

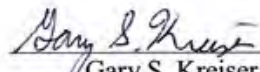
Soil and Site Evaluation For Wastewater Treatment and Dispersal Systems

NC 71 HWY

Parkton, NC

(PIN: 949220660000)

April 11, 2025


Gary S. Kreiser



Findings: Based on the soil and site evaluation, there is a high degree of certainty that two septic systems could be installed, and the lot could be used for residential development. Due to the depth to limiting conditions, a shallow placed system or a low-profile chamber system is recommended which will require a soil cap. Additionally, a pump tank may be needed.

No opinions are made regarding the following:

- Applicable zoning requirements.
- House locations.
- Specific septic system layout/components.
- Areas not evaluated; and
- Horizontal setbacks required from septic systems.

INTRODUCTION

Soil & Septic Solutions performed an on-site subsurface wastewater system investigation on a portion of an approximate 30-acre tract (PIN: 949220660000) located on NC 71 Hwy in Parkton, Robeson County, North Carolina on April 5, 2025. The property was evaluated in accordance with 15A NCAC 18E "Wastewater Treatment and Dispersal Systems". The purpose of this investigation was to perform an analysis of parcel capacity for two three-bedroom homes.

At the time of the survey, the review area was dense vegetation after previous logging activities. The review area was flat with slopes less than two percent.

INVESTIGATION METHODOLOGY

Soil borings were made with a hand-turned auger in the study area. Observations of the landscape (slope, drainage patterns, past use, etc.) as well as soil properties (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) to a depth ≥ 48 inches when possible were recorded. Soil color was determined with a Munsell Soil Color Chart. From these observations, potentially suitable areas for wastewater disposal were identified.

A handheld global positioning system (GPS) with sub-meter accuracy was used to locate each soil boring as well as other pertinent site features.

FINDINGS

On the day of the field investigation, twelve (12) hand auger borings were made on the property, logged, and their locations are shown in the Soil Boring Location Exhibit. Soil Boring logs are attached.

Depth to wetness was the limiting factor (See Soil Boring Logs). The shallowest depth to wetness was encountered at 13 inches (B12). The remaining borings had depth to wetness from 20 to 33 inches. The subsoil texture ranged from sandy clay loam to sandy clay. Three areas were delineated that had at least a depth of 20 inches to wetness. Area 1 and Area 2 had at least 24 inches to wetness and are estimated to be approximately 40,000 ft² and 29,000 ft², respectively. Area 3 had at least 20 inches to wetness and is estimated to be approximately 10,000 ft² (see attached Soil Boring Location Exhibit).

Based on the soil texture and depth to limiting conditions, a long-term acceptance rate (LTAR) of 0.25-0.3 gpd/ft² is recommended.

GENERAL DESIGN AND INSTALLATION CRITERIA

Wastewater systems can be used when there is at least 12 inches of naturally occurring soil between the bottom of the trench and the limiting condition.

Based on the depth to a limiting condition and slope in Areas 1 and 2 there is enough soil depth to install a shallow conventional placed septic system when there is at least 24 inches to wetness. In Area 3, where there is at least 20 inches to wetness, a low-profile chamber system could be used. Both systems will require a 6-inch soil cap.

For a 3-bedroom system, the design flow is 360 gallons per day (gpd). When the design flow is divided by the LTAR (using 0.25), the area of trench bottom can be calculated, which is 1,440 ft². The total length of trenches can be calculated by dividing the trench bottom area by 3 feet (which is the maximum trench width). Using these calculations, a 3-bedroom home would need 480 linear feet of trench.

Septic lines are laid on contours 9 feet apart from the center. Assuming six (6) 80 feet long lines, the septic system would require an area of 3,840 ft². This area assumes an even linear

slope with parallel septic lines. Additionally, septic systems need a designated repair area. At a minimum there needs to be approximately 7,680 ft² for both the initial and repair area. In areas where there are at least 24 inches, approved systems could be used that allow for a 25% reduction in trench length. However, low profile chambered systems do not afford the 25% reduction in trench length.

The septic tank will need to have a minimum capacity of 1000 gallons. A pump tank may be required depending on final elevations. It is recommended that the septic tank be installed as shallow as possible.

Required horizontal setbacks (property lines, wells etc.,) were not considered in the soil that could be used for a septic system. These setbacks will affect the overall area that can be used.

Permitting the septic systems may be done through the County Environmental Health Department or through the private permitting option. Careful placement of the homes and lot dimensions and other improvements will need to be considered as to maximum the area of soil that can be used for septic.

CONCLUSIONS

Depth to wetness was the limiting soil condition. There are three areas of soil that have at least 20 inches to wetness and would meet the required 12-inch vertical separation. Due to the shallow nature of the limiting condition, the systems will either be a shallow place system or low-profile chamber system and both would require a soil cap. Depending on the location of the homes, a pump tank may be required.

Area 1 and Area 2 are estimated to be approximately 40,000 ft² and 29,000 ft², respectively. Area 3 is estimated to be approximately 10,000 ft². Based on the LTAR of 0.25 gpd/ft² it is estimated that the required area for a 3-bedroom home would be approximately 7,680 ft². The exact location of the system and potential layout as well as house locations and horizontal setbacks were not calculated or defined. Careful consideration as to house locations and other improvements will need to be evaluated to maximize the potential septic area.

The findings presented herein represent Soil & Septic Solutions' soil and site evaluation and knowledge of the current laws and regulations governing on-site wastewater systems in North Carolina. This report discusses the general location of suitable soils and site conditions that are favorable for septic systems and does not constitute or imply any approval or permit as needed from the County Health Department.

It is Soil & Septic Solutions' professional opinion that this lot can be used for residential development. Any concurrence with the findings of this report would be made during the County's site evaluation. Additionally, do not disturb the soil until the County has granted the appropriate approvals.

Sincerely,



Attachments:

- 1) Soil boring Location Exhibit
- 2) Soil Boring Logs



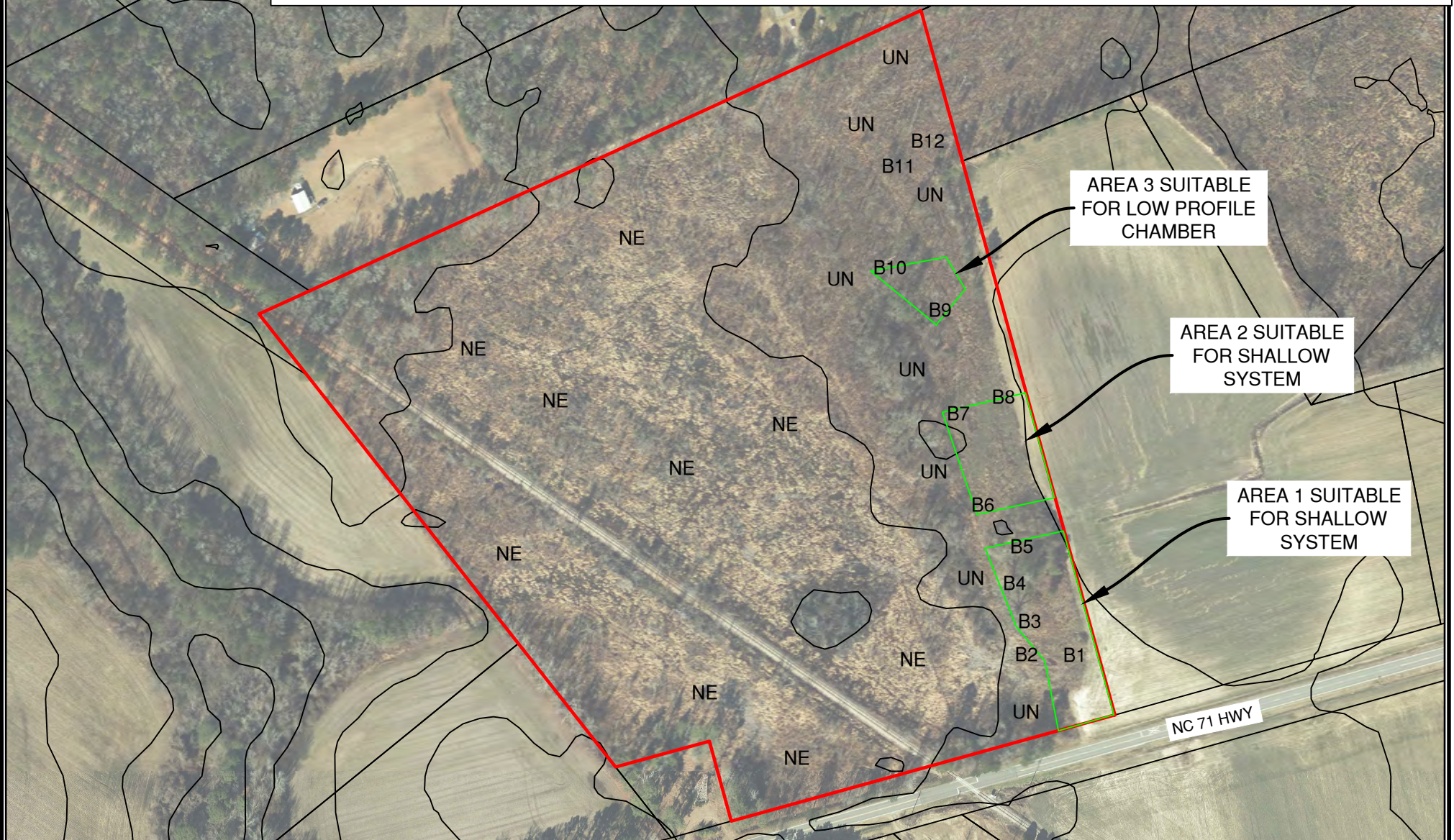
GRAPHIC SCALE



1 inch = 250 ft.

NOTES:

- 1) NOT A SURVEY - PROPERTY LINES FROM NC ONEMAP, BORING LOCATIONS BASED ON GPS.
- 2) MAP NOT VALID WITHOUT REPORT.
- 3) NE: AREA NOT EVALUATED NO OPINIONS MADE.
- 4) UN: SITE OR SOIL CONDITIONS UNSUITABLE.
- 5) COMPLY WITH ALL SETBACKS.
- 6) DO NOT CUT, FILL OR ALTER DRAINFIELD OR REPAIR AREA.
- 7) SOIL AND SITE EVALUATION NOT FOR ISSUANCE OF PERMIT. CONCURRENCE FROM COUNTY WILL BE REQUIRED OR ADDITIONAL WORK NEEDED FOR PRIVATE PERMIT.



NC 71HWY
PIN: 949220660000

PARKTON

ROBESON COUNTY

NORTH CAROLINA

SOIL BORING LOCATIONS

SOIL & SEPTIC SOLUTIONS

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM
(Complete all fields in full)

OWNER: _____ DATE EVALUATED: 4/5/25
ADDRESS: NC 71 HWY
PROPOSED FACILITY: _____ PROPOSED DESIGN FLOW (.0400): _____ PROPERTY SIZE: _____
LOCATION OF SITE: _____ PROPERTY RECORDED: _____
WATER SUPPLY: ☒ Public ☐ Single Family Well ☐ Shared Well ☐ Spring ☐ Other _____ WATER SUPPLY SETBACK: _____
EVALUATION METHOD: ☒ Auger Boring ☐ Pit ☐ Cut TYPE OF WASTEWATER: ☒ Domestic ☐ High Strength ☐ IPWW

P R O F I L E #	.0502 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY		OTHER PROFILE FACTORS				.0509 PROFILE CLASS & LTAR*	.0502(d) SLOPE CORRE CTION
			.0503 STRUCTURE/ TEXTURE	.0503 CONSISTENCE/ MINERALOGY	.0504 SOIL WETNESS/ COLOR	.0505 SOIL DEPTH	.0506 SAPRO CLASS	.0507 RESTR HORIZ		
1	L <2%	0-15	GR/SL	FR/SS/SP/SEXP	10YR 6/4 10YR 5/4 10YR 5/2, 10YR 4/6 @ 27"	S	-	-	SHALLOW SYSTEM 0.25-.03	-
		15-36	SBK/SCL	FI/SS/SP/SEXP						
2	L <2%	0-12	GR/SL	FR/SS/SP/SEXP	10YR 32/2 2.5Y 5/3 10YR 5/2, 10YR 4/6 @ 16"	S	-	-	UN	-
		12-36	SBK/SCL	FI/SS/SP/SEXP						
3	L <2%	0-8	GR/LS	FR/SS/SP/SEXP	10YR 3/3 10YR 6/4 10YR 5/4 10YR 5/2, 10YR 4/6 @ 28"	S	-	-	SHALLOW SYSTEM 0.25-.3	-
		8-15	GR/SL	FR/SS/SP/SEXP						
		15-30	SBK/SCL	FI/SS/SP/SEXP						
4	L <2%	0-10	GR/LS	FR/SS/SP/SEXP	10YR 3/3 2.5Y 5/6 10YR 5/2, 10YR 4/6 @ 33"	S	-	-	SHALLOW SYSTEM 0.25-.3	-
		10-20	GR/SL	FR/SS/SP/SEXP						
		20-36	SBK/SCL	FI/SS/SP/SEXP						

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM	SITE CLASSIFICATION (.0509): _____ EVALUATED BY: <u>GARY KREISER</u> OTHER(S) PRESENT: _____
Available Space (.0508)			
System Type(s)			
Site LTAR			
Maximum Trench Depth			

Comments: SHALLOW OR ULTRA SHALLOW PROFILE CHAMBER SYSTEM DEPENDS ON LOCATION OF SYSTEM. DUE TO SHALLOW DEPTH OF TRENCH BOTTOMS, PUMP TANK MAY BE NEEDED.

LEGEND

LANDSCAPE POSITION	SOIL GROUP	SOIL TEXTURE	CONVENTIONAL LTAR (gpd/ft²)	SAPROLITE LTAR (gpd/ft²)	LPP LTAR (gpd/ft²)	MINERALOGY/ CONSISTENCE		STRUCTURE
CC (Concave slope)	I	S (Sand)	0.8 - 1.2	0.6 - 0.8	0.4 -0.6	MOIST	WET	SG (Single grain)
CV (Convex Slope)		LS (Loamy sand)		0.5 -0.7		Lo (Loose)	NS (Non-sticky)	M (Massive)
D (Drainage way)	II	SL (Sandy loam)	0.6 - 0.8	0.4 -0.6	0.3 - 0.4	VFR (Very friable)	SS (Slightly sticky)	GR (Granular)
FP (Flood plain)		L (Loam)		0.2 - 0.4		FR (Friable)	S (Sticky)	SBK (Subangular blocky)
FS (Foot slope)	III	SiL (Silt loam)	0.3 - 0.6	0.1 - 0.3	0.15 - 0.3	FI (Firm)	VS (Very sticky)	ABK (Angular blocky)
H (Head slope)		SCL (Sandy clay loam)		0.05 - 0.15**		VFI (Very firm)	NP (Non-plastic)	PR (Prismatic)
L (Linear Slope)		CL (Clay loam)		None		EFI (Extremely firm)	SP (Slightly plastic)	PL (Platy)
N (Nose slope)		SiCL (Silty clay loam)					P (Plastic)	
R (Ridge/summit)		Si (Silt)						
S (Shoulder slope)		IV				SC (Sandy clay)	0.1 - 0.4	0.05 - 0.2
T (Terrace)	SiC (Silty clay)		EXP (Expansive)					
TS (Toe Slope)	C (Clay)							
		O (Organic)	None					

* Adjust LTAR due to depth, consistence, structure, soil wetness, landscape, position, wastewater flow and quality.

**Sandy clay loam saprolite can only be used with advanced pretreatment in accordance with 15A NCAC 18E .1200.

HORIZON DEPTH

In inches below natural soil surface

DEPTH OF FILL

In inches from land surface

RESTRICTIVE HORIZON

Thickness and depth from land surface

SAPROLITE

S(suitable) or U(unsuitable); Evaluation of saprolite shall be by pits.

SOIL WETNESS

Inches from land surface to free water or inches from land surface to soil colors with chroma 2 or less - record Munsell color chip designation

CLASSIFICATION

S (Suitable) or U (Unsuitable)

Show profile locations and other site features (dimensions, reference or benchmark, and North).

SOIL/SITE EVALUATION

(Continuation Sheet-Complete all field in full)

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DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH

PROPERTY ID #: _____
DATE OF EVALUATION: 4/5/25
COUNTY: _____

P R O F I L E #	.0502 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY		OTHER PROFILE FACTORS				.0509 PROFILE CLASS & LTAR*	.0503 SLOPE CORRE CTION
			.0503 STRUCTURE/ TEXTURE	.0503 CONSISTENCE/ MINERALOGY	.0504 SOIL WETNESS/ COLOR	.0506 SOIL DEPTH	.0507 SAPRO CLASS	.0508 RESTR HORIZ		
5	L <2%	0-10	GR/LS	FR/SS/SP/SEXP	10YR 3/3	S	-	-	SHALLOW SYSTEM 0.25-.03	-
		10-20	GR/SL	FR/SS/SP/SEXP	10YR 5/8					
		20-30	GR/SL	FR/SS/SP/SEXP	10YR 7/3					
					SAT SOIL @ 24"					
6	L <2%	0-8	GR/LS	FR/SS/SP/SEXP	10YR 3/3 10YR 6/4	S	-	-	SHALLOW SYSTEM 0.25-.3	-
		8-20	GR/SL	FR/SS/SP/SEXP	10YR 5/4					
		20-36	SBK/SCL	FI/SS/SP/SEXP	10YR 5/2, 10YR 4/6 @ 28"					
7	L <2%	0-10	GR/SL	FR/SS/SP/SEXP	10YR 3/3	S	-	-	SHALLOW SYSTEM 0.25	-
		10-36	SBK/SC	FI/SS/SP/SEXP	2.5 Y 5/6 10YR 5/2 @ 26"					
8	L <2%	0-8	GR/SL	FR/SS/SP/SEXP	10YR 3/3	S	-	-	SHALLOW SYSTEM 0.25	-
		8-36	SBK/SC	FI/SS/SP/SEXP	2.5 Y 5/6 10YR 5/2 @ 26"					
9	L <2%	0-12	GR/SL	FR/SS/SP/SEXP	10YR 3/3	S	-	-	LOW PROFILE CHAMBER 0.25	-
		12-36	SBK/SC	FI/SS/SP/SEXP	10YR 5/8 10YR 5/2 @ 22"					

COMMENTS: _____

SOIL/SITE EVALUATION

Page 3 of 3

(Continuation Sheet-Complete all field in full)

DEPARTMENT OF HEALTH AND HUMAN SERVICES

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10	L <2%	0-12	GR/SL	FR/SS/SP/SEXP	10YR 3/3	S	-	-	LOW PROFILE CHAMBER 0.25	-
		12-36	SBK/SC	FI/SS/SP/SEXP	10YR 5/8					
					10YR 5/2 @ 22"					
11	L <2%	0-12	GR/SL	FR/SS/SP/SEXP	10YR 3/3	S	-	-	UN	-
		12-36	SBK/SC	FI/SS/SP/SEXP	10YR 5/8					
					10YR 5/2 @ 15"					
12	L <2%	0-12	GR/SL	FR/SS/SP/SEXP	10YR 3/3	S	-	-	UN	-
		12-36	SBK/SC	FI/SS/SP/SEXP	10YR 5/8					
					10YR 5/2 @ 13"					

COMMENTS: _____