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File: PH3333-LET.02 - REV.01

Mr. Abdo El-Arab
6175 Rockdale Road
Vars, Ontario
K0A 3H0

Geotechnical Engineering
Environmental Engineering
Archaeological Studies
Hydrogeology
Geological Engineering
Materials Testing
Building Science

Attention: **Mr. Abdo El-Arab**

www.patersongroup.ca

Subject: **Servicing Brief
Proposed Site Re-Development
6175 Rockdale Road
Vars, Ontario**

Dear Mr. Abdo El-Arab:

As requested, Paterson Group has provided this servicing brief to outline the proposed services (water, wastewater and storm) for a proposed re-development of the commercial property located at 6175 Rockdale Road, Vars, Ontario. The subject property is located at the southeast corner of Rockdale Road and Russland Road/Highway Lane in Vars, Ontario.

Existing Conditions

The property consists of approximately 0.9 ha over two lots. The lots are currently occupied by two commercial businesses consisting of an Esso gas station and a used car dealership. The existing development is serviced by a private onsite sewage system and a drilled well. Refer to Figure 1 for an aerial photo of the existing site conditions.

The existing drilled well produces poor quality water with a high concentration of hydrogen sulphide. The current usage of the water supply is only for hand washing and bathroom needs. It is expected the drilled well will be decommissioned in accordance with O.Reg. 903 as a new water supply has been constructed to service the proposed development.

Surficial drainage for the existing development is controlled by sheet drainage and open ditches surrounding three sides of the property.

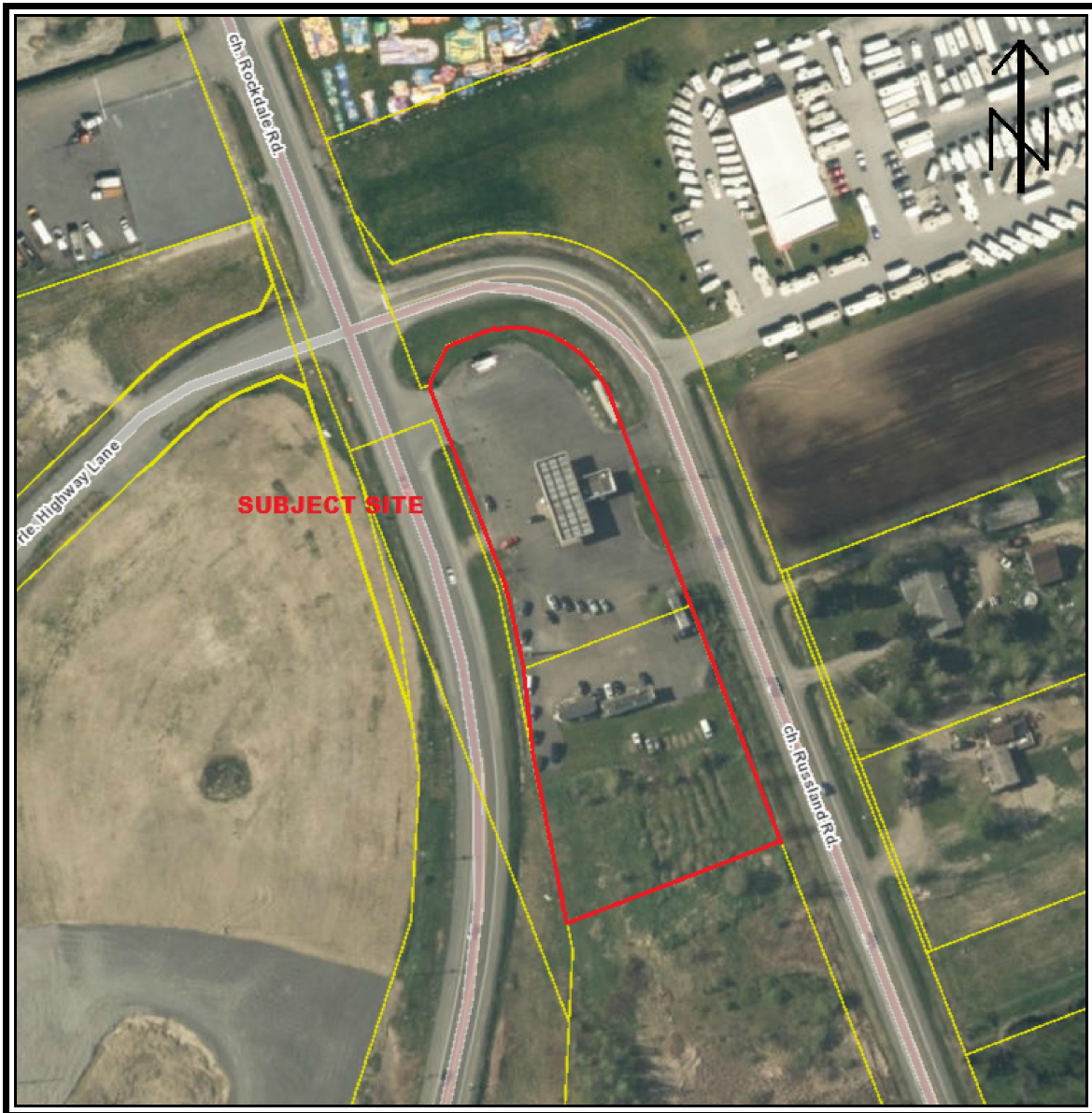


Figure 1: Key Plan

Development Proposal

The land is to be re-developed for an upgraded fuel station and convenience store with new parking lot and entrances. The gas pumps and canopy will be relocated and expanded. A drive-through service may be incorporated in the convenience store which will use paper service only.

Municipal services are not available at this site. The proposed development will be privately serviced by a new onsite sewage system and a new water well supply.

Private Water Service

The water supply for the new development will consist of a dug well. Dug wells are typically used in this area due to the poor water quality of the bedrock aquifer. A new dug well was installed on the subject site and subsequently tested for water quality and quantity to determine its suitability to support the proposed development. The findings of the well study are detailed in the Water Supply Assessment Report No. PH3333-LET.01, dated July 3, 2018 prepared by Paterson Group (Paterson).

The new dug well was constructed by Maurice Cayer Ltd. and consists of a 1.2 m diameter concrete casing extending down to 4.9 m depth based upon the Ministry of the Environment, Conservation and Parks water well record. The casing extends approximately 0.6 m into the bedrock. Results of the testing program carried out on the new well indicate that it is suitable to support the proposed development with respect to quantity and quality.

The dug well water supply is intended to be used for hand washing and toilet supply only and bottled water will be used for drinking purposes, similar to the present operation. A disinfection system on the water supply will be installed.

Private Sewage Service

The proposed development will be serviced by an onsite sewage system. The sewage generated by the proposed development will consist of domestic quality waste associated mostly with bathroom use. The wastewater will be treated by a Class 4 sewage system, consisting of an Ecoflo Biofilter wastewater treatment system with subsurface disposal. The Ecoflo Biofilter is a pre-engineered treatment system which uses specialized peat and coconut fibres as a treatment media. The Ecoflo system is an approved tertiary treatment system listed in the Ontario Building Code (OBC).

The estimated sewage flow for the proposed development is 9,145 L/day and, as such, the sewage system falls under OBC jurisdiction. The sewage system must be designed and constructed in accordance with the requirements of Part 8 of the OBC and the manufacturer's recommendations. A permit for the sewage system will be required to be obtained from the Ottawa Septic System Office.

The design of the sewage system was carried out by Paterson and is recorded on the Sewage System Layout Plan, Drawing No. PH3333-1 and Sewage System Details and Notes, Drawing No. PH3333-2, dated February 2, 2018 as attached.

Stormwater Management Service

The stormwater management design was completed by WSP Canada Inc. and is detailed in the Stormwater Management Report - Gas Station Redevelopment - Vars - Project No. 171-14602-00, dated December 20, 2017

Summary

- The subject property will be redeveloped as a gas station and convenience store.
- The proposed water supply will consist of a dug well.
- The wastewater generated by the development will be treated by a new onsite system designed in accordance with the requirements of the Ontario Building Code.
- The stormwater management service is prepared under a separate cover by WSP Canada Inc. and should be referenced for further details.

We trust this satisfies your present requirements.

Best Regards,

PATERSON GROUP INC.



Erik Ardley,
BSc. Geology



Michael S. Killam,
P.Eng.

Attachments:

- Paterson Drawing PH3333-1
- Paterson Drawing PH3333-2

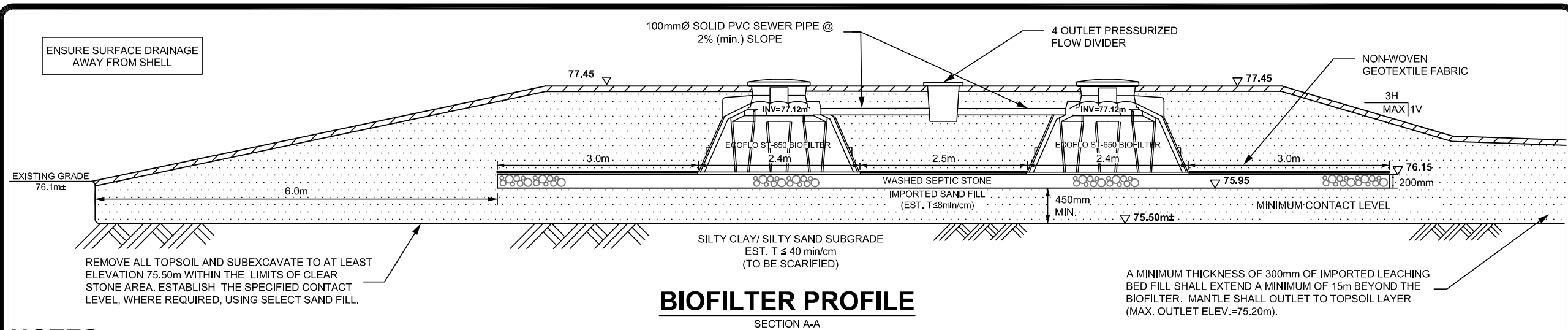


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BIOFILTER PROFILE

SECTION A-A

NOTES:

1) ESTIMATE OF DAILY SEWAGE FLOW (Q)

THE PROPOSED DEVELOPMENT WILL CONSIST OF A GAS BAR WITH A CONVENIENCE STORE AND A TAKE-OUT RESTAURANT WITH PAPER SERVICE ONLY

- GAS BAR: 12 NOZZLES @ 560L/DAY = 6720 L/DAY
- CONVENIENCE STORE: 155 m² x 5 L/DAY = 775 L/DAY
- TAKE OUT RESTAURANT: 74m²/9.25m² X 190 L/DAY/m² = 1527 L/DAY
- + 2 STAFF @ 75 L/DAY = 150 L/DAY

TOTAL SEWAGE FLOW = 9145 L/DAY

DESIGN SEWAGE FLOW = 9200 L/DAY

2) SUBGRADE CONDITIONS

SOILS INFORMATION GATHERED BY PATERSON GROUP INC. ON JULY 17, 2017

TH 1, ELEV. 74.97m	TH 2, ELEV. 75.21m	TH 3, ELEV. 75.88m
0-0.19 TOPSOIL	0-0.25 TOPSOIL	0-0.05 TOPSOIL
0.19-0.35 SILTY SAND	0.25-1.35 SILTY CLAY	0.05-1.35 SILTY SAND, SOME CLAY
0.35-1.35 SILTY CLAY SOME SAND	SOME SAND	
- GWL @ 0.58m DEPTH	- GWL @ 0.80m DETPH	- DRY UPON COMPLETION

3) GREASE TRAP

- THE KITCHEN FLOW FROM THE TAKE-OUT RESTAURANT MUST OUTLET INTO AN INTERIOR GREASE TRAP TO BE DESIGNED BY MECHANICAL ENGINEER

4) TANKAGE

General

- ALL TANKS SHALL CONSIST OF PRECAST CONCRETE TANKS CONFORMING TO CSA-B66.
- THE ACTUAL TANK CONFIGURATION MAY DIFFER FROM THAT SHOWN PROVIDED THE MINIMUM SPECIFIED WORKING CAPACITY OF THE TANK MEET THE DESIGN REQUIREMENTS.
- ALL SEPTIC TANKS MUST BE CERTIFIED TO WITHSTAND ALL APPLICABLE LOADS. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR REVIEW.
- TANKS SHALL BE BEDDED ON A LAYER OF OPSS GRANULAR A COMPACTED TO AT LEAST 95% OF ITS SPMDD.
- TANKS SHALL BE CONNECTED USING 100 mmØ SDR35 PVC SEWER PIPE WITH WATERTIGHT CONNECTIONS.
- BACKFILL TANKS USING OPSS GRANULAR B TYPE 1 BACKFILL OR CLEAN SAND FILL. PLACE BACKFILL IN UNIFORM LAYERS NOT EXCEEDING 300 mm THICKNESS AND COMPACT TO AT LEAST 90% OF SPMDD.
- FINAL GRADING SHALL BE SHAPED TO ENSURE THAT SURFACE WATER IS DIRECTED AWAY FROM ALL TANKS.
- WORK AREA SHALL BE COVERED WITH A LAYER OF TOPSOIL OF AT LEAST 100mm IN THICKNESS.

Septic Tank

- INSTALL A 27,600 L (min.) PRECAST CONCRETE SEPTIC TANK.
- INSTALL POLYLOK PL-625 EFFLUENT FILTER ON OUTLET PIPE. EFFLUENT FILTER TO BE INSTALLED WITH BOTTOM PIPE SUPPORT AND EXTENDED HANDLE.
- EFFLUENT FILTER TO BE INSTALLED ACCORDING TO MANUFACTURER'S GUIDELINES.
- EFFLUENT FILTER TO BE CENTRED OVER ACCESS OPENING.
- A 600mmØ ULTRA RIB RISERS AND INSULATED COVER ASSEMBLY SHALL BE INSTALLED OVER TANK ACCESS OPENINGS.
- RISERS SHALL EXTEND TO AT LEAST 50mm ABOVE FINISHED GRADE.
- PIPE CONNECTIONS AT TANK SHALL BE WATERTIGHT.

Balancing Tank

- THE BALANCING TANK SHALL CONSIST OF A 9,000 L SINGLE COMPARTMENT PRECAST CONCRETE TANK. IF A TWO COMPARTMENT TANK IS BEING USED, 3-150 mm Ø FLOW HOLES SHALL BE INSTALLED NEAR THE BASE OF THE DIVIDER WALL OF THE BALANCING TANK.
- BALANCING TANK SHALL BE LOCATED IN SERIES AND DOWNSTREAM FROM THE SEPTIC TANK.
- TANKS SHALL BE CONNECTED USING 100 mm Ø SDR35 PVC SEWER PIPE WITH WATERTIGHT CONNECTIONS USING STAINLESS STEEL LINK SEALS OR APPROVED EQUIVALENT.
- THE ACCESS OPENING IN THE TANK LID OVER THE PUMP SHALL BE 600mmØ. A 750mmØ ULTRA RIB RISER PIPE SHALL BE CAST IN THE TANK LID AND EXTEND TO AT LEAST 50mm ABOVE FINISHED GRADE. A LOCKABLE INSULATED COVER SHALL BE INSTALLED ON RISER.
- THE BALANCING TANK SHALL BE EQUIPPED WITH AN ALTERNATING DUPLEX PUMP SYSTEM, OR SIMILAR. THE PUMPS (2) SHALL CONSIST OF MYERS ME3F, OR EQUIVALENT, (230V, 1PH) WITH CORD LENGTH TO SUIT.
- INSTALL REQUIRED FITTINGS AND PIPING FROM NEW PUMPS AND CONNECT A - 50 mm Ø SCH40 PVC FORCEMAINS.
- FORCEMAINS TO BE INSTALLED TO GRAVITY DRAIN AND OVERLAIN BY 50 mm THICK BY 600 mm WIDE INSULATION BOARDS.
- ALL PIPING CONNECTIONS TO BE GLUED.
- THE PUMPS SHALL BE OPERATED BY AN ALTERNATING DUPLEX TIME CONTROL PANEL.
- THE CONTROL PANEL SHALL ALTERNATE THE PUMPS AND THE PUMPS SHALL OPERATE EVERY 20 MINUTES WITH A RUN TIME OF 110 SECONDS AND DOSE VOLUME OF 230L.
- PUMP RUN TIME TO BE CONFIRMED IN THE FIELD.
- A CONTROL SWITCH SHALL OVERRIDE THE TIMER TO MAINTAIN THE LIQUID LEVEL WITHIN THE WORKING CAPACITY OF THE TANK.
- ALL ELECTRICAL WORKS MUST BE CARRIED OUT BY A QUALIFIED ELECTRICAL CONTRACTOR IN ACCORDANCE TO THE LATEST CODES, BYLAWS AND REGULATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL NECESSARY ELECTRICAL PERMITS AND COORDINATE ALL ELECTRICAL INSPECTIONS.

5) DISPOSAL FIELD SIZING REQUIREMENTS

- INSTALL ECOFLO MODEL ST-650 BIOFILTERS
- CLEAR STONE AREA REQUIRED = 9200/50 = 184m²
- CLEAR STONE AREA PROVIDED = 258.0m²
- SAND AREA REQUIRED = QT/400 = 9200(40)/400 = 920m²
- SAND AREA PROVIDED = 982.8m²

6) DISPOSAL FIELD CONSTRUCTION GUIDELINES

- REMOVE ALL EXISTING TOPSOIL, WITHIN THE LIMITS OF THE SAND AREA AND SUBEXCAVATE TO AT LEAST ELEVATION 75.50m, WHICHEVER IS GREATER.
- A MINIMUM THICKNESS OF 450mm OF LEACHING BED FILL SHALL BE INSTALLED OVER A SUITABLY PREPARED SUBGRADE.
- LEACHING BED FILL SHALL BE UNIFORM SAND WITH GRADING LIMITS SIMILAR TO 100% PASSING 13.2mm SIEVE, LESS THAN 5% PASSING 0.075mm SIEVE AND HAVE A PERCOLATION RATE OF 6-8 min/cm.
- A MINIMUM THICKNESS OF 200mm OF WASHED SEPTIC STONE SHALL BE INSTALLED, WITHIN THE SPECIFIED CLEAR STONE AREA, OVER LEACHING BED FILL.
- THE ECOFLO BIOFILTERS SHALL BE INSTALLED LEVEL ON THE CLEAR STONE LAYER IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- THE CLEAR STONE LAYER, BEYOND THE BIOFILTERS, SHALL BE COVERED WITH A NON-WOVEN GEOTEXTILE FABRIC. ALL BACKFILL MATERIALS SHALL CONSIST OF PERMEABLE SAND FILL.
- THE TOTAL WORK AREA SHOULD BE COVERED WITH APPROX. 100mm OF SANDY TOPSOIL AND SHALL BE VEGETATED AS SOON AS POSSIBLE.
- THE FINAL LANDSCAPED GRADING SHALL DIRECT SURFACE WATER AWAY FROM THE BIOFILTER.

- THE UNDERSIDE OF THE BIOFILTER LIDS SHALL EXTEND ABOVE THE FINAL LANDSCAPED GRADE.

7) MINIMUM CLEARANCE DISTANCES FROM BIOFILTER

- 3.1m FROM ANY PROPERTY LINE
- 5.1m FROM ANY STRUCTURE
- 15.1m FROM ANY DRILLED WELL
- 30.1m FROM ANY DUG WELL

8) MINIMUM CLEARANCE DISTANCES FROM TANKS

- 1.5m FROM ANY PROPERTY LINE
- 1.5m FROM ANY STRUCTURE
- 15.0m FROM ANY DRILLED WELL

9) GENERAL

- CONTRACTOR SHALL BE QUALIFIED AND REGISTERED UNDER PART 8 OF THE ONTARIO BUILDING CODE.
- ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST BY-LAWS, CODES AND REGULATIONS.
- CONTRACTOR SHALL REVIEW DRAWINGS IN DETAIL AND SHALL INFORM THE CONSULTANT OF ANY ERRORS AND/OR OMISSIONS ON DESIGN DRAWINGS IMMEDIATELY.
- CONTRACTOR SHALL VISIT THE SITE AND REVIEW ALL DOCUMENTATION TO BECOME FAMILIAR WITH THE SITE AND SUBSURFACE SOIL CONDITIONS TO DETERMINE SUITABLE METHODS OF CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR LAYOUT AND GRADING AS DETAILED ON THE DESIGN DRAWINGS THE CONTRACTOR IS RESPONSIBLE TO LOCATE AND PROTECT EXISTING UNDERGROUND SERVICES.
- THE MANUFACTURER PROVIDES A LIMITED WARRANTY OF THE SYSTEM COMPONENTS. THE OWNER OF THE BIOFILTER MUST SIGN A MAINTENANCE AGREEMENT WITH THE MANUFACTURER'S REPRESENTATIVE.
- THE PROPERTY OWNER IS RESPONSIBLE FOR THE ANNUAL COSTS ASSOCIATED WITH THE MAINTENANCE PROGRAM.
- THE FIRM OF PATERSON GROUP INC. HAS PROVIDED DESIGN SERVICES ONLY FOR THE SUBJECT SEWAGE SYSTEM. THE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES AND OUR INTERPRETATION OF PART 8 OF THE ONTARIO BUILDING CODE.
- INSPECTIONS BY THE CONSULTANT DURING THE INSTALLATION OF THE SYSTEM IS A REQUIREMENT OF SOME REGULATING AUTHORITIES AND IS STRONGLY RECOMMENDED BY THIS FIRM.

14/06/19	Issued with PH3333-LET.01-Rev.01	3
29/04/19	Issued for Septic Permit	2
02/02/18	Issued for S.P.A.	1
19/07/17	Issued for Discussion Purposed	0
DD/MM/YY	DESCRIPTION	REV.

Consultant:

paterongroup
consulting engineers

Client:

ABDO EL-ARAB

Project:

**PROPOSED GAS BAR /
CONVENIENCE STORE**

**6175 ROCKDALE ROAD
OTTAWA (VARS), ONTARIO**

Drawing:

**SEWAGE SYSTEM
DETAIL & NOTES**

Scale: N.T.S.	Drawn by: HV
Date: 06/2019	Checked by: AVS

Drawing No.:
PH3333-2(rev.1)

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