

Geotechnical
Engineering

Environmental
Engineering

Archaeological Studies

Hydrogeology

Geological
Engineering

Materials Testing

Building Science

Private Wastewater Servicing Assessment

Proposed Research & Development Centre
4139 Moodie Drive
Ottawa, Ontario

Prepared For

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c/o ProSlide Technology Inc.

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Report No. PH3269-REP.02

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ATTACHMENTS:

- Conceptual Sewage System Layout Plan, Drawing No. PH3209-1**

1.0 INTRODUCTION

1.1 Terms of Reference

Paterson Group Inc. (Paterson) was retained by ProSlide Technology Inc., on behalf of 8589119 Canada Inc., to carry out a preliminary site assessment to determine the adequacy of the subject property to support a private onsite sewage system. The objective of this assessment is to demonstrate that the proposed development can be serviced by an onsite sewage system that is designed in conformance with the pertinent regulations. These works are being carried out in support of a rezoning application.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and preliminary recommendations pertaining to the onsite sewage system for the subject development as understood at the time of writing this report.

1.2 Background

The subject property is located at 4139 Moodie Drive in the City of Ottawa. The legal description of this parcel is Part of Lot 4, Concession 4, Rideau Front, in the Geographic Township of Nepean, now the City of Ottawa.

It is being proposed to construct a commercial building on the site, along with the associated parking and storage areas. The site is located outside the urban boundary where no municipal water and sanitary services are available. The proposed development will be privately serviced by a drilled well and an onsite sewage system.

2.0 SITE DESCRIPTION

2.1 Surface Conditions

The subject property fronts onto Moodie Drive and is approximately 20.2 ha. in size. The former house and garage structures, which were located near the west (front) end of the site, have been recently demolished. The site is mostly tree and grass covered and is relatively flat, sloping gently downwards from the east end of the site to the west. A series of interconnected shallow drainage ditches are located on the property.

An existing dug well is located on the property. This well appears to have been used for irrigation purposes and/or a water source for the chicken coups. It is our understanding that the former house was serviced by a drilled well. However, the location of this well is unknown (i.e. wellhead buried).

2.2 Subsurface Conditions

Five (5) boreholes were put down across the site as part of a geotechnical investigation carried out by Paterson (Paterson Report No. PG4063-1). The findings from this study indicate that the shallow subsoil profile underlying the site consists of topsoil followed by a silt to silty sand which, in turn, is underlain by silty clay followed by sandy silt. The total overburden thickness is estimated to be of the order of 19 m.

Groundwater levels were measured in the boreholes on March 17, 2017. The measured groundwater level varied from approximately 0.8 to 1.6 m depth below the existing ground surface.

The direction of flow of the shallow overburden water is influenced by the topographical relief across the site. The shallow groundwater flow direction is estimated to be in a south to southwesterly direction.

3.0 SEWAGE SYSTEM DESIGN RECOMMENDATIONS

3.1 General Development Constraints

The proposed development will be serviced by a private drilled well and an onsite sewage system. The property is surrounded mostly by agricultural lands and low density residential dwellings. There are no special constraints warranted for the proposed development serviced by a private sewage system other than those related to the regulatory requirements under Part 8 of the Ontario Building Code (OBC).

3.2 Estimate of Daily Sewage Flow

The wastewater generated by the proposed development will be of domestic quality, consisting primarily of grey water and blackwater generated by the washroom facilities. An occupancy type of analysis is considered to be best suited for estimating the total daily design sanitary sewage flow (TDDSSF) for a facility of this nature.

Based on the proposed preliminary development concept plan the TDDSSF, calculated in accordance with Table 8.2.2.3.B of the OBC, will be of the order of 5,000 L, as detailed below.

SUMMARY OF ESTIMATED TOTAL DAILY DESIGN SEWAGE SYSTEM FLOW			
Flow Generator	Quantity	Unit	Flow Value (L/day)
Office Area	450 m ²	75 L/day per 9.3 m ²	3,629
Warehouse Area -	Water Closet	1	950 L/day
	Loading Bays	2	150 L/day
ESTIMATED TDDSSF			4,879

Sewage systems having a design daily sewage flow of 10,000 L or less are regulated under Part 8 of the Ontario Building Code (OBC). The regulatory authority for Part 8 of the OBC in the City of Ottawa is the Ottawa Septic System Office (OSSO).

3.3 Preliminary Sewage System Design Concept

While the detailed engineering design works have not yet commenced for the design of the sewage system, a preliminary sewage system layout concept has been prepared. The purpose of this drawing is to illustrate that a sewage system that meets all the pertinent regulatory sizing and separation criteria can be accommodated on the subject site. Reference should be made to the attached Conceptual Sewage System Layout Plan, Drawing No. PH3269-1. The client should be aware that the attached concept drawing is preliminary only and the final design and location of the sewage system may vary depending on the final grading and site layout plan for the development and the results of a site specific investigation.

For preliminary purposes the sizing criteria for a Class 4 sewage system with a conventional absorption trench style leaching bed has been used. This type of leaching bed requires the greatest footprint of all the OBC approved styles of beds. Other types of Class 4 sewage systems, such as tertiary wastewater treatment systems, could potentially be used at this site and would require a significantly reduced area.

A Class 4 septic tank sewage system with a partially raised absorption trench style leaching bed can be installed to service the proposed development. The leaching bed will be required to be partially raised to meet the specified OBC separation distance from the water table. The minimum length of distribution pipe required for the leaching bed is determined by the formula $QT/200$, where “Q” is the design sewage flow and “T” is the percolation rate of the leaching bed fill. Based on the design sewage flow of 5,000 L/day, a minimum distribution pipe length of 200 m would be required, assuming the percolation rate of the imported leaching bed fill used is 8 min/cm. By way of example, a conventional absorption trench style leaching bed may consist of 2 cells of 6 runs of 17 m length each, having a total distribution pipe length of 204 m. An imported sand mantle must extend at least 15 m beyond the outer distribution pipe in the direction of effluent flow.

The upper soil stratum underlying the subject site consists of silt and sands having an estimated saturated hydraulic conductivity of the order of 10^{-5} cm/sec and a corresponding percolation time (T-time) of the order of 20 to 30 min/cm. As such, an imported sand mantle will be required in conjunction with a fill-based Class 4 absorption trench style leaching bed having a total area such that the hydraulic loading rate does not exceed 8 L/m².

As it can be seen on the Conceptual Sewage System Layout Plan a leaching bed, as described above, can be easily accommodated on the subject site and meet all the regulatory separation distances.

3.0 APPROVALS FOR THE SEWAGE SYSTEM

The sewage system for the proposed development will be regulated under Part 8 of the OBC. A Sewage System Permit will be required to be obtained from the Ottawa Septic System Office (OSSO) for the construction of the sewage system. As part of the permit application process it will be required that a detailed field investigation be carried out in the area of the proposed sewage system and design drawings for the proposed system be prepared.

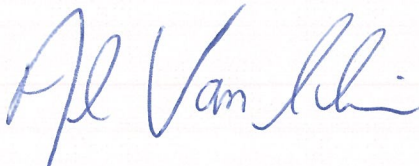
4.0 CONCLUSION

Based on the results of these works, it is our opinion that the subject site can accommodate a Class 4 sewage system, designed and constructed in conformance with the regulatory requirements, to service the proposed development. The proposed preliminary site development concept has allotted sufficient area for a sewage system which satisfies all the regulatory separation criteria.

The present report applies only to the project described in this document and is preliminary in nature. Use of this report for purposes other than those described herein or by person(s) other than ProSlide Technology Inc., or their agents is not authorized without review by Paterson for the applicability of our recommendations to the alternative use of the report.

Sincerely,

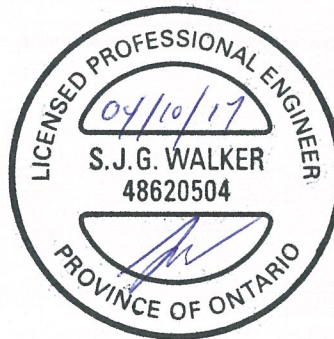
PATERSON GROUP INC.



Albert Van Schie, C.E.T.
Senior Associate

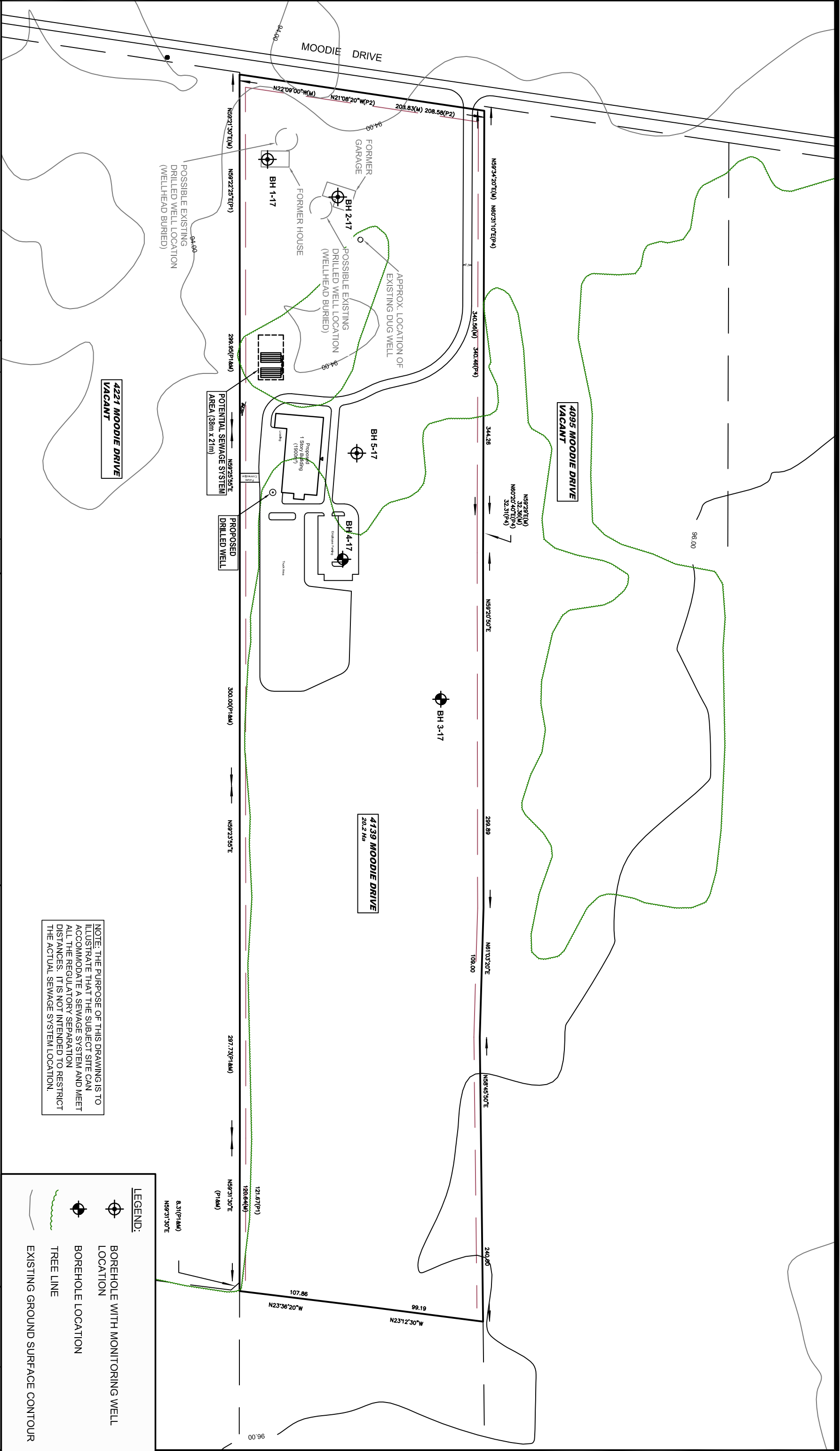


Stephen J. Walker, P. Eng.
Principal & Senior Engineer



APPENDIX 1

Conceptual Sewage System Layout Plan - Drawing No. PH3269-1



NOTE: THE PURPOSE OF THIS DRAWING IS TO ILLUSTRATE THAT THE SUBJECT SITE CAN ACCOMMODATE A SEWAGE SYSTEM AND MEET ALL THE REGULATORY SEPARATION DISTANCES. IT IS NOT INTENDED TO RESTRICT THE ACTUAL SEWAGE SYSTEM LOCATION.

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION
- BOREHOLE LOCATION
- TREE LINE
- EXISTING GROUND SURFACE CONTOUR

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Client
8589119 CANADA INC.
c/o PROSLIDE TECHNOLOGY INC.
4139 MOODIE DRIVE
OTTAWA, ONTARIO

Drawing
CONCEPTUAL SEWAGE SYSTEM LAYOUT PLAN

Scale:	1:3000	Drawn by:	HV
Date:	04/2017	Checked by:	AVS
Drawing no.:	PH3269-1		