Hydrogeological Impact Assessment

Innisfil Executive Estates Phase 2

Town of Innisfil, Ontario

Prepared for:
1820839 Ontario Ltd.

Prepared by:
Azimuth Environmental
Consulting, Inc.

June 2020

AEC 17-069

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Assessments & Approvals

June 18, 2020

AEC 17-069

1820839 Ontario Ltd.
950 Shoreview Drive
Innisfil, Ontario
L9S 5A7

Attention: Wayne Ezekiel

Re: Hydrogeological Impact Assessment
Innisfil Executive Estates Phase 2
Block 39 and 41, R.P. 51M-1045,
Town of Innisfil, County of Simcoe

Dear Mr. Ezekiel:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to provide our Hydrogeological Impact Assessment for a property located in the Village of Stroud, Town of Innisfil, ON (the "Site"). This work is intended to support a Draft Plan of subdivision for the Innisfil Executive Estates Phase 2 (IEE Phase 2) development.

This evaluation focuses on the existing soil and ground water regime underlying the Site and the potential for the proposed development to impact the existing conditions. Our evaluation also includes a Reasonable Use Policy (RUP) assessment update in addition to a Water Balance evaluation to support the development of 21 lots on the above noted Site. Our assessments only addresses the Phase 2 lands, as the Phase 1 lands were previously evaluated and approved. Phase I lands were developed implementing 8 lots with tertiary treatment.

Based on the results of our analysis, it is concluded that the environmental conditions upon the Site will allow up to 21 residential lots to be developed in compliance with the Lake Simcoe Regional Conservation Authority (LSRCA's) Water Budget Policies/standards as well as the Ministry of the Environment Conservation and Parks (MECP's) RUP. This is contingent on the use of tertiary treatment technology for all 21 IEE Phase 2 lots and 8 IEE Phase 1 lots.

If you have any questions or require further information, please do not hesitate to call the undersigned.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Jackie Coughlin, B.A.Sc., P.Eng.
Senior Environmental Engineer

Jennifer Millington, M.A.Sc., P.Geo.
Hydrogeologist

1.0 INTRODUCTION

Azimuth Environmental Consulting (Azimuth) was retained by1820839 Ontario Ltd. to complete a Hydrogeological Impact Assessment to support a Draft Plan of Subdivision for 21 lots for the Innisfil Executive Estate Phase 2 (IEE Phase 2) development. This study only addresses the Phase 2 lands, as the Phase 1 lands were previously evaluated and approved.

The purpose of this assessment is to characterize the existing hydrogeological conditions at the Site and the potential for the proposed IEE Phase 2 development to impact the existing environmental conditions including the potential for adverse effects from the proposed new sewage systems on local ground water resources.

A portion of the Site is considered a Significant Ground Water Recharge Area (SGRA) and the entire Site is considered a Highly Vulnerable Aquifer (HVA). The Site is also located within a Wellhead Protection Area D (WHPA-D) but is not in a WHPA-Q1 or WHPA-Q2. The Site is within 500m of a municipal well and is within the 25-year Capture Zone Boundary. Due to the Site's classification as a Major Development and its location within a SGRA, it is subject to the LSRCA's Water Budget policy and therefore a water balance was completed for the Site.Given that the proposed development is located within the WHPA-D boundary of a municipal well field, conformity with Source Water Protection and the Clean Water Act has also been evaluated as part of this work.

The remainder of this report presents the background information and provides the results of our evaluation and associated conclusions and recommendations.

2.0 BACKGROUND

The Site is located on the east boundary of the community of Stroud. The legal description of the Site is Block 39 and 41, Plan 51M-1045 (Part of Lot 17, Concession 10, in the former Geographic Township of Innisfil, Town of Innisfil, County of Simcoe, Ontario) (Figure 1).

The first phase of the IEE development ("IEE Phase 1")was approved in 2015 by the Town of Innisfil and included 38 single detached residential lots, internal roadways, a stormwater management block (Block 42) and two vacant blocks (Block 41 and 39) designated for future development (Figure 2).

The second phase of the IEE development ("IEE Phase 2") consists of future development Blocks 39 and 41 (4.78 hectares / 11.81 acres) which will be subdivided for the creation of 21 single detached residential lots (Figure 3). The Phase 2 draft plan also

includes an internal roadway from Robinson Avenue (0.569 hectares/1.406 acres), appropriate buffers from the Metrolinx railway line (0.385ha/0.951aces), and the berm area to be transferred to the Town of Innisfil (0.222 ha. / 0.547 ac). Each lot will incorporate tertiary treatment with inground disposal of the treated effluent. Water supply will be provided from the Town of Innisfil.

As part of IEE Phase 1 development, Azimuth completed a Reasonable Use Policy (RUP) assessment for the IEE Phase 1development. The RUP assessment was accepted and resulted in the approval of 38 residential lots on conventional treatment systems (Azimuth, 2011). The RUP assessment has since been updated to reflect the IEE Phase 2 development for 21 lots. The ability to meet the MECP's RUP for the proposed development is contingent on the use of tertiary treatment technology for Phase 2 and the use of tertiary treatment units (TTU's) on 8 lots in the previously approved IEE Phase 1 development. TTU's have now been installed on Lots 8 in the IEE Phase 1 subdivision (Appendix D).The updated RUP assessment is provided in Section 6.0 of this report.

2.1 Adjacent Land use

Adjacent land use consists of existing single detached residential development to the south and west within the Village of Stroud (and includes the IEE Phase 1 residential subdivision), agricultural farm land to the north, the Metrolinx Railway to the east, and agricultural farm land and some rural residential dwellings to the east situated outside the settlement area boundary of Stroud).. There is one single detached residential dwelling (Robertson residence) located adjacent the southwest corner of the IEE Phase 2 development.

2.2 Information Sources

Our assessment considered available literature data / technical reports for the Site as well as the completion of an on-Site field program (*i.e.*, soil, ground water monitoring). Information provided by the following sources was utilized in the course of this evaluation:

- Reasonable Use Assessment IEE Phase 1 (Azimuth, 2011);
- Geotechnical Investigation (Terraprobe, 2011);
- Functional Servicing and Storm Water Management Report (WMI Engineering, (2020);

3.0 ENVIRONMENTAL SETTING

3.1 Physiography and Soils

Physiographically, Chapman and Putnam (1984) define the Site as part of a region known as the Peterborough Drumlin Fields. Most of this region is located to the south and east of Lake Simcoe, although the Site is within the western edge of a smaller portion of the drumlin field located just south of Kempenfelt Bay.

The Soil Map of Simcoe County (Canada Department of Agriculture, 1959) defines the surficial soils as part of "Bondhead Sandy Loam" that is grey, calcareous and exhibits good drainage characteristics. The Quaternary Geology Map of Ontario (Barnett, *et al*., 1991) states that the main surficial soil unit is classified as "Newmarket Till", which generally consists of a sandy silt to silt matrix containing moderate to high levels of carbonate and clasts.

Although the majority of Stroud is serviced by a municipal drinking water system, a review of the local MECP well records and the 2004 Golder South Simcoe Ground Water (SSGW) Study for the Town of Innisfil (Stroud) was undertaken to compile supporting hydrogeological data for the Site. The stratigraphic descriptions provided in water well records acquired from the MECP records indicate a surficial layer of sand, silty sand and/ or sand clay mixtures (<10m), underlain by a fine to medium sand layer (10-25m thick). Below the fine to medium sand are moderately thick, alternating clayey/ sandy silt and fine grain sand/ sand gravel mixtures which extend to >60 metres below ground surface (Golder *et al.,* 2004).

3.2 Topography and Site Drainage

The local topography of the area is defined as smooth to gently sloping. The Site has no marked relief, with a majority of the development sloping to the southeast towards the stormwater management pond situated adjacent along the south boundary of the IEE Phase 2 development. Elevations range from ~275metres above sea level (m asl) to ~268 m asl across the Site.

Shallow ground water on the Site would be controlled by the topography and thus would flow in a southeasterly direction towards the storm water management pond. Regional ground water flow is towards Lake Simcoe.

3.3 Hydrogeology

3.3.1 Municipal Supply

The SSGW Study for the Town of Innisfil (Golder *et al*., 2004) indicates the presence of two shallow aquifers (A1 and A2) and two (2) deep aquifers (A3 and A4) within the

general area of Innisfil. The majority of the municipal water supply systems in Innisfil utilize the deeper aquifer units, which are typically found at elevations below 200m asl.

Flow in the upper aquifer system is primarily influenced by the local topography and drainage and flow in the lower aquifer systems are influence by the bedrock topography and the regional hydrogeological features.

The Golder *et al.*, (2004) report provides greater detail of the Site because of it location relative to the Stroud municipal wells. As shown in Figure 9.2.2 of the South Simcoe Ground Water (SSGW) Study, the shallow aquifer system (A1/A2) is present at elevations above 200 m asl within the vicinity of the study area and the deeper aquifer system is present at ~155-195 m asl (A3). The shallow aquifer system is composed of fine grained sand and/or sand and gravel and is separated by a ~20-30m thick confining layer consisting of clayey silt, clay and sandy silt and clay. Aquifer A3 is separated from A2 by a 20-30m thick silt and clayey confining layer.

The Stroud municipal drinking water system obtains its water from two (2) municipal wells (Wells 2 and 3) both of which pump from regional Aquifer A3 which is reportedly overlain by 60m or more of till material with intervening aquifers as described above (Golder *et al*., 2004).

3.3.2 Private Wells

At this property and in the general area of Stroud, the shallow aquifer is not the preferred potable water source because of potential connections to surface contaminant sources from septic beds located upgradient of the Site. As such, the deeper aquifer system is primarily used to supply water in the Village of Stroud.

The closest private well to the Phase 2 development is located on the Robertson property, adjacent the southwest corner of the IEE Phase 2 development. According to the well record, the well is 23.2m deep and consists of 3m of layer of sand overlying 7m of clay overlying 12.5 m sand (see Figure 6).

A well survey of the area downgradient of the Site was completed by Azimuth however mapping provided by InnServices indicates that servicing is provided along Victoria Street (west of the tracks), thus many of the dwellings to the south of the Site are presumed to be connected to the municipal drinking water system. Most of the wells (existing or otherwise decommissioned) are between 20-50 years old and target or previously targeted the shallow or intermediate aquifer at an average depth of 18m bgs.

There are a few dwellings situated east of the railway line. Mapping indicates that the closest well to the Site would be located~60m to the east of the Site however no information could be obtained about the location and/ or type of well from the owner and/ or MECP well record database. The next closest well is a drilled well located ~150m to the east-southeast however no information could be obtained from the MECP well record database. In general, most of the drilled wells in this area are old (1960's) and appear to have been previously dug wells according to the well records. Well depths range between 12.8m and 33.5m bgs.

4.0 HYDROGEOLOGY EVALUATION

4.1 Soil Investigations

Previous soils investigations which included the IEE Phase 1 development were completed by Geospec Engineering Ltd. (Geospec) in 2010. As part of these field investigations a total of eight (8) boreholes (BH-1 thru BH-9) were excavated to between 3.3 and 5.2 m bgs. Three boreholes were retrofitted as wells (i.e., G-3, G -8 and G-9).

Five of the excavations (BH-1 thru BH-8) were completed within the IEE Phase 1 development lands; and two excavations (BH-7 and BH -9) were completed within the IEE Phase 2 development lands including testwellG-9. Test well G-9 (now abandoned) is located within the centre part of IEE Phase 2 and is ~5.2m deep. BH-7 was located in the southwest corner of the Phase 2 area and is 5m deep (Figure 4).

The surficial soil descriptions provided by Geospec indicate a silt & sand/ sand & silt till in the IEE Phase 1 area and a silt till with some sand and gravel underlain by sand and silt deposits in the southeast part of the Site. Perched ground water conditions were noted in the southeast part of the Site (Geospec, 2011).

In support of the Phase 2 development plan, supplementary test pitting and soil sampling was completed by Azimuth in October 2017 and in March 2018. The purpose of the soil sampling was to identify the native soils, as well as the presence or absence of a shallow ground water table within the IEE Phase 2 lands.

A total of thirteen test pits (TP-1 through TP-13) were excavated to ~ 3m bgs, seven (7) of which were retrofitted with a standpipe for the purposes of monitoring shallow water table conditions. Test pits 1through 5were excavated within the north to the central part of Site and TP- 6 through TP-13 were excavated within the south part of the Site. Water levels were monitored at seven locations and at Geospec's Test well G-9.

The overburden soils in the north part of the Site can be described as silty sand and gravel. The overburden soils in the south part of the Site can be described as sand with a trace of silt. Ground water was not observed in any of Azimuth's test pits.

4.1.1 Grain Size Analysis

At the conclusion of Azimuth's field investigation, nine representative surficial soil samples were submitted to Terraprobe for grain size analysis and permeability testing ('T' time). The purpose of this testing is to characterize the grain size distribution for the shallow overburden soils, as well as to determine an estimated infiltration rate ('T' time)/ permeability rate for use in the design of the future septic beds.

The location of the test pits is provided on Figure 4 and the grain size reports are provided in Appendix B. The permeability of the native materials varies somewhat across the Site from a lower permeability soil being observed in the north half to a much higher permeable soil observed in the south half. Percolation rates ranged between 45-50min/cm at two locations within the north part and between 2-12min/cm at the seven remaining locations.

Table 1: Soil Summary

Location	Depth m bgs (feet)	Unified Soil Classification	Soil Description	T-Time (min/cm)
TP-1	0.6(2)	SM	Silty Sand, some Clay, trace gravel	45-50
TP-3	0.6(2)	SM	Silty Sand, trace gravel, trace silt	2-4
TP-4	0.9 (1)	SW-SP	Gravelly sand, trace silt	4-6
TP-6	0.6(2)	SM	Silty Sand, some Clay, trace gravel	45-50
TP-7	1.8 (6)	SP	Sand with trace silt, trace gravel	3-5
TP-8	1.8 (6)	SW-SP	Sand and Gravel with trace silt	2-4
TP-10	1.8 (6)	SP	Sand with trace silt, trace gravel	4-6
TP-11	1.0 (3)	SW-SP	Sand with some silt, some gravel	10-12
TP-12	1.2 (4)	SP	Sand with trace silt, trace gravel	4-6

4.1.2 Ground Water Monitoring

Ground water monitoring was completed at seven monitoring locations (TW-1 through TW-7) as well as at Terraprobe's existing monitoring well location (G9) between October 6, 2017 to August 29 2018. This includes manual measurements taken in March, April, and June 2018 to capture high water table conditions during spring freshet. With the exception of TW-3, TW-6, TW-7 and G9, all monitoring locations were dry (Figure 5).

In that regard, the water level was measured at depths between 1.7 and 4.3m bgs. The highest water levels were observed in March 2018at TW-3, TW-6, and TW-7 and April 2018at G9 (Table 2). It is noted that upon installation, the end cap of TW-6 and TW-7

was not punctured to allow for the drainage of collected water. This technique was applied for the remaining well locations. Since these two locations were the only wells to have recorded water levels in March, and since the recorded water level was less than 10cm above the base of the well (i.e. within the well cap and not within the screen as water within the screen has migrated back into the overburden), these measurements are not considered representative of the water table elevation. The high water level condition is therefore considered to be the levels measured in April, which are shown in red text and bold in Table 2.

Table 2: Ground Water Level Measurements

Monitoring Location	Location Relative to Site Boundary	Well Depth (mbgs)	Ground Elevation (masl)	March 7, 2018 mbgs/masl	April 26, 2018 mbgs/masl	June 12, 2018 mbgs/masl
TW-1	North	2.75	272.0	dry / <269.3	dry / <269.3	dry / <269.3
TW-2	Central northwest	2.83	272.5	dry / <269.7	dry / <269.7	dry / <269.7
TW-3	Central west	2.61	272.0	dry / <269.4	**1.91 / 270.1**	dry / <269.4
TW-4	Southwest	2.60	269.0	dry / <266.4	dry / <266.4	dry / <266.4
TW-5	Central east	2.20	270.0	dry / <267.8	dry / <267.8	dry / <267.8
TW-6	Central east	2.95	268.0	2.93 / 265.1	dry / <265.1	dry / <265.1
TW-7	Southeast	3.10	267.5	3.03 / 264.5	dry / <264.4	dry / <264.4
G9**	Center of Site	5.13	271.4	3.61 / 267.8	**1.70 / 269.7**	4.33 / 267.1

** Terraprobe well, 2011

Water level measurements are expected to fluctuate seasonally, particularly during periods of high precipitation and spring runoff. The presence of high water at TW-3 and G9 may indicate the presence of a localized perched condition. Based on the above, ground water control measuring during excavations may be required during foundation construction if work is completed in the spring. It is therefore recommended that construction occur in the dry summer months to reduce or eliminate the need for temporary dewatering.

5.0 WATER BALANCE

In order to determine the potential changes to the natural ground water recharge conditions, a pre- and post-development water balance assessment has been completed using the Thornthwaite and Mather method (1957). This method evaluates evapotranspiration based on precipitation and temperature. Residual soil saturation is a function of topography and soil type. Monthly data are tabulated from daily average temperature and precipitation, and the water budget is a continuous calculation over the period of record. To clarify, the method and the approach used by many individuals in examining infiltration resets annual conditions (moisture deficit, snow storage, etc.) over the winter months because of the general lack of infiltration during the frost period.

However, we maintain those records and carry them forward from month to month during the entire period of record.

Values were determined on a monthly basis, compiled from daily Environment Canada meteorological data station located in Barrie, Ontario between 1970 and 2017 (Station ID 6110557). The calculations are based on the average conditions during this period; the average precipitation was 908 mm, rainfall was 655 mm, evapotranspiration was 484 mm and the surplus was 424 mm.

5.1 Land Use

5.1.1 Pre-Development

The entire pre-development Site area can be classified as meadow land use (Table 3).

Table 3: Pre Development Area Classification

Land Use	Land Area (m^2)
Meadow	47,800
TOTAL	**47,800**

Land within the pre-development scenario is considered 0% impervious.

5.1.2 Post-Development

Land within the post-development Site is considered landscaped grass, driveway, roads, sidewalk, and structures. The post-development land area is summarized in the below Table 4:

Table 4: Post-Development Area Classification

Land Use	Land Area (m^2)
Landscaped Grass	39,322
Driveways	1,320
Roads	2,438
Sidewalk	540
Structures	4,180
TOTAL	**47,800**

Land within the post-development scenario is considered 18% impervious. The impervious area is associated with the structures, driveways, sidewalks, and internal roads.

5.2 Infiltration

Infiltration factors for the Site were estimated based on the underlying soil, local topography, and ground cover as per Table 2 of the Ministry of Environment and Energy (MOEE) Hydrogeological Technical Information Requirements for Land Development Applications (1995).

The soil variable factor was determined by taking into account information obtained from the previous field programs completed for the Site (Section 4.1.1). This information confirms that the surficial material is composed primarily by a silt/sand material.

The infiltration factors utilized in the water balance assessment are summarized in Table 5 below.

Table 5: Summary of Pervious Land Infiltration Factor

Land Use	Infiltration Factor	Assumption
Meadow	0.65	Rolling land, sand/silt soil, meadow land
Landscaped	0.60	Rolling land, sand/silt soil, lawn

5.2.1 Pre-Development

Pre-development infiltration was determined by multiplying the annual average surplus amount, the area of each land use, and the infiltration factor for each land use. The pre-development annual infiltration is therefore 13,174 m^3/year from meadow land (Appendix C).

5.2.2 Post-Development

Post-development infiltration (without mitigation) was determined by multiplying the annual average surplus amount, the area of each land use, and the infiltration factor for each land use. The post-development annual direct infiltration is therefore 10,004 m^3/year from landscaped grass. There is therefore a decrease in infiltration of 3,170 m^3/year from pre- to post-development without mitigation which represents 24%.

As noted above, the Site is considered a HVA and SGRA within a WHPA-D. Sites located within a HVA may have restrictions on the type or location of LIDs employed for additional infiltration. However, since the Site is considered low density residential, it is our understanding that there are no applicable infiltration restrictions.

Additional infiltration will be gained by directing rooftop runoff toward the adjacent grass surface. There is approximately 4,180 m^2 of rooftop area which will contribute to indirect infiltration. The infiltration volume for rooftop downspouts is determined by multiplying the area (4,180 m^2) by the annual rainfall (655 mm) by the infiltration

coefficient of the receiving land use (0.60) and by 80% to account for a 20% evapotranspiration factor. The total infiltration gained through this method is 1,314 m^3/year. This brings the total infiltration to 11,318 m^3/year in the post-development (with mitigation) scenario which leaves a deficit of 1,856 m^3/year.

Through consultation with WMI & Associates Limited it is our understanding that a grass swale network will be used around the perimeter of the proposed development to capture runoff and convey this water to the storm water management pond. It is assumed that the majority of overland flow within the Site will be conveyed toward this feature.

Grain size analysis was completed at numerous locations across the Site (Section 4.1.1). Percolation rates ranged between 45-50min/cm at two locations within the north part and between 2-12min/cm at the seven remaining locations. Due to the variability in material, a conservative value of 45 min/cm (or 320 mm/day) was utilized for swale infiltration.

The water balance currently has a deficit of 1,856 m^3/year. If it is assumed that infiltration within the swale network will occur over 15 days, then the grass swale will be required to cover an area of 772 m^2. This was determined by dividing the required volume (1,856 m^3) by the length of infiltration (15 days), and by the infiltration rate (320 mm/day). The swale area was then multiplied by a conservative factor of 2. This represents a swale 1m by 772m long or 2m by 386m long swale network. This methodology assumes that the swale will be positioned so that it can collect the majority of runoff from the Site and that the runoff is available for infiltration. It is our understanding that this will be considered/ incorporated by WMI & Associates Limited into the storm water design.

Based on the information summarized in Section 4.1.2 the high water level at the Site is at maximum 1.7 mbgs. Significant grading is not anticipated prior to development. Since the incorporated LIDs will occur at the ground surface there is at least a 1m vertical separation between the high ground water table and the proposed LIDs (rooftop diversion and conveyance swale).

5.2.3 Water Balance Summary

Using the climate model data and calculations mentioned above, the following pre and post-development infiltration values have been summarized (Appendix C).

Ground water infiltration at the Site could decrease by up to approximately 24% if no mitigation measures are employed. This reduction is based on the creation of impervious surfaces associated with driveways, sidewalks, roads, and structures. The 24% reduction equates to approximately 3,170 m^3/year.

The reduction is eliminated when mitigative strategies are employed (i.e. rooftop diversion and swale conveyance network. The LIDs account for an additional 3,170 m^3 of infiltration per year, which brings the total post-development infiltration volume to match the pre-development infiltration volume. As such, the water balance for the Site meets the Lake Simcoe Region Conservation Authority (LSRCA) requirements.

5.3 Well Head Protection Areas

As indicated in Section 4.2 of the Town of Innisfil's Official Plan, well head protection areas were defined in the South Simcoe Ground Water Study (2004). The study identifies areas around municipal wells susceptible to ground water contamination.

As presented in Figure 9.6.1 of the South Simcoe Ground Water Study, the proposed development is located within the "25-year capture zone boundary" of the Stroud municipal well field. Although the Site is located in close proximity to these wells, the capture zone extends to the southeast, which would indicate that the subject development property is downgradient of the municipal well locations.

Furthermore, the Stroud water supply system obtains its water from regional Aquifer A3 which is less than 200 m asl and is overlain by ~60 m of till material (Golder *et al*, 2004). The SSGW study also indicates that the capture zones for the Stroud well field are completely within a medium vulnerability area (Golder *et al.*, 2004); however, the vulnerability is more representative of the shallow unconfined aquifer and does not reflect the 60 m thick aquitard that exists between the shallow aquifer and the municipal aquifer.

6.0 GROUND WATER / RUP ASSESSMENT

As part of the IEE Phase 1 development, Azimuth completed a Reasonable Use Policy ("RUP") assessment for the entire parcel of land. The RUP assessment was accepted and resulted in the approval of 38 residential lots, each serviced by a conventional treatment system (Azimuth, 2011). The RUP assessment is now being updated as part of this Report to reflect the IEE Phase 2 development containing 21 lots. The ability to meet RUP is contingent on the use of tertiary treatment units (TTUs) for all 21 lots and the installation of TTUs on 8 lots located within the previously approved IEE Phase 1 subdivision. TTU permits for the applicable Phase 1 lots are provided in Appendix D.

Tertiary treatment technology can reduce nitrate concentrations to between 15 – 25mg/L (NO_3-N) with an average 20mg/L depending on the technology used. In this case, a Norweco's Hydro-Kinetic FEU system is considered a typical system that could be used, reporting a removal rate of 67% for total nitrogen. For the purposes of demonstrating

compliance with the RUP, the calculations include 21 Phase 2 TTUs, 8 Phase 1 TTUs and 30 Phase 1 conventional septic systems.

6.1 Private Well Evaluation

The primary focus of the ground water assessment is on impacts to off -site downgradient wells from septic beds. The closest private well to the IEE Phase 2 development is located on the Robertson property, located near the southwest corner of the Phase 2 development. The drilled well is located within the northwest corner of the Robertson property (Figure 6). The target aquifer is overlain with 7 m of clay which should be sufficient to protect this well from surface water contaminants, however sampling would be required to confirm this assumption.

According to the MECP well database, there are a number of wells located along Victoria Street to the south and southeast of the Site. Most of these wells (existing or otherwise decommissioned) are between 20-50 years old and target or previously targeted the shallow or intermediate aquifer at an average depth of 18m bgs. Although mapping from InnServices illustrates some of the dwellings along Victoria Street are municipally serviced, there are 2 dwellings located immediately adjacent Lots 20 and 21 of the IEE Phase 2 development that may not be municipally serviced (See Figure 6). No wells could be observed at the front or rear of these properties however the aerial imaging suggests that septic beds are located within the rear of these lots thus any wells (if present) would be located along the front or side of the dwelling to adhere to the minimum Ontario Building Code (OBC) setbacks between wells and septic systems (i.e., 15m-30m). If wells do exist on these properties, the proposed septic beds on Lots 20 and 21 can be strategically placed to maximize OBC setbacks between the proposed bed locations and any off site wells.

For the remainder of the Site, the treated effluent discharging to the proposed disposal beds would flow with shallow ground water in a southeasterly direction. Most of the wells along Victoria Street (if present) would also be located at the front of these properties (>100m away from the Phase 2 property), to maximize wells setbacks from their own septic systems located within the rear of these properties. Any wells situated on the east side of the railway line are more transgradient to the flow of ground water from the Phase 2 Site therefore impacts would not be anticipated.

6.2 Reasonable Use Policy Assessment

A ground water assessment is typically evaluated within the scope of the MECP Reasonable Use Policy (RUP Procedure B-7-1), the 2008 MECP Guideline for Sewage Works (MECP, 2008) and/ or MECP Procedure D-5-4 (MECP, 1996). The RUP

describes acceptable levels of parameters that are permitted to reach the downgradient property boundary in the ground water regime.

In general, RUP is only applicable to large sewage works with a point source discharge (i.e., treatment systems that generate >10,000 Lpd). As the sewage volumes for each lot are significantly less than 10,000 Lpd, they are regulated under the OBC. Therefore, RUP does not strictly apply in this case however can be used as a guide to determine concentration levels at the downgradient property boundary and evaluate any undesirable environmental impacts from sewage disposal systems.

6.2.1 RUP Assumptions

The following assumptions were used in the RUP evaluation:

Nitrate Criteria: Nitrate (as nitrogen) is the main contaminant of concern for sewage works that discharge effluent to the ground water regime due to the potential for health related impacts in drinking water supplies. Under a Reasonable Use evaluation, the quality of drinking water must not be degraded by an amount in excess of 25% of the difference between background concentrations and the ODWQS for health related parameters (i.e., 10 mg/L for nitrate-N). Historical use of RUP has accepted the maximum compliance criteria for nitrate at the downgradient property boundary as 10 mg/L (ODWQS for nitrate-N) for residential lot development. For the purposes of this assessment, a value of 10 mg/L (nitrate-N) was used as the maximum RUP compliance criteria.

Dilution Area: RUP considers dilution only, and therefore it is highly conservative. Because an individual lot is relatively small, and infiltration from the full lot contributes to dilution, thus the entire property (4.78ha) is used for the dilution calculation. This includes areas designated for internal roads, the Metrolinx widening and other lands transferred to the Town.

Background Nitrate: MECP Guideline B-7-1 describes the background concentration to be used in the RUP calculations as "Background is considered to be the quality of ground water prior to any man-made contamination." Any elevated nitrate concentrations observed at the Site are assumed would be related to agricultural fertilizer application, and therefore a pre-anthropogenic background of 0.2 mg/L is appropriate for this variable and is consistent with the MECP guideline since RUP uses this variable to reflect the concentration of the precipitation infiltrating on the property.

The value of ~10mg/L reflects the shallow ground water condition and represents the water that is underflowing the Site from upgradient areas, which is not used in the RUP

calculation. However, the RUP allows the reviewer to consider site conditions in evaluating the "reasonable use" of the receiving ground water regime. In this case, the shallow ground water regime has been impacted by nitrate levels from both agricultural practices and septic inputs from the existing Stroud community. As described in Guideline B-7 (Section 4.1), it is appropriate for the proposed development to discharge septic effluent into the shallow unit, reflecting its "reasonable use", as it has been contaminated and the contamination is expected to continue.

Influent Nitrate Concentrations: Typical nitrate (NO_3-N) values for weak to medium domestic sewage for a standard Class IV system range between 20 and 60mg/L (Metcalf & Eddy, 1972.) with an average concentration of 40 mg/L (NO_3-N). However, tertiary treatment can reduce nitrate concentrations by 50-67% (e.g., WBS, Norweco's Hydro-Kinetic FEU system) depending on the technology used. Using the above tertiary treatment technologies, nitrate concentrations can be reduced to between 15 – 25mg/L (NO_3-N) with an average 20mg/L. For the purposes of this assessment, a nitrate concentration of 20mg/L is used for tertiary treatment and 40mg/L is used for conventional treatment.

Annual Sewage Volume: The average daily volume for a single residential home is typically between 800-1000Lpd. As per Procedure D-5-4 (MECP, 1996), the volume of sewage should not exceed 1,000Lpd when evaluating contaminant attenuation for residential development. For the purposes of this assessment, 1000Lpd is used.

Infiltration Rates: In 2008, the MECP modified the RUP assessment and have incorporated a constant quantity of dilution in the calculation (MECP, 2008). The quantity is 250mm of water per year (mm/a) over the area of the contaminant plume. For the purposes of the RUP evaluation, an average infiltration rate of 279.5 mm/a is used since it represents Site specific conditions (see below) The infiltration rate is lower than that used in the original 2011 RUP evaluation reflecting an updated water budget analysis.

As part of this evaluation, a water budget was prepared using the Thornthwaite and Mather (1957) method using the Environment Canada meteorological data at Station 6110557 (Barrie) between 1970 and 2018. The average annual water surplus is 430 mm representing the amount of water available annually to infiltrate into the ground water or run off as surface water. During this period, the average annual precipitation was 912 mm, the average annual rainfall was 657 mm, and the average annual evapotranspiration was 481 mm. Snowmelt accounts for 255 mm of the annual surplus and the remainder (175mm) is split between runoff and infiltration in the non-freezing times of the year (rain surplus). Considering that the surficial geology within the study,

the majority of the site being cultivated and the flat nature of the topography, it was determined that between55 to 75% (average 65%) of the water surplus will infiltrate across the Site. By multiplying the annual average precipitation surplus amount (430) by the soil infiltration rate (65%), infiltration is estimated to be approximately 279.5 mm/year for the Site.

6.3 Prediction of Contaminant Attenuation

The nitrate concentration at the Phase 2 development boundary can be estimated using the nitrate dilution equation:

$$C_{pb} = \frac{Q_1C_1 + Q_2C_2}{C_T}$$ where,

- Q_1 = dilutions area (m^2) x infiltration (m/a) = total development area (m^2) x infiltration rate (m/a);
- C_1 = (background nitrate concentration from precipitation) ~ 0.2 mg/L;
- Q_2 = (annual sewage volume) =1,000 Lpd (MECP, 1996);
- C_2 = (effluent NO_3-N concentration in sewage) = 40.0 mg/L (conventional treatment) or 20mg/L (tertiary treatment);
- Q_T = (total offsite sewage volume) = Q_1+Q_2;
- C_{pb} = contribution of nitrate at downgradient property boundary is ≤10 mg/L.

IEE Phase 2 Development:

- Q_1 = Phase 2 dilution area (m^2) x infiltration (m/a) = 47,800 m^2 *179.5 m/a infiltration = 13,360 m^3/a);
- C_1 = (background nitrate concentration from precipitation) = ~ 0.2 mg/L;
- Q_2 = (Phase 2 sewage volume) =1,000x 21 = 21,000 Lpd;
- C_2 = (effluent NO_3-N concentration in sewage) = 20mg/L (tertiary treatment);
- Q_T = (total offsite sewage volume) = Q_1+Q_2;
- C_{pb} = contribution of nitrate at downgradient Phase 2 boundary is ≤10 mg/L.

Based on the above assumptions, the average nitrate-N concentration at the Phase 2 Site boundary is estimated to be 7.4 mg/L. The RUP results indicate that the average loading at the Site boundary is below the 10 mg/L criteria, thus the MECP RUP is met for the IEE Phase 2 development. A sensitivity analysis was also completed using a higher

effluent NO_3-N concentration (25 mg/L NO_3-N) and the results indicated an RUP value is ≤10mg/L; therefore our approach is considered conservative.

IEE Phase 1 and Phase 2 Development:

As part of the technical evaluation undertaken in support of the IEE Phase I development, Azimuth completed a Reasonable Use Policy evaluation for the 17.5 ha parcel of land (Azimuth, 2011). The RUP assessment was accepted and resulted in the approval of 38 residential lots with conventional sewage treatment systems. In order to comply with MECPs RUP at the property boundary as a result of the Phase 2 development, the owner has installed eight (8) of the 38 previously approved conventional systems with tertiary treatment. In that regard, the RUP calculation was re-evaluated having consideration of cumulative impacts from both phases based on the following:

- 38 IEE Phase 1 development lots:
  - 30 conventional systems, and
  - 8 tertiary treatment systems.

- 21 IEE Phase 2 development lots (4.78ha):
  - 21 tertiary treatment systems

The nitrate concentration at the property boundary was estimated using the following equation:

$$C_{pb} = \frac{Q_1C_1 + Q_2C_2 + Q_3C_3 + Q_4C_4}{C_T}$$ where,

- Q_1 = dilutions area (m^2) x infiltration (m/a) = 175,520 m^2 *179.5 m/a infiltration = 48,959 m^3/a;
- C_1 = (background nitrate concentration from precipitation) = ~0.2 mg/L;
- Q_2 = (Phases I sewage volume) =1,000 x 30 units total = 30,000 Lpd;
- C_2 = (effluent NO_3-N concentration in sewage) = 40.0 mg/L (conventional treatment
- Q_3 = (Phase I sewage volume) =1,000 x 8 units total = 8,000 Lpd;
- C_3= (effluent NO_3-N concentration in sewage) =20 mg/L (tertiary treatment)
- Q_4 = (Phase 2 sewage volume) =1,000 x 21 units total = 21,000 Lpd;
- C_4= (effluent NO_3-N concentration in sewage) =20 mg/L (tertiary treatment)

- Q_T = (total offsite sewage volume) = Q_1+Q_2+ Q_3 +Q_4;
- C_{pb} = contribution of nitrate at downgradient property boundary is ≤10 mg/L.

Using the same general assumptions provided in Section 6.1.1, the average nitrate concentration at the property boundary is estimated to be 9.4mg/L. Based on the previous installation of 8 conventional systems with TTU's for the IEE Phase 1 development and by incorporating TTU's for all 21 Phase 2 lots, the net loading is below the 10 mg/L criteria. Therefore, we conclude the RUP guideline is met.

The results of the RUP assessment are considered to be conservative for individual lot development since Reasonable Use Policy is intended to be used to evaluate larger volumes of sewage from large wastewater treatment systems. As the proposed dwellings will be serviced by municipal water, there are no ground water wells proposed for the site. The deeper aquifer system will be used to supply water to the area.

7.0 CONLUSIONS AND RECOMMEDATIONS

The nitrate dilution calculation was used as a guide to determine concentration levels at the downgradient boundary to evaluate any undesirable impacts from the sewage works from the IEE Phase 2 development. In this case, the results of the assessment show that the net loading at the property boundary meets the 10 mg/L criteria provided that tertiary treatment technology is used with a greater than 50% removal rate for nitrate-N for all 21 Phase 2 lots and 8 Phase 1 lots. The use of tertiary technology is sufficient to protect the natural environment and will not result in any negative impact on the ground water quality.

Based on the physical characteristics of the Site, nitrate concentrations in the shallow subsurface would also be significantly reduced by nitrification and attenuation processes, as well as biological uptake, which are not considered within the RUP methodology. Denitrification also plays a primary role in polishing nitrate concentrations in the shallow subsurface will is also not factored in the RUP methodology. As such, impacts are expected to be minimal in nature as a result of the proposed development.

Ground water infiltration at the Site could decrease by approximately 24% if mitigation measures are employed. This reduction is based on the creation of impervious surfaces associated with driveways, sidewalks, roads, and structures. The 24% reduction equates to approximately 3,170 m^3/year. The reduction is eliminated when mitigative strategies are employed (i.e. rooftop diversion and swale conveyance network. The LIDs account for an additional 3,170 m^3 of infiltration per year, which brings the total post-development infiltration volume to match the pre-development infiltration volume. As

such, the water balance for the Site meets the Lake Simcoe Region Conservation Authority (LSRCA) requirements.

8.0 REFERENCES

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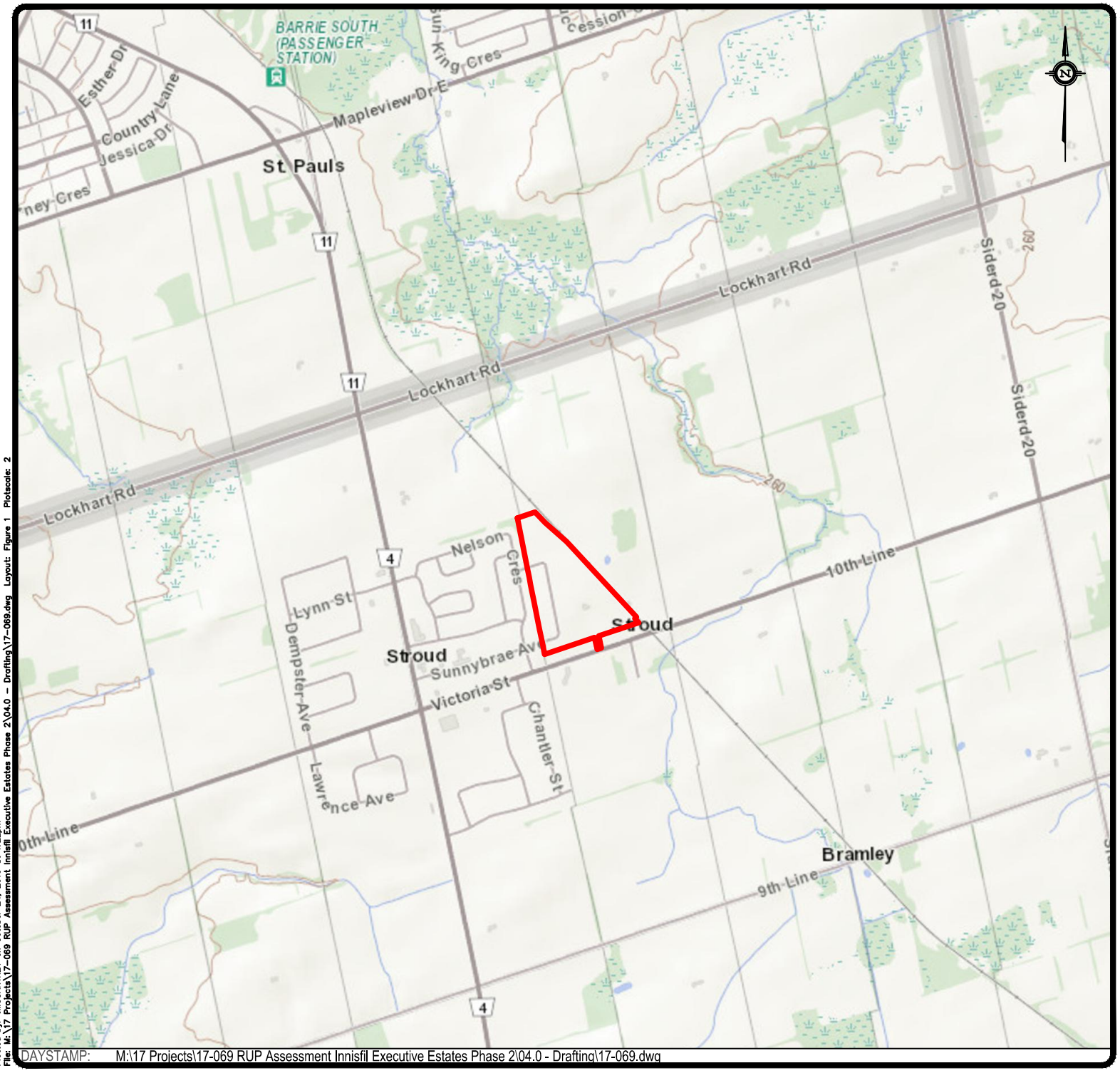
APPENDICES

Appendix A: Figures
Appendix B: Soils Information
Appendix C: Water Balance Summary
Appendix D: IEE Phase 1 Tertiary Treatment Permits

APPENDIX A

Figures



LEGEND:

Approx. Property Boundary

REG MAP

250m 0 750m

HORIZONTAL SCALE 1:25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Innisfil Executive Estates,
Stroud, ON

DATE ISSUED: *October 2019*	Figure No.
CREATED BY: *JLM*	
PROJECT NO.: *17-069*	1
REFERENCE: *MNRF*	

DAYSTAMP: M:\17 Projects\17-069 RUP Assessment Innisfil Executive Estates Phase 2\04.0 - Drafting\17-069.dwg

Plotted by: JMCCARTNEY on October 24, 2019 at 1:22pm
File: M:\17 Projects\17-069 RUP Assessment Innisfil Executive Estates Phase 2\04.0 - Drafting\17-069.dwg Layout: Figure 1 Plotscale: 2

LEGEND:

- *Phase 1 Property Boundary (~17.1ha)*
- *Phase 2 Boundaries (~4.78ha)*

25m 0 75m

HORIZONTAL SCALE 1:2,500

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Existing Conditions

Innisfil Executive Estates (Phase 2)

DATE ISSUED:	*October 2019*	Figure No. 2
CREATED BY:	*JLM*	
PROJECT NO.:	*17-069*	
REFERENCE:	*Simcoe County Maps*	

DAYSTAMP: M:\17 Projects\17-069 RUP Assessment Innisfil Executive Estates Phase 2\04.0 - Drafting\17-069.DWG

Plotted by: JMCCARTNEY on May 28, 2020 at 1:46pm
File: C:\Users\jmccartney\AppData\Local\Temp\AcPublish_9376\17-069.dwg Layout: HYD2 Plotscale: 2

LEGEND:

Phase 2 Boundaries (~4.78ha)

25m 0 75m

HORIZONTAL SCALE 1:2,500

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Development Site Plan

Innisfil Executive Estates (Phase 2)

DATE ISSUED:	*October 2019*	Figure No. 3
CREATED BY:	*JLM*	
PROJECT NO.:	*17-069*	
REFERENCE:	*Simcoe County Maps*	

Plotted by: JMCCARTHEY on June 18, 2020 at 3:29pm
File: C:\Users\jmccartney\AppData\Local\Temp\AcPublish_5808\17-069.dwg Layout: HY03 Plotscale: 2

LEGEND:

- Phase 2 Boundaries (~4.78ha)
- Test Well Locations (Geospec, 2011)
- Test Pit Locations
- Test Well Locations

30m 0 60m

HORIZONTAL SCALE 1:2,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Test Locations

Innisfil Executive Estates (Phase 2)

DATE ISSUED:	October 2019	Figure No. 4
CREATED BY:	JLM	
PROJECT NO.:	17-069	
REFERENCE:	Simcoe County Maps	

DAYSTAMP: M:\17 Projects\17-069 RUP Assessment Innisfil Executive Estates Phase 2\04.0 - Drafting\17-069.DWG

Plotted by: JMCCARTNEY on June 18, 2020 at 3:29pm
File: C:\Users\jmccartney\AppData\Local\Temp\AcPublish_5608\17-069.dwg Layout: HYD4 Plotscale: 2

LEGEND:

- Phase 2 Boundaries (~4.78ha)
- Test Well Locations (Geospec, 2011)
- Test Pit Locations
- Test Well Locations
- 269.7 Denotes Spring Water Level (masl) (April 26, 2018)

30m 0 60m

HORIZONTAL SCALE 1:2,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Water Levels

Innisfil Executive Estates (Phase 2)

DATE ISSUED:	October 2019	Figure No. 5
CREATED BY:	JLM	
PROJECT NO.:	17-069	
REFERENCE:	Simcoe County Maps	

DAYSTAMP: M:\17 Projects\17-069 RUP Assessment Innisfil Executive Estates Phase 2\04.0 - Drafting\17-069.DWG

Plotted by: JMCCARTNEY on June 18, 2020 at 3:30pm
File: C:\Users\jmccartney\AppData\Local\Temp\AcPublish_5608\17-069.dwg Layout: HYD5 Plotscale: 2

LEGEND:

- *Former Property Boundary (~17.1ha)*
- *Phase 2 Boundaries (~4.78ha)*
- *GIN Water Well Locations*

Note:
Well locations are based on MECP well records and/or WWIS (2017) mapping.

30m 0 60m

HORIZONTAL SCALE 1:2,000

DAYSTAMP: M:\17 Projects\17-069 RUP Assessment Innisfil Executive Estates Phase 2\04.0 - Drafting\17-069.DWG

Plotted by: JMCCARTNEY on June 19, 2020 at 8:09am
File: P:\17 Projects\17-069 RUP Assessment Innisfil Executive Estates Phase 2\04.0 – Drafting\17-068.dwg Layout: HYD6 Plotscale: 2

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Well Map

Innisfil Executive Estates (Phase 2)

DATE ISSUED:	*June 2020*	Figure No. 6
CREATED BY:	*JLM*	
PROJECT NO.:	*17-069*	
REFERENCE:	*Simcoe County Maps*	

APPENDIX B

Soils Information

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Inspection & Testing

November 1, 2017

File No. 3-16-0041

Azimuth Environmental
642 Welham Road
Barrie, ON
L4N 9A1

Attention: Ms. Jackie Coughlin

RE: ESTIMATION OF SOIL PERCOLATION RATE
SUBMITTED SOIL SAMPLES
PROJECT NO. 17-069

Dear Sirs:

We are pleased to confirm the details of the estimation of soil percolation rate performed on the submitted soil samples for the above referenced project.

Terraprobe has performed a grain size distribution analysis on the four (4) soil samples delivered to our laboratory on October 13, 2017. The locations of delivered samples were identified as being from Project # 17-069.

Grain size distribution curves were plotted for the samples (Lab No. 1641a to 1641d). They are appended on the Wash Sieve and Sieve Hydrometer Analysis Test Report forms. Table 1 below represents a summary of the results of the samples tested.

Table 1

Lab No.	Location of sample	Soil Description	Unified Soil Classification	Estimated Soil "T"-Time
1641a	TP 1 sa 1	Silty sand, some clay, trace gravel	SM	45 to 50 min/cm
1641b	TP 3 sa 2	Silty sand, trace clay, trace gravel	SM	40 to 45 min/cm
1641c	TP 4 sa 1	Gravelly sand, trace silt	SW-SP	4 to 6 min/cm
1641d	TP 6 sa 1	Silty sand, some clay, trace gravel	SM	40 to 45 min/cm

It should be noted that Terraprobe Inc. did not conduct a field investigation in conjunction with the collection of these samples, or witness the collection of the samples tested. 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.

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.

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

Yours truly,

Terraprobe Inc.

Jerry Duguid, A. Sc. T.
Laboratory Manager

Brian H. Jackson
Barrie Branch Manager

BHJ/jd
Barrie Office

Terraprobe

SIEVE AND HYDROMETER ANALYSIS TEST REPORT

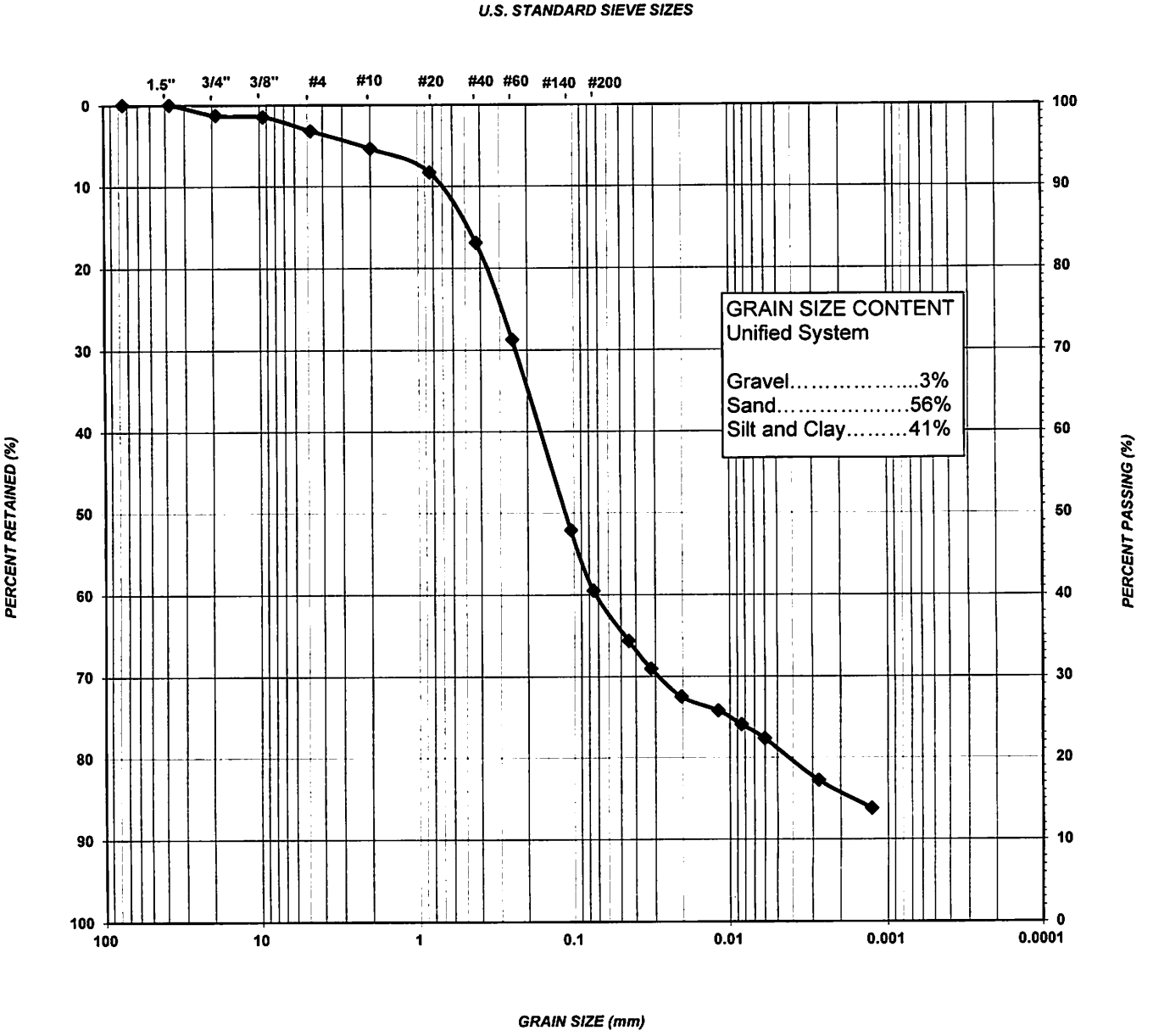
PROJECT: **Laboratory Testing; Septic T-Time**
LOCATION: **N/G**
CLIENT: **Azimuth Environmental**

FILE NO.: **3-16-0041**
LAB NO.: **1641a**
SAMPLE DATE: **Oct-13-17**
SAMPLED BY: **Client**

TEST PIT NUMBER: **1** SAMPLE DEPTH: **0.6 to 1.1m**
SAMPLE NUMBER: **1**
SAMPLE LOCATION: **Project No. 17-069**
SAMPLE DESCRIPTION: **Silty sand, some clay, trace gravel**

Estimated Septic T-Time: 45 to 50 min/cm

GRAIN SIZE DISTRIBUTION



MIT SYSTEM	GRAVEL	COARSE	MEDIUM	FINE	SILT	CLAY
		SAND				

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

Terraprobe

SIEVE AND HYDROMETER ANALYSIS TEST REPORT

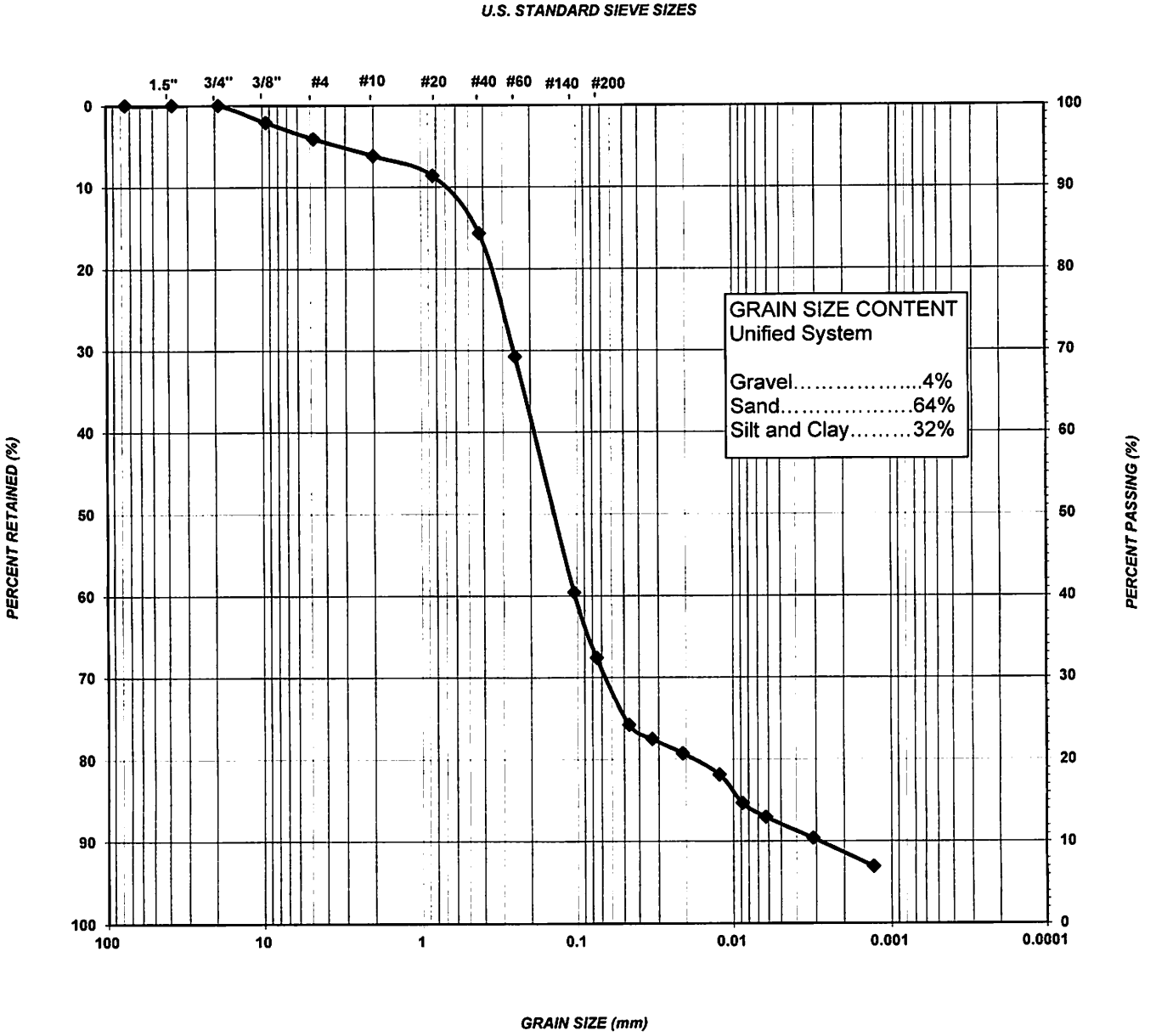
PROJECT: **Laboratory Testing; Septic T-Time**
LOCATION: **N/G**
CLIENT: **Azimuth Environmental**

FILE NO.: **3-16-0041**
LAB NO.: **1641b**
SAMPLE DATE: **Oct-13-17**
SAMPLED BY: **Client**

TEST PIT NUMBER: **3** SAMPLE DEPTH: **1.1m**
SAMPLE NUMBER: **2**
SAMPLE LOCATION: **Project No. 17-069**
SAMPLE DESCRIPTION: **Silty sand, trace clay, trace gravel**

Estimated Septic T-Time: 40 to 45 min/cm

GRAIN SIZE DISTRIBUTION



MIT SYSTEM	GRAVEL	COARSE	MEDIUM	FINE	SAND	SILT	CLAY

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

Terraprobe

WASH SIEVE ANALYSIS TEST REPORT

PROJECT: **Laboratory Testing; Septic T-Time**
LOCATION: **N/G**
CLIENT: **Azimuth Environmental**

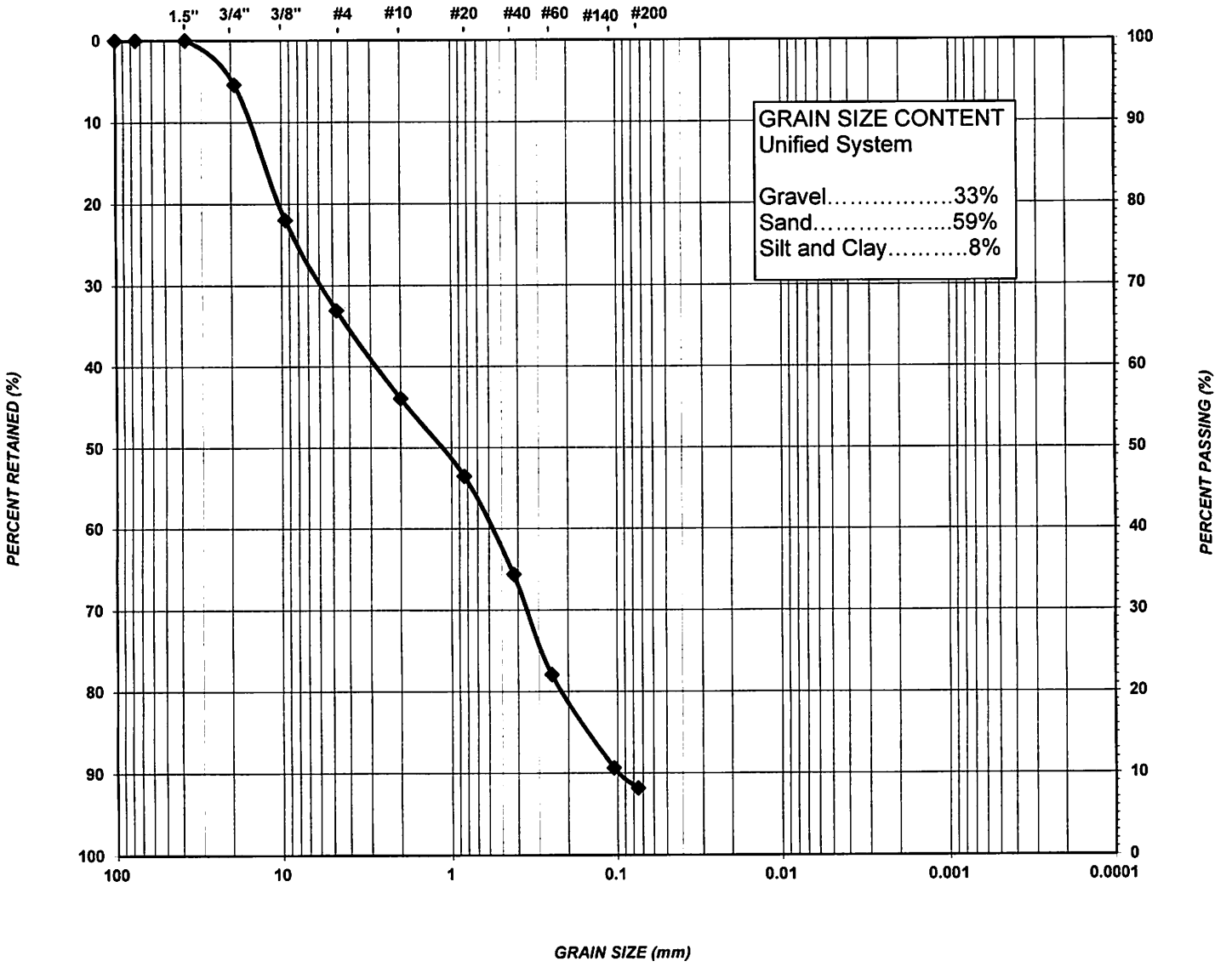
FILE NO.: **3-16-0041**
LAB NO.: **1641c**
SAMPLE DATE: **Oct-13-17**
SAMPLED BY: **Client**

TEST PIT NUMBER: **4** SAMPLE DEPTH: **0.9 to 1.9m**
SAMPLE NUMBER: **1**
SAMPLE LOCATION: **Project No. 17-069**
SAMPLE DESCRIPTION: **Gravelly 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

SIEVE AND HYDROMETER ANALYSIS TEST REPORT

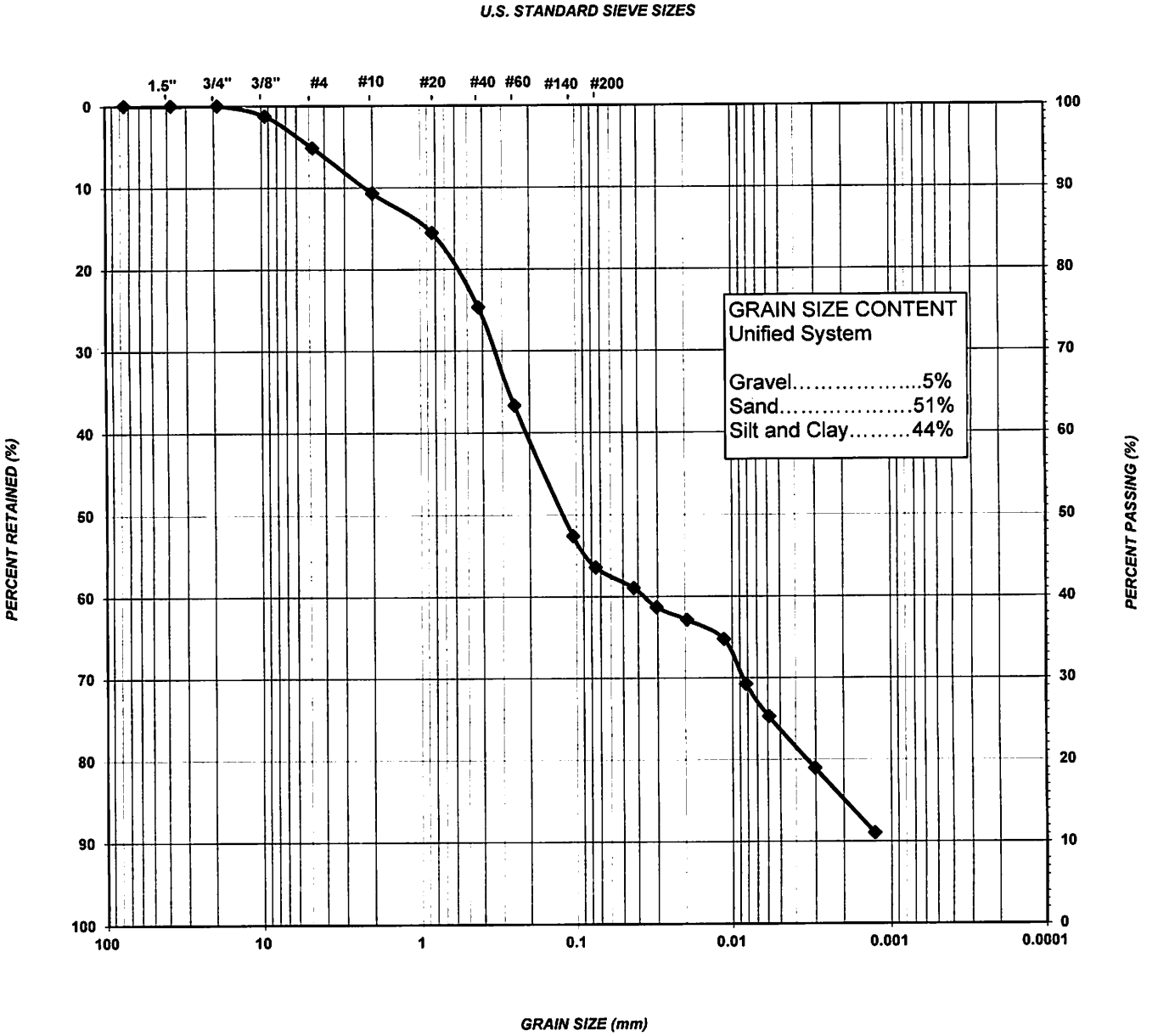
PROJECT: **Laboratory Testing; Septic T-Time**
LOCATION: **N/G**
CLIENT: **Azimuth Environmental**

FILE NO.: **3-16-0041**
LAB NO.: **1641d**
SAMPLE DATE: **Oct-13-17**
SAMPLED BY: **Client**

TEST PIT NUMBER: **6** SAMPLE DEPTH: **0.6 to 1.3m**
SAMPLE NUMBER: **1**
SAMPLE LOCATION: **Project No. 17-069**
SAMPLE DESCRIPTION: **Silty sand, trace clay, trace gravel**

Estimated Septic T-Time: 40 to 45 min/cm

GRAIN SIZE DISTRIBUTION



MIT SYSTEM	GRAVEL	COARSE	MEDIUM	FINE	SILT	CLAY
		SAND				

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

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Inspection & Testing

March 16, 2018 File No. 3-16-0041

Azimuth Environmental
642 Welham Road
Barrie, ON
L4N 9A1

Attention: Ms. Jackie Coughlin, B.A.Sc., P. Eng.

RE: ESTIMATION OF SOIL PERCOLATION RATE
SUBMITTED SOIL SAMPLES
PROJECT NO. 17-069

Dear Ms. Coughlin:

We are pleased to confirm the details of the estimation of soil percolation rates performed on the submitted soil samples for the above referenced project.

Terraprobe has performed a grain size distribution analysis on the five (5) soil samples delivered to our laboratory on March 2, 2018. The locations of delivered samples were identified as being from Project # 17-069.

Grain size distribution curves were plotted for the samples (Lab No. 1905a to 1905e). They are appended on the Wash Sieve Analysis Test Report forms. Table 1 below represents a summary of the results of the samples tested.

Table 1

Lab No.	Location of sample	Soil Description	Unified Soil Classification	Estimated Soil "T"-Time
1905a	TP 7	Sand, trace gravel, trace silt	SP	3 to 5 min/cm
1905b	TP 8	Sand and gravel, trace silt	SW-SP	2 to 4 min/cm
1905c	TP 10	Sand, trace gravel, trace silt	SP	4 to 6 min/cm
1905d	TP 11	Sand, some silt, some gravel	SW-SP	10 to 12 min/cm
1905e	TP 12	Sand, trace silt, trace gravel	SP	4 to 6 min/cm

It should be noted that Terraprobe Inc. did not conduct a field investigation in conjunction with the collection of these samples, or witness the collection of the samples tested. 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.

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.

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

Yours truly,

Terraprobe Inc.

Jerry Duguid, A. Sc. T.
Laboratory Manager

Steven Green, P. Eng.

SG/jd
Barrie Office

Terraprobe

WASH SIEVE ANALYSIS TEST REPORT

PROJECT: **Laboratory Testing; Septic T-Time**
LOCATION: **N/G**
CLIENT: **Azimuth Environmental**

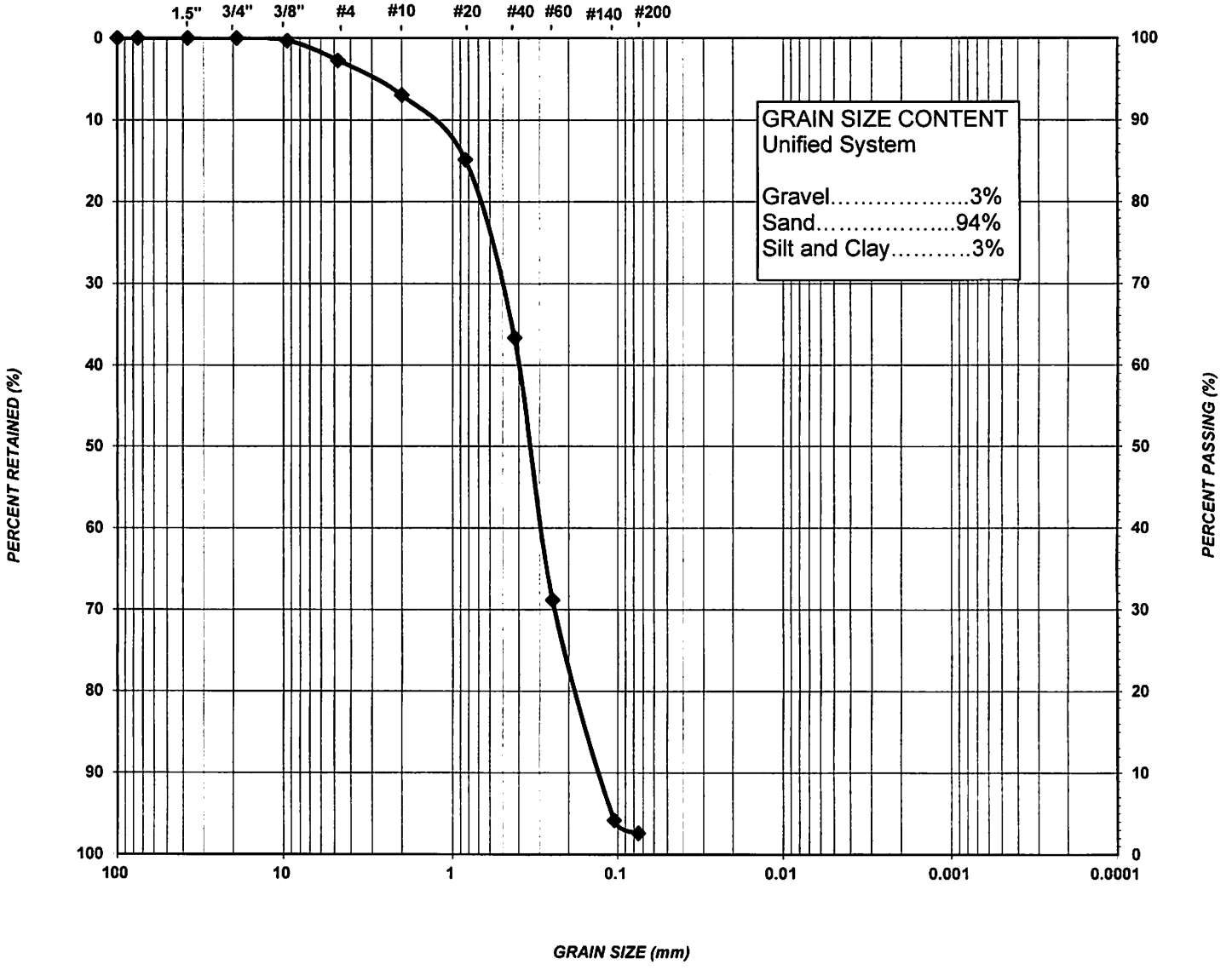
FILE NO.: **3-16-0041**
LAB NO.: **1905a**
SAMPLE DATE: **Mar-02-18**
SAMPLED BY: **Client**

TEST PIT NUMBER: **7** SAMPLE DEPTH: **6.0'**
SAMPLE NUMBER: **1**
SAMPLE LOCATION: **Project 17-069**
SAMPLE DESCRIPTION: **Sand, trace gravel, trace silt**

Estimated Septic T-Time: 3 to 5 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	
	GRAVEL		SAND			SILT AND CLAY

Terraprobe

WASH SIEVE ANALYSIS TEST REPORT

PROJECT: **Laboratory Testing; Septic T-Time**
LOCATION: **N/G**
CLIENT: **Azimuth Environmental**

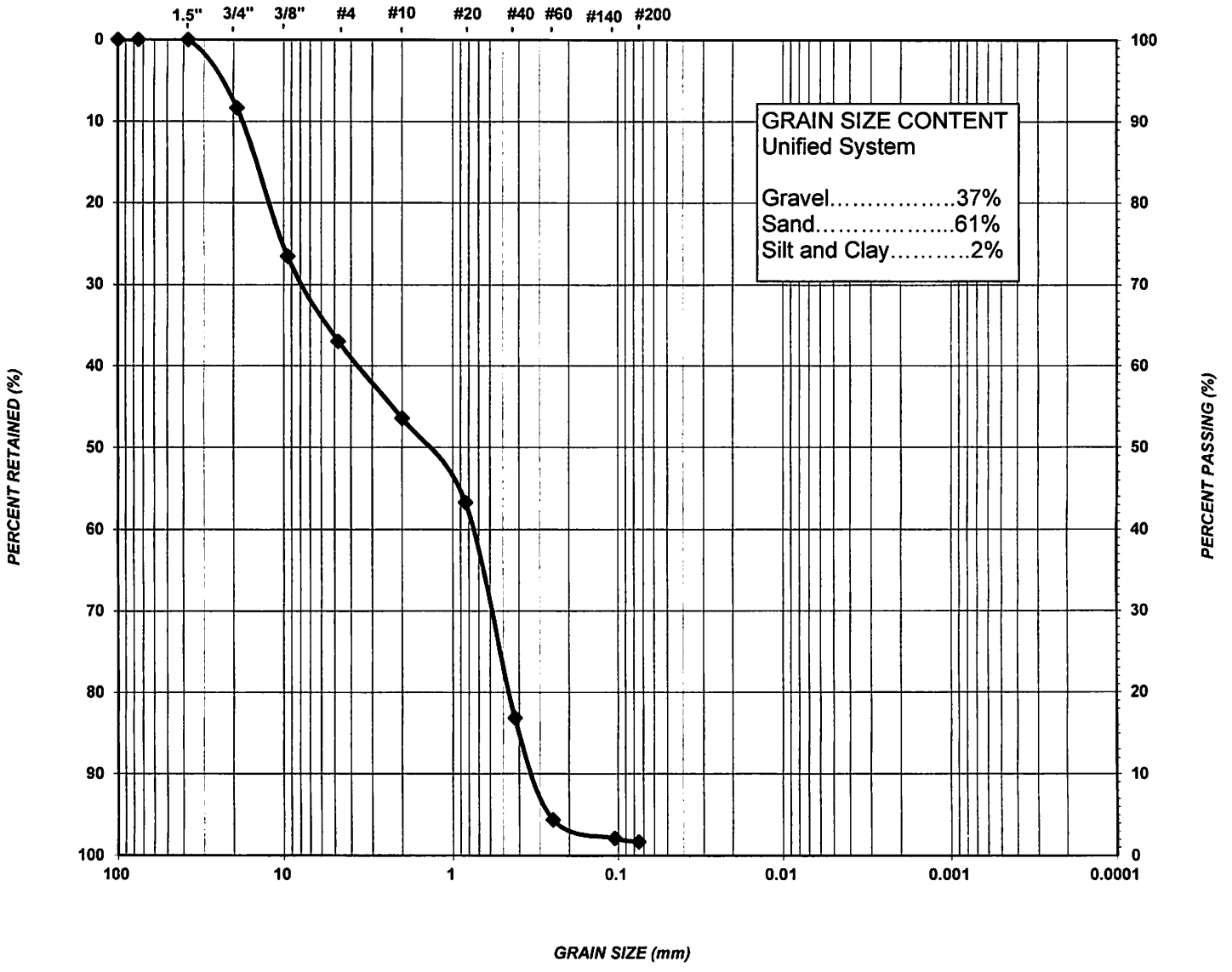
FILE NO.: **3-16-0041**
LAB NO.: **1905b**
SAMPLE DATE: **Mar-02-18**
SAMPLED BY: **Client**

TEST PIT NUMBER: **8** SAMPLE DEPTH: **6.0'**
SAMPLE NUMBER: **1**
SAMPLE LOCATION: **Project 17-069**
SAMPLE DESCRIPTION: **Sand and gravel, trace silt**

Estimated Septic T-Time: 2 to 4 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	
	GRAVEL		SAND			SILT AND CLAY

Terraprobe

WASH SIEVE ANALYSIS TEST REPORT

PROJECT: **Laboratory Testing; Septic T-Time**
LOCATION: **N/G**
CLIENT: **Azimuth Environmental**

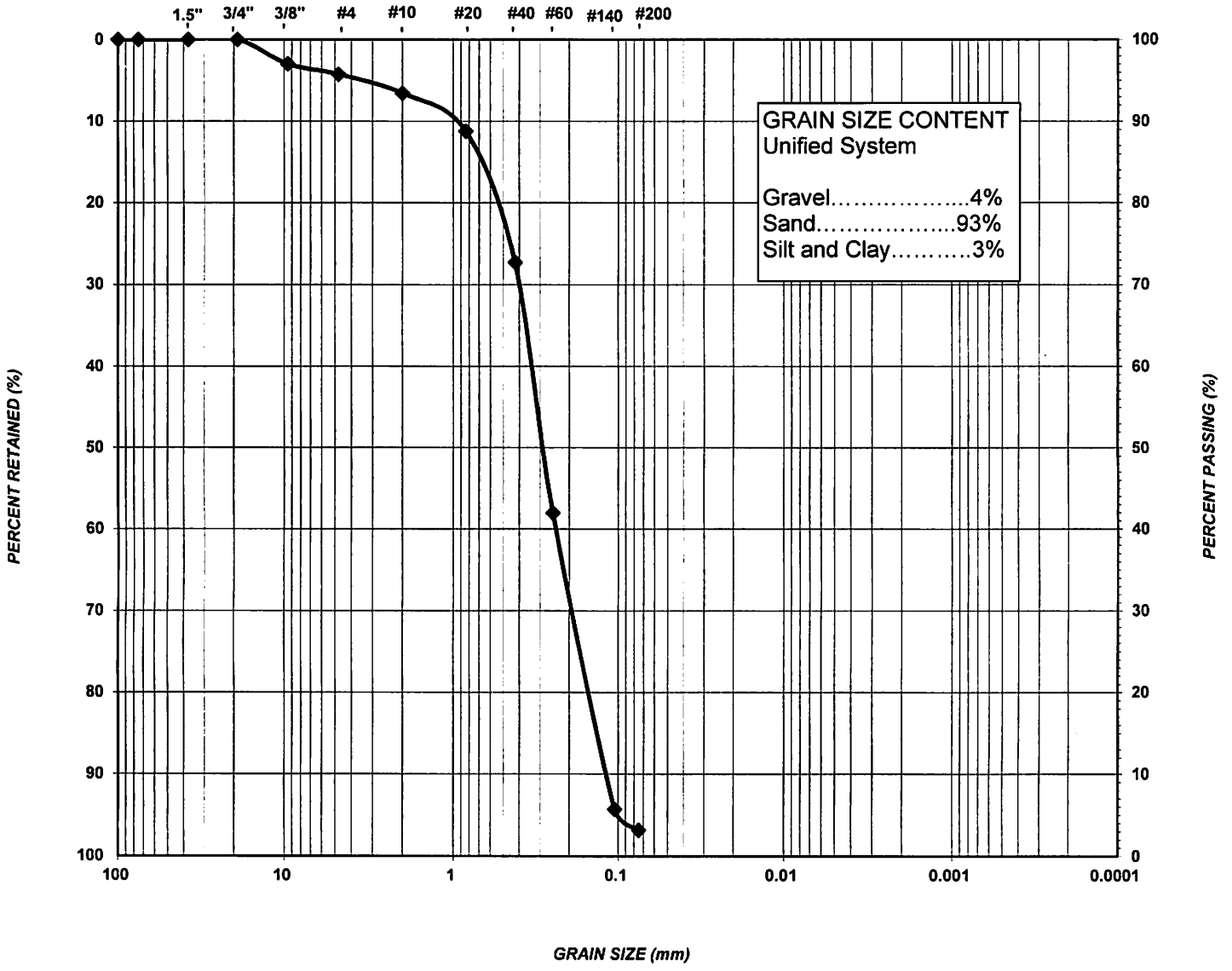
FILE NO.: **3-16-0041**
LAB NO.: **1905c**
SAMPLE DATE: **Mar-02-18**
SAMPLED BY: **Client**

TEST PIT NUMBER: **10** SAMPLE DEPTH: **6.0'**
SAMPLE NUMBER: **1**
SAMPLE LOCATION: **Project 17-069**
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	
	GRAVEL		SAND			SILT AND CLAY

Terraprobe

WASH SIEVE ANALYSIS TEST REPORT

PROJECT: **Laboratory Testing; Septic T-Time**
LOCATION: **N/G**
CLIENT: **Azimuth Environmental**

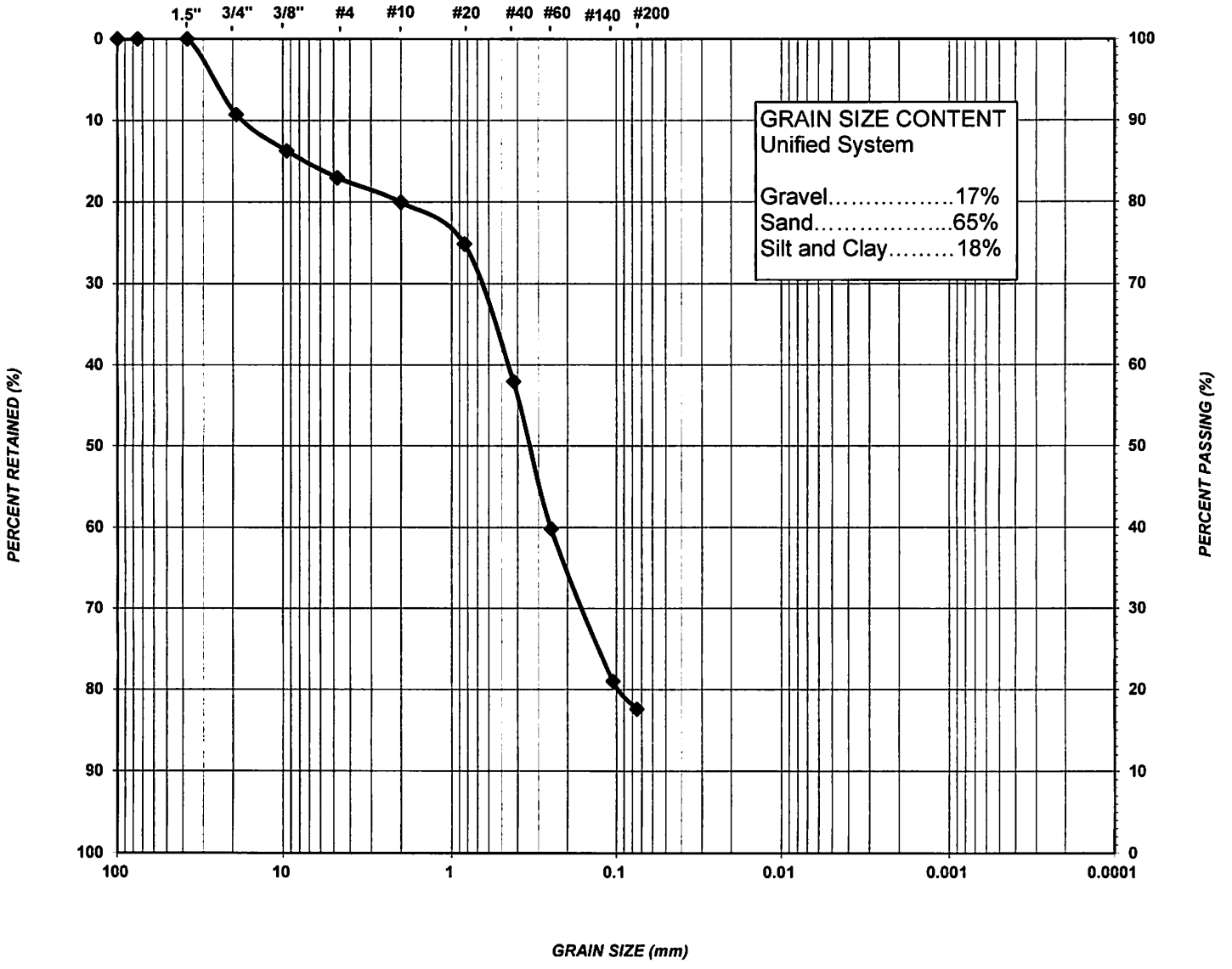
FILE NO.: **3-16-0041**
LAB NO.: **1905d**
SAMPLE DATE: **Mar-02-18**
SAMPLED BY: **Client**

TEST PIT NUMBER: **11** SAMPLE DEPTH: **3.0'**
SAMPLE NUMBER: **1**
SAMPLE LOCATION: **Project 17-069**
SAMPLE DESCRIPTION: **Sand, some silt, some gravel**

Estimated Septic T-Time: 10 to 12 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	
	GRAVEL		SAND			SILT AND CLAY

Terraprobe

WASH SIEVE ANALYSIS TEST REPORT

PROJECT: **Laboratory Testing; Septic T-Time**
LOCATION: **N/G**
CLIENT: **Azimuth Environmental**

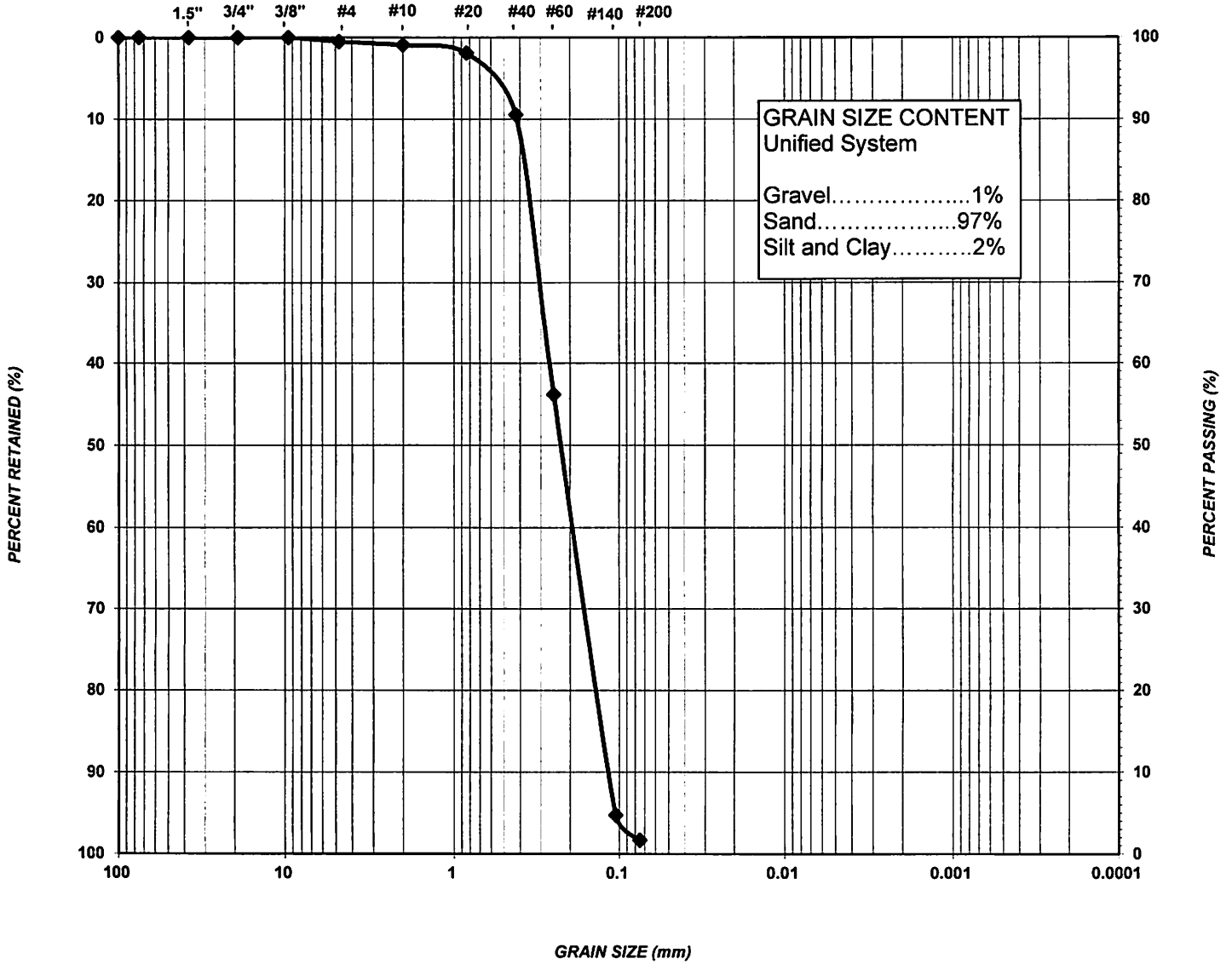
FILE NO.: **3-16-0041**
LAB NO.: **1905e**
SAMPLE DATE: **Mar-02-18**
SAMPLED BY: **Client**

TEST PIT NUMBER: **12** SAMPLE DEPTH: **4 .0 to 5.5'**
SAMPLE NUMBER: **1**
SAMPLE LOCATION: **Project 17-069**
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	
	GRAVEL		SAND			SILT AND CLAY

APPENDIX C

Water Balance Summary

Table A: Pre-Development

Catchment Designation	Meadow	Total
Area (m^2)	47,800	47,800
Pervious Area (m^2)	47,800	47,800
Impervious Area (m^2)	0	0
Infiltration Factors		
Topography Infiltration Factor	0.2	
Soil Infiltration Factor	0.3	
Land Cover Infiltration Factor	0.15	
Infiltration Factor	0.65	
Run-Off Coefficient	0.35	
Run-Off From Impervious Surfaces	0.8	
Inputs (Per Unit Area)		
Precipitation (mm/yr)	908	908
Rainfall (mm/yr)	655	655
Run-On (mm/yr)	0	0
Other Inputs (mm/yr)	0	0
Total Inputs (mm/yr)	**908**	908
Outputs (Per Unit Area)		
Precipitation Surplus (mm/yr)	424	424
Net Surplus (mm/yr)	424	424
Evapotranspiration (mm/yr)	484	484
Infiltration (mm/yr)	276	276
Surplus Infiltration (mm/yr)	0	0
Total Infiltration (mm/yr)	276	276
Run-Off Pervious Areas (mm/yr)	148	148
Run-Off Impervious Areas (mm/yr)	0	0
Total Run-Off (mm/yr)	148	148
Total Outputs (mm/yr)	**908**	**908**
Difference (Inputs - Outputs)	**0**	**0**
Inputs (Volumes)		
Precipitation (m^3/yr)	43,402	43,402
Run-On (m^3/yr)	0	0
Other Inputs (m^3/yr)	0	0
Total Inputs (m^3/yr)	**43,402**	**43,402**
Outputs (Volumes)		
Precipitation Surplus (m^3/yr)	20,267	20,267
Net Surplus (m^3/yr)	20,267	20,267
Evapotranspiration (m^3/yr)	23,135	23,135
Infiltration (m^3/yr)	13,174	13,174
Surplus Infiltration (m^3/yr)	0	0
Total Infiltration (m^3/yr)	**13,174**	**13,174**
Run-Off Pervious Areas (m^3/yr)	7,094	7,094
Run-Off Impervious Areas (m^3/yr)	0	0
Total Run-Off (m^3/yr)	7,094	7,094
Total Outputs (m^3/yr)	43,402	43,402
Difference (Inputs - Outputs)	**0**	**0**

Table B: Post-Development (no mit)

Catchment Designation	Landscaped Grass	Driveway	Roads	Sidewalk	Structure	Total
Area (m^2)	39,322	1,320	2,438	540	4,180	47,800
Pervious Area (m^2)	39,322	0	0	0	0	39,322
Impervious Area (m^2)	0	1,320	2,438	540	4,180	8,478
Infiltration Factors						
Topography Infiltration Factor	0.2	0	0	0	0	
Soil Infiltration Factor	0.3	0	0	0	0	
Land Cover Infiltration Factor	0.1	0	0	0	0	
Infiltration Factor	0.6	0	0	0	0	
Run-Off Coefficient	0.4	1	1	1	1	
Run-Off From Impervious Surfaces	0.8	0.8	0.8	0.8	0.8	
Inputs (Per Unit Area)						
Precipitation (mm/yr)	908	908	908	908	908	908
Rainfall (mm/yr)	655	655	655	655	655	655
Run-On (mm/yr)	0	0	0	0	0	0
Other Inputs (mm/yr)	0	0	0	0	0	0
Total Inputs (mm/yr)	**908**	**908**	**908**	**908**	**908**	908
Outputs (Per Unit Area)						
Precipitation Surplus (mm/yr)	424	726	726	726	726	478
Net Surplus (mm/yr)	424	726	726	726	726	478
Evapotranspiration (mm/yr)	484	182	182	182	182	430
Infiltration (mm/yr)	254	0	0	0	0	209
Surplus Infiltration (mm/yr)	0	0	0	0	0	0
Total Infiltration (mm/yr)	254	0	0	0	0	209
Run-Off Pervious Areas (mm/yr)	170	0	0	0	0	140
Run-Off Impervious Areas (mm/yr)	0	726	726	726	726	129
Total Run-Off (mm/yr)	170	726	726	726	726	268
Total Outputs (mm/yr)	**908**	**908**	**908**	**908**	**908**	**908**
Difference (Inputs - Outputs)	**0**	**0**	**0**	**0**	**0**	**0**
Inputs (Volumes)						
Precipitation (m^3/yr)	35,704	1,199	2,214	490	3,795	43,402
Run-On (m^3/yr)	0	0	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0	0	0
Total Inputs (m^3/yr)	**35,704**	**1,199**	**2,214**	**490**	**3,795**	**43,402**
Outputs (Volumes)						
Precipitation Surplus (m^3/yr)	16,673	959	1,771	392	3,036	22,831
Net Surplus (m^3/yr)	16,673	959	1,771	392	3,036	22,831
Evapotranspiration (m^3/yr)	19,032	240	443	98	759	20,571
Infiltration (m^3/yr)	10,004	0	0	0	0	10,004
Surplus Infiltration (m^3/yr)	0	0	0	0	0	0
Total Infiltration (m^3/yr)	**10,004**	**0**	**0**	**0**	**0**	**10,004**
Run-Off Pervious Areas (m^3/yr)	6,669	0	0	0	0	6,669
Run-Off Impervious Areas (m^3/yr)	0	959	1,771	392	3,036	6,158
Total Run-Off (m^3/yr)	6,669	959	1,771	392	3,036	12,827
Total Outputs (m^3/yr)	35,704	1,199	2,214	490	3,795	43,402
Difference (Inputs - Outputs)	**0**	**0**	**0**	**0**	**0**	**0**

18%

Table C: Post-Development (with mitigation)

Catchment Designation	Landscaped Grass	Driveway	Roads	Sidewalk	Structure	Total
Area (m^2)	39,322	1,320	2,438	540	4,180	47,800
Pervious Area (m^2)	39,322	0	0	0	0	39,322
Impervious Area (m^2)	0	1,320	2,438	540	4,180	8,478
Infiltration Factors						
Topography Infiltration Factor	0.2	0	0	0	0	
Soil Infiltration Factor	0.3	0	0	0	0	
Land Cover Infiltration Factor	0.1	0	0	0	0	
Infiltration Factor	0.6	0	0	0	0	
Run-Off Coefficient	0.4	1	1	1	1	
Run-Off From Impervious Surfaces	0.8	0.8	0.8	0.8	0.8	
Inputs (Per Unit Area)						
Precipitation (mm/yr)	908	908	908	908	908	908
Rainfall (mm/yr)	655	655	655	655	655	655
Run-On (mm/yr)	0	0	0	0	0	0
Other Inputs (mm/yr)	0	0	0	0	0	0
Total Inputs (mm/yr)	**908**	**908**	**908**	**908**	**908**	908
Outputs (Per Unit Area)						
Precipitation Surplus (mm/yr)	424	726	726	726	726	478
Net Surplus (mm/yr)	424	726	726	726	726	478
Evapotranspiration (mm/yr)	484	182	182	182	182	430
Infiltration (mm/yr)	254	0	0	0	0	209
Surplus Infiltration (mm/yr)	47	0	0	0	314	66
Total Infiltration (mm/yr)	302	0	0	0	314	276
Run-Off Pervious Areas (mm/yr)	122	0	0	0	0	101
Run-Off Impervious Areas (mm/yr)	0	726	726	726	412	101
Total Run-Off (mm/yr)	122	726	726	726	412	202
Total Outputs (mm/yr)	**908**	**908**	**908**	**908**	**908**	**908**
Difference (Inputs - Outputs)	**0**	**0**	**0**	**0**	**0**	**0**
Inputs (Volumes)						
Precipitation (m^3/yr)	35,704	1,199	2,214	490	3,795	43,402
Run-On (m^3/yr)	0	0	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0	0	0
Total Inputs (m^3/yr)	**35,704**	**1,199**	**2,214**	**490**	**3,795**	**43,402**
Outputs (Volumes)						
Precipitation Surplus (m^3/yr)	16,673	959	1,771	392	3,036	22,831
Net Surplus (m^3/yr)	16,673	959	1,771	392	3,036	22,831
Evapotranspiration (m^3/yr)	19,032	240	443	98	759	20,571
Infiltration (m^3/yr)	10,004	0	0	0	0	10,004
Surplus Infiltration (m^3/yr)	1,856	0	0	0	1,314	3,170
Total Infiltration (m^3/yr)	**11,860**	**0**	**0**	**0**	**1,314**	**13,174**
Run-Off Pervious Areas (m^3/yr)	4,813	0	0	0	0	4,813
Run-Off Impervious Areas (m^3/yr)	0	959	1,771	392	1,722	4,844
Total Run-Off (m^3/yr)	4,813	959	1,771	392	1,722	9,657
Total Outputs (m^3/yr)	35,704	1,199	2,214	490	3,795	43,402
Difference (Inputs - Outputs)	0	0	0	0	0	0

Table D: Water Balance Summary Table

Characteristic	Site						
	Pre-Development	Post-Development	Change (Pre to Post)		Post-Development with Mitigation	Change (Pre to Post with Mitigation)	
Inputs (Volume)							
Precipitation (m^3/yr)	43,402	43,402	0	0%	43,402	0	0%
Run-On (m^3/yr)	0	0	0	NA	0	0	NA
Other Inputs (m^3/yr)	0	0	0	NA	0	0	NA
Total Inputs (m^3/yr)	43,402	43,402	0	0%	43,402	0	0%
Outputs (Volume)							
Precipitation Surplus (m^3/yr)	20,267	22,831	2,564	13%	22,831	2,564	13%
Net Surplus (m3/yr)	20,267	22,831	2,564	13%	22,831	2,564	13%
Evapotranspiration (m^3/yr)	23,135	20,571	-2,564	-11%	20,571	-2,564	-11%
Infiltration (m^3/yr)	13,174	10,004	-3,170	-24%	10,004	-3,170	-24%
Rooftop Infiltration (m^3/yr)	0	0	0	NA	3,170	3,170	NA
Total Infiltration (m^3/yr)	**13,174**	**10,004**	**-3,170**	**-24%**	**13,174**	**0**	**0%**
Run-Off Pervious Areas (m^3/yr)	7,094	6,669	-425	-6%	4,813	-2,281	-32%
Run-Off Impervious Areas (m^3/yr)	0	6,158	6,158	NA	4,844	4,844	NA
Total Run-Off (m^3/yr)	7,094	12,827	5,734	81%	9,657	2,564	36%
Total Outputs (m^3/yr)	**43,402**	**43,402**	**0**	**0%**	**43,402**	**0**	**0%**

APPENDIX D

IEE Phase 1 Tertiary Treatment Permits

Lot 4 (335 Sunnybrae Ave.)
Building Permit No.: 2018-0203

BUILDING PERMIT

Number: 2018-0203

Schedule a Building Inspection:
Please book your inspection(s) online by clicking this link: www.innisfil.ca/eservices
or Email: buildinginspections@innisfil.ca or Leave a phone message at: 705-436-3710 Ext. 3500

Applicant :	Lou Kelly
Owner :	Lou Kelly
Legal Description :	PLAN 51M1045 LOT 4
Roll Number :	010035054140000

SEPTIC PERMIT
WATER-LOO WIRE MESH BASKET SEPTIC SYSTEM

Inspections Required:

- Sewage System - Readiness to Construct
- Sewage System - Substantial Completion
- Notice of Completion

Conditions/Remarks:

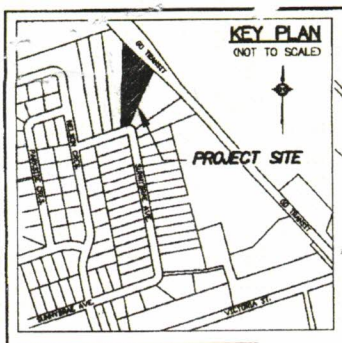
Install new septic system for SFD

Water-Loo Wire mesh basket Septic system

Maintenance contract required for Water-Loo Treatment system

Ensure header and distribution piping is able to be detected magnetically via 14 gauge tracer wire or other means.

Ensure distribution piping and septic tank are minimum distance from all well and property lines.



SITE GRADING PLAN OF

ALL OF LOT 4
REGISTERED PLAN 51M-1045

GEOGRAPHIC TOWNSHIP OF STROUD

TOWNSHIP OF INNISFIL

COUNTY OF SIMCOE

SCALE 1 : 400

5 0 5 20 40 metres

RUDY MAK SURVEYING LTD.

HOUSE ELEVATIONS	
FINISHED FIRST FLOOR	273.85
TOP OF FOUNDATION WALL	273.47
FINISHED BASEMENT FLOOR	270.59
UNDERSIDE OF FOOTING (FRONT)	270.29
UNDERSIDE OF FOOTING (GARAGE)	272.27

TOWN OF INNISFIL
LOT GRADING & ZONING APPROVAL

4/24/18 — DATE

K.B. — SIGNATURE

K. Bayley — NAME

P.E. — TITLE

GENERAL NOTES

1. CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING THE LOCATIONS OF ALL EXISTING UNDERGROUND AND ABOVE GROUND UTILITIES AND SERVICES. BUILDER TO VERIFY SANITARY INVERT ELEVATION AT PROPERTY LINE PRIOR TO GRADE CONSTRUCTION TO ENSURE 2.0% MIN. GRADE FROM EXISTING SERVICE TO BASEMENT. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCE NOTICE PRIOR TO ANY DIGGING FOR STAKE OUT. RUDY MAK O.L.S. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.
2. THE BUILDER IS TO INSTALL THE VERTICAL RISER/ CLEANOUTS IN ACCORDANCE TO INNISFIL STD. 1001.02, THE BUILDER MUST ADVISE THE BUILDING DEPARTMENT FOR APPROPRIATE INSPECTIONS.
3. SUMP PUMP TO BE CONNECTED TO STORM SERVICE AS PER TOISD 607.
4. A MINIMUM SEPARATION OF 1.5 METERS BETWEEN WATER SERVICE AND ANY PROPOSED TREES SHALL BE PROVIDED.
5. FOOTINGS BEAR ON NATIVE UNDISTURBED SOIL OR ROCK AND BE A MINIMUM OF 1.22m BELOW FINISHED GRADE
6. SUITABILITY OF FOUNDATION SOILS TO BE CONFIRMED BY A GEO-TECHNICAL ENGINEER.

BENCHMARK

MNR BENCHMARK 001193MBLS TWP.STROUD ELEV.270.809

TABLET LOCATION: PRESBYTERIAN CHURCH, IN VILLAGE, ABOUT 90m EAST OF TORONTO- NORTH BAY HWY, TABLET IN WEST CONCRETE FOUNDATION WALL OF WEST TOWER, 1.5m FROM S/W CORNER AND 1.37m BELOW CONCRETE BLOCKS.

BOUNDARY

THE BOUNDARY HAS BEEN COMPILED BY NOTES AND RECORDS OF RUDY MAK SURVEYING LTD.

SUBDRAIN ADDED APR. 23/18 WM

1.ad

RUDY MAK
ONTARIO LAND SURVEYOR

INSTALL 150mm ϕ Subdrain c/w Filter Sock. CONTINUE SUBDRAIN TO LOT 6 & THEN PROVIDE OUTLET DOWNSTREAM OF LOT 6. PROVIDE 0.1-0.3m COVER BELOW SWALE INVERT

FEB15, 2018
DATE

LEGEND

■	DENOTES FOUND SURVEY MONUMENT
○	DENOTES PLANTED SURVEY MONUMENT
SIB	DENOTES STANDARD IRON BAR
IB	DENOTES IRON BAR
-x-x-	DENOTES FENCING
2%	DENOTES FLOW DIRECTION & SLOPE GRADE
273.32	DENOTES EXISTING GRADE ELEVATION
x220.80	DENOTES PROPOSED GRADE ELEVATION

METRIC

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

SITE DEVELOPMENT

335 SUNNYBRAE AVENUE

ZONING

(BY-LAW 080-13)

R1-8 - RESIDENTIAL 1 ZONE

BUILDING USE

SINGLE DETACHED DWELLING

CALCULATIONS:

SETBACKS:	REQUIRED MIN.	PROPOSED
FRONT YARD:	8.00 M.	34.07 M.
EAST SIDE YARD:	1.50 M.	2.78 M.
WEST SIDE YARD:	1.50 M.	1.50 M.
REAR YARD (WEST):	6.00 M.	79.90 M.

AREA CALCULATIONS:

LOT AREA:	7909.5 SQ.M.
BUILDING:	515.02 SQ.M.
LOT COVERAGE (SEC. 4.2a):	06.5 % (35% MAX)
GROSS FLOOR AREA (SEC. 4.2a):	515.02 SQ.M.

REVISION	BY	DATE
FIRST ISSUE	AP	12/18/17
NEW SEPTIC DESIGN	RJH	02/14/18

RUDY MAK SURVEYING LTD.
ONTARIO LAND SURVEYORS
89 BIG BAY POINT ROAD
BARRIE, ONTARIO L4N 8M5 (705) 722-3845
E-MAIL MAIL@MAKSURVEYING.COM

DRAWN BY: AP | CHECK BY: RM | FILE No. 11123 SP (4)

or plumbing for an upper-tier municipality, board of health or conservation authority to whom this application is made, or, c) Director, Building and Development Branch, Ministry of Municipal Affairs and Housing 777 Bay St., 2nd Floor. Toronto, M5G 2E5 (416) 585-6666.

Customer Copy

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information

Building number, street name			Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other description		

B. Individual who reviews and takes responsibility for design activities

Name Jason Cheslock		Firm Rumball Excavation and Haulage		
Street address 408 Tiffin Street,			Unit no.	Lot/con.
Municipality Barrie	L4N 5W8	Province ON	E-mail jscheslock@gmail.com	
Telephone number (705) 722-1145	Fax number (705) 735-1701		Cell number (705) 623-3889	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]

☐ House	☐ HVAC – House	☐ Building Structural
☐ Small Buildings	☐ Building Services	☐ Plumbing – House
☐ Large Buildings	☐ Detection, Lighting and Power	☐ Plumbing – All Buildings
☐ Complex Buildings	☐ Fire Protection	☑ On-site Sewage System

Description of designer's work

D. Declaration of Designer

I Jason Cheslock declare that (choose one as appropriate):

(print name)

☑ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: 10457

Firm BCIN: 15632

☐ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Division C, of the Building Code.

Individual BCIN: _____

Basis for exemption from registration: _____

☐ The design work is exempt from the registration and qualification requirements of the Building Code.

Basis for exemption from registration and qualification: _____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

February 7, 2018 Date

Signature of Designer

NOTE:

1.For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.

2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of practice, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Schedule 2: Sewage System Installer Information

A. Project Information

Building number, street name			Unit number	Lot/con.
Municipality	Postal code	Plan number/ other description		

Sewage system installer

Is the installer of the sewage system engaged in the business of constructing on-site, installing, repairing, servicing, cleaning or emptying sewage systems, in accordance with Building Code Article 3.3.1.1, Division C?

☑ Yes (Continue to Section C) No (Continue to Section E) Installer unknown at time of application (Continue to Section E)

Registered installer information (where answer to B is "Yes")

Name Rumball Excavation and Haulage			BCIN 10457
Street address 408 Tiffin Street			Unit number / Lot/con.
Municipality Barrie	Postal code L4N 5W8	Province ON	E-mail jscheslock@gmail.com
Telephone number (705) 722-1145	Fax (705) 735-1701		Cell number (705) 623-3889

Qualified supervisor information (where answer to section B is "Yes")

Name of qualified supervisor(s)	Building Code Identification Number (BCIN)
J Cheslock	10457
R Cheslock	10456

Declaration of Applicant:

I Jason Cheslock declare that:
(print name)

☐ I am the applicant for the permit to construct the sewage system. If the installer is unknown at time of application, I shall submit a new Schedule 2 prior to construction when the installer is known;

OR

☑ I am the holder of the permit to construct the sewage system, and am submitting a new Schedule 2, now that the installer is known.

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

January 7, 2018 Date

Signature of applicant

Lot 5 (333 Sunnybrae Ave.)
Building Permit No.: 2016-1177

Jackie Coughlin

From: Online Building Inspections [moar@innisfil.ca]
Sent: Monday, June 10, 2019 3:36 PM
To: Sigmund
Subject: Innisfil Building Permit Inspection - Permit 2016-1177

Application Number2016-1177
Address 333 SUNNYBRAE AVE
Owner(s): 1820839 ONTARIO INC
Legal description of Property: PLAN 51M1045 LOT 5 Roll Number 010035054150000

Inspected by Todd McCulloch on 2019-06-10
Inspection Type Sewage System - Substantial Completion
Inspection Status Acceptable with o/s deficiencies

Inspection Comments
Maintenance contract required
Alarm test required
As built drawing required for area change

Tanks not installed at time of inspection

Ok to cover bed area

CAUTION You are required to book an inspection when the corrections have been made. Acceptance and approval by a building inspector is required. Construction may not be concealed until the above infractions have been inspected by the Town of Innisfil and accepted by the building inspector. Failure to resolve the outstanding concerns listed above may result in the issuance of an Order, including a Stop Work Order.

Rumball Excavation & Haulage
408 Tiffin St
Barrie, Ontario L4N 9W8
(705) 722-1145 Fax (705) 735-1701

February 3, 2019

ANT - IEE Remington A, Lot 5,
Revised Waterloo Baskets

1. "T" of original controlling soil layer 40 min/cm
2. Total "fixture units" value for all dwelling units: 31.5
3. Total number of bedrooms in all dwelling units: 4
4. Total finished floor area in all dwelling units: 327 square meters
5. Total daily design sanitary sewage flow: 3300 liters per day
6. Minimum septic tank size 7000 liters
7. Calculations:

A – is the area in m2
Q – is the daily design sanitary sewage flow in liters
T – is the percolation times of the underlying native soil in min/cm to a max of 50

Stone Area
A = Q/50
A =3300/50
A= 66 m²

Sand Area
A = Q x T/850
A = (3300x 40)/400
A = 330 m²

Stone Area	66 m²
Sand Area	330 m²

8. Benchmark established as original grade

BCIN Authorization #. 10457

Signature:

ZONING INFORMATION

ZONE DESIGNATION R1-6	PERMITTED	PROVIDED
LOT AREA (sq. m)	1400 (min.)	6868.55
LOT FRONTAGE (m)	17.0 (min.)	10.50m
FRONT YARD SETBACK (m)	8.0 (min.)	27.50m
INT. SIDE YARD (WEST) SETBACK (m)	1.5 (min.)	5.0m
INT. SIDE YARD (EAST) SETBACK (m)	1.5 (min.)	11.3m
REAR YARD SETBACK (m)	6.0 (min.)	77.87m
GROSS FLOOR AREA (sq. m)	N/A	320.35 sq. m
LOT COVERAGE (%)	35.0% (max.)	4.6%
BUILDING HEIGHT (m)	9.0 (max.)	±7.5m

STRUCTURE

MODEL NO.		REMINGTON A
HOUSE STYLE (i.e. walkout, bungalow etc.)		2 STOREY
ADJACENT MODEL	EAST	VACANT
	WEST	SUNNYBRAE AVENUE
	NORTH	VACANT RESIDENTIAL
	SOUTH	VACANT RESIDENTIAL
FIREBREAK LOT		NO

SERVICING CHECK BOX

SERVICES	YES/NO	DEPTH AT P/L	INVERT @ P/L
WATER	YES	2.28	252.03(APPROX)
SANITARY	NO	N/A	N/A
STORM	YES	2.05	269.81

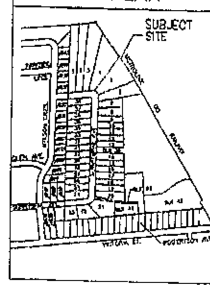
BUILDING ELEV./DETAILS

F.F.	273.71
T.F.W.	273.35
B.T.F.	271.01
U.S.F.	270.76
U.S.F. FRONT	———
U.S.F. REAR	———
T.F.W. GARAGE	273.26
U.S.F. GARAGE	271.58

LEGEND

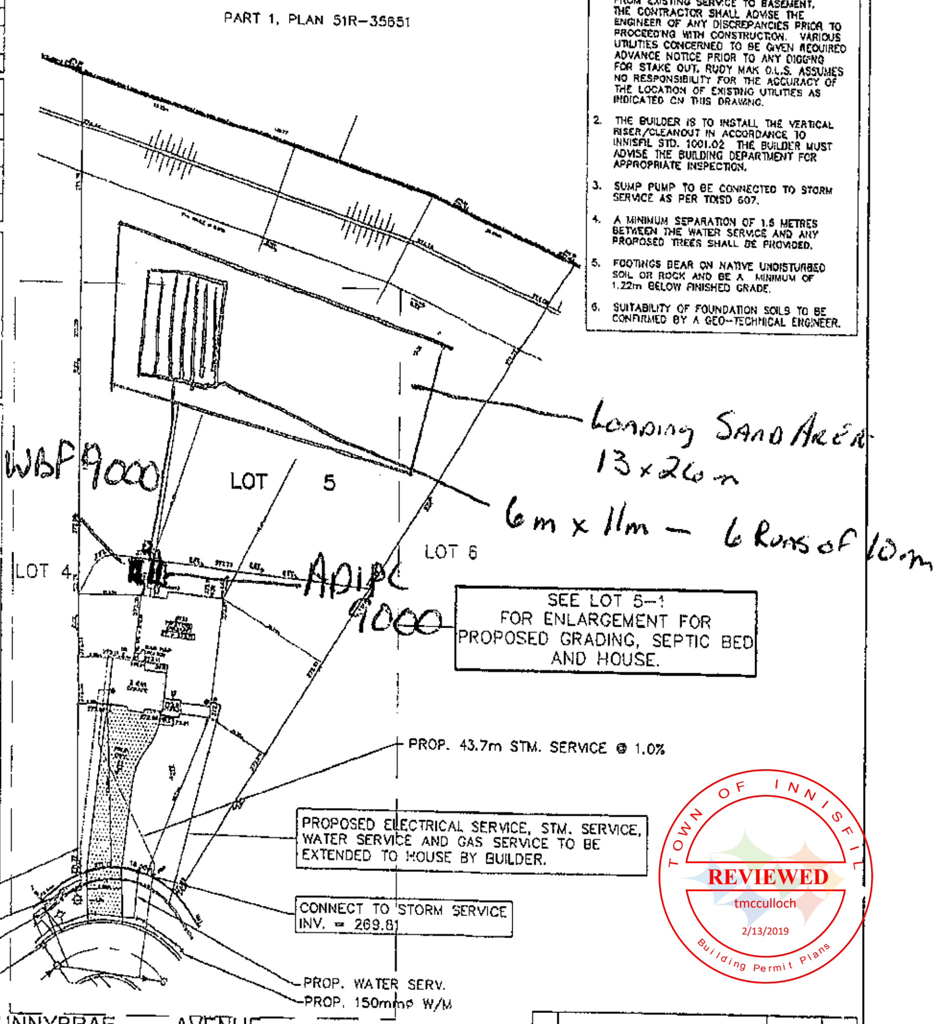
- SUBJECT PROPERTY
- EXISTING CONTOUR
- PROPOSED CURB
- PROPOSED DWELLING
- PROPOSED DRIVEWAY
- PROP. SEPTIC TANK
- PROPOSED BASEMENT WINDOW LOCATION
- PROP. SEPTIC BED
- PROP. DOWNSPOUT LOCATION
- PROP. STORM SERVICE
- PROP. 45° BEND
- PROP. 25mmø PE WATER SERVICE
- PROPOSED CURB STOP
- PROPOSED FIRE HYDRANT
- DIRECTION OF FLOW AND GRADE
- PROP. ELEVATION / EXISTING ELEVATION
- MAX. 3:1 SLOPE
- PROP. TREE

KEY PLAN



GENERAL NOTES

1. CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING THE LOCATIONS OF ALL EXISTING UNDERGROUND AND ABOVE GROUND UTILITIES ANDS SERVICES. BUILDER TO VERIFY SANITARY INVERT ELEVATION AT PROPERTY LINE PRIOR TO CONSTRUCTION TO ENSURE 2.0% MIN. GRADE FROM EXISTING SERVICE TO BASEMENT. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCE NOTICE PRIOR TO ANY DIGGING FOR STAKE OUT. RUDY MAK O.L.S. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.
2. THE BUILDER IS TO INSTALL THE VERTICAL RISER/CLEANOUT IN ACCORDANCE TO INNISFIL STD. 1001.02 THE BUILDER MUST ADVISE THE BUILDING DEPARTMENT FOR APPROPRIATE INSPECTION.
3. SUMP PUMP TO BE CONNECTED TO STORM SERVICE AS PER TOISD 607.
4. A MINIMUM SEPARATION OF 1.5 METRES BETWEEN THE WATER SERVICE AND ANY PROPOSED TREES SHALL BE PROVIDED.
5. FOOTINGS BEAR ON NATIVE UNDISTURBED SOIL OR ROCK AND BE A MINIMUM OF 1.22m BELOW FINISHED GRADE.
6. SUITABILITY OF FOUNDATION SOILS TO BE CONFIRMED BY A GEO-TECHNICAL ENGINEER.



TOWN OF INNISFIL
REVIEWED
tmcculloch
2/13/2019
Building Permit Plans

BENCHMARK

[illegible]

NO.	REVISIONS	DATE	INITIAL
1	FIRST SUBMISSION	DEC. 13/18	R.M.

RUDY MAK SURVEYING LTD.
ONTARIO LAND SURVEYORS

O.L.S. STAMP

TO BE STAMPED BY ONTARIO LAND SURVEYOR

THE PROPOSED LOT GRADING IS APPROVED AS BEING IN GENERAL CONFORMITY WITH THE OVERALL APPROVED GRADING PLAN FOR THE SUBDIVISION.

COMPANY NAME: RUDY MAK SURVEYING LTD.
APPROVED BY: RUDY MAK
SIGNATURE:
DATE: DEC. 13, 2018

TO BE COMPLETED BY ONTARIO LAND SURVEYOR

#333 SUNNYBRAE AVENUE
LOT 5, OF PLAN 51M-
INNISFIL EXECUTIVE ESTATES
TOWN OF INNISFIL

SCALE:	1:750
DATE:	DEC. 13, 2018
DRAWN:	GEMCAD INC.
DESIGNED:	R.M.

DWG. NO.
LOT 5

Lot 6 (331 Sunnybrae Ave.)
Building Permit No.: 2017-0701

Jackie Coughlin

From: Peter Slusarczyk [moarinnisfil@gmail.com]
Sent: Friday, January 25, 2019 8:20 AM
To: Sigmund
Subject: Innisfil Building Permit Inspection - Permit 2017-0701

Application Number2017-0701
Address 331 SUNNYBRAE AVE
Owner(s): EZEKIEL TRACY LYNN
Legal description of Property: PLAN 51M1045 LOT 6 Roll Number 010035054160000

Inspected by Peter Slusarczyk on 2019-01-25 00:00:00.000
Inspection Type Sewage System - Substantial Completion
Inspection Status Acceptable with o/s deficiencies

Inspection Comments
-Maintenance contract received.
-Alarm test conducted.
-As built received.

Call for Final inspection when erosion control in place.

CAUTION You are required to book an inspection when the corrections have been made. Acceptance and approval by a building inspector is required. Construction may not be concealed until the above infractions have been inspected by the Town of Innisfil and accepted by the building inspector. Failure to resolve the outstanding concerns listed above may result in the issuance of an Order, including a Stop Work Order.

ZONING INFORMATION

ZONE DESIGNATION R1-8	PERMITTED	PROVIDED
LOT AREA (sq. m)	1400 (min.)	6868.55
LOT FRONTAGE (m)	17.0 (min.)	18.58m
FRONT YARD SETBACK (m)	8.0 (min.)	25.02m
INT. SIDE YARD (WEST) SETBACK (m)	1.5 (min.)	4.32m
INT. SIDE YARD (EAST) SETBACK (m)	1.5 (min.)	4.25m
REAR YARD SETBACK (m)	6.0 (min.)	82.70m
GROSS FLOOR AREA (sq. m)	N/A	343.37sq. m
LOT COVERAGE (%)	35.0% (max.)	4.8%
BUILDING HEIGHT (m)	9.0 (max.)	6.05m

STRUCTURE

MODEL NO.		KENTWOOD B
HOUSE STYLE (i.e. walkout, bungalow etc.)		BUNGALOW
ADJACENT MODEL	EAST	VACANT
	WEST	SUNNYBRAE AVENUE
	NORTH	VACANT RESIDENTIAL
	SOUTH	VACANT RESIDENTIAL
FIREBREAK LOT		NO

SERVICING CHECK BOX

SERVICES	YES/NO	DEPTH AT P/L	INVERT @ P/L
WATER	YES	2.28	269.37(APPROX)
SANITARY	NO	N/A	N/A
STORM	YES	2.05	269.60

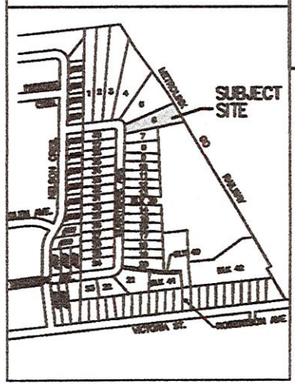
BUILDING ELEV./DETAILS

F.F.	273.52
T.F.W.	273.16
B.T.F.	270.51
U.S.F.	270.26
U.S.F. FRONT	———
U.S.F. REAR	———
T.F.W. GARAGE	273.07
U.S.F. GARAGE	271.39

LEGEND

- SUBJECT PROPERTY
- EXISTING CONTOUR
- PROPOSED CURB
- PROPOSED DWELLING
- PROPOSED DRIVEWAY
- PROP. SEPTIC TANK
- PROPOSED BASEMENT WINDOW LOCATION
- PROP. SEPTIC BED
- PROP. DOWNSPOUT LOCATION
- PROP. STORM SERVICE
- PROP. 45° BEND
- PROP. 25mmø PE WATER SERVICE
- PROPOSED CURB STOP
- PROPOSED FIRE HYDRANT
- DIRECTION OF FLOW AND GRADE
- PROP. ELEVATION / EXISTING ELEVATION
- MAX. 3:1 SLOPE
- PROP. TREE

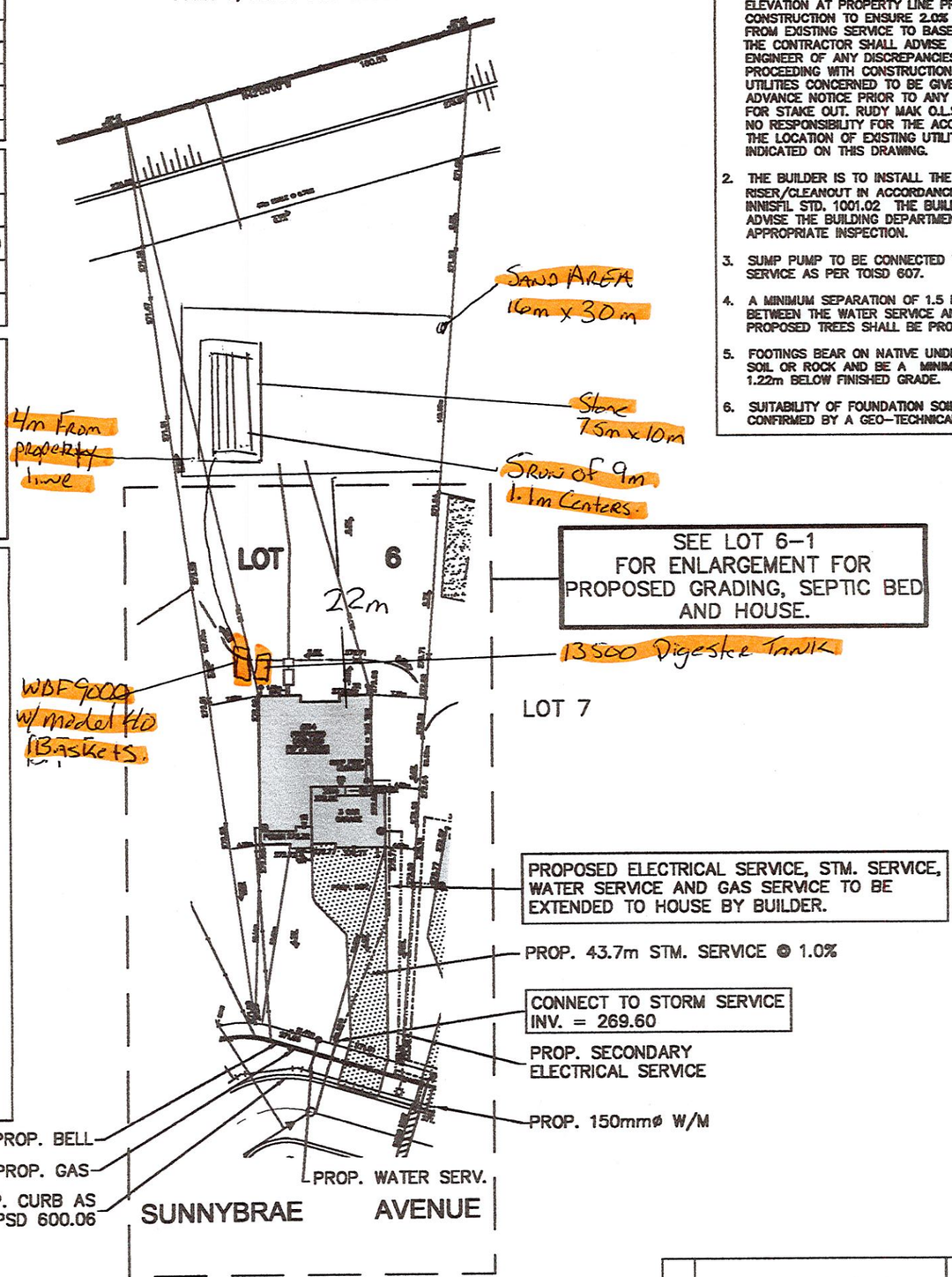
KEY PLAN



GENERAL NOTES

1. CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING THE LOCATIONS OF ALL EXISTING UNDERGROUND AND ABOVE GROUND UTILITIES ANDS SERVICES. BUILDER TO VERIFY SANITARY INVERT ELEVATION AT PROPERTY LINE PRIOR TO CONSTRUCTION TO ENSURE 2.0% MIN. GRADE FROM EXISTING SERVICE TO BASEMENT. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCE NOTICE PRIOR TO ANY DIGGING FOR STAKE OUT. RUDY MAK O.L.S. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.
2. THE BUILDER IS TO INSTALL THE VERTICAL RISER/CLEANOUT IN ACCORDANCE TO INNISFIL STD. 1001.02 THE BUILDER MUST ADVISE THE BUILDING DEPARTMENT FOR APPROPRIATE INSPECTION.
3. SUMP PUMP TO BE CONNECTED TO STORM SERVICE AS PER TOISD 607.
4. A MINIMUM SEPARATION OF 1.5 METRES BETWEEN THE WATER SERVICE AND ANY PROPOSED TREES SHALL BE PROVIDED.
5. FOOTINGS BEAR ON NATIVE UNDISTURBED SOIL OR ROCK AND BE A MINIMUM OF 1.22m BELOW FINISHED GRADE.
6. SUITABILITY OF FOUNDATION SOILS TO BE CONFIRMED BY A GEO-TECHNICAL ENGINEER.

PART 1, PLAN 51R-35651



BENCHMARK

BENCHMARK: CONCRETE MON. TOP: STROUD ELEV.: 270.000

TABLET LOCATION: PRESBYTERIAN CHURCH, IN VILLAGE, ABOUT 50m EAST OF TORONTO-NORTH BAY HWY. TABLET IN WEST CONCRETE FOUNDATION WALL OF WEST TOWER, 1.0m FROM S/W CORNER AND 1.37m BELOW CONCRETE BLOCKS.

NO.	REVISIONS	DATE	INITIAL
1	FIRST SUBMISSION	JAN. 23/17	R.M.

RUDY MAK SURVEYING LTD.
ONTARIO LAND SURVEYORS

O.L.S. STAMP

TO BE STAMPED BY ONTARIO LAND SURVEYOR

THE PROPOSED LOT GRADING IS APPROVED AS BEING IN GENERAL CONFORMITY WITH THE OVERALL APPROVED GRADING PLAN FOR THE SUBDIVISION.

COMPANY NAME: RUDY MAK SURVEYING LTD.

APPROVED BY: RUDY MAK

SIGNATURE: _____

DATE: JAN. 23, 2017

TO BE COMPLETED BY ONTARIO LAND SURVEYOR

#331 SUNNYBRAE AVENUE LOT 6, OF PLAN 51M- INNISFIL EXECUTIVE ESTATES TOWN OF INNISFIL

SCALE: 1:750
DATE: JAN. 23, 2017
DRAWN: GEMCAD INC.
DESIGNED: R.M.

DWG. NO. LOT 6

Lot 13 (303 Sunnybrae Ave.)
Building Permit No.: 2018-0871

BUILDING PERMIT

Innisfil

Number: 2018-0871

Schedule a Building Inspection:
Please book your inspection(s) online by clicking this link: www.innisfil.ca/eservices
or Email: buildinginspections@innisfil.ca or Leave a phone message at: 705-436-3710 Ext. 3500

Applicant :	Sigmund Tronowicz, Ant Construction
Owner :	1820839 ONTARIO INC
Legal Description :	PLAN 51M1045 LOT 13
Roll Number :	010035054230000

Inspections Required:

- Sewage System - Readiness to Construct
- Sewage System - Substantial Completion
- Notice of Completion

Conditions/Remarks:

New Septic Installation

WATER_LOO Wire mesh basket

-Maintenance agreement required

-As built required

-Provide granular analysis for native and imported soil prior to install inspection.

-Ensure header and distribution piping is able to be detected magnetically via 14 gauge tracer wire or other means.

-Ensure distribution piping and septic tank are minimum distance from all wells and property lines

Innisfil

BUILDING PERMIT

Number: 2018-0871

Project Location : 303 SUNNYBRAE AVE

Work Type : Septic

ATTENTION :

1. Owner/agent is required to arrange for all required site inspections as listed on this permit. Book your Inspection online at www.innisfil.ca/eservices two business days in advance of the preferred date of inspection.
2. Owner/agent is also required to be aware of the list of inspections and notes to this permit indicated on the next page(s) and also be aware of any notes/marks in red on the attached plans and/or documents.
3. All plans and/or documents attached to this permit form part of this permit and are to remain on site and available to the Inspector.
4. Owner/agent is required to comply with the Ontario Building Code and any other applicable law at all times.

DEC-17 2018

Date

for Chief Building Official (signature)

Community Development Standards Branch
Town of Innisfil 2101 Innisfil Beach Rd Innisfil, ON L9S 1A1 705-436-3710 888-436-3710
www.innisfil.ca

Jackie Coughlin

From: Online Building Inspections [moar@innisfil.ca]
Sent: Thursday, September 19, 2019 4:12 PM
To: Sigmund
Subject: Innisfil Building Permit Inspection - Permit 2018-0871

Application Number2018-0871
Address 303 SUNNYBRAE AVE
Owner(s): 1820839 ONTARIO INC
Legal description of Property: PLAN 51M1045 LOT 13 Roll Number 010035054230000

Inspected by Todd McCulloch on 2019-09-19
Inspection Type Sewage System - Substantial Completion
Inspection Status Acceptable with o/s deficiencies

Inspection Comments
Maintenance contract required
Alarm test required
As built required
Appears as per approved drawings

Tanks not hooked to house at time of inspection

Ok to cover

CAUTION You are required to book an inspection when the corrections have been made. Acceptance and approval by a building inspector is required. Construction may not be concealed until the above infractions have been inspected by the Town of Innisfil and accepted by the building inspector. Failure to resolve the outstanding concerns listed above may result in the issuance of an Order, including a Stop Work Order.

Lot 14 (288 Sunnybrae Ave.)
Building Permit No.: 2018-0850

Innisfil

BUILDING PERMIT

Number: 2018-0850

Project Location : 288 SUNNYBRAE AVE

Work Type : New Septic

ATTENTION :

1. Owner/agent is required to arrange for all required site inspections as listed on this permit. Book your Inspection online at www.innisfil.ca/eservices two business days in advance of the preferred date of inspection.
2. Owner/agent is also required to be aware of the list of inspections and notes to this permit indicated on the next page(s) and also be aware of any notes/marks in red on the attached plans and/or documents.
3. All plans and/or documents attached to this permit form part of this permit and are to remain on site and available to the Inspector.
4. Owner/agent is required to comply with the Ontario Building Code and any other applicable law at all times.

DEC 17, 2018
Date

for Chief Building Official (signature)

Community Development Standards Branch
Town of Innisfil 2101 Innisfil Beach Rd Innisfil, ON L9S 1A1 705-436-3710 888-436-3710
www.innisfil.ca

Jackie Coughlin

From: Moar Automation [moar@innisfil.ca]
Sent: Thursday, December 5, 2019 3:48 PM
To: Sigmund
Subject: Innisfil Building Permit Inspection - Permit 2017-0651

Application Number2017-0651
Address 295 SUNNYBRAE AVE
Owner(s): 1820839 ONTARIO INC
Legal description of Property: PLAN 51M1045 LOT 14 Roll Number 010035054240000

Inspected by Ryan Dobie on 2019-12-05
Inspection Type Sewage System - Substantial Completion
Inspection Status Acceptable with o/s deficiencies

Inspection Comments
Setbacks appear to comply to OBC
Appears as per approved drawings
Alarm test required
Maintenance contract required

Ok to cover

CAUTION You are required to book an inspection when the corrections have been made. Acceptance and approval by a building inspector is required. Construction may not be concealed until the above infractions have been inspected by the Town of Innisfil and accepted by the building inspector. Failure to resolve the outstanding concerns listed above may result in the issuance of an Order, including a Stop Work Order.

Lot 23 (255 Sunnybrae Ave.)
Building Permit No.: 2019-0202

BUILDING PERMIT

Number: 2019-0202

Project Location : 255 SUNNYBRAE AVE

Work Type : Septic

ATTENTION :

1. Owner/agent is required to arrange for all required site inspections as listed on this permit. Book your Inspection online at www.innisfil.ca/eservices two business days in advance of the preferred date of inspection.
2. Owner/agent is also required to be aware of the list of inspections and notes to this permit indicated on the next page(s) and also be aware of any notes/marks in red on the attached plans and/or documents.
3. All plans and/or documents attached to this permit form part of this permit and are to remain on site and available to the Inspector.
4. Owner/agent is required to comply with the Ontario Building Code and any other applicable law at all times.

June 11, 2019

Date

for Chief Building Official (signature)

Community Development Standards Branch
Town of Innisfil 2101 Innisfil Beach Rd Innisfil, ON L9S 1A1 705-436-3710 888-436-3710
www.innisfil.ca

BUILDING PERMIT

Number: 2019-0202

Schedule a Building Inspection:
Please book your inspection(s) online by clicking this link: www.innisfil.ca/eservices
or Email: buildinginspections@innisfil.ca or Leave a phone message at: 705-436-3710 Ext. 3500

Applicant :	Jason Cheslock, Rumball Excavation
Owner :	1820839 ONTARIO INC
Legal Description :	PLAN 51M1045 LOT 23
Roll Number :	010035054330000

Inspections Required:

- Sewage System - Readiness to Construct
- Sewage System - Substantial Completion
- Notice of Completion

Conditions/Remarks:

New Septic Installation
Water-Loo Biofilter Basket BA-30

-Maintenance agreement required for treatment system

-Ensure header and distribution piping is able to be detected magnetically via 14 gauge tracer wire or other means.

-Ensure distribution piping and septic tank are minimum distance from all wells.

Rumball Excavation & Haulage
408 Tiffin Street
Barrie, Ontario L4N 9W8
(705) 722-1145

February 25, 2019

Lauren Kelley Residence
Waterloo Baskets Model BA30

1. "T" of original controlling soil layer 50 min/cm
2. Total "fixture units" value for all dwelling units: 31
3. Total number of bedrooms in all dwelling units: 4
4. Total finished floor area in all dwelling units: 243 square meters
5. Total daily design sanitary sewage flow: 2550 liters per day
6. Calculations:

A – is the area in m2
Q – is the daily design sanitary sewage flow in liters
T – is the percolation times of the underlying native soil in min/cm to a max of 50

Stone Layer
$A = Q/75$
$A = 2550/75$
$A = 34\ m^2$

Sand Layer
$A = Q \times T/400$
$A = (2550 \times 50)/400$
$A = 320\ m^2$

Minimum Stone layer Area – 34 m² to a minimum depth of 250 mm
Minimum Sand layer Area – 320 m² to minimum depth of 250 mm

BCIN Authorization #. 10457

Signature:

Rumball Excavation & Haulage
408 Tiffin St
Barrie, Ontario L4N 9W8
(705) 722-1145 Fax (705) 735-1701

February 25, 2019

IEE, Lauren Kelley Residence

Total Daily Design
Sanitary Sewage Flow Rate
Calculations

Fixture Count	Units
Basement	
1 – 3 piece	6
Main Floor	
Kitchen Sink	1.5
Dishwasher	1.5
Laundry Tub	1.5
Washer	1.5
1 - 4 piece	7.5
1 - 3 Piece	6
1 - 2 piece	5.5

TOTAL 31

4 Bedrooms – 2000 L/D
Fixture Count 31 = 550 L/D
243 m² = 500 L/D
Q = 2550
T = 50

Town of Innisfil

Do Not Complete
Permit No _____
Revision No _____

Date _____

Schedule 3
Proposed Services

1. Engineered
   - ☐ Yes
   - ☐ No

2. Water supply
   - ☐ Proposed
   - ☑ Existing

3. Type of work proposed
   - ☑ New Installation
   - ☐ Replacement
   - ☐ Alteration

4. Type of Well
   - ☐ Dug/bored/Sandpoint well
   - ☐ Drilled well
   - ☑ Municipal
   - ☐ Other

5. Residential Sewage Design Flow Info.
   Bedrooms 4
   House (floor area) 243 m²
   People _____
   Total Fixture Units 31 (Schedule 7)
   Residential Flow 2550 L/day

6. Sewage Design Flow for Other Occupancies
   Design Flow _____ L/day
   Detailed sewage flow calculations:
   _____
   _____
   _____

7. Type of System
   - ☐ Treatment Unit _____
   - ☐ Class 2 – Leaching Pit
   - ☐ Class 3 – Cesspool
   - ☐ Class 4 – Shallow Buried Trench
   - ☐ Class 4 – Trench
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☐ Class 4 – Filter Media
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☑ Class 4 – Area Bed
     - ☐ Fully raised
     - ☑ Partially raised
     - ☐ In-ground
   - ☐ Class 4 – Aerobic with Trench
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☐ Class 4 – Aerobic with Filter Media
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☐ Class 5 – Holding Tank

Do Not Complete
Permit No _____
Revision No _____
Date _____

Schedule 4
Sewage System Details

Type of System Waterloo Biofilter (Schedule 4)

Septic/Holding Tank 6135 L

Septic Tank Effluent Filter Digester tank

Treatment Unit – Make & Model Waterloo Biofilter Basket BA 30

Number of Units 1

Refer to Typical Drawing _____

Pump(s) required Yes

Mantle Information:

Native or imported =15m in 1 direction(s)

Pump Rate 100 L/15min

Note: Alarm required for all pumping systems

Slope subgrade 2 % slope

1 direction(s)

Site to be Scarified (If in clay) (YES) / NO

Clay Seal Required (If in bedrock) YES / (NO)

0 **Trench**

Distribution Pipe Length _____ m

Loading Area _____ m²

Type of Chamber _____

Length of Chamber _____ m

0 **Area Bed**

Stone 34 m²

Sand 320 m²

Pipe 30m m

0 **Shallow Buried Trench**

Pipe Length _____ m

0 **Filter Media Bed**

Stone _____ m²

Extended Base _____ m²

Pipe _____ m

Weight of Filter Media _____ Kg

Loading Area _____ m²

Construction Notes: Base Cut 600mm

Do Not Complete
Permit No _____
Revision No _____
Date _____

Schedule 6
Fixture unit count

Fixtures		# Existing	+	# Proposed	X	unit count	=	Fixture Count
Bathroom								
Bathroom group (toilet, sink and tub or shower) with flush tank			+	3	X	6	=	18
Bathtub with/without overhead shower			+	1	X	1.5	=	1.5
Shower stall			+		X	1.5	=	
Wash basin (1½inch trap)			+	1	X	1.5	=	1.5
Watercloset (toilet) tank operated			+	1	X	4	=	4
Bidet			+		X	1	=	
Kitchen								
Dishwasher			+	1	X	1	=	1
Sink with/without garbage grinder(s), domestic and other small type single, double or 2 single with a common trap			+	1	X	1.5	=	1.5
Other								
Domestic washing machine			+	1	X	1.5	=	1.5
Combination sink and laundry tray single or double (Installed on 1½ trap)			+	1	X	1.5	=	1.5

Total: 30.5

Insert the TOTAL in section 5 of Schedule 4 (0.Reb.403/97 Table 7.4.9.3)

1. Sump pumps and floor drains are not to be connected to the sewage system. Connection of such fixtures to a sewage system may lead to a hydraulic failure of the said system. The above mentioned fixtures should be discharged separately to an approved Class 2 (leaching pit) sewage system.
2. Where laundry waste is not more than 20% of the total daily design sanitary sewage flow, it may discharge to a sewage system (Part 8, OBC, 8.1.3.1(2)).

Agent/Owner signature

FEB 25 2019
Date

SCHEDULE 10 - TYPICAL DRAWING D

BIOFILTER METHOD

Septic Permit # _____

Date _____

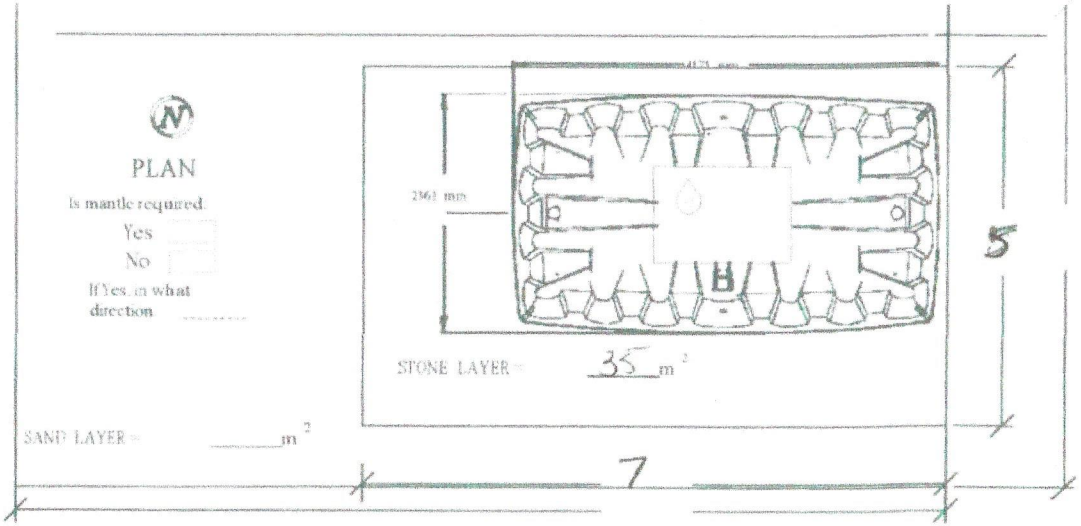
Revision _____

Applicant _____

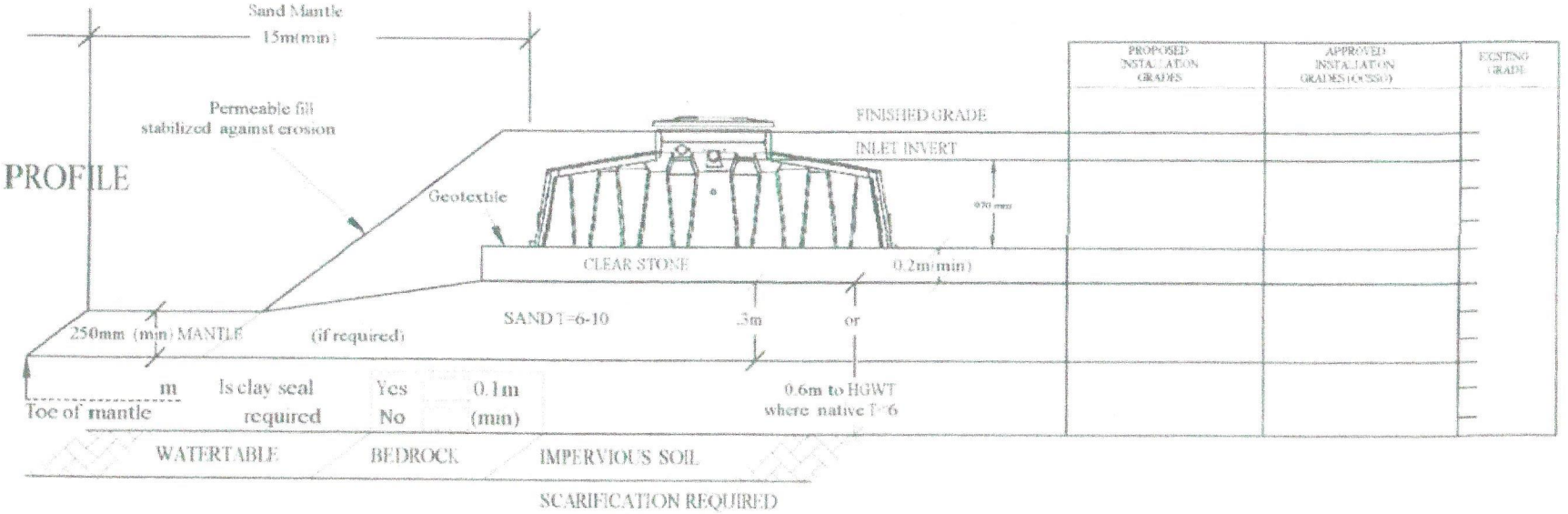
Municipality _____

Scarification required Yes ☐ No ☐

DATE INSPECTOR



NOT TO SCALE



SCARIFICATION REQUIRED

Lot 26 (255 Sunnybrae Ave.)
Building Permit No.: 2018-0921

BUILDING PERMIT

Number: 2018-0921

Project Location : 280 SUNNYBRAE AVE

Work Type : Septic

ATTENTION :

1. Owner/agent is required to arrange for all required site inspections as listed on this permit. Book your Inspection online at www.innisfil.ca/eservices two business days in advance of the preferred date of inspection.
2. Owner/agent is also required to be aware of the list of inspections and notes to this permit indicated on the next page(s) and also be aware of any notes/marks in red on the attached plans and/or documents.
3. All plans and/or documents attached to this permit form part of this permit and are to remain on site and available to the Inspector.
4. Owner/agent is required to comply with the Ontario Building Code and any other applicable law at all times.

December 21, 2018

Date

for Chief Building Official (signature)

Community Development Standards Branch
Town of Innisfil 2101 Innisfil Beach Rd Innisfil, ON L9S 1A1 705-436-3710 888-436-3710
www.innisfil.ca

BUILDING PERMIT

Number: 2018-0921

Schedule a Building Inspection:
Please book your inspection(s) online by clicking this link: www.innisfil.ca/eservices
or Email: buildinginspections@innisfil.ca or Leave a phone message at: 705-436-3710 Ext. 3500

Applicant :	Andrea Kelly
Owner :	1820839 ONTARIO INC
Legal Description :	PLAN 51M1045 LOT 26
Roll Number :	010035054360000

Inspections Required:

- Sewage System - Readiness to Construct
- Sewage System - Substantial Completion
- Notice of Completion

Conditions/Remarks:

New Septic Installation for new SFD

Water-Loo Treatment system

Maintenance agreement required

Ensure header and distribution piping is able to be detected magnetically via 14 gauge tracer wire or other means.

Ensure distribution piping and septic tank are minimum distance from all wells and property lines

Rumball Excavation & Haulage
408 Tiffin St
Barrie, Ontario L4N 9W8
(705) 722-1145 Fax (705) 735-1701

November 27, 2018

ANT - IEE, Lot 26, Sunnybrae, The Belcourt A

1. "T" of original controlling soil layer 50 min/cm
2. Total "fixture units" value for all dwelling units: 32
3. Total number of bedrooms in all dwelling units: 4
4. Total finished floor area in all dwelling units: 272 square meters
5. Total daily design sanitary sewage flow: 2800 liters per day
6. Minimum septic tank size 6150 liters
7. Calculations:

A – is the area in m2
Q – is the daily design sanitary sewage flow in liters
T – is the percolation times of the underlying native soil in min/cm to a max of 50

Stone Area
A = Q/75
A =2800/75
A= 38 m²

Sand Area
A = Q x T/400
A = (2800x 50)/400
A = 350 m²

Minimum Stone Area	38 m²
Minimum Sand Area	350 m²

8. Benchmark established as original grade

Loading Rates for fill based absorption trenches and filter beds

Table 8.7.4.1.A

BCIN Authorization #. 10457

Signature:

Rumball Excavation & Haulage
408 Tiffin St
Barrie, Ontario L4N 9W8
(705) 722-1145 Fax (705) 735-1701

November 27, 2018

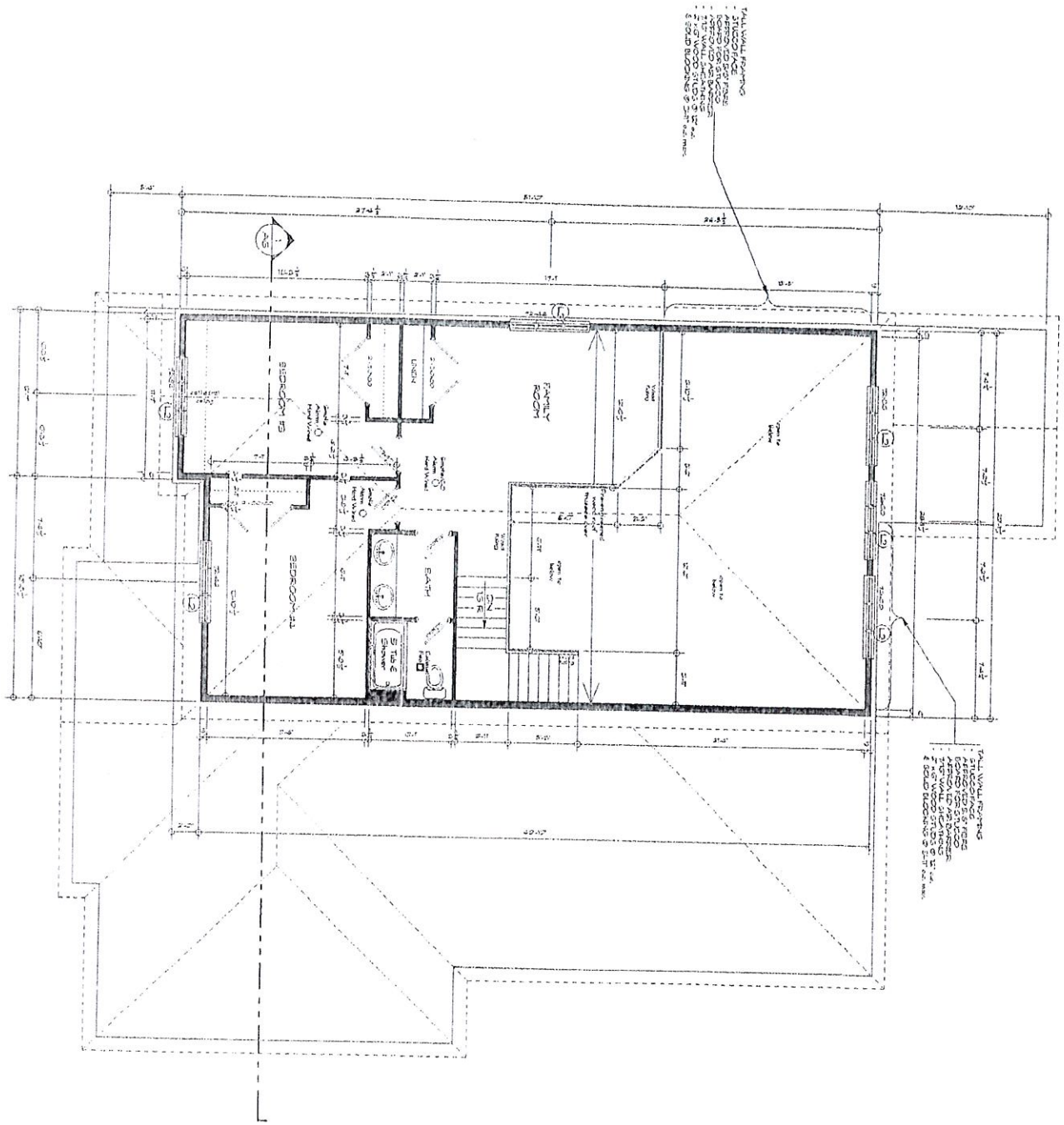
ANT - IEE, Lot 26, Sunnybrae, The Belcourt A

Total Daily Design
Sanitary Sewage Flow Rate
Calculations

Fixture Count	Units
Basement	
1 – 3 piece	6
Main Floor	
Kitchen Sink	1.5
Dishwasher	1.5
Laundry Tub	1.5
Washer	1.5
Bidet	1
1 - 4 piece	7.5
1 - 2 piece	5.5
Second Floor	
1 – 3 piece	6

TOTAL 32

4 Bedrooms – 2000 L/D
Fixture Count 32 = 600 L/D
272 m^2 = 800 L/D
Q = 2800
T = 50

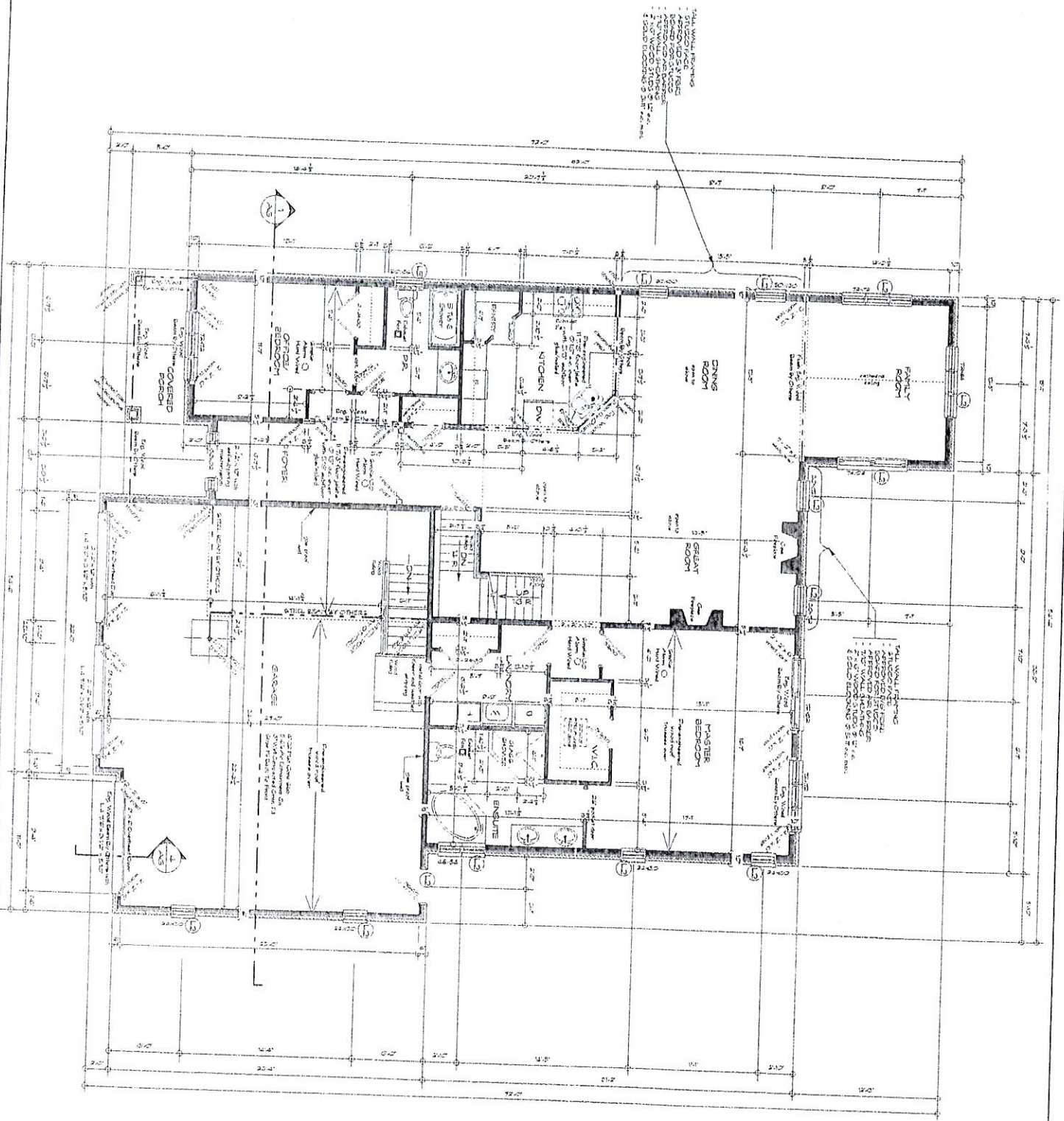


The Belcourt A

(1

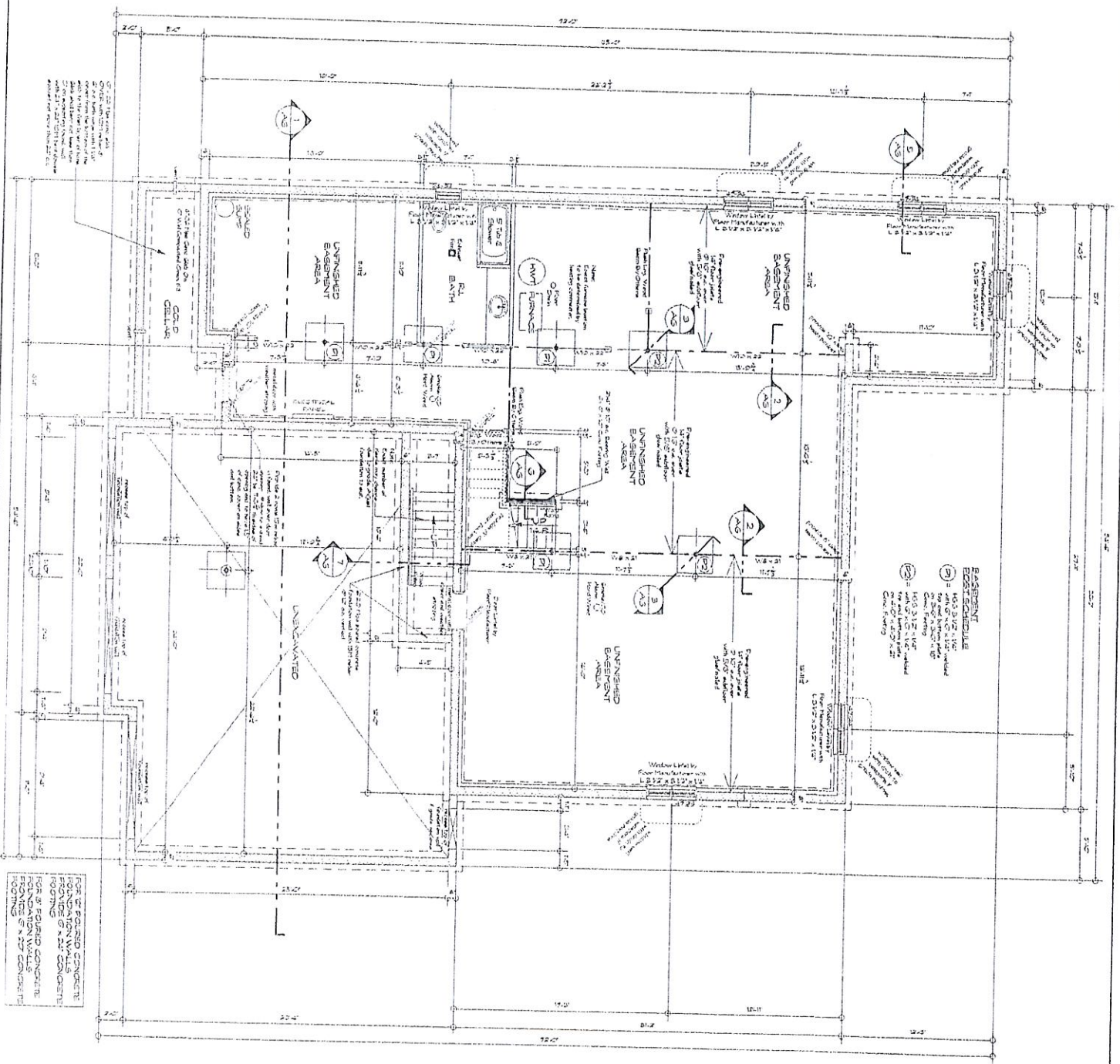
Date: 2013-12-01	Size: A3	Drawing Title: 2nd FLOOR PLAN A - 779 Sq. Ft.	
Scale: 3/16" = 1'-0"	Project No.: 13-035	Project: NEW 2 STOREY FOR INNISFIL ESTATES	
Drawn By: J. LUCAS	Total Area: 2922 SQ. FT. / Lot Area: 3198 SQ. FT.		

LUCAS DRAFTING
21 Morrow Cres
Barrie, ON, L4M 3T3
Tel/Fax: 705-725-0405



The Belcourt A

Date: 2018-12-01	Drawing: A2	Description: FLOOR PLAN A - 2143 Sq. Ft.	LUCAS DRAFTING
Scale: 3/16" = 1'-0"	Project No: 13.025	Project: NEW 2 STOREY FOR INNISFIL ESTATES	21 Mimico Cres, Barrie, ON, L4N 0Y3
Drawn By: J. LUCAS	Main Floor Area: 2022 SQ. FT. Upper: 2058 SQ. FT.		



The Belcourt A

Date: 2013-12-01	Scale: A1	Sheet Name: BASEMENT	
Scale: 3/16" = 1'-0"	Project No.: 13-055	Project: NEW 2 STOREY FOR INNISFIL ESTATES	LUCAS DRAFTING
Drawn By: J. LUCAS	Main Floor Area: 2822 SQ. FT. Lot Area: 3123 SQ. FT.		

Schedule 3: Sewage System Design Specifications

Proposed Sewage System ☑ Residential ☐ Commercial

☑ New Install ☐ Replacement ☐ Repair/Alteration

Proposed Type of Sewage System

☐ CLASS 2 – Greywater System ☐ CLASS 3 – Cesspool

☑ CLASS 4 – Leaching Bed System ☐ CLASS 5 – Holding Tank

Building Information

Plumbing Fixtures

Description	Existing	÷	Proposed	=	Total	x	Fixture Units	=	Count
Example; Sink	0	÷	1	=	1	x	1.5	=	1.5
Bathroom Group – Toilet/Sink/Shower		÷	4	=	4	x	6	=	24
Sinks/Wash Basins		÷	1	=	1	x	1.5	=	1.5
Bathtub/Showers		÷	1	=	1	x	1.5	=	1.5
Toilets (flush tank)		÷		=		x	4	=	
Dishwasher		÷	1	=	1	x	1.5	=	1.5
Laundry Tub/Washing Machine		÷	2	=	2	x	1.5	=	3
Other:		÷		=		x		=	
							TOTAL FIXTURE UNITS	=	31.5

FINISHED FLOOR AREA = 272 m^2

Design Flow Calculations (Q)

BEDROOM FLOWS

	# of Bedrooms	Volume (Litres)	Total Flow
A	1 Bedroom	750	
	2 Bedrooms	1100	
	3 Bedrooms	1600	
	4 Bedrooms	2000	2000
	5 Bedrooms	2500	
ADDITIONAL FLOW FOR:			
B	Each Bedroom over 5 OR*	500	
C	Each $10m^2$ over $200m^2$ - $400m^2$	100	800
	Each $10m^2$ over $400m^2$ - $600m^2$	75	
	Each $10m^2$ over $600m^2$ OR*	50	
D	Each Fixture over 20 Fixture Units	50	600

DESIGN FLOW "Q"

Q = A + (B or C or D)

A = 2000

B = —

C = 800

D = 600

EXPECTED DAILY DESIGN SEWAGE FLOW (Q) = 2800 Liters Per Day

Septic Tank Size (Working Capacity) ☑ New ☐ Existing ☐ Replacement

Proposed/Existing Working Capacity = 6135 Litres (2 x Q for Residential)

Schedule 3: Sewage System Design Specifications

Percolation Rate (T)

A percolation test or a sieve analysis must be completed on the property that the proposed septic system is to be installed.

Percolation Test Completed? ✓ Yes

____ No (sieve analysis of native soil MUST be completed and attached to permit application)

*** Requirements for "Percolation Test Procedure" are attached.

Percolation Rate of Native Soil	Percolation Rate of Imported Soil
T = 40 min/cm	T = 15 min/cm

Test Pit

A test pit should be dug at the location of the proposed leaching bed to observe subsoil profile and groundwater conditions. Test pits should be a minimum of 1m wide and 1.5m deep.

Soil Type	Coarse Gravel, No Fines	Gravel, Some Small Rocks	Gravel-Sand Mix, Some Fines	Sand, Fairly Uniform, Some Fines	Sandy-Loam Mix	Silty-Loam, Almost Clay	Clay Smears Well, Rolls into Ribbons
Percolation Rate (T)	0 to 1	1 to 5	5 to 10	10 to 15	15 to 25	25 to 50	>50

Soil Depth (meters)	Soil Type (See Above)	Percolation Rate (T)	Depth of Rock/Impervious Soil/Groundwater table
0.2			
0.4			
0.6			
0.8			
1.0		40	
1.2			
1.4			
1.6			

Topsoil to be removed:
Depth: ____ m

Usable Existing Soil:
Depth: ____ m

Excavation of Existing Soil:
Depth: 0.6 to 0.9 m

Imported Fill:
Depth: 0.3 to 1.05 m

Lot 33

Schedule 3: Sewage System Design Specifications

ABSORPTION TRENCH	☐ In-ground	☑ Raised	☐ Partially Raised

Length of Distribution Pipe:

$L = \frac{Q \times T}{200}$ $L =$ _____ m

WATERLOO

	☐ In-ground	☐ Raised	☐ Partially Raised

Effective Area :

If Q ≤ 3000L A = Q/75 Stone Effective Area = 38 m^2

If Q > 3000L. A = Q/50 Effective Area = _____ m^2

Extended Contact Area:

$A = \frac{Q \times T}{400}$ Sand Contact Area = 350 m^2

MANTLE/LOADING AREA

Loading Rates (LR)
Fill-Based Trenches and Filter Beds
(Table 8.7.4.1. A OBC)

Percolation Time of Soil (T) min/cm	Loading Rates ($L./m^2/day$)
$1 < T \leq 20$	10
$20 < T \leq 35$	8
$35 < T \leq 50$	6
$T > 50$	4

Loading Area = Q/LR Loading Area = 467 m^2

or plumbing for an upper-tier municipality, board of health or conservation authority to whom this application is made, or, c) Director, Building and Development Branch, Ministry of Municipal Affairs and Housing 777 Bay St., 2nd Floor. Toronto, M5G 2E5 (416) 585-6666.

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information

Building number, street name			Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other description		

B. Individual who reviews and takes responsibility for design activities

Name Jason Cheslock		Firm Rumball Excavation and Haulage		
Street address 408 Tiffin Street,			Unit no.	Lot/con.
Municipality Barrie	L4N 5W8	Province ON	E-mail jscheslock@gmail.com	
Telephone number (705) 722-1145	Fax number (705) 735-1701		Cell number (705) 623-3889	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]

☐ House	☐ HVAC – House	☐ Building Structural
☐ Small Buildings	☐ Building Services	☐ Plumbing – House
☐ Large Buildings	☐ Detection, Lighting and Power	☐ Plumbing – All Buildings
☐ Complex Buildings	☐ Fire Protection	☑ On-site Sewage System

Description of designer's work

D. Declaration of Designer

I _____Jason Cheslock_____ declare that (choose one as appropriate):
(print name)

☑ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: ____10457_____

Firm BCIN: ____15632_____

☐ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Division C, of the Building Code.

Individual BCIN: _____

Basis for exemption from registration: _____

☐ The design work is exempt from the registration and qualification requirements of the Building Code.

Basis for exemption from registration and qualification:_____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

Nov 27 2018 Date Signature of Designer

NOTE:

1.For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.

2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of practice, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Schedule 2: Sewage System Installer Information

A. Project Information

Building number, street name			Unit number	Lot/con.
Municipality	Postal code	Plan number/ other description		

Sewage system installer

Is the installer of the sewage system engaged in the business of constructing on-site, installing, repairing, servicing, cleaning or emptying sewage systems, in accordance with Building Code Article 3.3.1.1, Division C?

☑ Yes (Continue to Section C) No (Continue to Section E) Installer unknown at time of application (Continue to Section E)

Registered installer information (where answer to B is "Yes")

Name Rumball Excavation and Haulage			BCIN 10457	
Street address 408 Tiffin Street			Unit number	Lot/con.
Municipality Barrie	Postal code L4N 5W8	Province ON	E-mail jscheslock@gmail.com	
Telephone number (705) 722-1145	Fax (705) 735-1701		Cell number (705) 623-3889	

Qualified supervisor information (where answer to section B is "Yes")

Name of qualified supervisor(s)	Building Code Identification Number (BCIN)
J Cheslock	10457
R Cheslock	10456

Declaration of Applicant:

I Jason Cheslock (print name) declare that:

☐ I am the applicant for the permit to construct the sewage system. If the installer is unknown at time of application, I shall submit a new Schedule 2 prior to construction when the installer is known;

OR

☑ I am the holder of the permit to construct the sewage system, and am submitting a new Schedule 2, now that the installer is known.

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

Nov 27 2018 Date

Signature of applicant

Lot 28
Building Permit No.: 2018-0850

BUILDING PERMIT

Innisfil

Number: 2018-0850

Schedule a Building Inspection:
Please book your inspection(s) online by clicking this link: www.innisfil.ca/eservices
or Email: buildinginspections@innisfil.ca or Leave a phone message at: 705-436-3710 Ext. 3500

Applicant :	Sigmund Tronowicz, Ant Construction
Owner :	1820839 ONTARIO INC
Legal Description :	PLAN 51M1045 LOT 28
Roll Number :	010035054380000

Inspections Required:

- Sewage System - Readiness to Construct
- Sewage System - Substantial Completion
- Notice of Completion

Conditions/Remarks:

New Septic Installation
Water-Loo Wire Mesh Model 20

Maintenance agreement required for treatment system

Alarm Test required

Provide granular analysis for native and imported soil prior to install inspection.

Ensure header and distribution piping is able to be detected magnetically via 14 gauge tracer wire or other means.

Ensure distribution piping and septic tank are minimum distance from all wells and property lines.