

HAL OWEN & ASSOCIATES, INC.

SOIL & ENVIRONMENTAL SCIENTISTS

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28 February 2017

Mr. Adam Shindledecker
2745 Kipling Road
Fuquay-Varina NC 27526

Reference: Soil Investigation and Septic System Design (v.2)
Lot 7R Block 6 Captains Landing Subdivision; PIN 0613-43-9435

Dear Mr. Shindledecker,

A site investigation was conducted on 20 February 2017 for the above referenced property, which is located on the northern side of Dauphine Street in Harnett County, North Carolina. The purpose of the investigation was to determine the ability of this lot to support a subsurface sewage waste disposal system for a typical three-bedroom home. It is our understanding that this lot is exempt from the repair area requirement (15A NCAC 18A .1945). Community water supplies will be utilized for this lot.

All ratings and determinations were made in accordance with "Laws and Rules for Sewage Treatment and Disposal Systems, 15A NCAC 18A .1900". This report represents my professional opinion but does not guarantee or represent permit approval for any lot by the local Health Department. The permit you receive from the Health Department may contain some modifications or amendments to our submitted design. Please carefully review your permit and adhere to all prescribed requirements.

SOIL INVESTIGATION

The soils were evaluated under moist soil conditions through the advancing of auger borings. A portion of this lot was observed to be underlain by soils rated as provisionally suitable for subsurface sewage waste disposal (Figure 1). These provisionally suitable soils were observed to be dominantly firm sandy clay loams to greater than 30 inches and will support long term acceptance rates of 0.3 to 0.4 gal/day/sqft. However some observations of clayey layers in the subsoils were noted and therefore the lower long term acceptance rate of 0.3 gal/day/sqft is proposed as required in the regulations. Included in these soils are small particles of a mineral called kaolin that has a white color and looks somewhat like a soil wetness condition but is not. In addition, the gravel content of the soils exhibited some light colors that also made these soils more difficult to dig and interpret. The soils appear to be well drained to at least a foot below the proposed trench bottoms.

SEPTIC SYSTEM DESIGN

An initial septic system has been designed for a design flow of 360 gallons per day (Figure 2) utilizing a long term application rate of 0.3 gal/day/ft². A pump will be necessary to lift effluent uphill to the proposed drainfield. A pressure manifold will distribute effluent to four variable length, accepted status drainlines (chamber) totaling 300 linear feet. The drainlines should be installed on contour with trench bottom depths at 16 inches below surface. This requirement will necessitate the addition of approximately 6 inches of topsoil to completely cover the system. A small, partial repair area is located below the proposed initial system that appears adequate for subsurface drip system. You are encouraged to preserve this area for potential future needs.

Potential septic system drainlines have been demonstrated with various colored pin flags that are located on the lot. It is important that you do not disturb the septic system area. It is recommended that a staked line or protective fence be placed around the system prior to construction to eliminate any potential damage to the soil or the layout of the system.

It is recommended that care be taken to preserve the life of your septic system. The septic tank, pump tank, and distribution boxes should be kept accessible for pumping and adjustment. Your septic system should be inspected periodically and the septic tank pumped out every 2 to 5 years by a professional contractor. Practicing water conservation in the home, such as promptly repairing leaky fixtures and running washing machines and dishwashers only when full, will help to avoid overloading the septic system. Also, disposal of oils, fats, and grease into the septic system should be avoided because they could clog drainlines and conveyance pipes. A list of other useful suggestions is attached for your use. It is also recommended that a fence or other barrier be placed around the drainfield to prevent vehicular traffic from damaging the drainlines.

This report and the attached septic system design information will need to be submitted to the County Health Department for review and the permitting process. I appreciate the opportunity to provide this service and hope to be allowed to assist you again in the future. If you have any questions or need additional information, please contact me at your convenience.



Sincerely,

Krissina B. Newcomb

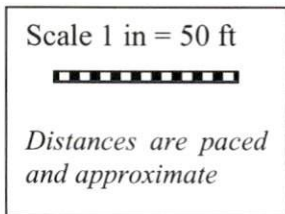
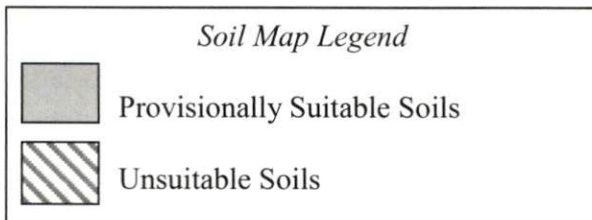
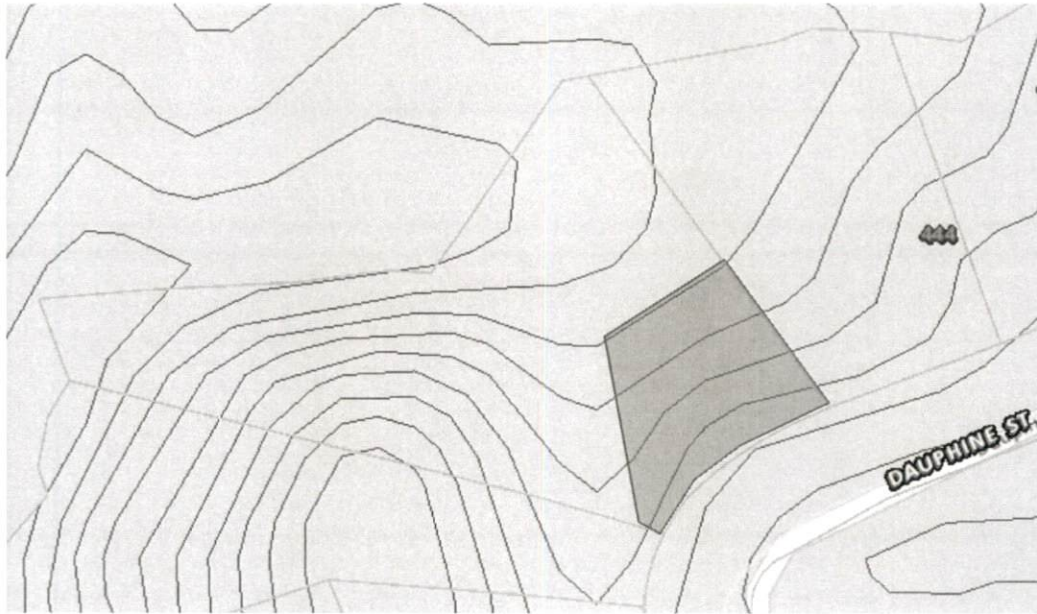
Krissina B. Newcomb

Hal Owen

Hal Owen
Licensed Soil Scientist

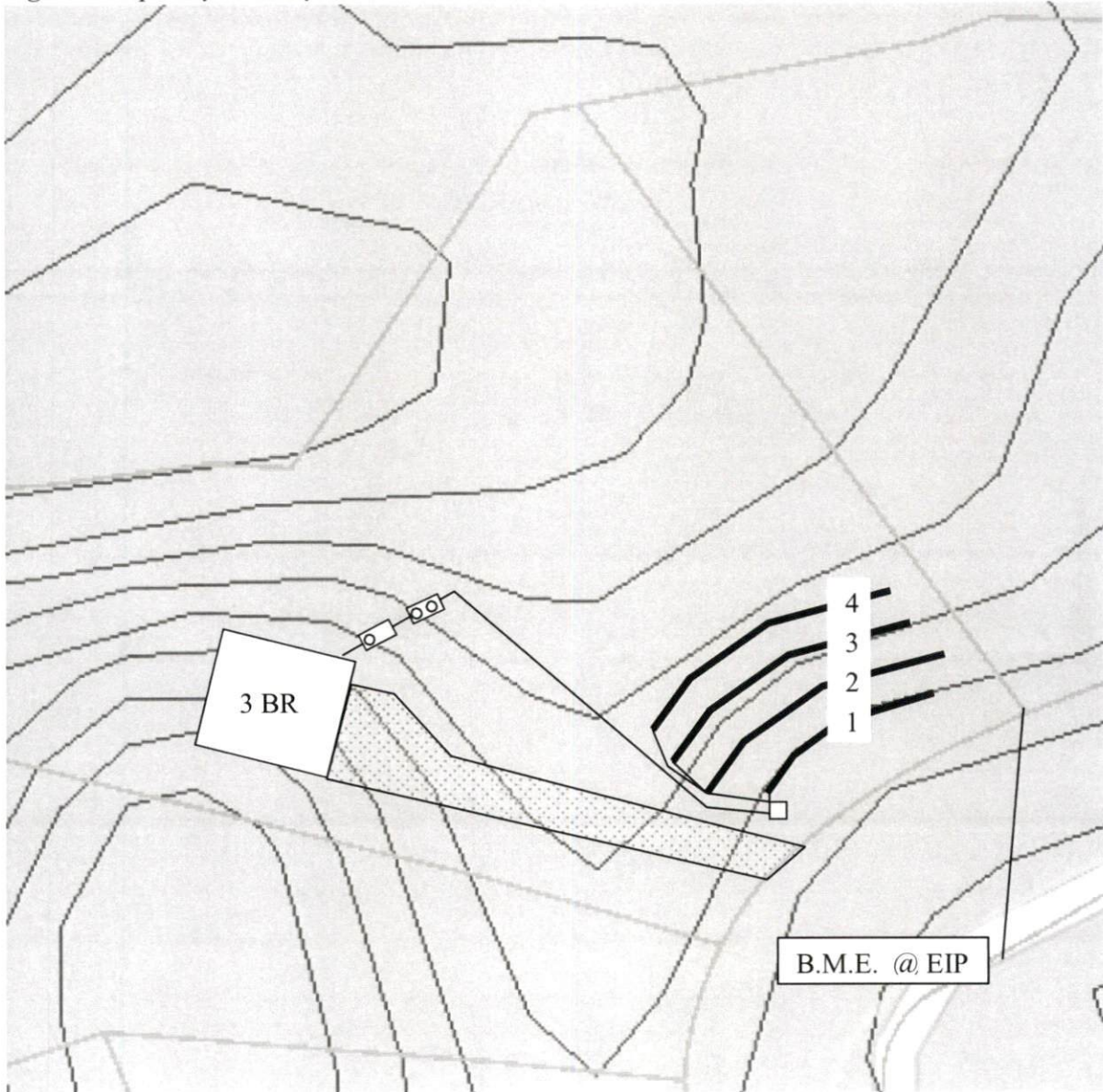
Soil Investigation and Septic System Design
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21 February 2017

Figure 1. Soil Map showing Septic Suitability




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Figure 2. Septic System Layout



Line #	Color	Drainline Length(ft)	Measured Field Line Length (ft)	Relative Elevation (ft)
1	B	60	67	99.95
2	R	80	84	98.99
3	Y	80	86	97.94
4	B	80	91	96.81
Total:		300	328	EIP=100

Scale 1 in = 50 ft

 Distances are paced
 and approximate



Pressure Manifold Design Criteria

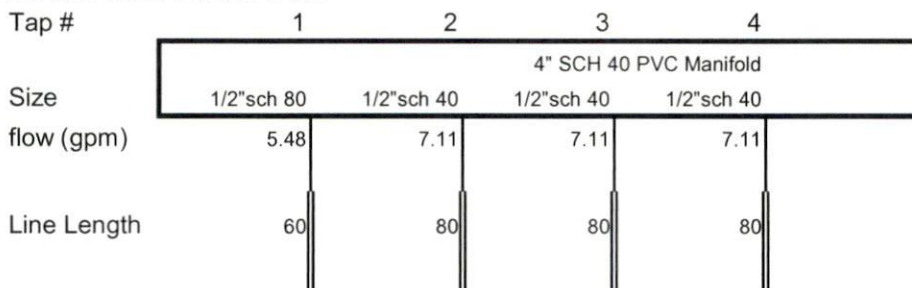
Initial System

Line Number	Line Color	Elevation	Drainline Length(ft)	Tap Size/Schedule	Flow/tap (gpm)	gpd/ft	LTAR (gpd/sqft)
1	B	99.95	60	1/2"sch 80	5.48	1.226	0.409
2	R	98.99	80	1/2"sch 40	7.11	1.193	0.398
3	Y	97.94	80	1/2"sch 40	7.11	1.193	0.398
4	B	96.81	80	1/2"sch 40	7.11	1.193	0.398

Total Drainline= 300 Total Flow= 26.81

Pressure Head (ft)= 2 Target LTAR* (gpd/sf)= 0.4 LTAR + 5% 0.42
 Daily Flow= 360 Total Flow (gpm)= 26.81 Daily PRT(min)= 13.43
 Dose Vol= 146.93 gallons w/ Pipe Vol @% 75 Dose PRT (min)= 5.48

MANIFOLD DIAGRAM:



* Soil LTAR 0.3 gpd/sf; convert for accepted system drainlines $0.3 / .75 = 0.4$ gpd/sf