S&EC

Soil & Environmental Consultants, PA

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December 8, 2021

Indigo Investment Properties, LLC
Attn: Ms. Frances Swain
5816 Flat Fern Drive
Raleigh, NC 27610

S&EC Project # 15076.S1

Re: Soil Evaluation on Lot 67, Buoy Lane, Pool Rock Plantation, Vance Co., NC

Dear Ms. Swain:

Soil & Environmental Consultants, PA (S&EC) performed a preliminary soil and site evaluation on the above referenced property. This was performed at your request as part of the preliminary planning process in order to determine areas of soil that have potential for subsurface wastewater disposal. Fieldwork was performed on December 7, 2021 and was completed as per our proposal dated November 11, 2021.

S&EC traversed the property and observed landforms (slope, drainage patterns, past use, etc.) as well as soil conditions (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) through the use of hand auger borings. The site was evaluated during dry soil conditions. From these observations, a preliminary evaluation of the site, relative to subsurface disposal of wastewater, was developed. Soil areas were estimated in the field and are estimated on the attached sketch map. The soil/site evaluation criteria used is that contained in 15 A NCAC 18A .1900 "Laws and Rules for Sewage Treatment and Disposal Systems".

FINDINGS

This site is located in the piedmont region of Vance County. Most of the soils on the evaluated portion of the property are similar to the Pacolet soil series (Group IV Soils). The Pacolet soil series has a sandy loam surface material over a clay to sandy clay loam subsoil. These soils are at least 24 to 30 inches deep to prohibitive soil characteristics and are potentially useable for a modified conventional type subsurface septic system. The lower subsoil (26 to 30 + inches) was the saprolite parent material of the Pacolet series and with further evaluations, may be generally suitable for a saprolite type system (if needed).

The accompanying sketch map indicates the estimated area with potential use for subsurface wastewater disposal. The hatched units indicate areas of soils which are at least 24 to 30 inches deep to prohibitive soil characteristics and these areas have potential for a shallow modified conventional system. The "UN" are areas that are unsuitable due to drainage features (gullies).

The site plan for this property must ensure that adequate soil area for a system and a repair area is unaffected by site elements (building placement, driveway, well, etc.) on this area. The area ultimately designated by the health department on the site plan for the septic system and potentially the repair, must remain undisturbed (no mechanical clearing, excavation, heavy traffic or other significant site disturbing activities) until authorized by the health department. An area with initially adequate useable soil area may be rendered unusable as a result of improper site planning and/or disturbance.

GENERAL WASTEWATER CONSIDERATIONS

Once potentially useable areas are located through vertical borings, the next consideration is the horizontal extent of those areas. The size and configuration of the useable soil area dictate the utility of that area. The size of a subsurface disposal field is determined by: 1) the design flow from the source (120 gallons/bedroom/day in residences), and 2) the long term acceptance rate (LTAR) of the soil (based on the hydraulic conductivity of the soil, a function of the soil's texture, mineralogy, structure, porosity, etc.). The configuration must be such that an efficient layout of disposal lines (on contour) is possible. An additional consideration is the required setbacks for the system from various elements such as wells (50' to 100'), property lines (10'), top of embankment (15'), etc. (see Attachment 1).

The utility of a potential useable soil area for a subsurface system is most accurately determined by an on-ground layout of the proposed system. The total area needed for a system and repair will depend upon the system type, the layout of that system and the total design flow (factors mentioned above). A typical area needed for a three bedroom residence is approximately 12,000 ft^2 (could be more depending on site features) or 720 linear feet of modified conventional trench line. These estimates reference Laws and Rules for Sewage Treatment and Disposal Systems for North Carolina and use a LTAR of 0.25 gpd/ft^2 for shallow modified conventional trench systems (.1956). The health department will determine the ultimate LTAR after their lot evaluation and if additional site testing is completed. S&EC will be glad to assist in any system layout, site testing or sizing calculations, if requested. Depending on the house placement, a saprolite system (.1956 6) may be needed, however the area will need to be reviewed with backhoe pits to determine the site loading rate.

This report discusses the general location of potentially useable soils for on-site subsurface wastewater disposal and, of course, does not constitute or imply any approval or permit as needed by the client from the local Health Department. S&EC is a professional consulting firm that specializes in the delineation of soil areas for wastewater disposal and the layout and design of wastewater treatment systems. As a professional consulting firm, S&EC is hired for its professional opinion in these matters. The rules governing wastewater treatment (interpreted and governed by local and state agencies) are evolving constantly, and in many cases, affected by the opinions of individuals employed by these governing agencies. Because of this, S&EC cannot guarantee that areas delineated and/or systems designed will be permitted by the governing agencies. As always, S&EC recommends that anyone making financial commitments on a tract be fully aware of individual permit requirements on that tract prior to final action.

This report and site evaluation is not conformant to the Engineered Option Permit (EOP) process. Additional site testing and evaluations will be required to utilize the EOP process of if a saprolite system is needed. The soil report and map associated with this project is for the exclusive use of the addressee and the use or reliance by all others is expressly denied without the written consent of S&EC.

An individual septic system permit will be required for this lot prior to obtaining a building permit. This will involve a detailed evaluation by the local health department to determine, among other things, system size and layout, well, drive and house location. Only after developing this information can a final determination be made concerning specifics of system design and site utilization.

Soil & Environmental Consultants, PA is pleased to be of service in this matter and we look forward to assisting in any site analysis needs you may have in the future. Please feel free to call with any questions or comments.

Sincerely,
Soil & Environmental Consultants, PA

12-8-21

Don Wells,
NC Licensed Soil Scientist

LICENSED SOIL SCIENTIST
DONALD LOUIS WELLS
1099
STATE OF NORTH CAROLINA

Encl: Attachment 1 & Soil Suitability Sketch Map

*** Suitable for preliminary planning purposes only. ***

All systems will require approval by the county health department. This map should be used as a general guide. Some adjustments will be necessary in the field due to soil variability and topographic irregularities.



LEGEND

Area with 24 to 30 inches of potentially useable soil for a shallow modified conventional system LTAR of 0.25 GPD/SF

Area may be useable for a saprolite system with further evaluations

UN – AREA GENERALLY UNSITIABLE FOR A SUBSURFACE CONVENTIONAL SEPTIC SYSTEM

Don Wells 12-8-21

LICENSED SOIL SCIENTIST
DONALD LOUIS WELLS
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STATE OF NORTH CAROLINA

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NOTE:

1) THIS IS A SKETCH MAP, ALL SOIL UNITS ARE APPROXIMATE.
2) Not a Survey

Lot 67 Buoy Lane

Vance County, NC

Project #: 15076.S1	Scale:	Figure 1 – Preliminary Soil Sketch Map
Project Mgr.: DW	Date: 12-8-21	

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Attachment 1

.1950 Location of Sanitary Sewage Systems

(c) Every sanitary sewage treatment and disposal system shall be located at least the minimum horizontal distance from the following:

(1)	any private water supply source including a well or spring	50 to 100 feet
(2)	any public water supply source	100 feet
(3)	streams classified as WS-I	100 feet
(4)	water classified as S.A.	100 feet from mean high water mark
(5)	Other coastal waters	50 feet from mean high water mark
(6)	any other stream, canal, marsh, or other surface waters	50 feet
(7)	any Class I or Class II reservoir	100 feet from normal pool elevation
(8)	any permanent storm water retention pond	50 feet from flood pool elevation
(9)	any other lake or pond	50 feet from normal pool elevation
(10)	any building foundation	5 feet
(11)	any basement	15 feet
(12)	any property line	10 feet
(13)	top of slope of embankments or cuts of 2 feet or more vertical height	15 feet
(14)	any water line	10 feet
(15)	drainage systems:	
	(A) Interceptor drains, foundation drains and storm water diversions	
	(i) upslope	10 feet
	(ii) sideslope	15 feet
	(iii) downslope	25 feet
	(B) Groundwater lowering ditched and devices	25 feet
(16)	any swimming pool	15 feet
(17)	any other nitrification field (except repair area)	20 feet

(b) Ground absorption, sewage treatment and disposal systems may be located closer than 100 feet from a private well supply, except springs and uncased wells located downslope and used as a source of drinking water, repairs, space limitations and other site-planning considerations but shall be located the maximum feasible distance and, in no case, less than 50 feet.

(c) Nitrification fields and repair areas shall not be located under paved areas or areas subject to vehicular traffic. If effluent is to be conveyed under areas subject to vehicular traffic, ductile iron or its equivalent pipe shall be used. However, pipe specified in Rule .1955 (e) may be used if a minimum of 30 inches of compacted cover is provided over the pipe.

Note: Systems over 3000 GPD or an individual nitrification fields with a capacity of 1500 GPD or more have more restrictive setback requirements, see .1950 (a) (17) (d) for specifics.