (m)} \\ &= \frac{40 \times 48}{1000} \quad P = \text{percolation rate (Table 4.4 of MOE Manual OR} \\ &= 1.92 \text{ m} \quad \text{Geotechnical/Hydrogeological Assessments) (mm/hr)} \\ & \quad T = \text{draw down time (24-48hr) (hr)} \\ \text{Provided Depth} &= 0.60 \text{ m} \end{aligned}$$

**Min. Bottom Area:**

Based on the Ministry of the Environment's (MOE) Stormwater Management Design Manual dated March 2003, Page 4-26, Equation 4.3: Infiltration Bottom Area is:

$$\begin{aligned} \text{Min. Required Bottom Area:} \\ A &= \frac{1000 V}{P n t} \quad \text{where,} \quad A = \text{bottom area (m}^2\text{)} \\ &= \frac{1000 \times 5}{40 \times 0.4 \times 48} \quad V = \text{runoff volume to be infiltrated (m}^3\text{)} \\ &= 6.5 \text{ m}^2 \quad P = \text{percolation rate of surrounding native soil (mm/hr)} \\ & \quad n = \text{porosity of the storage media (0.4 for clear stone/1.0 for} \\ & \quad \text{infiltration basins)} \\ & \quad t = \text{retention time (hr)} \\ \text{Provided Bottom Area} &= 9.0 \text{ m}^2 \end{aligned}$$

**Excavation Volume:**

$$\begin{aligned} \text{Min. Required Excavation Volume} &= \frac{\text{Infiltration Volume/porosity of the storage media}}{0.4} < (0.4 \text{ for clear stone/1.0 for infiltration basins}) \\ &= \frac{5}{0.4} \text{ m}^3 \\ &= 12.5 \text{ m}^3 \\ \text{Provided Excavation Volume} &= L \times W \times D \text{ m}^3 \\ &= 3 \text{ m} \times 3 \text{ m} \times 0.6 \text{ m} \\ &= 5.4 \text{ m}^3 \end{aligned}$$

**Soil Cover:**

Based on the Ministry of the Environment's (MOE) Stormwater Management Design Manual dated March 2003, Page 4-21, Figure 4.4: Soil Cover for Trenches (based on frost heave potential).

$$\text{Min. Soil Cover} = 0.5 \text{ m}$$

**Notes:** - Refer to the latest Geotechnical Letter for the percolation rate which was estimated to be 4-6min/cm (100mm/hr) through grain size distribution analyses. Considering this, and based on Table C1 in Appendix C of the LID Design Guide and assuming that the soil horizon is continuous within 1.5m below the proposed bottom of the infiltration features, the mean infiltration rate assumed (100mm/hr) has been divided by a safety correction factor of 2.5 to calculate the design infiltration rate of 40mm/hr. Refer to Table C2 in Appendix C of the LID Design Guide for reference to the safety correction factor noted above. Groundwater was not encountered on-site.

# Culvert Calculator Report

## 20-644 Driveway Culvert

Comments: Driveway Culvert sized to convey peak flows generated by the 5-year design storm (1.50ha contributing area - 0.082cu.m/s).

Minimum culvert size of 400mm (CMP) required at a minimum slope of 0.5%

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	0.44 m	Headwater Depth/Height	0.87
Computed Headwater Elev:	0.40 m	Discharge	0.0820 m <sup>3</sup> /s
Inlet Control HW Elev.	0.36 m	Tailwater Elevation	0.00 m
Outlet Control HW Elev.	0.40 m	Control Type	Outlet Control

Grades			
Upstream Invert	0.04 m	Downstream Invert	0.00 m
Length	9.00 m	Constructed Slope	0.005000 m/m

Hydraulic Profile			
Profile	M2	Depth, Downstream	0.20 m
Slope Type	Mild	Normal Depth	0.33 m
Flow Regime	Subcritical	Critical Depth	0.20 m
Velocity Downstream	1.26 m/s	Critical Slope	0.019060 m/m

Section			
Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	0.41 m
Section Size	400 mm	Rise	0.41 m
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	0.40 m	Upstream Velocity Head	0.04 m
Ke	0.90	Entrance Loss	0.03 m

Inlet Control Properties			
Inlet Control HW Elev.	0.36 m	Flow Control	Unsubmerged
Inlet Type	Projecting	Area Full	0.1 m <sup>2</sup>
K	0.03400	HDS 5 Chart	2
M	1.50000	HDS 5 Scale	3
C	0.05530	Equation Form	1
Y	0.54000		

**APPENDIX C**

---

**Hydrogeological Assessment  
(by Wilson Associates Inc.)**

December 5, 2020

Mr. Frank Charlebois  
Charlebois Properties Inc.  
430 Concession 16 East  
Tiny, ON  
L9M 0P1

**Wilson  
Associates**

Consulting Hydrogeologists

Dear Mr. Charlebois:

Re: Desktop Hydrogeological Assessment - Proposed Residential Lots  
Overhead Bridge Road at Concession Road 12  
Part Lot 9, Concession 12, Township of Tiny

---

It is proposed to develop six residential lots on a 5.5968ha parcel of land located at the northwest corner of the intersection of Overhead Bridge Road and Concession Road 12, within part of Lot 9, Concession 12, Township of Tiny. The attached drawing, prepared by Celeste Philips Planning Inc., shows the location and layout of the proposed lots.

It is proposed to service the lots with individual drilled water wells and private subsurface sewage disposal systems.

To support the development proposal, a desktop hydrogeological study was conducted involving the following:

- A desktop review of readily available background hydrogeological information for the site and vicinity.
- A review of site-specific subsurface information detailed in the December 3, 2020 Test Pit Investigation letter report from Terraprobe Inc. (copy attached).
- Sewage system development impact assessment under current Ministry of the Environment, Conservation and Parks (MECP) Procedure D-5-4 "Technical Guideline For Individual On-Site Sewage Systems : Water Quality Impact Risk Assessment", commonly known as the "nitrate guideline".
- A review of water well records to provide comment regarding aquifer conditions and groundwater supply potential.

This desktop study was completed at the request of Charlebois Properties Inc.

## **SITE SETTING, GEOLOGY AND HYDROGEOLOGY**

The proposed development is located northwest corner of the intersection of Overhead Bridge Road and Concession Road 12. The site is a mostly rectangular parcel, with two existing residential lots dividing the frontage on Overhead Bridge Road. Total frontage on Overhead Bridge Road is about 365m and frontage along Concession Road 12 is about 137m. The subject lands are forested and undeveloped. The site exhibits a slope to the north or northwest, with a total relief of about 10m. Lands to the west, north and south are occupied by residential lots. Apart from the two existing residential lots fronting on Overhead Bridge Road, lands to the east are undeveloped forest.

No surface water bodies are located on or in the close vicinity of the site. Simcoe County website mapping suggests that wetland conditions may be present downslope to the north of the site.

The subject property is situated within the Simcoe Uplands physiographic region of southern Ontario, which consists of a series of rolling till plains situated above the glacial Lake Algonquin shoreline. According to Ontario Geological Survey Map P.975 "Quaternary Geology of the Orr Lake - Nottawasaga Area", the upper soils consist of glaciolacustrine shallow water deposits of sand with minor fine gravel. The Terraprobe report indicates that all subsurface samples collected consisted of sand with traces of gravel and/or silt, consistent with Quaternary geology mapping.

According to the record of a log of a 1978 test well completed about 1.5km to the southwest, (Well Record # 5715544), the overburden is approximately 100 to 110 metres deep in the vicinity of the site. Nearby well records report that the upper half of the overburden largely consists of granular deposits of sand, or sand and gravel, with discontinuous, variable fine-grained deposits at depths typically in the range of 20m to 40m below grade. Distant well records typically report the lower overburden to be fine-grained in character.

The bedrock beneath the site consists of limestone or dolostone of the Simcoe Group.

The majority of local groundwater supplies are obtained from the granular deposits of the intermediate overburden. The lower overburden typically provides little to no potential for groundwater supply due to its fine-grained character, and the bedrock is less often utilized due to the expense of deep drilling and the potential of obtaining aesthetically poor-quality water.

## WELL POTENTIAL ANALYSIS

To establish well yield and basic water quality probabilities, up-to-date MECP records for water wells located within approximately 500 metres of the proposed development were reviewed. Records for well abandonments, geotechnical or environmental monitoring wells are not included in the summary. The MECP water well record database contains the records for 18 water wells within the review area. The water well records used in the preparation of the review are attached. The following summarizes the reported well record information within the review area.

Number of wells:	18
Drilled Construction:	18
Dug/Bored Construction:	0
Sandpoint Construction:	0
Unknown Construction:	0
Completed in Overburden:	18 (100%)
Completed in Bedrock:	0

The following summarizes the reported well performance data.

	Maximum	Minimum	Average
Well Depth (m)	74.7	29.6	57.2
Test Rate (L/min)	455	23	78
Test Period (Hours)	24	1	4.5

### Reported Water Quality:

Fresh:	18 or 100% (no objectionable tastes or odours)
Sulphurous:	none
Mineralized/Saline:	none
Quality Not Reported:	none
Dry Well:	none

The average reported well within about 500 metres of the proposed development is of drilled construction, completed in the intermediate overburden to a depth of 57.2 metres and yields 78 litres of fresh-quality water per minute over an average period of 4.5 hours. This average yield significantly exceeds the maximum water demand of a normal four bedroom home specified by the MECP (i.e. 18L/min without inline storage). Overall groundwater conditions are very favourable for domestic water requirements. The high average well yield in the vicinity of the site is consistent with an aquifer setting that is more than capable of supplying domestic water demand with limited risk of adverse interference on the large lots proposed.

It should be noted that the above summary and analysis is based solely on information contained in the MECP water well record database as reported by drilling contractors and is not

subject to quality control, however the overall analytical summary is very favourable.

### **WATER QUALITY**

Based on the probable depth of on-site wells (i.e.  $\pm 57\text{m}$ ) in the intermediate overburden, the bacteriological quality of water from properly-constructed wells is anticipated to be acceptable. Samples of water collected in 1992 by Wilson Associates from Whippoorwill Well #2 (Well Record No. 5728953), completed about 300m to the south and in the same overburden aquifer in which the on-site wells are likely to be completed, were reported to contain no detectable Total Coliform or E. Coli bacteria (analysis attached). The Tiny Township 2019 Annual Drinking Water Report for the Whippoorwill Wells 1 and 2 reports that 104 samples of raw water were collected from the Whippoorwill wells, with non-detectable to low (1 CFU/100mL) Total Coliform and no detectable E. Coli bacteria (attached).

The chemical quality of groundwater from the intermediate overburden aquifer is known to be acceptable. Samples of water collected by Wilson Associates in 1992 from Whippoorwill Well #2 (Well Record No. 5728953), completed about 300m to the south and in the same overburden aquifer in which the on-site wells are likely to be completed, were reported to be slightly alkaline (pH 7.92) and to exhibit moderate hardness (198mg/L as  $\text{CaCO}_3$ ) (analyses attached). All parameters determined in 1992 were at acceptable levels, with no indicators of surface water impact (i.e. elevated levels of nitrate, chloride, sodium, etc...). The Tiny Township 2019 Annual Drinking Water Report for the Whippoorwill system reports no applicable chemical water quality exceedances of the Ontario Drinking Water Quality Standards (attached).

### **SEWAGE SYSTEM IMPACT ASSESSMENT**

Under the current MECP "Technical Guideline For Individual On-Site Sewage Systems : Water Quality Impact Risk Assessment" (Procedure D-5-4, also known as the "nitrate guideline"), each proposed development of five lots or greater utilizing individual on-site sewage systems requires an assessment of groundwater impact potential. The purpose of the assessment is to ensure that the discharge from the individual on-site sewage systems will have a minimal effect on groundwater and the present or potential use of adjacent properties. The assessment involves a three-step process, with the need to advance to the next step dependant on the requirements of the previous step. Where the background nitrate content of shallow groundwater exceeds 10 mg/L, additional development cannot normally be supported.

Based on samples collected from the nearby Whippoorwill wells (per the 2019 Annual Drinking Water Report), the nitrate content of groundwater is low, recently ranging between 0.2 and 0.7mg/L.

Under Step 1 of the guideline, for developments where the lot size for each private residence within the development is one hectare or larger (with no lots being less than 0.8ha in area), the risk that the limits imposed by the guideline may be exceeded is considered acceptable with no additional hydrogeologic assessment. Step 1 of the guideline is not applicable based on lot size.



Step 2 of the guideline is applicable where groundwater resources can be confidently demonstrated to be hydraulically isolated from potential sewage pathways. As the upper overburden is predominantly granular, Step 2 of the guideline does not apply.

Under Step 3 of the guideline, a mass-balance calculation is used to determine the potential impact of the proposed lots. Under the current MECP guideline only infiltrating precipitation and the volume of water contained in the sewage may be considered as dilutants for the nitrate contained in septic effluent. To establish the infiltration rate, the percentage of the local water surplus which may infiltrate is calculated using the Rational Method approach. According to the Terraprobe soil evaluation and Quaternary geology mapping, the upper soil profile consists of sand (infiltration factor 40%), the overall relief is hilly (infiltration factor 10%) and the cover will likely be cleared (infiltration factor 10%), all resulting in an infiltration factor of 60%. The water surplus for the site is assumed to be 456mm/year, based on the 1981-2010 precipitation normal for the closest Environment Canada weather station - Midland WPCP weather station (1040.6mm/year, rounded to 1041mm/year) and the actual evapotranspiration rate as identified for Copeland Creek subwatershed by the 2015 Severn Sound Source Protection Area Approved Assessment Report (Table 3.2-3 - actual evapotranspiration 585mm/year).

As such, the annual infiltration rate will be 273mm (60% of 456mm), representing about 26% of average annual precipitation in the sub-watershed.

The following mass-balance formula is used to calculate the impact of the proposed development under the MECP guideline:

$$Q_T C_T = Q_S C_S + Q_P C_P$$

Where:

$Q_T$  = Sum of  $Q_S$  and  $Q_P$

$C_T$  = Nitrate concentration

$Q_S$  = Volume of sewage (6 lots @ 1000 L/day/lot, per MECP guideline)

$C_S$  = Nitrate content of sewage (40 mg/L, per MECP guideline)

$Q_P$  = Infiltration (273mm/year x 5.5968ha x 10,000L/mm/ha =  $1.53 \times 10^7$  L/yr)

$C_P$  = Nitrate content of shallow groundwater (0.7mg/L assumed, see above)

Therefore:

$$(2.19 \times 10^6 \text{ L/yr} + 1.53 \times 10^7 \text{ L/yr}) \times C_T = (2.19 \times 10^6 \text{ L/yr} \times 40 \text{ mg/L}) + (1.53 \times 10^7 \text{ L/yr} \times 0.7 \text{ mg/L})$$

$$C_T = 5.6 \text{ mg/L}$$


Based on the MECP-specified daily volume of sewage for the purposes of the Procedure D-5-4 assessment, and an infiltration rate of 273mm/year, the nitrate impact of the proposed six-lot development is 5.6mg/L, and well within the maximum acceptable nitrate impact of 10mg/L. As such, the sewage impact of the proposed six privately-serviced lots will be acceptable.

**CONCLUSIONS AND RECOMMENDATIONS**

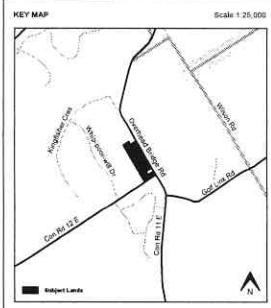
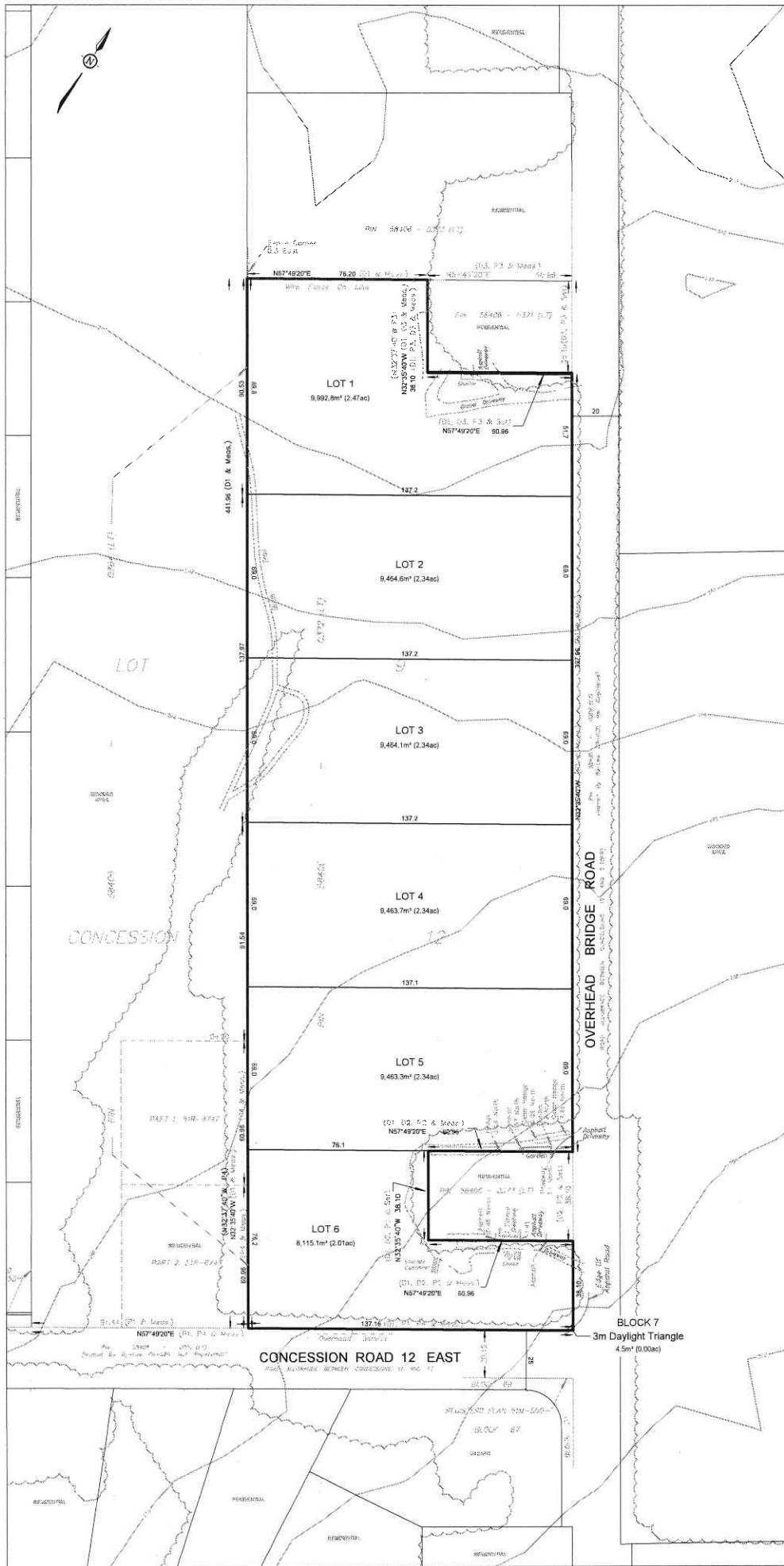
1. The average reported well within about 500 metres of the proposed development is of drilled construction, completed in the intermediate overburden to a depth of 57.2 metres and yields 78 litres of fresh-quality water per minute over an average period of 4.5 hours. This average yield significantly exceeds the maximum water demand of a normal four bedroom home specified by the MECP (i.e. 18L/min without inline storage). Overall groundwater conditions are very favourable for domestic water requirements. The high average well yield in the vicinity of the site is consistent with an aquifer setting that is more than capable of supplying domestic water demand with limited risk of adverse interference on the large lots proposed.
2. Based on historical and on-going water quality analytical data from the nearby Whipoorwill wells, which are completed in the same overburden aquifer in which the on-site wells are likely to be completed, the bacteriological and chemical quality of water from properly-constructed on-site drilled wells will be acceptable.
3. Under MECP Procedure D-5-4, the nitrate impact of the proposed six-lot development is 5.6mg/L, and well within the maximum acceptable nitrate impact of 10mg/L. The sewage impact of the proposed six privately-serviced lots will be acceptable

Should there be any questions regarding the above information and discussion, please do not hesitate to contact this office.

**IAN D. WILSON ASSOCIATES LIMITED**

  
Geoffrey Rether, B.Sc., P. Geo.





**DRAFT PLAN OF SUBDIVISION**  
 PART OF LOT 9, CONCESSION 12  
 TOWNSHIP OF TINY  
 COUNTY OF SIMCOE

**LAND USE SCHEDULE**

USE	LOTS / BLOCKS	AREA
Single Detached Lots	Lots 1-6	55,863.3m² (13.83ac)
3m Daylight Triangle	Block 7	4.5m² (0.00ac)
<b>Total</b>		<b>55,867.8m² (13.83ac)</b>

**LEGEND**

- 2.0m Contours
- Wooded Area

**SURVEYOR'S CERTIFICATE**

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

DATE \_\_\_\_\_

PETER T. RAVES, ED., C.L.S., M.R.C.S.  
 RAVES GEOMATICS INC.

**OWNER'S CERTIFICATE**

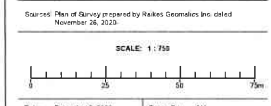
CHARLEBOIS PROPERTIES INC. BEING THE REGISTERED OWNER OF THE SUBJECT LANDS, HEREBY AUTHORIZES CELESTE PHILLIPS PLANNING INC. TO PREPARE AND SUBMIT A DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

DATE \_\_\_\_\_

FRANK CHARLEBOIS, PRESIDENT  
 CHARLEBOIS PROPERTIES INC.

- ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT**
- a) Shown on plan
  - b) Shown on plan
  - c) See Key Plan
  - d) Residential
  - e) Shown on plan
  - f) Shown on plan
  - g) None
  - h) Shown on plan
  - i) Municipal Water
  - j) Sand and Gravel Sand
  - k) Shown on plan
  - l) Full Municipal Services
  - m) Shown on plan

No.	DATE	REVISION	BY



Date: December 2, 2023 Drawn By: AM

85 Bayfield Street, Suite 300,  
 Barrie, ON L4M 3A7  
 T: 705 797 8977  
 F: 705 730 8850  
 celeste@cplan.ca

**CELESTE PHILLIPS PLANNING INC.**



December 3, 2020

File No. 3-20-0134-21  
Barrie Office

Charlebois Properties Inc.  
430 Concession 16 East  
Tiny, ON  
L9M 0P1

Attention: Mr. Frank Charlebois, frankc@charleboishaulage.com

---

**RE: TEST PIT INVESTIGATION  
OVERHEAD BRIDGE ROAD  
TINY, ONTARIO**

---

Dear Mr. Charlebois:

This letter presents the results of our Test Pit Investigation carried out at the above noted site. The purpose of the investigation was to retrieve samples for the estimation of soil percolation rates.

**1. SITE AND PROJECT DESCRIPTION**

The site is located at Overhead Bridge Road and the 12<sup>th</sup> Concession in the Township of Tiny, in the County of Simcoe, Ontario. The site consists of six lots, numbered one through six.

**2. FIELD WORK**

The field work for the investigation was carried out on November 24, 2020. The test hole locations are noted on the appended Test Pit Location Plan.

A total of six (6) test holes were advanced using an excavator extending to depths between 1.44 and of 1.8 m below existing grades.

The field work was carried out by a member of our field staff. The excavator was provided and operated by the client.

---

**Terraprobe Inc.**

**Greater Toronto**

11 Indell Lane  
Brampton, Ontario L6T 3Y3  
(905) 796-2650 Fax: 796-

**Hamilton – Niagara**

903 Barton Street, Unit 22  
Stoney Creek, ON, L8E 5P5  
(905) 643-7560 Fax: 643-

**Central Ontario**

220 Bayview Drive, Unit 25  
Barrie, Ontario L4N 4Y8  
(705) 739-8355 Fax: 739-

**Northern Ontario**

1012 Kelly Lake Rd., Unit 1  
Sudbury, Ontario P3E 5P4  
(705) 670-0460 Fax: 670-

### 3. SUBSURFACE CONDITIONS

The details of the subsurface conditions encountered at the test pit locations are presented on the Table 1 summarized below. It should be noted that the conditions are confirmed at the test pit locations only and could vary between and beyond the locations. No water ingress was observed in all six test locations on the completion of excavation.

Table 1

Lab No.	Location of sample	Soil Description	Unified Soil Classification	Estimated Soil "T"-Time (min/cm)	Depth of Test Hole (m)
719a	Lot 1	Sand, trace gravel, trace silt	SW-SP	4 to 6	1.44 m
719b	Lot 2	Sand, trace silt	SW-SP	4 to 6	1.8 m
719c	Lot 3	Sand, trace gravel, trace silt	SW-SP	4 to 6	1.5 m
719d	Lot 4	Sand, trace silt	SW-SP	4 to 6	1.6 m
719e	Lot 5	Sand, trace silt	SW-SP	4 to 6	1.8 m
719f	Lot 6	Sand, trace silt, trace gravel	SW-SP	4 to 6	1.8 m

Terraprobe witnessed the excavation of the test holes. Samples were retrieved between 0.5 and 1.2 m in the open test holes. Please refer to the appended Test Pit Location Plan. Terraprobe Inc. assumes no responsibility for the application of the above-noted percolation rates ("T"-Time) for use in design of an on-site sewage disposal system. The design of an on-site sewage system must be conducted by a qualified professional with due regard for a number of site-specific conditions in addition to the percolation rates of the soils.

### 4. ESTIMATION OF SOIL PERCOLATION RATE ('T-TIME')

Samples were obtained of the native materials encountered in each of the six test holes. A grain size distribution curve was plotted for the samples and is appended on the Wash Sieve Analysis Test Reports. The estimated soil percolation rate ("T-Time") is greater than 4 to 6 min/cm.

## 5. CLOSURE

Terraprobe Inc. does not present the estimated percolation rates given in this report as a warranty of performance for the soils tested. Furthermore, the estimate provided is indicative of the sample in a disturbed state only. It must be emphasized that factors such as, but not limited to, consistency, structure, organic content, density and degree of saturation could influence the estimate. The client or third party using this information as a basis for tile field design assumes all risk associated with their evaluation of this report and all other criteria used in the design of any private sewage disposal system.

This report was prepared for the express use of Charlebois Properties and its retained design consultants and is not for the use by others. Contractors bidding on this project should provide their own interpretation of the data and/or conduct their own investigation and compose their own analyses/conclusions. This report is the copyright of Terraprobe Inc. and no part of this report may be reproduced by any means, in any form, without the prior written permission of Terraprobe Inc.

We trust this information is sufficient for your present purposes. Should you have any questions concerning the above, please do not hesitate to contact the undersigned.

**Terraprobe Inc.**



Steven Green, P.Eng.  
Associate  
Barrie Branch Manager



Enclosures: Test Pit Location Plan (1 page)  
Wash Sieve Analysis (6 pages)



**LEGEND**

- Site Boundary
- Test Pit Location

NOT TO SCALE.  
BOREHOLE LOCATIONS ARE APPROXIMATE.

**Terraprobe**  
220 Bayview Drive, Barrie, Ontario, L4N 4Y8  
Tel: (705) 739-8355 Fax: (705) 739-8369

<b>Title:</b>	<b>OVERHEAD BRIDGE ROAD TEST PIT LOCATION PLAN</b>
<b>File No.</b>	3-20-0134

**FIGURE :**  
**1**



1



2

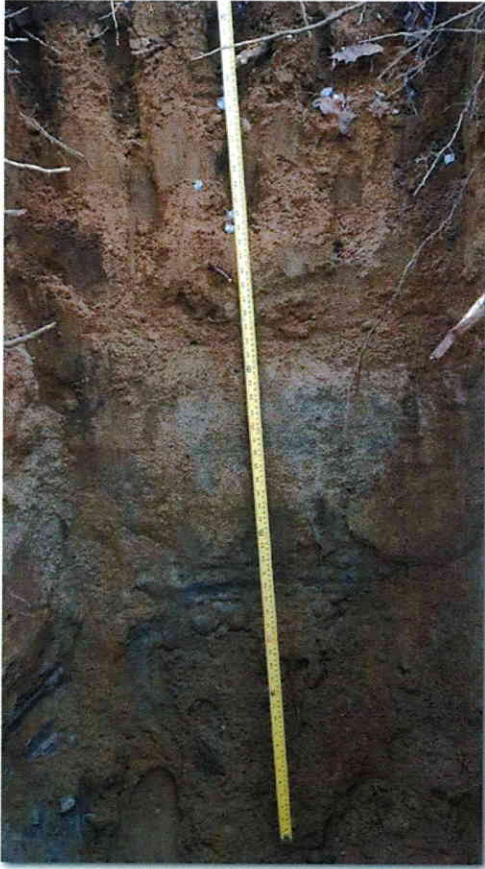


3

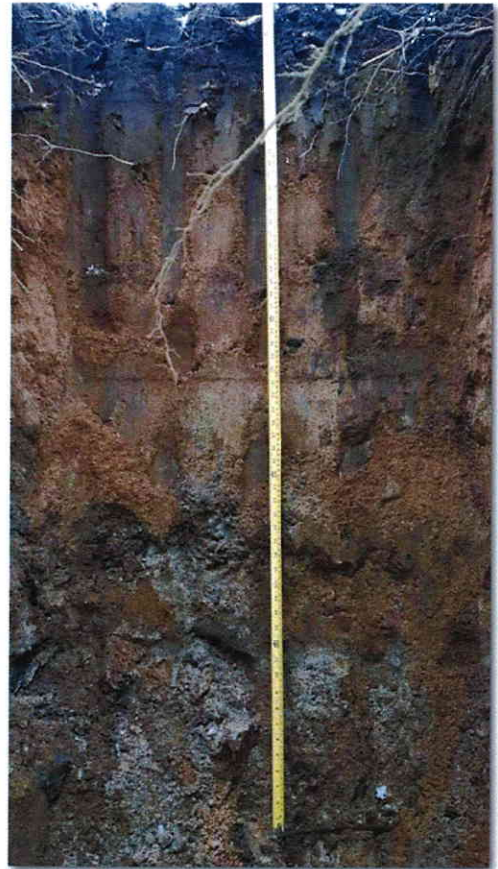


4





5



6



**Terraprobe**

**WASH SIEVE ANALYSIS  
TEST REPORT**

PROJECT: Overhead Bridge Road  
 LOCATION: Tiny, ON  
 CLIENT: Charlesbois Properties Inc.

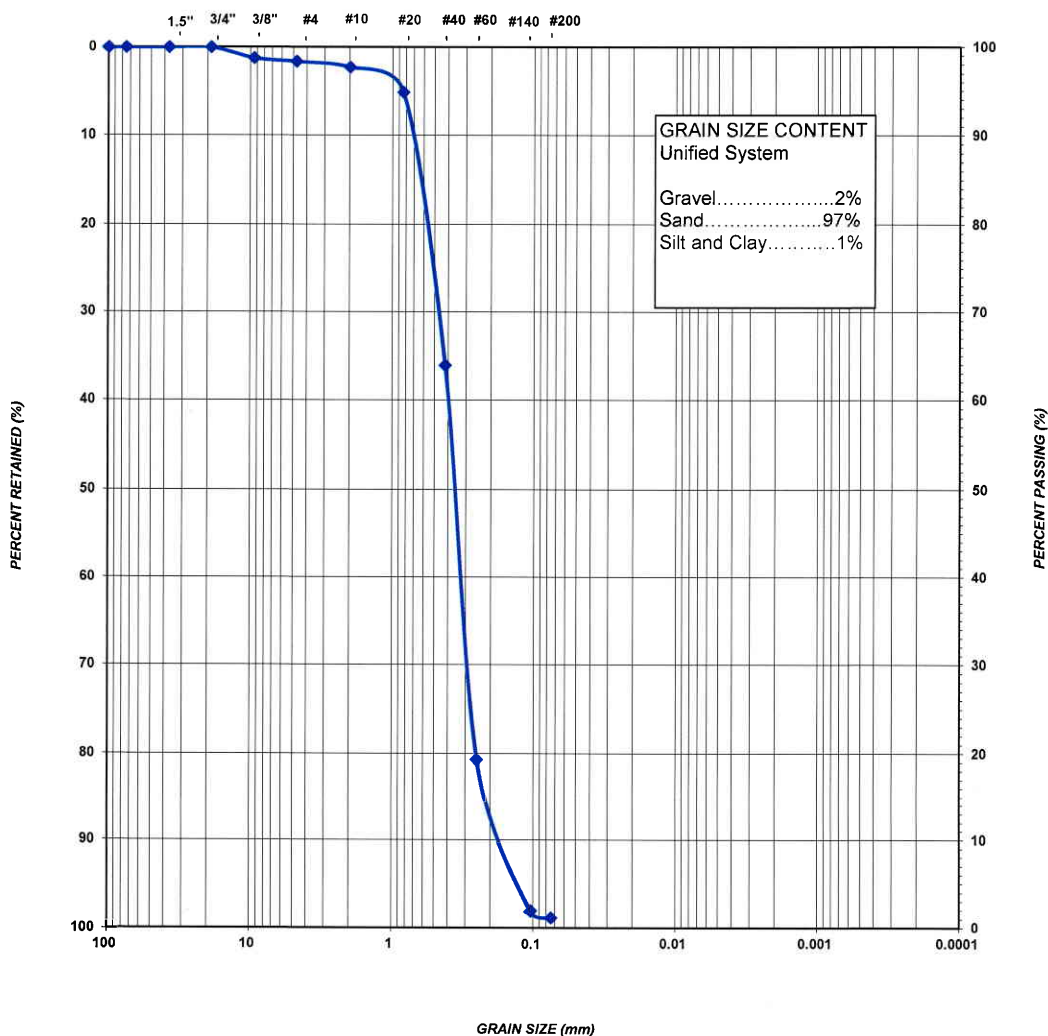
FILE NO.: 3-20-0134  
 LAB NO.: 719a  
 SAMPLE DATE: Nov-24-20  
 SAMPLED BY: S.W.

TEST PIT NUMBER: 1      SAMPLE DEPTH: 0.5 to 1.5m  
 SAMPLE NUMBER: 1  
 SAMPLE LOCATION: Lot 1  
 SAMPLE DESCRIPTION: Sand, trace gravel, trace silt

Estimated Septic T-Time: 4 to 6 min/cm

**GRAIN SIZE DISTRIBUTION**

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
	SAND						
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				



**Terraprobe**

**WASH SIEVE ANALYSIS**

**TEST REPORT**

PROJECT: Overhead Bridge Road

LOCATION: Tiny, ON

CLIENT: Charlesbois Properties Inc.

FILE NO.: 3-20-0134

LAB NO.: 719b

SAMPLE DATE: Nov-24-20

SAMPLED BY: S.W.

TEST PIT NUMBER: 2

SAMPLE DEPTH: 0.5 to 1.5m

SAMPLE NUMBER: 1

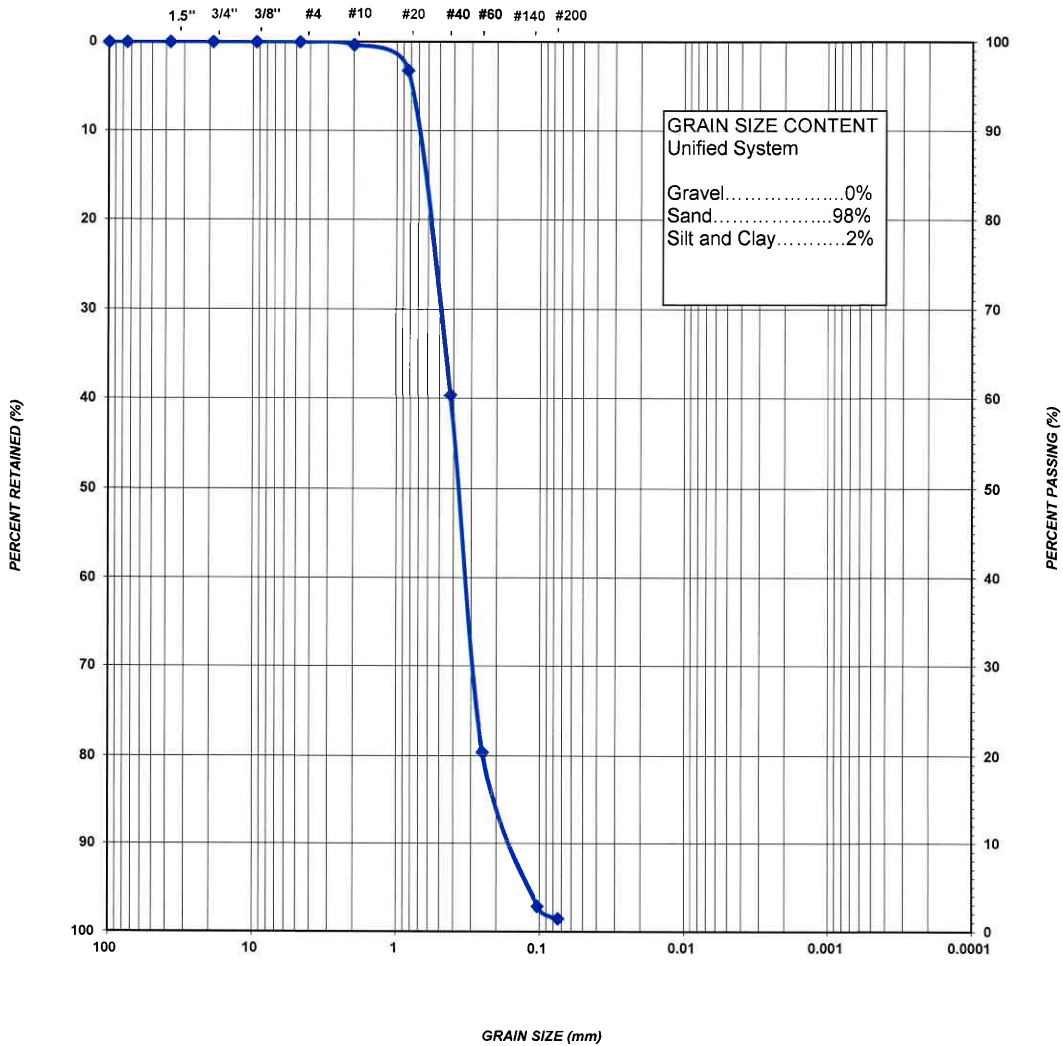
SAMPLE LOCATION: Lot 2

SAMPLE DESCRIPTION: Sand, trace silt

Estimated Septic T-Time: 4 to 6 min/cm

**GRAIN SIZE DISTRIBUTION**

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
	SAND						
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				



**Terraprobe**

**WASH SIEVE ANALYSIS  
TEST REPORT**

PROJECT: Overhead Bridge Road  
 LOCATION: Tiny, ON  
 CLIENT: Charlesbois Properties Inc.

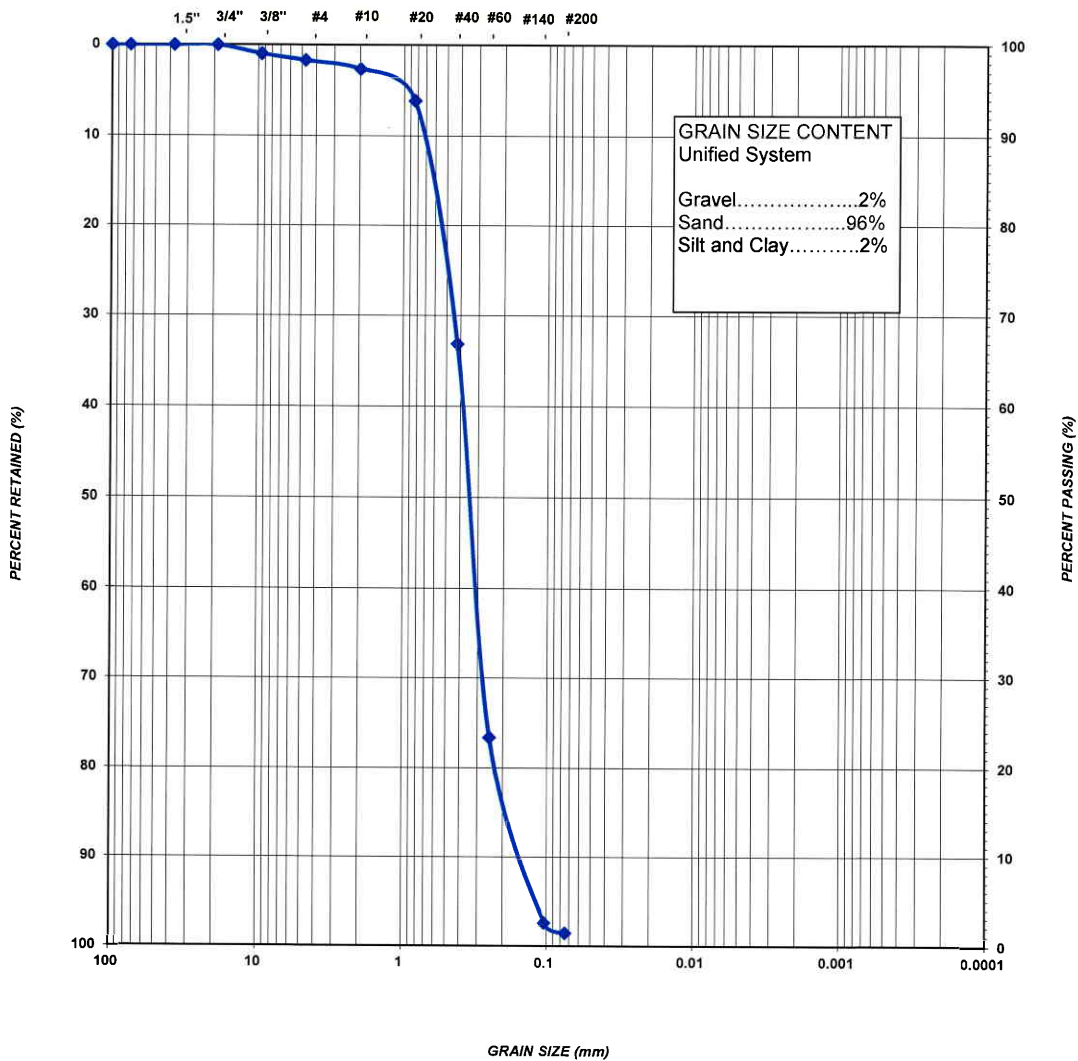
FILE NO.: 3-20-0134  
 LAB NO.: 719c  
 SAMPLE DATE: Nov-24-20  
 SAMPLED BY: S.W.

TEST PIT NUMBER: 3      SAMPLE DEPTH: 0.5 to 1.5m  
 SAMPLE NUMBER: 1  
 SAMPLE LOCATION: Lot 3  
 SAMPLE DESCRIPTION: Sand, trace gravel, trace silt

**Estimated Septic T-Time: 4 to 6 min/cm**

**GRAIN SIZE DISTRIBUTION**

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
	SAND						
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				



**Terraprobe**

**WASH SIEVE ANALYSIS  
TEST REPORT**

PROJECT: Overhead Bridge Road  
LOCATION: Tiny, ON  
CLIENT: Charlesbois Properties Inc.

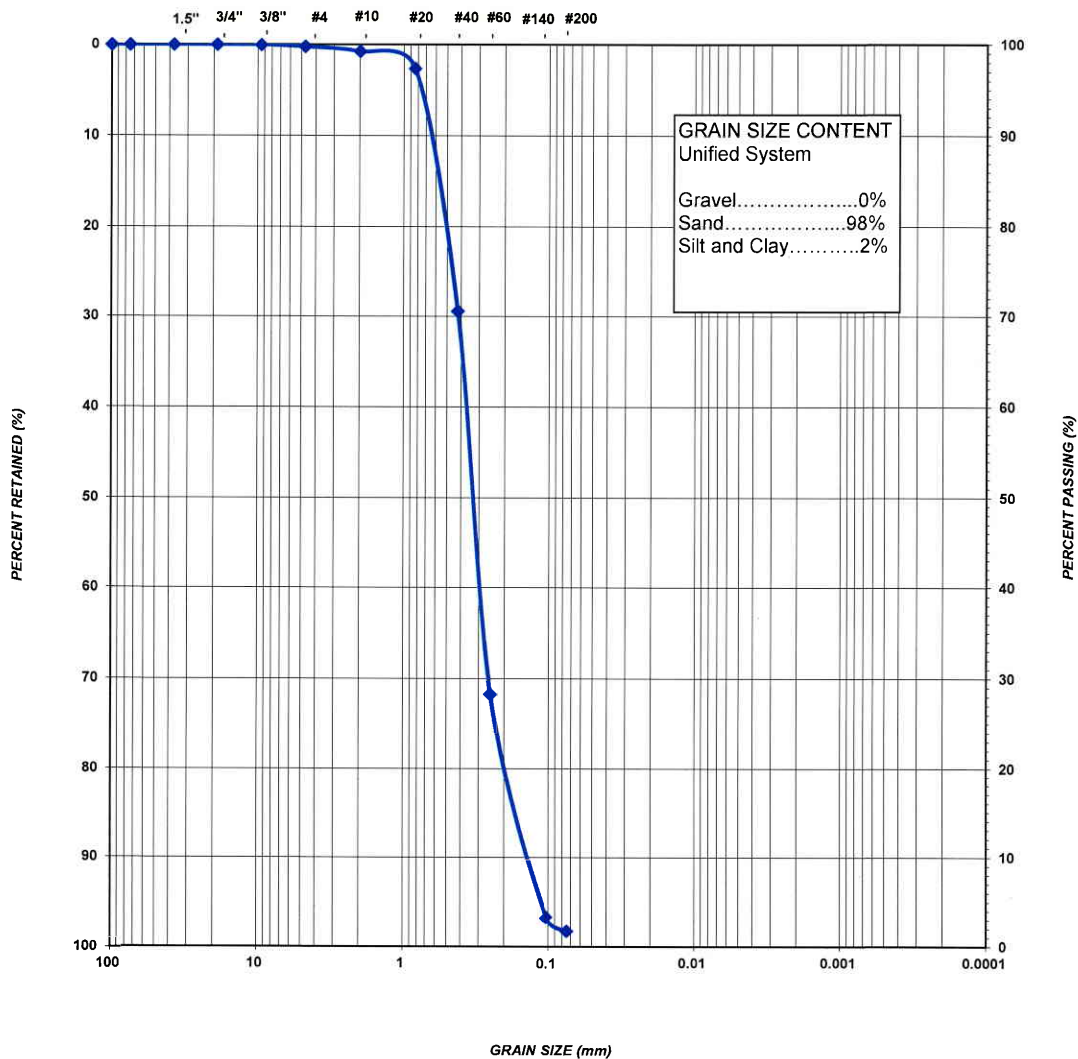
FILE NO.: 3-20-0134  
LAB NO.: 719d  
SAMPLE DATE: Nov-24-20  
SAMPLED BY: S.W.

TEST PIT NUMBER: 4      SAMPLE DEPTH: 0.5 to 1.5m  
SAMPLE NUMBER: 1  
SAMPLE LOCATION: Lot 4  
SAMPLE DESCRIPTION: Sand, trace silt

**Estimated Septic T-Time: 4 to 6 min/cm**

**GRAIN SIZE DISTRIBUTION**

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
			SAND				
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				



**Terraprobe**

**WASH SIEVE ANALYSIS  
TEST REPORT**

PROJECT: Overhead Bridge Road  
 LOCATION: Tiny, ON  
 CLIENT: Charlesbois Properties Inc.

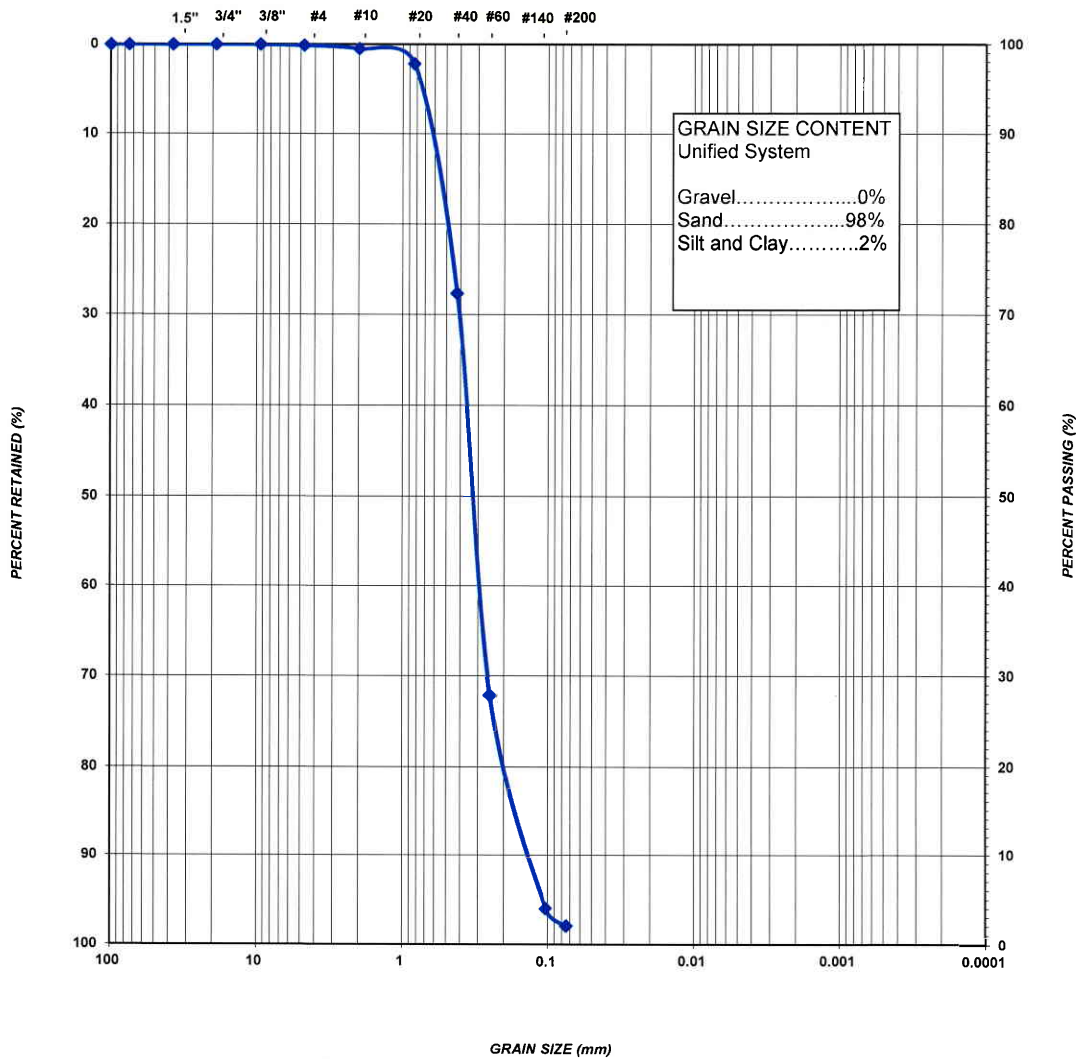
FILE NO.: 3-20-0134  
 LAB NO.: 719e  
 SAMPLE DATE: Nov-24-20  
 SAMPLED BY: S.W.

TEST PIT NUMBER: 5      SAMPLE DEPTH: 0.5 to 1.5m  
 SAMPLE NUMBER: 1  
 SAMPLE LOCATION: Lot 5  
 SAMPLE DESCRIPTION: Sand, trace silt

**Estimated Septic T-Time: 4 to 6 min/cm**

**GRAIN SIZE DISTRIBUTION**

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
			SAND				
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				



**Terraprobe**

**WASH SIEVE ANALYSIS  
TEST REPORT**

PROJECT: Overhead Bridge Road  
 LOCATION: Tiny, ON  
 CLIENT: Charlesbois Properties Inc.

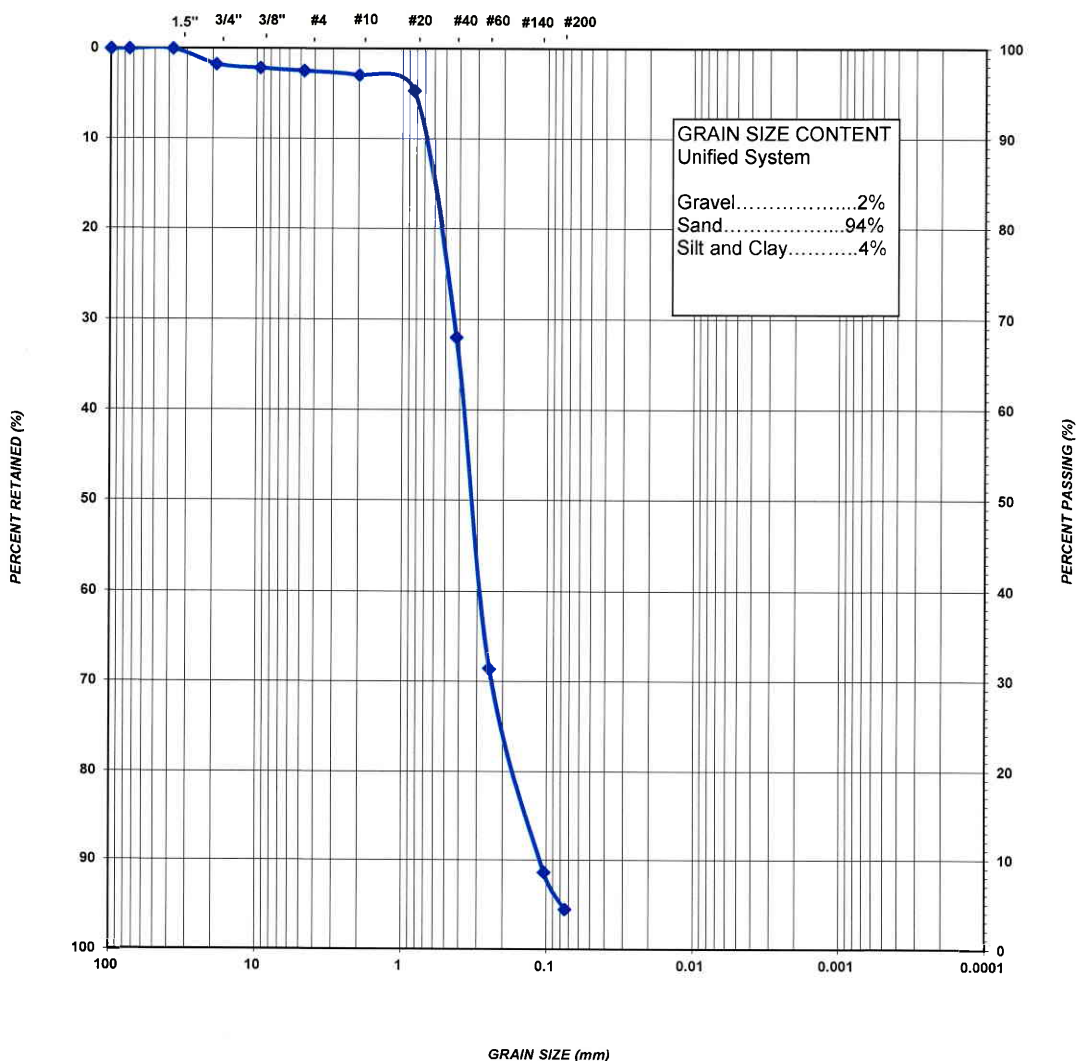
FILE NO.: 3-20-0134  
 LAB NO.: 719f  
 SAMPLE DATE: Nov-24-20  
 SAMPLED BY: S.W.

TEST PIT NUMBER: 6      SAMPLE DEPTH: 0.5 to 1.5m  
 SAMPLE NUMBER: 1  
 SAMPLE LOCATION: Lot 6  
 SAMPLE DESCRIPTION: Sand, trace silt, trace gravel

**Estimated Septic T-Time: 4 to 6 min/cm**

**GRAIN SIZE DISTRIBUTION**

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
			SAND				
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				



Ministry of Health

Ministère de la Santé

Laboratory Services Branch

Service de Laboratoire

Date Received / Date Reçue

Lab. No. / N° du Lab.

### Bacteriological Analysis of Drinking Water

Sample taken by / Echantillon prélevé par: **G. REITHIER**

Location of supply (Lot, Con., Twp.) / Lieu de Prélèvement (Lot, Concession, Commune): **L9, C11, T1WY**

County: **Simcoe**

Date collected / Date du Prélèvement: **JAN 13 '92**

Your name and return address must appear on all copies / Votre nom et votre adresse de retour doivent paraître sur toutes les copies.

Name / Nom: **JAN D. WILSON ASSOC.**

Street, R.R., Box No. / Rue, R.R., Boite Postale: **BOX 277**

City, Town / Ville: **STRATFORD**

Province: **ONT**

Postal Code / Code Postal: **N5A6T1**

- Private Citizens: check this box. Drinking water only. See reverse of report for interpretation.
- Citoyen Privé: cocher cette case... Eau potable seulement. Voir au verso pour interprétation.

Consult your local health unit for further information. / Pour les directives additionnelles consultez votre unité sanitaire locale.

SHADED AREAS FOR OFFICIAL AGENCIES ONLY / ZONE OMBRÉE RÉSERVÉE AUX AGENTS OFFICIELS

Non potable samples MUST be received within 6 hours if unrefrigerated or within 24 hours if refrigerated.

#### CHECK APPROPRIATE BOXES / COCHER TOUTES LES CASES APPROPRIÉES

<b>DRINKING WATER</b> <input type="checkbox"/> Treated <input checked="" type="checkbox"/> Non-treated <input checked="" type="checkbox"/> Municipal <input type="checkbox"/> Other Public <input type="checkbox"/> Single Household		<b>NON-DRINKING WATER</b> <input type="checkbox"/> Recreational <input type="checkbox"/> Hydrotherapy Spa, Whirlpool <input type="checkbox"/> Wading Pool <input type="checkbox"/> Other:		<b>COMMENTS</b>  
<input type="checkbox"/> Swimming Pool-Indoor <input type="checkbox"/> Swimming Pool-Outdoor		<input type="checkbox"/> Sewage		

<b>BACTERIAL COUNT / NUMÉRATION DES BACTÉRIES</b> Based on 100 ml volume / Base sur un volume de 100 ml		<b>BACTERIAL COUNT</b> Based on 10 ml volume / APG	
Total coliforms / Coliformes Colibacilles 00	Faecal Streptococci / Streptocoques fécaux 00	<b>JAN 13 '92</b>	
Background P. aeruginosa	Presumptive Staphylococci	S. aureus <b>PUBLIC HEALTH LABORATORY</b> <b>750 MEMORIAL AVE.</b> <b>ORILLIA ONT L3V 6K5</b>	
Technician	Checked by		



**REPORT OF ANALYSIS**

**ARECO CANADA INC., 28 CONCOURSE GATE, NEPEAN, ONTARIO, K2E 7T7**  
 TELEPHONE: (613) 228 1145 FAX: (613) 228 1148

LABORATORY I.D.: 140192-2  
 SAMPLE MATRIX: Well Water, Bidan Subdivision  
 REPORT NUMBER: 7943001

CLIENTS JOB NUMBER: Ian D. Wilson, 89-19  
 DATE SUBMITTED: 14-01-92  
 DATE REPORTED: 30-01-92

DRINKING WATER CRITERIA	UNITS	RESULTS			
PARAMETERS		Well 2 Tiny Twp.			
Colour	T.C.U.	<1			
Hardness(CaCO <sub>3</sub> )	mg/L	198			
Alkalinity(CaCO <sub>3</sub> )	mg/L	149			
Turbidity	N.T.U.	11			
Conductivity	uS/cm	390			
pH		7.92			
Fluoride	mg/L	<0.1			
Chloride	mg/L	3.7			
Nitrite (N)	mg/L	<0.1			
Nitrate (N)	mg/L	<0.1			
Sulphate	mg/L	20.3			
Calcium	mg/L	51.8			
Magnesium	mg/L	16.6			
Sodium	mg/L	6.4			
Potassium	mg/L	2.6			
Ammonia (N)	mg/L	0.16			
TKN	mg/L	0.2			
Cyanide	mg/L	<0.02			
Phenols	mg/L	<0.002			
TOC	mg/L	1			
DOC	mg/L	1			



**REPORT OF ANALYSIS**

**ARECO CANADA INC., 28 CONCOURSE GATE, NEPEAN, ONTARIO, K2E 7T7**  
TELEPHONE: (613) 228 1145 FAX: (613) 228 1148

LABORATORY I.D.: 140192-2  
SAMPLE MATRIX: Well Water, Bidan Subdivision  
REPORT NUMBER: 7943001

CLIENTS JOB NUMBER: Ian D. Wilson, 89-19  
DATE SUBMITTED: 14-01-92  
DATE REPORTED: 30-01-92

DRINKING WATER CRITERIA		UNITS	RESULTS				
PARAMETERS			Well 2 Tiny Twp.				
Barium	mg/L		0.11				
Cadmium	mg/L		<0.004				
Chromium	mg/L		<0.01				
Copper	mg/L		<0.01				
Arsenic	mg/L		<0.01				
Boron	mg/L		0.01				
Iron	mg/L		0.02				
Lead	mg/L		<0.04				
Manganese	mg/L		0.034				
Selenium	mg/L		<0.005				
Silver	mg/L		<0.01				
Zinc	mg/L		0.03				
Mercury	mg/L		<0.001				
Uranium	mg/L						




**REPORT OF ANALYSIS**

ARECO CANADA INC., 28 CONCOURSE GATE, NEPEAN, ONTARIO, K2E 7T7  
 TELEPHONE: (613) 228 1145 FAX: (613) 228 1148

LABORATORY I.D.: 140192-2  
 SAMPLE MATRIX: Well Water, Bidan Subdivision  
 REPORT NUMBER: 7943001

CLIENTS JOB NUMBER: Ian D. Wilson, 89-19  
 DATE SUBMITTED: 14-01-92  
 DATE REPORTED: 30-01-92

DRINKING WATER CRITERIA	UNITS	RESULTS				
PARAMETERS		Well 2 Tiny Twp.				
Anion Sum	meq/L	3.98				
Cation Sum	meq/L	4.30				
% Difference	%	3.81				
Ion Ratio	AS/CS	0.93				
Conductivity (calc.)	uS/cm	386				
TDS (ion sum calc.)	mg/L	241				
SAR		0.20				
Langelier Index	S.I.	0.27				

  
 -----  
 Certified by  
 Greg Clarkin, B.Sc., GeoChem  
 Lab Manager

**REPORT OF ANALYSIS**

ARECO CANADA INC., 28 CONCOURSE GATE, NEPEAN, ONTARIO, K2E 7T7  
 TELEPHONE: (613) 228 1145 FAX: (613) 228 1148

LABORATORY I.D.: 140192-2  
 SAMPLE MATRIX: Water, Bidan Subdivision  
 REPORT NUMBER: 7943001

CLIENTS JOB NUMBER: Ian D. Wilson, #89-19  
 DATE SUBMITTED: 14-01-92  
 DATE REPORTED: 30-01-92

**METHOD: PURGE AND TRAP HIGH RESOLUTION GC-MS/SIM**

PARAMETER	UNITS	M.D.L.	Well 2			
EPA 624						
Benzene	ppb	0.04	<0.04			
Bromodichloromethane	ppb	0.09	<0.09			
Bromoform	ppb	0.2	<0.2			
Bromomethane	ppb	0.4	<0.4			
Carbon Tetrachloride	ppb	0.08	<0.08			
Chlorobenzene	ppb	0.05	<0.05			
Chloroethane	ppb	0.4	<0.4			
Chloroform	ppb	0.06	<0.06			
2-Chloroethylvinylether	ppb	0.09	<0.09			
Chloromethane	ppb	0.6	<0.6			
Dibromochloromethane	ppb	0.1	<0.1			
1,2-Dichlorobenzene	ppb	0.08	<0.08			
1,3-Dichlorobenzene	ppb	0.07	<0.07			
1,4-Dichlorobenzene	ppb	0.07	<0.07			
1,1-Dichloroethane	ppb	0.1	<0.1			
1,2-Dichloroethane	ppb	0.1	<0.1			
1,1-Dichloroethene	ppb	0.2	<0.2			
trans-1,2-Dichlorethene	ppb	0.1	<0.1			
1,2-Dichloropropane	ppb	0.2	<0.2			
cis-1,3-Dichloropropene	ppb	0.1	<0.1			
trans-1,3-Dichloropropene	ppb	0.1	<0.1			
Ethylbenzene	ppb	0.03	<0.03			
Methylene Chloride	ppb	0.05	<0.05			
1,1,2,2-Tetrachloroethane	ppb	0.2	<0.2			

### REPORT OF ANALYSIS

ARECO CANADA INC., 28 CONCOURSE GATE, NEPEAN, ONTARIO, K2E 7T7

TELEPHONE: (613) 228 1145

FAX: (613) 228 1148

LABORATORY I.D.: 140192-2  
SAMPLE MATRIX: Water, Bidan Subdivision  
REPORT NUMBER: 7943001

CLIENTS JOB NUMBER: Ian D. Wilson, #89-19  
DATE SUBMITTED: 14-01-92  
DATE REPORTED: 30-01-92

*METHOD: PURGE AND TRAP HIGH RESOLUTION GC-MS/SIM*

PARAMETER	UNITS	M.D.L.	Well 2			
EPA 624		M.D.L.	Well 2			
Tetrachloroethene	ppb	0.08	<0.08			
Toluene	ppb	0.04	<0.04			
1,1,1-Trichloroethane	ppb	0.08	<0.08			
1,1,2-Trichloroethane	ppb	0.2	<0.2			
Trichloroethene	ppb	0.1	<0.1			
Trichlorofluoromethane	ppb	0.5	<0.5			
Vinyl Chloride	ppb	0.7	<0.7			
m,p-Xylene	ppb	0.03	<0.03			
o-Xylene	ppb	0.03	<0.03			



Certified by  
Greg Clarkin, B.Sc. GeoChem  
Lab Manager



**Township of Tiny**  
**2019 Annual Drinking Water Report**  
**Whippoorwill Drinking Water System**

**Drinking Water System Number:** 220007481

**Drinking Water System Category:** Small Municipal Residential

**Owned and Operated by:** The Corporation of the Township of Tiny

**Report cov** January 1st to December 31st, 2019

**1. Notification and Availability of Reports:**

The annual reports and annual summary reports are available to the public at no charge on the Township of Tiny website:

[www.Tiny.ca](http://www.Tiny.ca)

The Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection at the Township of Tiny Municipal Office:

130 Balm Beach Rd W,  
Tiny, Ontario  
L0L 2J0

System users were notified that annual reports are available, free of charge, through the Township of Tiny website and when the public requests a report.

This Drinking Water System does not serve more than 10,000 people.

There are no Designated Facilities served by this Drinking Water System.

A copy of this annual report was not provided to the Designated Facility but is available upon request.

The Township of Tiny does not report to any Interested Authorities.

There are no other Drinking Water Systems that receive all of their drinking water from this system.

**2. Drinking Water System Description:**

The Whippoorwill Drinking Water System is comprised of one pumping station, two groundwater wells, one storage reservoir, and approximately 2.6 km of distribution water mains. The system serves 71 properties, with 2 vacant lots slated for future service.



**Township of Tiny**  
**2019 Annual Drinking Water Report**  
**Whippoorwill Drinking Water System**

**3. Water treatment chemicals used in this reporting period:**

Sodium Hypchlorite (Flochem-12)

**4. Significant expenses were incurred to:**

- a.  Install required equipment
- b.  Repair required equipment
- c.  Replace required equipment
- d.  Studies / Engineering

**5. Description and breakdown of monetary expenses incurred:**

Replaced all pumpstaion piping with stainless steel PH 21	105749.00
Cleaned generator fuel	850.00
Replaced reseroir probe	750.00

Total Expenditure: \$107,349.00

**6. Details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre:**

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
None					

**7. Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period:**

Sample Locations	Number of Samples	Range of E. Coli results	Range of Total Coliform Results	Number of HPC Samples	Range of HPC Results
Raw	104	0	0-1	n/a	n/a
Treated	52	0	0	n/a	n/a
Distribution	52	0	0	52	0-210



**Township of Tiny**  
**2019 Annual Drinking Water Report**  
**Whippoorwill Drinking Water System**

**8. Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report:**

Parameter	Number of Grab Samples	Range of Results	
		(min #)-(max #)	
Turbidity - Raw	24	0.06	0.66
Chlorine – Treated	228	1.15	2.14
Chlorine - Distribution	105	0.78	1.87
Fluoride – not required	n/a	n/a	n/a

**9. Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument:**

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
None				

**10. Summary of inorganic parameters tested during this reporting period or the most recent sample results:**

*Note: ND = not detected*

Parameter	Sample Date	Results 21	Unit of Measure	Exceedance
Alkalinity	2019	164-175*	mg/L	no
Antimony	24-Apr-08	ND	µm	no
Arsenic	24-Apr-08	ND	µm	no
Barium	24-Apr-08	79	µm	no
Boron	24-Apr-08	14	µm	no
Cadmium	24-Apr-08	ND	µm	no
Chromium	24-Apr-08	ND	µm	no
Mercury	24-Apr-08	ND	µm	no
Selenium	24-Apr-08	ND	µm	no
Uranium	24-Apr-08	0.84	µm	no
Flouride	24-Apr-08	0.11	mg/L	no
Sodium	24-Apr-08	9400	µm	no
Lead	2018	ND-0.61*	µm	no
Nitrite	2019	<0.1	mg/L	no
Nitrate	2019	0.2-0.7	mg/L	no

*\*Distribution sample*





**Township of Tiny**  
**2019 Annual Drinking Water Report**  
**Whippoorwill Drinking Water System**

**11. Summary of organic parameters tested during this reporting period or the most recent sample results:**

*Note: ND = not detected*

Parameter	Sample Date	Results PH 21	Unit	Exceedence
Alachlor	24-Apr-08	ND	µm	no
Atrazine + metabolites	24-Apr-08	ND	µm	no
Azinphos-methyl	24-Apr-08	ND	µm	no
Benzene	24-Apr-08	ND	µm	no
Benzo(a)pyrene	24-Apr-08	ND	µm	no
Bromoxynil	24-Apr-08	ND	µm	no
Carbaryl	24-Apr-08	ND	µm	no
Carbofuran	24-Apr-08	ND	µm	no
Carbon Tetrachloride	24-Apr-08	ND	µm	no
Chlorpyrifos	24-Apr-08	ND	µm	no
Diazinon	24-Apr-08	ND	µm	no
Dicamba	24-Apr-08	ND	µm	no
1,2-Dichlorobenzene	24-Apr-08	ND	µm	no
1,4-Dichlorobenzene	24-Apr-08	ND	µm	no
1,2-dichloroethane	24-Apr-08	ND	µm	no
1,1-Dichloroethylene (vinylidene chloride)	24-Apr-08	ND	µm	no
Dichloromethane	24-Apr-08	ND	µm	no
2,4-Dichlorophenol	24-Apr-08	ND	µm	no
2,4-Dichlorophenoxy acetic acid (2,4-D)	24-Apr-08	ND	µm	no
Diclofop-methyl	24-Apr-08	ND	µm	no
Dimethoate	24-Apr-08	ND	µm	no
Diquat	24-Apr-08	ND	µm	no
Diuron	24-Apr-08	ND	µm	no
Glyphosate	24-Apr-08	ND	µm	no
Malathion	24-Apr-08	ND	µm	no
Metolachlor	24-Apr-08	ND	µm	no
Metribuzin	24-Apr-08	ND	µm	no
Monochlorobenzene	24-Apr-08	ND	µm	no
Paraquat	24-Apr-08	ND	µm	no
Pentachlorophenol	24-Apr-08	ND	µm	no
Phorate	24-Apr-08	ND	µm	no
Picloram	24-Apr-08	ND	µm	no
Polychlorinated Biphenyls (PCB)	24-Apr-08	ND	µm	no



**Township of Tiny**  
**2019 Annual Drinking Water Report**  
**Whippoorwill Drinking Water System**

*Note: ND = not detected*

Parameter	Sample Date	Results PH 21	Unit	Exceedance
Prometryne	24-Apr-08	ND	µm	no
Simazine	24-Apr-08	ND	µm	no
Terbufos	24-Apr-08	ND	µm	no
Tetrachloroethylene (perchloroethylene)	24-Apr-08	ND	µm	no
2,3,4,6-Tetrachlorophenol	24-Apr-08	ND	µm	no
Triallate	24-Apr-08	ND	µm	no
Trichloroethylene	24-Apr-08	ND	µm	no
2,4,6-Trichlorophenol	24-Apr-08	ND	µm	no
Trifluralin	24-Apr-08	ND	µm	no
Vinyl Chloride	24-Apr-08	ND	µm	no

Distribution Parameter	RAA	Exceedance
Haloacetic Acids Average	5.3	no
Trihalomethanes Average	6.3	no

**12. The following inorganic or organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards:**

Parameter	Result Value	Unit of Measure	Date of Sample
None			

5706259



The Ontario Water Resources Commission Act

# WATER WELL RECORD

County or District: **Simcoe** Lot: **111** Township, Village, Town or City: **Midland**  
 Con. II O.S. Date completed: **27** **March** **69**  
 Address: **MISSISSAUGA**

**Casing and Screen Record**  
 Inside diameter of casing: **6 3/4"**  
 Total length of casing: **212 ft.**  
 Type of screen: **6" stainless steel**  
 Length of screen: **3' x 25 slot & 3' x 30 slot**  
 Depth to top of screen: **213'**  
 Diameter of finished hole: **6"**

**Pumping Test**  
 Static level: **195 ft.**  
 Test-pumping rate: **17** G.P.M.  
 Pumping level: **196 ft.**  
 Duration of test pumping: **24 hrs.**  
 Water clear or cloudy at end of test: **clear**  
 Recommended pumping rate: **10** G.P.M.  
 with pump setting of **205'** feet below ground surface

Well Log		Water Record	
Overburden and Bedrock Record	From ft.	To ft.	Kind of water (fresh, salty, sulphur)
<i>sand gravel &amp; stones</i>	0	220	<i>215 fresh</i>

For what purpose(s) is the water to be used? **domestic**

Is well on upland, in valley, or on hillside? **upland**

Drilling or Boring Firm: **Arden Drilling**

Address: **Craighead**

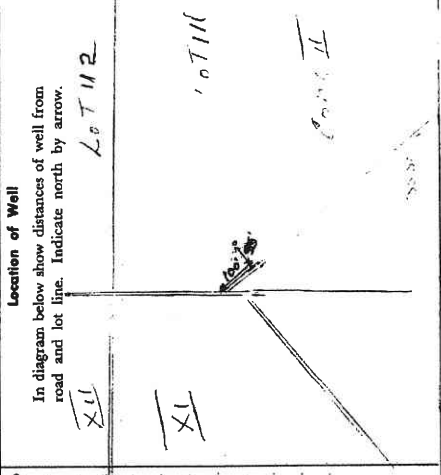
Licence Number: **3481**

Name of Driller or Borer: **R. Sieder**

Address: **Craighead**

Date: **March 23, 1969**

**Ralph Sieder**  
 (Signature of Licensed Drilling or Boring Contractor)



Form 7  
**OWRC COPY**

Map: Well records | Ontario.ca  
 This map allows you to search and view well record information from reported wells in Ontario.  
 Full detail is available in the OpenData catalogue.

Well ID: **31D/12WJ.B.**  
 Well ID Number: **5706259**  
 Well Acre Number: **111**  
 Well Tag Number: **111**

**Well Location**  
 Address of Well Location: **111 TINSY TOWNSHIP**  
 Township: **111**  
 Lot: **111**  
 Concession: **PR W 02**  
 County/District/Municipality: **SIMCOE**  
 City/Town/Village:   
 Province: **ON**  
 Postal Code:   
 UTM Coordinates: **14QDG - Zone 17 Easting: 982814.50 Northing: 6954724.00**  
 Municipal Area and Subsector Number:   
 Other:

**Overburden and Bedrock Materials Interval**

General Color	Moist Consistency	Other Materials	Depth From	Depth To
			0 ft	129 ft
			129 ft	181 ft
			181 ft	188 ft
			188 ft	194 ft

**Annular Space/Abandonment Sealing Record**

Depth From	Type of Sealant Used	Volume (Material and Type)

**Method of Construction & Well Use**

Method of Construction: **Well Use: Domestic**

**Status of Well**  
 Water Supply: **Domestic**

**Construction Record - Casing**

Inside Diameter	Open Hole or Material	Depth From	Depth To
6 inch	STEEL	0 ft	196 ft

**Construction Record - Screen**

Outside Diameter	Material From To	Depth From	Depth To
6 inch		0 ft	194 ft

**Well Contractor and Well Technician Information**

Well Contractor's Licence Number: **4816**

**Results of Well Yield Testing**

After test of well yield, water was: **CLEAR**  
 If pumping discontinued, give reason:   
 Pump intake set at:   
 Duration of Pumping:  to  hrs.  
 Recommended pumping rate:  G.P.M.  
 Recommended pump depth:  ft.

# WATER WELL RECORD

The Ontario Water Resources Commission Act

31012w

Water impounded in Ontario:  1. MEET ONLY IN SPACES PROVIDED  
 2. CHECK  CORRECT BOX WHERE APPLICABLE

COUNTY OF DISTRICT: Simcoe TOWNSHIP: Penetang CITY, TOWN, VILLAGE: Penetang

DATE COMPLETED: 05/22/99 BY: JTL

WELL NO.: 5709771 LOT NO.: 11

DATE OF RECORD: 05/22/99 BY: JTL

**LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)**

DEPTH - FEET	GENERAL DESCRIPTION	OTHER MATERIALS	DEPTH - FEET
FROM	TO		FROM
0	162	Cemented	
162	207	Fine	
207	216	medium	

**(51) CASING & OPEN HOLE RECORD**

DATE: 01/22/99 TO: 02/16/99

WELL NO.: 5709771

WELL DEPTH: 216 FEET

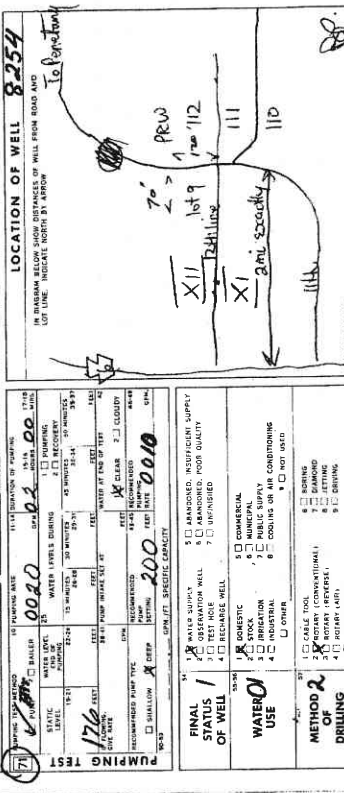
WELL TYPE: OPEN HOLE

WELL MATERIAL: Stainless Steel

WELL SIZE: 10 1/2 INCH

WELL STATUS: OPEN

WELL LOCATION: 1019



**(53) LOCATION OF WELL**

WELL NO.: 5709771

WELL DEPTH: 216 FEET

WELL TYPE: OPEN HOLE

WELL MATERIAL: Stainless Steel

WELL SIZE: 10 1/2 INCH

WELL STATUS: OPEN

WELL LOCATION: 1019

WELL COORDINATES: 141172

WELL ELEVATION: 4816

WELL OWNER: 4816

WELL CONTRACTOR: 4816

WELL DATE: 05/22/99

WELL STATUS: OPEN

Draw Down & Recovery

Draw Down Time (min): 10

Draw Down Water Level: 100 ft

Recovery Time (min): 10

Recovery Water Level: 100 ft

Time (min)	Water Level (ft)
1	
2	
3	
4	
5	
10	
15	
20	
25	
30	
40	
45	
50	
60	

**Water Details**

Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

Depth Depth: Diameter

From To:

**Water Details**

Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

Depth Depth: Diameter

From To:

**Water Details**

Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

Depth Depth: Diameter

From To:

**Water Details**

Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

Depth Depth: Diameter

From To:

**Water Details**

Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

Depth Depth: Diameter

From To:

**Water Details**

Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

Depth Depth: Diameter

From To:

**Water Details**

Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

Depth Depth: Diameter

From To:

**Water Details**

Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

Depth Depth: Diameter

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Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

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Depth Depth: Diameter

From To:

**Water Details**

Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

Depth Depth: Diameter

From To:

**Water Details**

Water Found at Depth: Kind

Kind: Fresh

**Hole Diameter**

Depth Depth: Diameter

From To:

1. PRINT ONLY IN SPACES PROVIDED  
 2. CHECK  CORRECT FOR WHOLE APPLICATION  
 3. COUNTY OF DISTRICT: **Simcoe** TOWNSHIP: **Conroy** CITY, TOWN, VILLAGE: **Conroy** DATE COMPLETED: **12-09-72**

WELL NO.: **5709366** (11) 5715544 (11) 57014 CAN 31012W  
 DEPTH: **0-42.3** FEET  
 DATE OF RECORDING: **09-12-72**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	COMMON MATERIAL	OTHER MATERIALS	DEPTH - FEET	TO
		dry well	0	42.3
		red loam sand	43	84
		fine sand with sand water	84	97

LOG OF CASING AND OPEN HOLE RECORD

DEPTH - FEET	WATER RECORD	CASING AND OPEN HOLE RECORD	PLUGGING & SEALING RECORD
0-42.3	WATER RECORD: <input checked="" type="checkbox"/> SAND, <input checked="" type="checkbox"/> GRAVEL, <input checked="" type="checkbox"/> SAND, <input checked="" type="checkbox"/> GRAVEL, <input checked="" type="checkbox"/> SAND, <input checked="" type="checkbox"/> GRAVEL	CASING AND OPEN HOLE RECORD: <input checked="" type="checkbox"/> 1" GALV. STEEL, <input checked="" type="checkbox"/> 1" GALV. STEEL, <input checked="" type="checkbox"/> 1" GALV. STEEL	PLUGGING & SEALING RECORD: <input checked="" type="checkbox"/> 1" GALV. STEEL, <input checked="" type="checkbox"/> 1" GALV. STEEL, <input checked="" type="checkbox"/> 1" GALV. STEEL

LOCATION OF WELL: **8254**  
 IN METER (SEE SCALE) INDICATE DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

CONTRACTOR: **Robertson** DATE: **09-12-72**

1. PRINT ONLY IN SPACES PROVIDED  
 2. CHECK  CORRECT FOR WHOLE APPLICATION  
 3. COUNTY OF DISTRICT: **Conroy** TOWNSHIP: **Conroy** CITY, TOWN, VILLAGE: **Conroy** DATE COMPLETED: **09-12-72**

WELL NO.: **5715544** (11) 57014 CAN 31012W  
 DEPTH: **0-42.3** FEET  
 DATE OF RECORDING: **09-12-72**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	COMMON MATERIAL	OTHER MATERIALS	DEPTH - FEET	TO
		CLAY, STONES	0	20
		CLAY	20	40
		CLAY	40	60
		SAND-GRAVEL (MEDIUM)	60	260
		CLAY	260	280
		HARDPAN & GRAVEL	280	333
		GRAVEL	333	343

LOG OF CASING AND OPEN HOLE RECORD

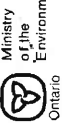
DEPTH - FEET	WATER RECORD	CASING AND OPEN HOLE RECORD	PLUGGING & SEALING RECORD
0-42.3	WATER RECORD: <input checked="" type="checkbox"/> SAND, <input checked="" type="checkbox"/> GRAVEL, <input checked="" type="checkbox"/> SAND, <input checked="" type="checkbox"/> GRAVEL, <input checked="" type="checkbox"/> SAND, <input checked="" type="checkbox"/> GRAVEL	CASING AND OPEN HOLE RECORD: <input checked="" type="checkbox"/> 1" GALV. STEEL, <input checked="" type="checkbox"/> 1" GALV. STEEL, <input checked="" type="checkbox"/> 1" GALV. STEEL	PLUGGING & SEALING RECORD: <input checked="" type="checkbox"/> 1" GALV. STEEL, <input checked="" type="checkbox"/> 1" GALV. STEEL, <input checked="" type="checkbox"/> 1" GALV. STEEL

LOCATION OF WELL: **8254**  
 IN METER (SEE SCALE) INDICATE DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

CONTRACTOR: **Howell** DATE: **09-12-72**

MINISTRY OF THE ENVIRONMENT COPY

MINISTRY OF THE ENVIRONMENT COPY



The Ontario Water Resources Act  
**WATER WELL RECORD**

1. NAME AND ADDRESS OF OWNER  
2. CHECK ONE (CORRECT ONE ONLY)  
COUNTY OF DISTRICT **SIMCOE** CITY/TOWN/VILLAGE **Brimley**

3. WELL NO. **5723524** 4. DATE COMPLETED **14 JUL 88**

5. COUNTY OF DISTRICT **SIMCOE** CITY/TOWN/VILLAGE **Brimley**

6. NAME OF CONTRACTOR **Brian Costr Ltd. RR 1 Beckwithfield Ontario**

7. DATE OF INSTALLATION **14 JUL 88**

8. WELL NO. **5723524** 9. DATE COMPLETED **14 JUL 88**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	WATER CONTENT	OTHER MATERIALS	DEPTH (FEET)	TO (FEET)
Brown sand			0	70
Brown gravel		stones	70	160
Grey clay			160	188
Brown sand		Gravel	188	195

31. WATER RECORD

32. CASING & OPEN HOLE RECORD

33. PLUGGING & SEALING RECORD

34. LOCATION OF WELL

35. PUMPING TEST

36. FINAL STATUS OF WELL

37. WATER USE

38. METHOD OF CONSTRUCTION

39. CONTRACTOR

40. OFFICE USE ONLY



The Ontario Water Resources Act  
**WATER WELL RECORD**

1. NAME AND ADDRESS OF OWNER  
2. CHECK ONE (CORRECT ONE ONLY)  
COUNTY OF DISTRICT **SIMCOE** CITY/TOWN/VILLAGE **Brimley**

3. WELL NO. **5724350** 4. DATE COMPLETED **14 JUL 88**

5. COUNTY OF DISTRICT **SIMCOE** CITY/TOWN/VILLAGE **Brimley**

6. NAME OF CONTRACTOR **PERKINSFIELD OUT**

7. DATE OF INSTALLATION **14 JUL 88**

8. WELL NO. **5724350** 9. DATE COMPLETED **14 JUL 88**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	WATER CONTENT	OTHER MATERIALS	DEPTH (FEET)	TO (FEET)
Brown sand			0	32
Grey clay		clay	32	85
Brown sand		Gravel	85	100
Brown sand		Gravel	100	105
Brown sand		Gravel	105	190

31. WATER RECORD

32. CASING & OPEN HOLE RECORD

33. PLUGGING & SEALING RECORD

34. LOCATION OF WELL

35. PUMPING TEST

36. FINAL STATUS OF WELL

37. WATER USE

38. METHOD OF CONSTRUCTION

39. CONTRACTOR

40. OFFICE USE ONLY

5724520

5724520

11 12 13 14 15 16

12 13 14 15 16

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

GENERAL COLOUR	COMMON MATERIAL	OTHER MATERIALS	DEPTH (FEET)	DATE
Brown	Sand		0	95
Brown	Clay		0	95
Brown	Sand		90	98
Brown	Sand		90	100
Brown	Sand		140	165
Grey	Clay		165	190
			190	206

WATER RECORD	CASING & OPEN HOLE RECORD	PLUGGING & SEALING RECORD
190	188	187
180	188	187

**LOCATION OF WELL**

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

Whipcord Rd  
TINY CON 12  
GOLF LINKS RD

**PUMPING TEST**

WATER LEVEL DURING: 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200

**CONTRACTOR**

Clearwater Drilling  
R.R.#1 Barrie, Ont. L4M 4Y8  
Donald V. Prince  
10176

**DATE** 15 83  
**TIME** FEB 07 1989

**OFFICE USE ONLY**

WELL CONTRACTOR'S LICENSE NUMBER: 1583  
WELL CONTRACTOR'S IDENTIFICATION NUMBER: 10176

5724867

5724867

11 12 13 14 15 16

12 13 14 15 16

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

GENERAL COLOUR	COMMON MATERIAL	OTHER MATERIALS	DEPTH (FEET)	DATE
brown	sand		0	65
clay			65	85
sand	gravel		85	95
stones			95	110
sand	gravel		110	140
gravel			140	145
sand	coarse		145	155
sand	medium		155	185
clay	sand		185	200

WATER RECORD	CASING & OPEN HOLE RECORD	PLUGGING & SEALING RECORD
155	188	178
188	188	175

**LOCATION OF WELL**

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

Whipcord Rd  
TINY TWP  
CONC. 12

**PUMPING TEST**

WATER LEVEL DURING: 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200

**CONTRACTOR**

Clearwater Drilling  
R.R.#1 Barrie, Ont. L4M 4Y8  
Donald V. Prince  
10176

**DATE** 15 83  
**TIME** MAY 10 1989

**OFFICE USE ONLY**

WELL CONTRACTOR'S LICENSE NUMBER: 1583  
WELL CONTRACTOR'S IDENTIFICATION NUMBER: 10176

# The Ontario Water Resources Act WATER WELL RECORD

WELL NO. **5724868** DATE COMPLETED **26** MAY **1989**  
 COUNTY OR DISTRICT **Simcoe** TOWNSHIP **Tiny** LOT **12** SECTION **12** RANGE **26** TOWNSHIP **12** RANGE **04** COUNTY **12**

**General Delivery Perkingfield LOL 200**

GENERAL COLOR	COMMON MATERIAL	OTHER MATERIALS	DEPTH (FEET)
brown	sand		0
greyt	clay	coarse	76
	sand	stones	100
	sand	coarse	110
	sand	gravel	185
	sand	dirty	200

**LOG OF OVERBURDEN AND BEDROCK MATERIALS** (SEE INSTRUCTIONS)

41. **WATER RECORD**

WELL FOUND AT DEPTH **178'** WATER LEVEL **188'** DEPTH TO WATER **10'**

42. **CASING & OPEN HOLE RECORD**

WELL FOUND AT DEPTH **178'** WATER LEVEL **175'** DEPTH TO WATER **3'**

43. **PLUGGING & SEALING RECORD**

WELL FOUND AT DEPTH **175'** MATERIAL AND TYPE **hole-plug**

**LOCATION OF WELL**

INDICATE BELOW SHOW DISTANCE OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

LOT 17 WHARFORD HILL ESTATES  
 150' x 100' x 100' x 100' x 100'  
 CONC. 12  
 TINY TWP 43232

**PUMPING TEST**

WATER SUPPLY:  OBSERVATION WELL,  UNDESIGNED POOR QUALITY,  UNDESIGNED WELL,  WINDMILL,  PUBLIC SUPPLY,  OTHER.

WATER USE:  IRRIGATION,  DOMESTIC,  OTHER.

METHOD OF CONSTRUCTION:  CASING (NON-REVERSIBLE),  CASING (REVERSIBLE),  ROTARY (REVERSIBLE),  ROTARY (NON-REVERSIBLE),  OTHER.

**CONTRACTOR**

**Clearwater Drilling**  
 P. R. #1 Barrie, Ont. L4M 4J8  
 DONALD R. PENCE  
 30 MAY 04 '89

**OFFICE USE ONLY**

DATE OF INSPECTION **1583** MAY 10 1989

FORM NO. 5268 (11/86) FORM 5

# The Ontario Water Resources Act WATER WELL RECORD

WELL NO. **5725681** DATE COMPLETED **23** JUNE **1989**  
 COUNTY OR DISTRICT **Simcoe** TOWNSHIP **Tiny** LOT **12** SECTION **12** RANGE **22** TOWNSHIP **12** RANGE **09** COUNTY **12**

**LOG OF OVERBURDEN AND BEDROCK MATERIALS** (SEE INSTRUCTIONS)

41. **WATER RECORD**

WELL FOUND AT DEPTH **179'** WATER LEVEL **177'** DEPTH TO WATER **2'**

42. **CASING & OPEN HOLE RECORD**

WELL FOUND AT DEPTH **179'** WATER LEVEL **177'** DEPTH TO WATER **2'**

43. **PLUGGING & SEALING RECORD**

WELL FOUND AT DEPTH **177'** MATERIAL AND TYPE **15" Benz seal**

**LOCATION OF WELL**

INDICATE BELOW SHOW DISTANCE OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

LOT 9  
 100' x 100' x 500'

**PUMPING TEST**

WATER SUPPLY:  OBSERVATION WELL,  UNDESIGNED POOR QUALITY,  UNDESIGNED WELL,  WINDMILL,  PUBLIC SUPPLY,  OTHER.

WATER USE:  IRRIGATION,  DOMESTIC,  OTHER.

METHOD OF CONSTRUCTION:  CASING (NON-REVERSIBLE),  CASING (REVERSIBLE),  ROTARY (REVERSIBLE),  ROTARY (NON-REVERSIBLE),  OTHER.

**CONTRACTOR**

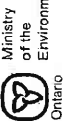
**Henry Hawker & Sons Well Drilling**  
 515 W. Vincent St. Barrie, Ont.  
 H. HAWKER  
 25 OCT 27 1989

**OFFICE USE ONLY**

DATE OF INSPECTION **2514** OCT 27 1989

FORM NO. 5268 (11/86) FORM 5





The Ontario Water Resources Act  
**WATER WELL RECORD**

MINISTRY OF THE ENVIRONMENT  
ONTARIO

FORM NO. 09 (11/80) FORM 8

1. PRINT ONLY IN SPACES PROVIDED  
2. CHECK  CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT: **INDIANA** TOWNSHIP: **INDIANA** DISTRICT: **INDIANA**

SOURCE: **WELL** ( ) **WATER TREATMENT PLANT** ( )

DATE COMPLETED: **12 MAY 83**

WELL NO.: **601** DATE OF INSTALLATION: **APR 83**

WELL DEPTH: **41** FEET

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS

GENERAL COLOR	COMBINATION	OTHER MATERIALS	DEPTH - FEET TO
Brown	Sand	Gravel	0 - 197

31. WATER RECORD

32. CASING & OPEN HOLE RECORD

33. PLUGGING & SEALING RECORD

34. SCREEN

35. MATERIAL AND TYPE

36. PLUGGING & SEALING RECORD

37. MATERIAL AND TYPE

7. PUMPING TEST

8. LOCATION OF WELL

9. PUMPING TEST

10. LOCATION OF WELL

11. PUMPING TEST

12. LOCATION OF WELL

13. CONTRACTOR

14. OFFICE USE ONLY

15. CONTRACTOR

16. OFFICE USE ONLY

17. CONTRACTOR

18. OFFICE USE ONLY



The Ontario Water Resources Act  
**WATER WELL RECORD**

MINISTRY OF THE ENVIRONMENT  
ONTARIO

1. PRINT ONLY IN SPACES PROVIDED  
2. CHECK  CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT: **INDIANA** TOWNSHIP: **INDIANA** DISTRICT: **INDIANA**

SOURCE: **WELL** ( ) **WATER TREATMENT PLANT** ( )

DATE COMPLETED: **12 MAY 83**

WELL NO.: **601** DATE OF INSTALLATION: **APR 83**

WELL DEPTH: **41** FEET

LOG OF OVERBURDEN AND BEDROCK MATERIALS - SEE INSTRUCTIONS

GENERAL COLOR	COMBINATION	OTHER MATERIALS	DEPTH - FEET TO
Red	Sand		0 - 26
Red	Sand	Clay	26 - 98
Grey	Clay	Gravel	98 - 132
Grey	Clay	Cemented Sand	132 - 144
Red	Gravel	Sand	144 - 200

31. WATER RECORD

32. CASING & OPEN HOLE RECORD

33. PLUGGING & SEALING RECORD

34. SCREEN

35. MATERIAL AND TYPE

36. PLUGGING & SEALING RECORD

37. MATERIAL AND TYPE

7. PUMPING TEST

8. LOCATION OF WELL

9. PUMPING TEST

10. LOCATION OF WELL

11. PUMPING TEST

12. LOCATION OF WELL

13. CONTRACTOR

14. OFFICE USE ONLY

15. CONTRACTOR

16. OFFICE USE ONLY

17. CONTRACTOR

18. OFFICE USE ONLY

1. FIRST FIVE FEET SPACES PROVIDED  
2. CHECK  CORRECT ED TO MAKE AVAILABLE  
3. CHECK  CORRECT ED TO MAKE AVAILABLE

COUNTY OR TOWNSHIP: Simcoe CITY/TOWN/VILLAGE: Simcoe DATE COMPLETED: 12 YEAR: 90

WELL NO.: 5726570 LOT NO.: 1 DISTRICT: 1456

OWNER: Midland Ont. ADDRESS: 4489 K.K.H. DATE OF INSTALLATION: 01 MONTH: 04 YEAR: 90

**LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)**

GENERAL COLOUR	COMPOUND MATERIAL	OTHER MATERIALS	DEPTH (FEET) FROM	DEPTH (FEET) TO
Red	Sand		0	15
Grey	Clay	gravel	15	120
Dark	Sand	gravel	120	190

31. **WATER RECORD**

WELL NO.: 187 DATE OF RECORDING: 18 YEAR: 90

WATER LEVELS: 180 FEET (DATE: 180)

32. **CASING & OPEN HOLE RECORD**

WELL NO.: 187 DATE OF RECORDING: 18 YEAR: 90

33. **PLUGGING & SEALING RECORD**

WELL NO.: 187 DATE OF RECORDING: 18 YEAR: 90

MATERIAL AND TYPE: SEWERS

7. **PUMPING TEST**

WELL NO.: 187 DATE OF RECORDING: 18 YEAR: 90

8. **LOCATION OF WELL**

SECTIONAL BLOCK, RANGE, TOWNSHIP, COUNTY AND LOT LINE INDICATE NORTH BY ARROW.

County Rd #18  
Whipacril Rd.  
12th Twp.  
Whipacril Sub.

77361

9. **FINAL STATUS OF WELL**

10. **WATER USE**

11. **METHOD OF CONSTRUCTION**

12. **CONTRACTOR**

NAME OF WELL CONTRACTOR: Burton Drilling

ADDRESS: 101 2nd St. Ont.

CITY/TOWN/VILLAGE: Simcoe DATE OF CONTRACT: 04 YEAR: 90

1456 MAY 24 1990

CSS/ES

1. FIRST FIVE FEET SPACES PROVIDED  
2. CHECK  CORRECT ED TO MAKE AVAILABLE  
3. CHECK  CORRECT ED TO MAKE AVAILABLE

COUNTY OR TOWNSHIP: Simcoe CITY/TOWN/VILLAGE: Simcoe DATE COMPLETED: 12 YEAR: 90

WELL NO.: 5726571 LOT NO.: 1 DISTRICT: 1456

OWNER: #1 Sproulefield, D.L. ADDRESS: 101270 DATE OF INSTALLATION: 23 MONTH: 04 YEAR: 90

**LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)**

GENERAL COLOUR	COMPOUND MATERIAL	OTHER MATERIALS	DEPTH (FEET) FROM	DEPTH (FEET) TO
Red	Sand		0	50
Grey	Sand	Stones	50	74
Dark	Sand	Clay	74	144
		Med.	144	170

31. **WATER RECORD**

WELL NO.: 187 DATE OF RECORDING: 18 YEAR: 90

WATER LEVELS: 164 FEET (DATE: 164)

32. **CASING & OPEN HOLE RECORD**

WELL NO.: 187 DATE OF RECORDING: 18 YEAR: 90

33. **PLUGGING & SEALING RECORD**

WELL NO.: 187 DATE OF RECORDING: 18 YEAR: 90

MATERIAL AND TYPE: SEWERS

7. **PUMPING TEST**

WELL NO.: 187 DATE OF RECORDING: 18 YEAR: 90

8. **LOCATION OF WELL**

SECTIONAL BLOCK, RANGE, TOWNSHIP, COUNTY AND LOT LINE INDICATE NORTH BY ARROW.

County Rd #18  
12th Twp.

77356

9. **FINAL STATUS OF WELL**

10. **WATER USE**

11. **METHOD OF CONSTRUCTION**

12. **CONTRACTOR**

NAME OF WELL CONTRACTOR: Burton Drilling

ADDRESS: 101 2nd St. Ont.

CITY/TOWN/VILLAGE: Simcoe DATE OF CONTRACT: 04 YEAR: 90

1456 MAY 24 1990

CSS/ES

1 PRINT ONLY IN SPACES PROVIDED  
2 CHECK ONE BOX WHERE APPLICABLE

COUNTY OF DISTRICT: **SIMCOE** TOWN/VILLAGE: **TINY** DATE COMPLETED: **13** 11/27

CONTRACTOR: **ANYTHING OUTSIDE** DATE OF INSPECTION: **10/29/90**

WELL IDENTIFICATION: **175** CITY/TOWN/VILLAGE: **COX** LOT: **112**

WELL NUMBER: **5727035** CITY/TOWN/VILLAGE: **TINY** DATE OF INSPECTION: **10/29/90**

WELL IDENTIFICATION: **175** CITY/TOWN/VILLAGE: **COX** LOT: **112**

CONTRACTOR: **ANYTHING OUTSIDE** DATE OF INSPECTION: **10/29/90**

WELL IDENTIFICATION: **175** CITY/TOWN/VILLAGE: **COX** LOT: **112**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

DEPTH (FEET)	GENERAL DESCRIPTION	DEPTH (FEET)	GENERAL DESCRIPTION
0 - 60	Yellow sand	70 - 90	Grey clay
60 - 90	Grey clay	90 - 102	Grey clay
102 - 168	Gravel, stones	168 - 175	Brown sand

31 WATER RECORD

32 CASING & OPEN HOLE RECORD

33 PLUGGING & SEALING RECORD

34 LOCATION OF WELL

35 PUMPING TEST

36 FINAL STATUS OF WELL

37 WATER USE

38 METHOD OF CONSTRUCTION

39 NAME OF WELL CONTRACTOR

40 NAME OF WELL INSPECTOR

41 DATE OF INSPECTION

42 OFFICE USE ONLY

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 5006 (11/89) FORM 9

1 PRINT ONLY IN SPACES PROVIDED  
2 CHECK ONE BOX WHERE APPLICABLE

COUNTY OF DISTRICT: **SIMCOE** TOWN/VILLAGE: **TINY** DATE COMPLETED: **14** 11/27

CONTRACTOR: **FOX PENSTANG** DATE OF INSPECTION: **10/18/91**

WELL IDENTIFICATION: **175** CITY/TOWN/VILLAGE: **COX** LOT: **112**

WELL NUMBER: **5728073** CITY/TOWN/VILLAGE: **TINY** DATE OF INSPECTION: **10/18/91**

WELL IDENTIFICATION: **175** CITY/TOWN/VILLAGE: **COX** LOT: **112**

CONTRACTOR: **FOX PENSTANG** DATE OF INSPECTION: **10/18/91**

WELL IDENTIFICATION: **175** CITY/TOWN/VILLAGE: **COX** LOT: **112**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

DEPTH (FEET)	GENERAL DESCRIPTION	DEPTH (FEET)	GENERAL DESCRIPTION
0 - 70	Brown sand	70 - 90	Grey clay
90 - 150	Brown sand	150 - 158	Brown sand
158 - 158	Gravel		

31 WATER RECORD

32 CASING & OPEN HOLE RECORD

33 PLUGGING & SEALING RECORD

34 LOCATION OF WELL

35 PUMPING TEST

36 FINAL STATUS OF WELL

37 WATER USE

38 METHOD OF CONSTRUCTION

39 NAME OF WELL CONTRACTOR

40 NAME OF WELL INSPECTOR

41 DATE OF INSPECTION

42 OFFICE USE ONLY

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 5006 (11/89) FORM 9



Map: Well records

This map allows you to search and view well record information from reported wells in Ontario. Full subject is available in the Open Data catalogue.

Can. back to Map

Well ID

Well ID Number: 7274641  
Well Arch Number: 2273954  
Well Tag Number: 4620264

This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location: 66 KING FISHER CRESCENT  
Township: TINY TOWNSHIP  
Lot: 009  
Concession: CON 12  
County/District/Municipality: SIMCOE  
City/Town/Village: PENITANG  
Province: ON  
Postal Code: N4G 6S5  
UTM Coordinates: Northing: 4655596.00  
Easting: 581913.00  
Municipal Plan and Sublot Number: Other:

Overburden and Bedrock Materials Interval

Table with columns: General Colour, Mark Common Material, Other Materials, General Description, Depth From, Depth To. Includes entries for LOAM, CLAY, SAND, GRAY, BRWN, GREY, BROWN, etc.

Annular Space/Abandonment Sealing Record

Depth From: 0.0', To: 2.0', Material: GROUT  
Depth From: 2.0', To: 5.0', Material: GROUT  
Depth From: 5.0', To: 11.0', Material: GROUT  
Depth From: 11.0', To: 13.0', Material: GROUT  
Depth From: 13.0', To: 15.0', Material: GROUT  
Depth From: 15.0', To: 19.0', Material: GROUT

Method of Construction & Well Use

Method of Construction: Well Line  
Other Method: Domestic

Status of Well

Water Supply: Domestic

Construction Record - Casing

Inside Diameter: 5 inch STEEL  
Outside Diameter: 6 inch STEEL  
Depth From: 152.0', To: 154.0'

Construction Record - Screen

Outside Diameter: 5 inch STAINLESS STEEL (54.0', 127.0')

Well Contractor and Well Technician Information

Well Contractor License Number: 2576

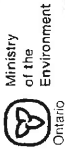
Results of Well Yield Testing

After test of well yield, water was CLEAR  
If pumping discontinued, give reason: 1.30 ft  
Pumping Rate: 5 GPM  
Duration of Pumping:

https://www.ontario.ca/environment-and-energy/map-well-records

WATER WELL RECORD

The Ontario Water Resources Act



5728953

570141

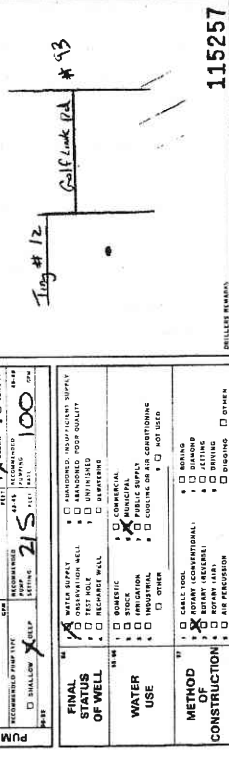
12

Header section with fields for County, District, Township, Location, Date Completed, and Well ID.

LOG OF OVERBURDEN AND BEDROCK MATERIALS. Table with columns for General Colour, Other Materials, and Depth (ft).

WATER RECORD. Table with columns for Well Type, Material, and Depth (ft).

PLUGGING & SEALING RECORD. Form with fields for Material and Type.



PUMPING TEST. Form with fields for Final Status of Well, Water Use, Method of Construction, and Contractor information.

OFFICE USE ONLY. Form with fields for Date of Inspection, Inspector Name, and Well ID.

12/4/2020

Final water level .....  
 If flowing give rate .....  
 Recommended pump depth 130 ft  
 Recommended pump rate 10 GPM  
 Well Protection .....  
 Satisfactory: Y

**Draw Down & Recovery**

Draw Down Time(min)	Draw Down Water level SWL	Recovery Time(min)	Recovery Water level
1	96 ft	1	102 ft
2	98 ft	2	
3		3	99 ft
4		4	
5	101 ft	5	96 ft
10	106 ft	10	96 ft
15	109 ft	15	96 ft
20	109 ft	20	96 ft
25	109 ft	25	96 ft
30	109 ft	30	96 ft
40	109 ft	40	95 ft
45		45	
50	109 ft	50	96 ft
60	109 ft	60	95 ft

**Water Details**

Water Found at Depth 157 ft  
 Kind Fresh

**Hole Diameter**

Depth Diameter  
 From To  
 0 ft - 20 ft 8 inch  
 20 ft - 157 ft 6 inch

Well Number: 2227054  
 Date Well Completed: August 09, 2016  
 Date Well Record Received by MOE: January 06, 2017  
 Updated: January 24, 2020

**APPENDIX D**

---

**Test Pit Investigation  
(by Terraprobe)**



# Terraprobe

Consulting Geotechnical & Environmental Engineering  
Construction Materials Inspection & Testing

December 3, 2020

File No. 3-20-0134-21

Barrie Office

Charlebois Properties Inc.  
430 Concession 16 East  
Tiny, ON  
L9M 0P1

Attention: Mr. Frank Charlebois, frankc@charleboishaulage.com

---

**RE: TEST PIT INVESTIGATION  
OVERHEAD BRIDGE ROAD  
TINY, ONTARIO**

---

Dear Mr. Charlebois:

This letter presents the results of our Test Pit Investigation carried out at the above noted site. The purpose of the investigation was to retrieve samples for the estimation of soil percolation rates.

## 1. SITE AND PROJECT DESCRIPTION

The site is located at Overhead Bridge Road and the 12<sup>th</sup> Concession in the Township of Tiny, in the County of Simcoe, Ontario. The site consists of six lots, numbered one through six.

## 2. FIELD WORK

The field work for the investigation was carried out on November 24, 2020. The test hole locations are noted on the appended Test Pit Location Plan.

A total of six (6) test holes were advanced using an excavator extending to depths between 1.44 and of 1.8 m below existing grades.

The field work was carried out by a member of our field staff. The excavator was provided and operated by the client.

---

### Terraprobe Inc.

**Greater Toronto**  
11 Indell Lane  
Brampton, Ontario L6T 3Y3  
(905) 796-2650 Fax: 796-

**Hamilton – Niagara**  
903 Barton Street, Unit 22  
Stoney Creek, ON, L8E 5P5  
(905) 643-7560 Fax: 643-

**Central Ontario**  
220 Bayview Drive, Unit 25  
Barrie, Ontario L4N 4Y8  
(705) 739-8355 Fax: 739-

**Northern Ontario**  
1012 Kelly Lake Rd., Unit 1  
Sudbury, Ontario P3E 5P4  
(705) 670-0460 Fax: 670-

[terraprobe.ca](http://terraprobe.ca)

### 3. SUBSURFACE CONDITIONS

The details of the subsurface conditions encountered at the test pit locations are presented on the Table 1 summarized below. It should be noted that the conditions are confirmed at the test pit locations only and could vary between and beyond the locations. No water ingress was observed in all six test locations on the completion of excavation.

Table 1

Lab No.	Location of sample	Soil Description	Unified Soil Classification	Estimated Soil "T"-Time (min/cm)	Depth of Test Hole (m)
719a	Lot 1	Sand, trace gravel, trace silt	SW-SP	4 to 6	1.44 m
719b	Lot 2	Sand, trace silt	SW-SP	4 to 6	1.8 m
719c	Lot 3	Sand, trace gravel, trace silt	SW-SP	4 to 6	1.5 m
719d	Lot 4	Sand, trace silt	SW-SP	4 to 6	1.6 m
719e	Lot 5	Sand, trace silt	SW-SP	4 to 6	1.8 m
719f	Lot 6	Sand, trace silt, trace gravel	SW-SP	4 to 6	1.8 m

Terraprobe witnessed the excavation of the test holes. Samples were retrieved between 0.5 and 1.2 m in the open test holes. Please refer to the appended Test Pit Location Plan. Terraprobe Inc. assumes no responsibility for the application of the above-noted percolation rates ("T"-Time) for use in design of an on-site sewage disposal system. The design of an on-site sewage system must be conducted by a qualified professional with due regard for a number of site-specific conditions in addition to the percolation rates of the soils.

### 4. ESTIMATION OF SOIL PERCOLATION RATE ('T-TIME')

Samples were obtained of the native materials encountered in each of the six test holes. A grain size distribution curve was plotted for the samples and is appended on the Wash Sieve Analysis Test Reports. The estimated soil percolation rate ("T-Time") is greater than 4 to 6 min/cm.



## 5. CLOSURE

Terraprobe Inc. does not present the estimated percolation rates given in this report as a warranty of performance for the soils tested. Furthermore, the estimate provided is indicative of the sample in a disturbed state only. It must be emphasized that factors such as, but not limited to, consistency, structure, organic content, density and degree of saturation could influence the estimate. The client or third party using this information as a basis for tile field design assumes all risk associated with their evaluation of this report and all other criteria used in the design of any private sewage disposal system.

This report was prepared for the express use of Charlebois Properties and its retained design consultants and is not for the use by others. Contractors bidding on this project should provide their own interpretation of the data and/or conduct their own investigation and compose their own analyses/conclusions. This report is the copyright of Terraprobe Inc. and no part of this report may be reproduced by any means, in any form, without the prior written permission of Terraprobe Inc.

We trust this information is sufficient for your present purposes. Should you have any questions concerning the above, please do not hesitate to contact the undersigned.

**Terraprobe Inc.**



Steven Green, P.Eng.  
Associate  
Barrie Branch Manager



Enclosures: Test Pit Location Plan (1 page)  
Wash Sieve Analysis (6 pages)



Title: **OVERHEAD BRIDGE ROAD  
TEST PIT LOCATION PLAN**

File No. **3-20-0134**

FIGURE:  
**1**



1



2



3



4



5



6



**Terraprobe**

**WASH SIEVE ANALYSIS  
TEST REPORT**

PROJECT: Overhead Bridge Road  
 LOCATION: Tiny, ON  
 CLIENT: Charlesbois Properties Inc.

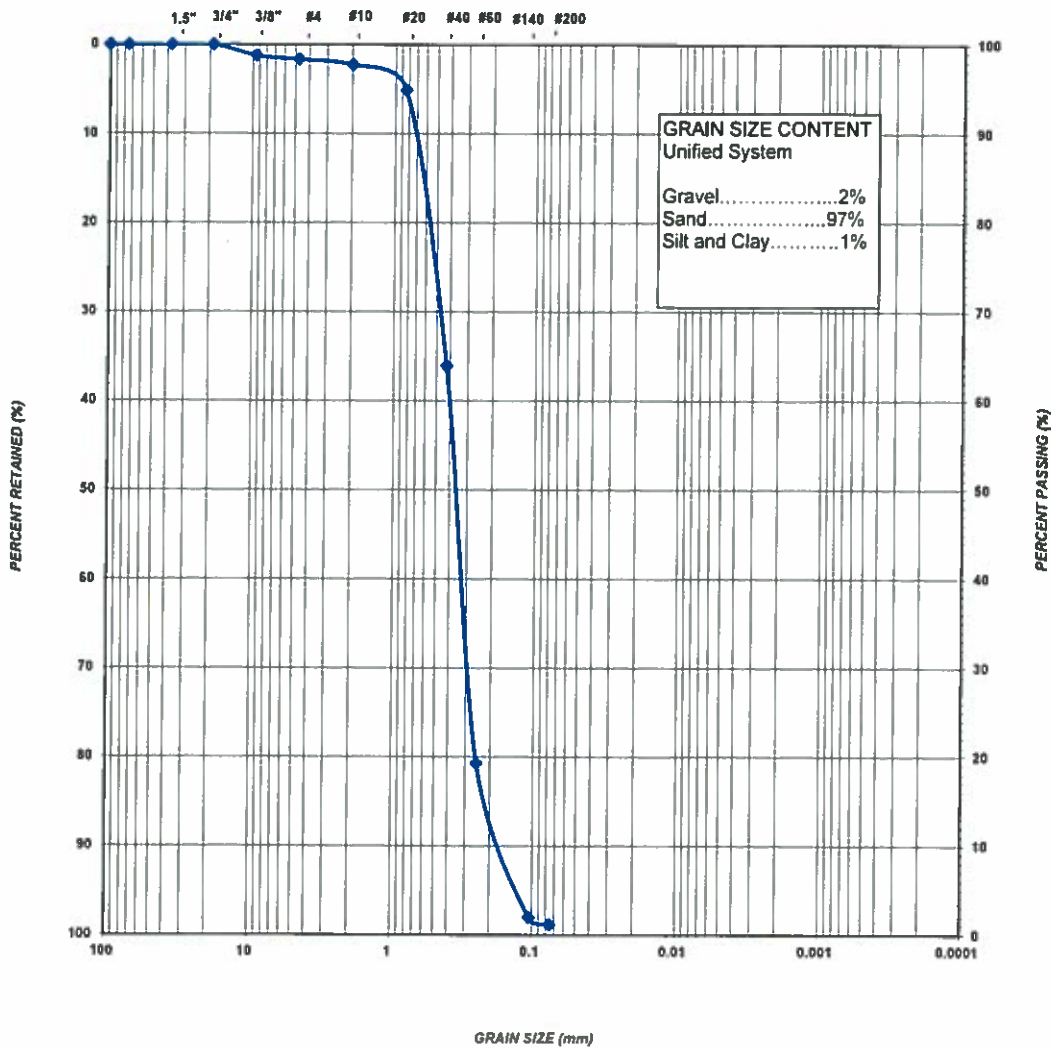
FILE NO.: 3-20-0134  
 LAB NO.: 719a  
 SAMPLE DATE: Nov-24-20  
 SAMPLED BY: S.W.

TEST PIT NUMBER: 1      SAMPLE DEPTH: 0.5 to 1.5m  
 SAMPLE NUMBER: 1  
 SAMPLE LOCATION: Lot 1  
 SAMPLE DESCRIPTION: Sand, trace gravel, trace silt

Estimated Septic T-Time: 4 to 6 min/cm

**GRAIN SIZE DISTRIBUTION**

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
			SAND				
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				



# Terraprobe

## WASH SIEVE ANALYSIS TEST REPORT

PROJECT: Overhead Bridge Road

LOCATION: Tiny, ON

CLIENT: Charlesbois Properties Inc.

FILE NO.: 3-20-0134

LAB NO.: 719b

SAMPLE DATE: Nov-24-20

SAMPLED BY: S.W.

TEST PIT NUMBER: 2

SAMPLE DEPTH: 0.5 to 1.5m

SAMPLE NUMBER: 1

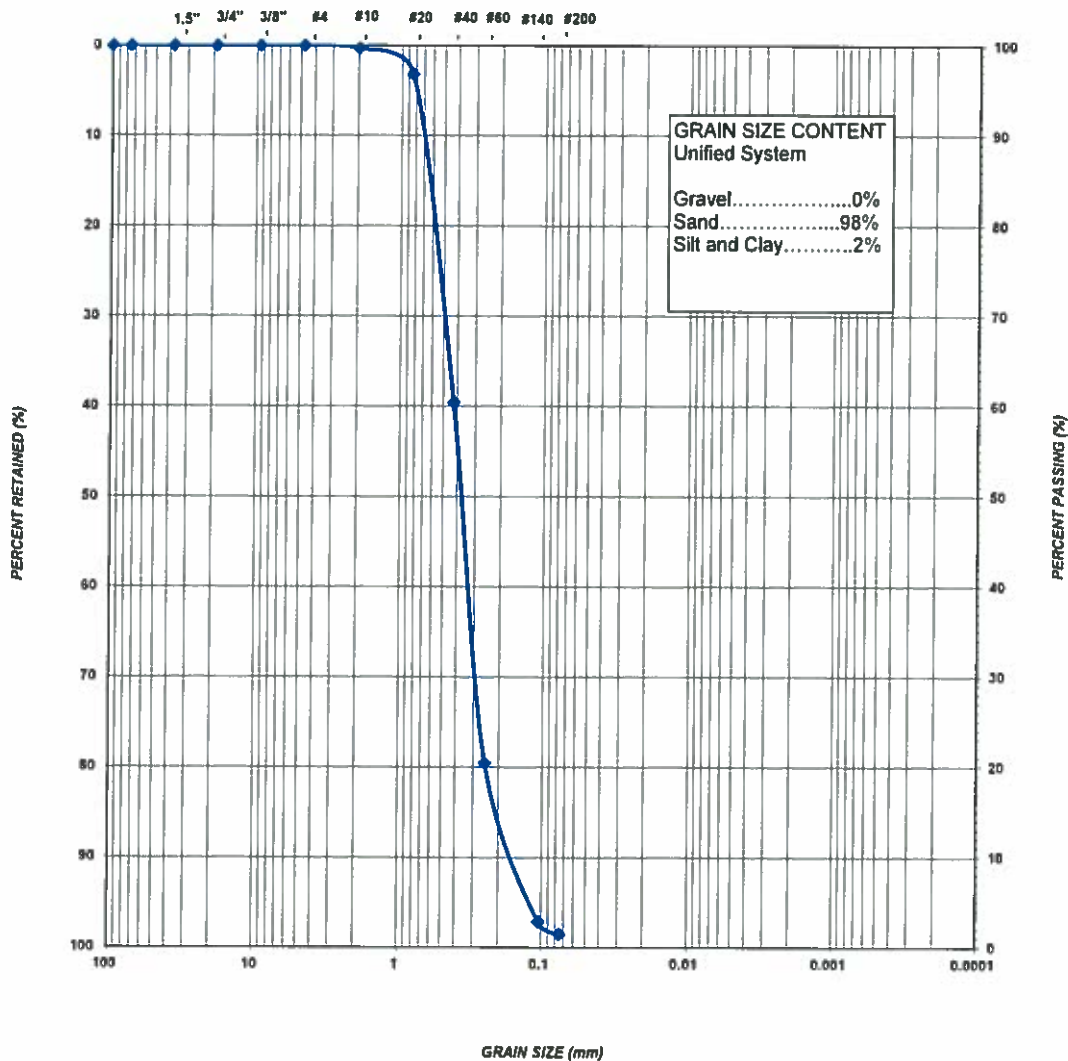
SAMPLE LOCATION: Lot 2

SAMPLE DESCRIPTION: Sand, trace silt

Estimated Septic T-Time: 4 to 6 min/cm

### GRAIN SIZE DISTRIBUTION

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		SAND			SILT	CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE		
UNIFIED SYSTEM	GRAVEL		SAND			SILT AND CLAY	
	COARSE	FINE	COARSE	MEDIUM	FINE		



**Terraprobe**

**WASH SIEVE ANALYSIS  
TEST REPORT**

PROJECT: Overhead Bridge Road  
 LOCATION: Tiny, ON  
 CLIENT: Charlesbois Properties Inc.

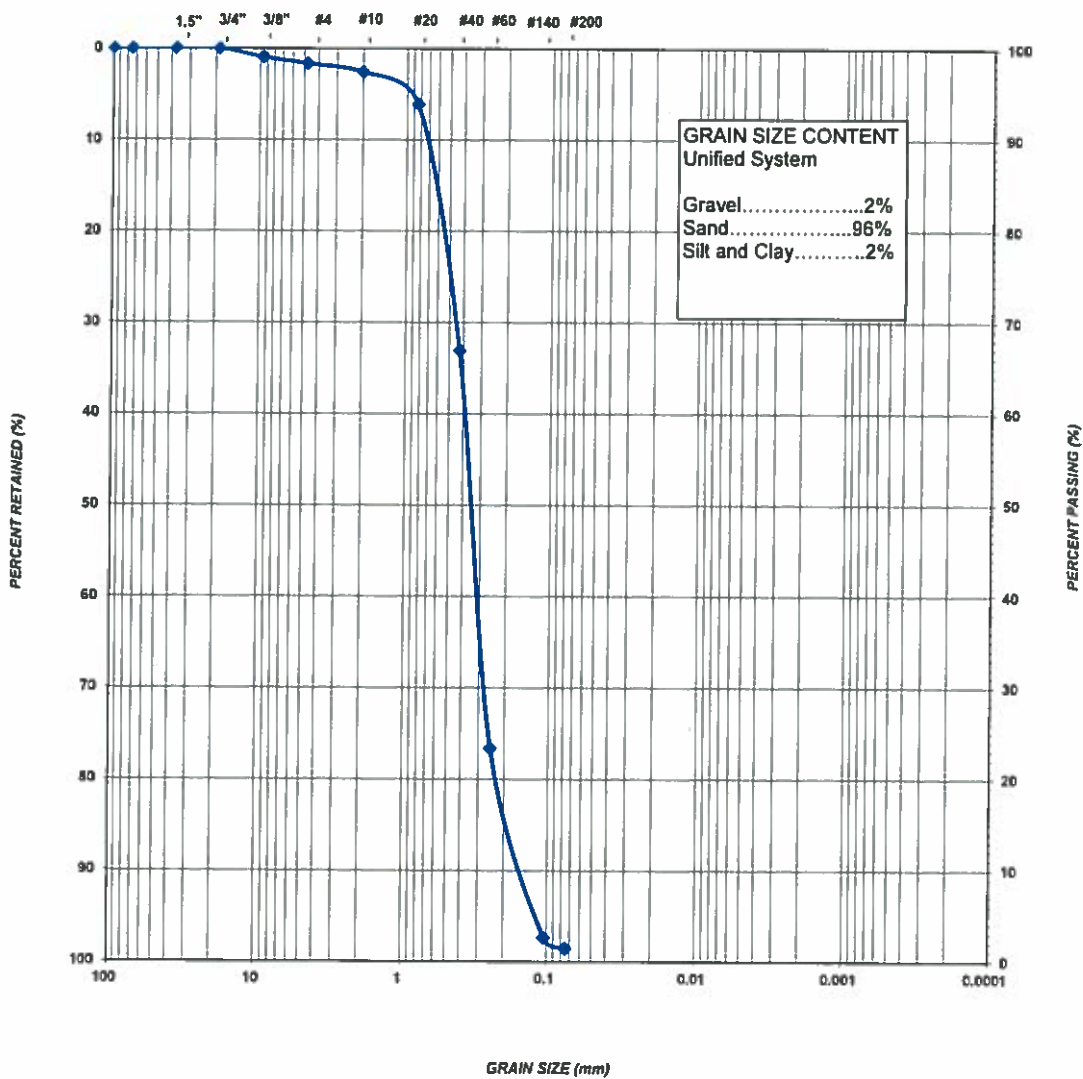
FILE NO.: 3-20-0134  
 LAB NO.: 719c  
 SAMPLE DATE: Nov-24-20  
 SAMPLED BY: S.W.

TEST PIT NUMBER: 3      SAMPLE DEPTH: 0.5 to 1.5m  
 SAMPLE NUMBER: 1  
 SAMPLE LOCATION: Lot 3  
 SAMPLE DESCRIPTION: Sand, trace gravel, trace silt

Estimated Septic T-Time: 4 to 6 min/cm

**GRAIN SIZE DISTRIBUTION**

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
	SAND						
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				



# Tetra probe

## WASH SIEVE ANALYSIS TEST REPORT

PROJECT: Overhead Bridge Road

LOCATION: Tiny, ON

CLIENT: Charlesbois Properties Inc.

FILE NO.: 3-20-0134

LAB NO.: 719d

SAMPLE DATE: Nov-24-20

SAMPLED BY: S.W.

TEST PIT NUMBER: 4

SAMPLE DEPTH: 0.5 to 1.5m

SAMPLE NUMBER: 1

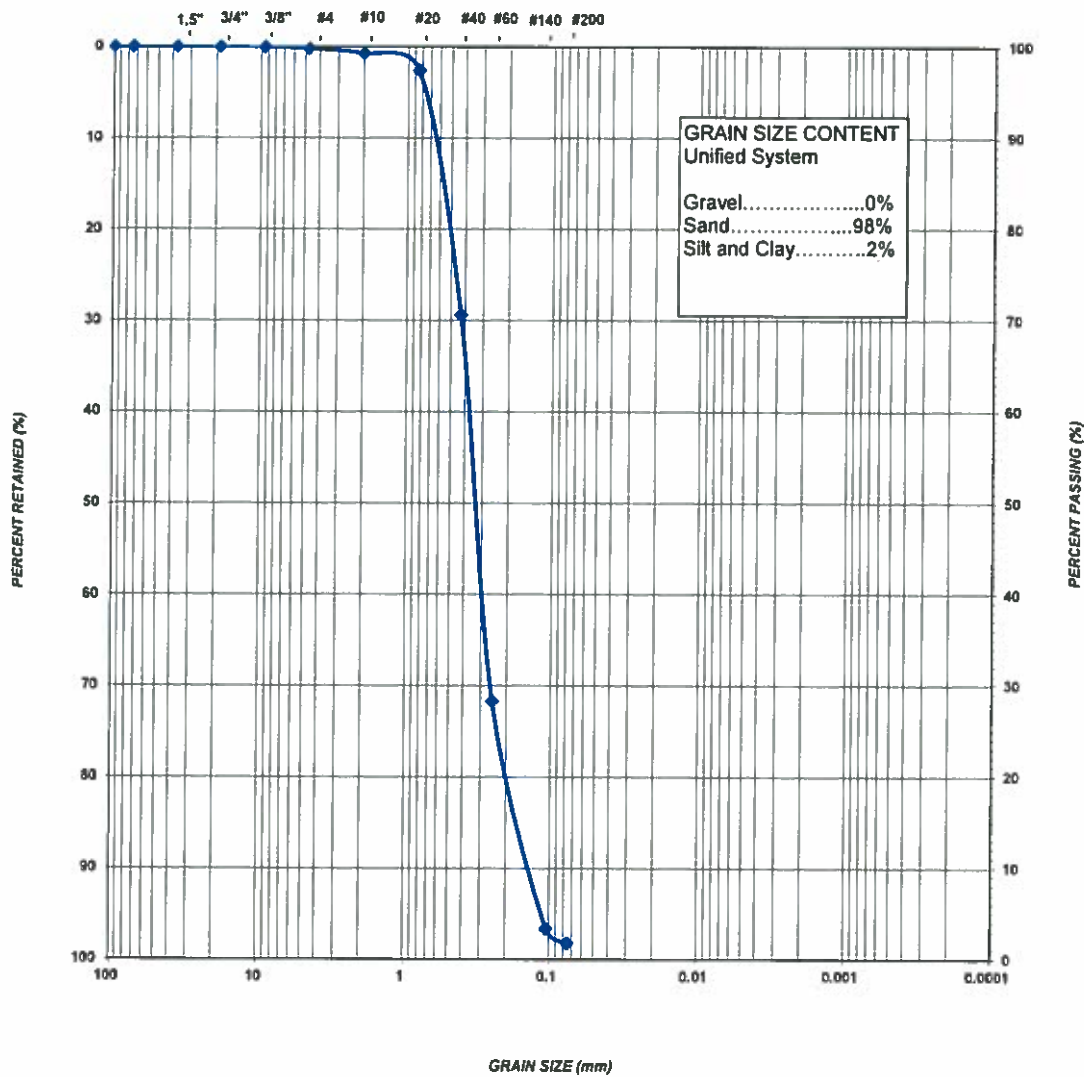
SAMPLE LOCATION: Lot 4

SAMPLE DESCRIPTION: Sand, trace silt

Estimated Septic T-Time: 4 to 6 min/cm

### GRAIN SIZE DISTRIBUTION

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
	SAND						
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				





# Terraprobe

## WASH SIEVE ANALYSIS TEST REPORT

PROJECT: Overhead Bridge Road  
 LOCATION: Tiny, ON  
 CLIENT: Charlesbols Properties Inc.

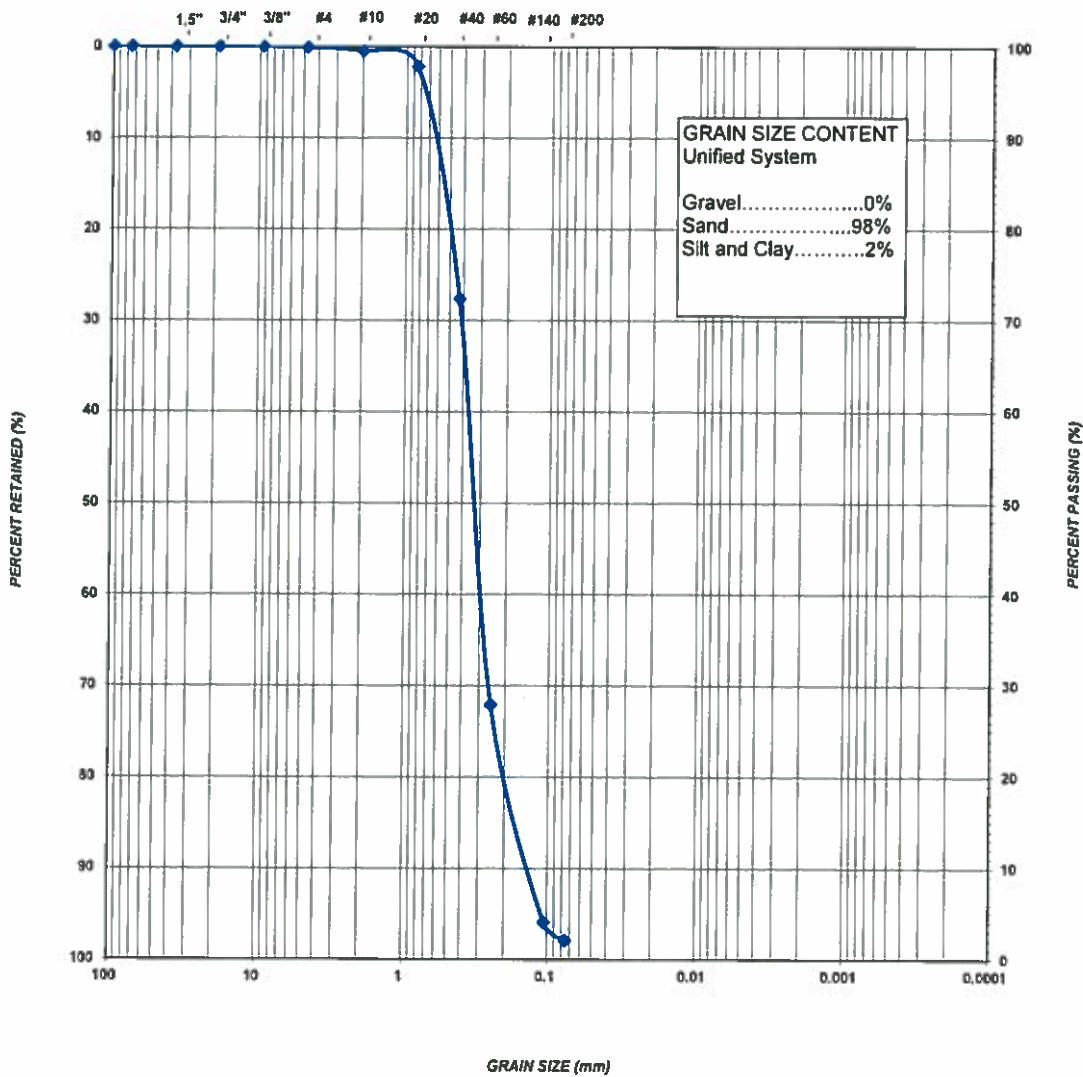
FILE NO.: 3-20-0134  
 LAB NO.: 719e  
 SAMPLE DATE: Nov-24-20  
 SAMPLED BY: S.W.

TEST PIT NUMBER: 5      SAMPLE DEPTH: 0.5 to 1.5m  
 SAMPLE NUMBER: 1  
 SAMPLE LOCATION: Lot 5  
 SAMPLE DESCRIPTION: Sand, trace silt

Estimated Septic T-Time: 4 to 6 min/cm

### GRAIN SIZE DISTRIBUTION

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
	SAND						
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				



# Terraprobe

## WASH SIEVE ANALYSIS TEST REPORT

PROJECT: Overhead Bridge Road  
 LOCATION: Tiny, ON  
 CLIENT: Charlesbois Properties Inc.

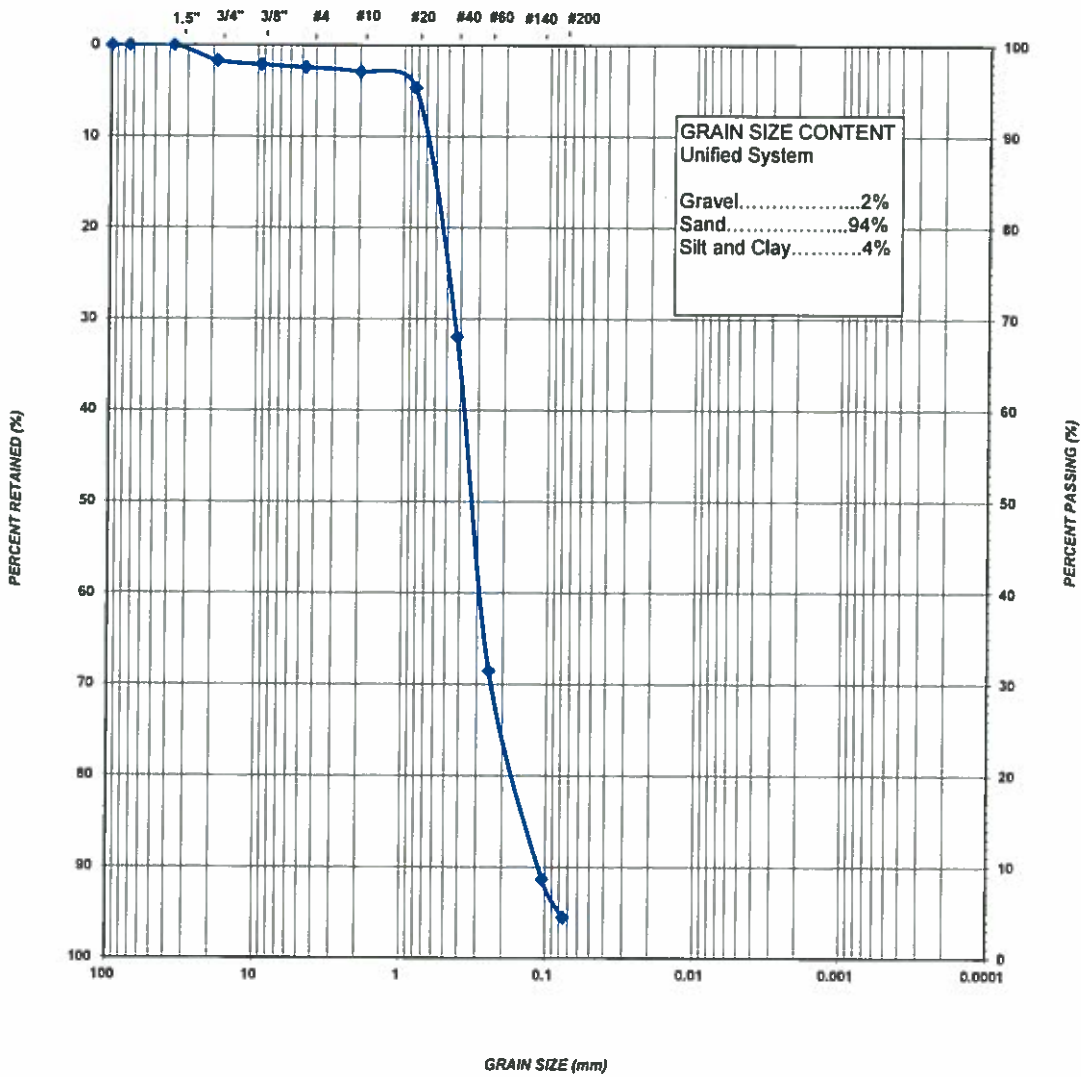
FILE NO.: 3-20-0134  
 LAB NO.: 719f  
 SAMPLE DATE: Nov-24-20  
 SAMPLED BY: S.W.

TEST PIT NUMBER: 6      SAMPLE DEPTH: 0.5 to 1.5m  
 SAMPLE NUMBER: 1  
 SAMPLE LOCATION: Lot 6  
 SAMPLE DESCRIPTION: Sand, trace silt, trace gravel

Estimated Septic T-Time: 4 to 6 min/cm

### GRAIN SIZE DISTRIBUTION

U.S. STANDARD SIEVE SIZES



MIT SYSTEM	GRAVEL		COARSE	MEDIUM	FINE	SILT	CLAY
	SAND						
UNIFIED SYSTEM	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	
	GRAVEL		SAND				

**APPENDIX E**

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**Traffic Calculations**



TRIP GENERATION SPREADSHEET

VEHICLE TRIP ENDS VS. DWELLING UNITS

ON A WEEKDAY, PEAK HOUR OF ADJACENT STREET TRAFFIC, ONE HOUR BETWEEN 7AM AND 9AM

Date: 25-Mar-21

Project No.: 20-644

Project: Charlebois Properties, Tiny Twp.

Prepared By: JR

References: Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th edition

Development	ITE Code & Land Use	Independent Variable	Total Trips- From Fitted Curve Equation [ $T = 0.71(X) + 4.80$ ]
Charlebois Properties	210: Single-Family Detached Housing	6 units	10

Notes:

This analysis is based on the Draft Plan of Subdivision, prepared by Celeste Phillips Planning Inc., dated February 19, 2021.



TRIP GENERATION SPREADSHEET

VEHICLE TRIP ENDS VS. DWELLING UNITS

ON A WEEKDAY, PEAK HOUR OF ADJACENT STREET TRAFFIC, ONE HOUR BETWEEN 4PM AND 6PM

Date: 25-Mar-21

Project No.: 20-644

Project: Charlebois Properties, Tiny Twp.

Prepared By: JR

References: Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th edition

Development	ITE Code & Land Use	Independent Variable	Total Trips- From Fitted Curve Equation [ $\ln(T) = 0.96\ln(X) + 0.20$ ]
Charlebois Properties	210: Single-Family Detached Housing	6 units	7

Notes:

This analysis is based on the Draft Plan of Subdivision, prepared by Celeste Phillips Planning Inc., dated February 19, 2021.

**AT-GRADE INTERSECTIONS**

**SIGHT DISTANCE**

- A - Minimum Stopping Sight Distance, Table E3-1.
- A<sub>1</sub> - Distance travelled in 3 s, Table E3-2.
- B - Safe Sight Distance for P vehicle, crossing 2-lane highway from stop.
- C - Safe Sight Distance for P vehicle, turning left into 2-lane highway across P vehicle approaching from left.
- D - Safe Sight Distance for P vehicle to turn left into 2-lane highway and attain assumed operating speed before being overtaken by P vehicle approaching in same direction at design speed.
- E - Safe Sight Distance for P vehicle to turn right into 2-lane highway and attain assumed operating speed before being overtaken by P vehicle approaching in same direction at design speed.

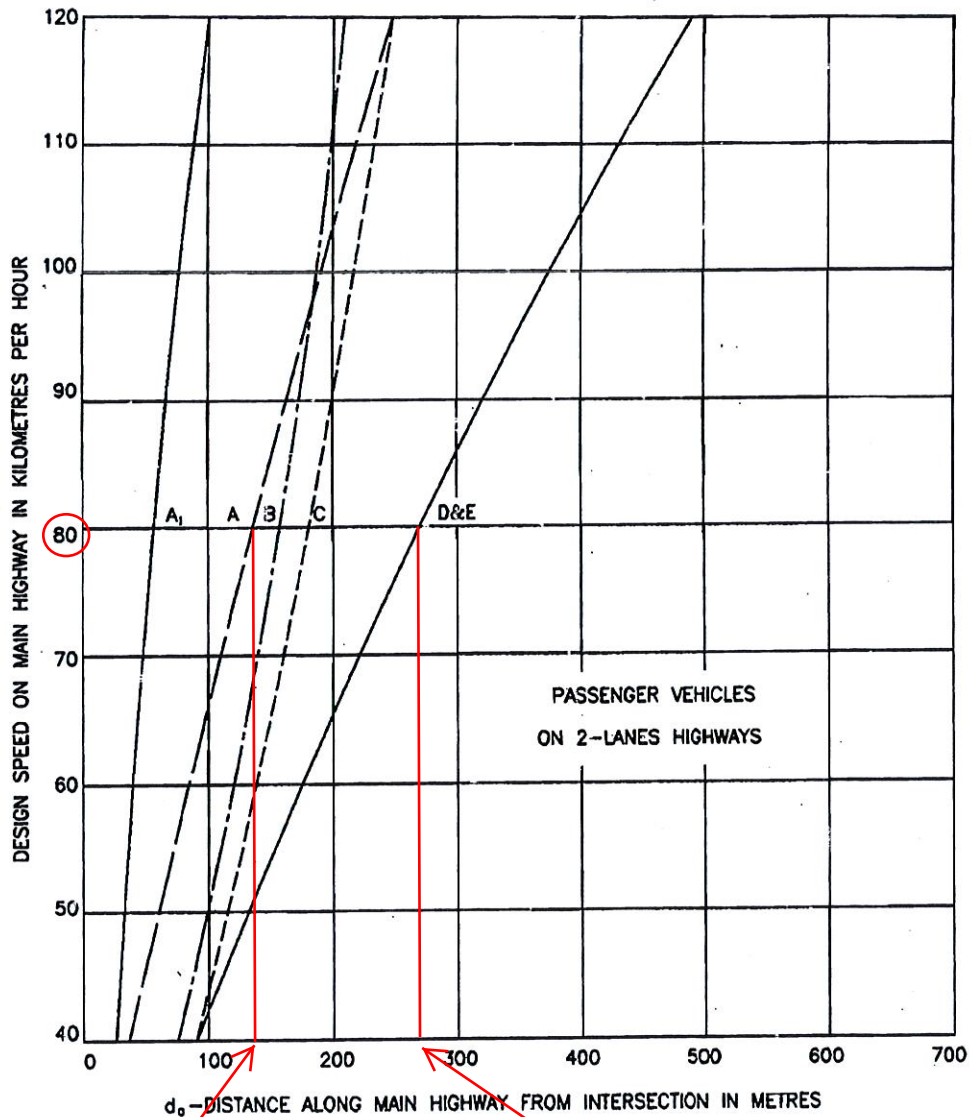


Figure E3-6

Sight Distance Requirements for Stopping Crossing and Turning Movements

Condition A: Minimum stopping sight distance is approx. 130m for 80km/h design speed.

Condition D & E: Safe sight distance is approx. 270m for 80km/h design speed.

## **APPENDIX F**

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### **Project Correspondence**

## Stephen Morash

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**From:** Celeste Phillips <celeste@cplan.ca>  
**Sent:** November 30, 2020 4:30 PM  
**To:** Stephen Morash  
**Cc:** Frank Charlebois  
**Subject:** FW: Charlebois development

Stephen – Below is the email exchange with Melissa. Sounds good to me – but please let us know.

---

**From:** "celeste@cplan.ca" <celeste@cplan.ca>  
**Date:** Monday, November 30, 2020 at 4:27 PM  
**To:** Melissa Carruthers <MCarruthers@severnsound.ca>  
**Cc:** Shawn Persaud <spersaud@tiny.ca>  
**Subject:** Re: Charlebois development

Thanks Melissa for your response. Yes, 6 residential lots are contemplated, no commercial or retail.

---

**From:** Melissa Carruthers <MCarruthers@severnsound.ca>  
**Date:** Monday, November 30, 2020 at 10:04 AM  
**To:** "celeste@cplan.ca" <celeste@cplan.ca>  
**Cc:** Shawn Persaud <spersaud@tiny.ca>  
**Subject:** RE: Charlebois development

Hi Celeste,

I can only speak to the drinking water source protection program and the screening that I do as part of that on behalf of the Township; as this property is located in the wellhead protection area D of the Robert Street municipal drinking water system, with a vulnerability score of 2. If the application is strictly for the creation of 6 residential lots, without any commercial or retail spaces, I would not have any requirements. Having said that, once a formal application has been made, I would issue a letter to this effect. In essence, formal screening will take place, however, based on the indicated plans for the property, nothing will apply from a drinking water source protection standpoint.

For all other screening requirements, it's recommended to confirm with Shawn and Calvin.

If you have any questions, comments, or concerns, please feel free to contact me.  
Thank you!

**Melissa Carruthers**  
**Risk Management Official / Risk Management Inspector**

**Severn Sound Environmental Association**

489 Finlayson St, P.O. Box 460, Port McNicoll, ON L0K 1R0  
P (705) 534-7283 ext. 205 / Fax (705) 534-7459

[MCarruthers@severnsound.ca](mailto:MCarruthers@severnsound.ca) | [www.severnsound.ca](http://www.severnsound.ca) | [@SSEA\\_SSRAP](https://www.facebook.com/SSEA_SSRAP)



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---

**From:** Celeste Phillips [mailto:[celeste@cplan.ca](mailto:celeste@cplan.ca)]

**Sent:** November 25, 2020 5:33 PM

**To:** Melissa Carruthers

**Subject:** Charlebois development

Hi Melissa – We recently met at a virtual meeting regarding the Charlebois landholding on the west side of Overhead Bridge Road in the Township of Tiny. My recollection is that Shawn Persaud indicated at the outset of the meeting that no formal screening is required and I was wondering if you might have provided this to Shawn by email. He is away this week and I wanted to be sure I had your confirmation of this. Kindly advise when time permits.

---

**Celeste Phillips, MCIP RPP**

**Celeste Phillips Planning Inc.**

85 Bayfield Street

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Barrie, Ontario

Canada

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iPhone: 705.730.8850

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