

Soil and Site Evaluation For
Wastewater Treatment and Dispersal Systems
Reed Road
Castalia, NC
(Parcel ID: 028418)
Franklin County

March 16, 2026



Soil & Septic Solutions, PLLC
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Findings: Based on the soil and site evaluation, it is Soil & Septic Solutions' professional opinion that the area reviewed can accommodate sewage disposal systems and therefore can be used for residential development.

No opinions are made regarding the following:

- Applicable zoning requirements;
- House locations; and
- Specific septic system layout/components

INTRODUCTION

Soil & Septic Solutions performed an on-site subsurface wastewater system investigation on approximately 5 acres of a 41-acre parcel (Parcel ID: 028418) located on Reed Road, Castalia, Nash County, North Carolina on March 14, 2026. The property was evaluated in accordance with 15A NCAC 18E "Wastewater Treatment and Dispersal Systems". The purpose of this investigation was to evaluate the potential suitability for subdividing a portion of the 41-acre parcel into 3 lots.

According to the NRCS Web Soil Survey the area that was reviewed is mapped as Varina soil series. Directly adjacent to this area, there was an area mapped as Georgeville soil series. Both soils are formed in residuum. The Varina is formed from marine sediments while the Georgeville is formed from weathered metavolcanic rock. Both soils are found along interstream divides, ridges and side slopes.

Based on review of aerial photography, the review area were in agricultural production from at least the 1950s. Currently, the review area is used as a hay field.

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, eight (8) hand auger borings were made, logged, and their locations are shown in the Soil Boring Location Exhibit. Soil Boring logs are attached.

No limitations were noted within 48 inches. (See Soil Boring Logs). The review area had a slight convex linear slope that ranged from 3 to 5 percent.

The soil encountered was like the Georgeville. The soil had red color with a clay texture. No plinthite was encountered which is a distinctive characteristic of the Varina soil.

Typical soil description of Georgeville is listed below:

A – 0-10 inches; strong brown (7.5YR 5/6); clay loam; weak medium, subangular blocky; friable, slightly plastic and slightly sticky.

Bt – 10-36 inches; red (2.5YR 4/6); clay; weak medium subangular blocky structure; firm, slightly plastic and slightly sticky.

BC – 36 + inches; red (2.5YR 4/6); clay loam; weak medium subangular blocky structure; firm, slightly plastic and slightly sticky.

Based on the soil texture and depth to restrictive horizon, a long-term acceptance rate (LTAR) of 0.3 gpd/ft² is recommended. Depending on the location of the system, trench depth is recommended to be between 24 and 36 inches.

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.

For a 4-bedroom system, the design flow is 480 gallons per day (gpd). When the design flow is divided by the LTAR (using 0.3), the area of trench bottom can be calculated, which is 1600 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 4-bedroom home would need 533 linear feet of trench.

Based on the depth of the suitable soil area and the slope, there is enough soil depth to install a conventional placed septic system.

Traditional gravel trenches are laid on contours 9 feet from the center. Assuming 4- 100-foot lines, the minimum area need is approximately 3,000 ft². This area assumes an even linear slope with parallel septic lines.

Additionally, septic systems need a designated repair area. The minimum area needed is at least 6,000 ft² for both the initial and repair systems. This area could be reduced by using approved systems that allow for a 25% reduction in trench length.

Required horizontal setbacks (wells, property lines, 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 system may be done through the County Environmental Health Department or through the private permitting option. Additionally, careful placement of the house and other improvements will need to be considered as to maximum the area of soil that can be used for septic.

CONCLUSIONS

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. Any concurrence with the findings of this report would be made during the County's site evaluation. Soil & Septic Solutions could also perform additional work for the issuance of private permits.

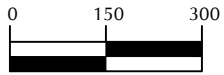
It is Soil & Septic Solutions' professional opinion that the potential lots can accommodate a sewage disposal system and therefore can be used for residential development. Any concurrence with the findings of this report would be made during the County's site evaluation. Additionally, do not clear or grub any land until the County has granted the appropriate approvals.

Attachments:

- 1) Soil Map
- 2) Soil Boring Logs



GRAPHIC SCALE



1 inch = 300 ft.

NOTES:

- 1) NOT A SURVEY - LOCATIONS OF PROPERTY LINES BASED ON FRANKLIN COUNTY GIS DATA.
- 2) BORING LOCATIONS BASED ON GPS AND FIELD MEASUREMENTS.
- 3) DO NOT CUT, FILL OR ALTER DRAINFIELD.
- 4) COMPLY WITH ALL SETBACKS
- 5) FINAL SYSTEM WILL DEPEND ON LOCATION OF SYSTEM, HOUSE AND SLOPE.
- 6) SOIL AND SITE EVALUATION NOT FOR ISSUANCE OF PERMIT. CONCURRENCE FROM COUNTY WILL BE REQUIRED OR ADDITIONAL WORK NEEDED FOR ISSUANCE OF PRIVATE PERMIT.

REVIEW AREA

B8 B7
B5 B6
B4 B3
B1 B2

John S. Kiser
John S. Kiser



REED ROAD (PARCEL ID: 028418)

CASTALIA

FRANKLIN 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: 3/14/26
ADDRESS: _____
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 3-5%	0-8	SBK/CL	FR/SS/SP/SEXP	7.5YR 5/6	S	-	-	S 0.3	1.1-1.8
		8-40	SBK/C	FI/SS/SP/SEXP	2.5YR 4/6					
		40-48	SBK/CL	FI/SS/SP/SEXP						
2	L 3-5%	0-12	SBK/CL	FR/SS/SP/SEXP	7.5YR 5/6	S	-	-	S 0.3	1.1-1.8
		12-40+	SBK/C	FI/SS/SP/SEXP	2.5YR 4/6					
3	L 3%	0-18	SBK/CL	FR/SS/SP/SEXP	7.5YR 5/6	S	-	-	S 0.3	1.1
		18-36	SBK/C	FI/SS/SP/SEXP	2.5YR 4/6					
		36-48	SBK/CL	FI/SS/SP/SEXP						
4	L 3%	0-10	SBK/CL	FR/SS/SP/SEXP	2.5YR 5/6	S	-	-	S 0.3	1.1
		10-20	SBK/CL	FI/SS/SP/SEXP	2.5YR 4/6					
		20-48	SBK/C	FI/SS/SP/SEXP						

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

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: _____
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 3%	0-10	SBK/CL	FR/SS/SP/SEXP	10YR 5/8	S	-	-	S 0.3	1.1
		10-40+	SBK/C	FI/SS/SP/SEXP	2.5YR 4/6					
6	L 3%	0-48	SBK/C	FI/SS/SP/SEXP	10YR 5/8	S	-	-	S 0.3	1.1
					@ 30" 2.5YR 4/6					
7	L 3%	0-42	SBK/C	FI/SS/SP/SEXP	2.5YR 4/6	S	-	-	S 0.3	1.1
		42	AR- AUGER REFUSAL							
8	L 3%	0-12	SBK/CL	FR/SS/SP/SEXP	10YR 5/8	S	-	-	S 0.3	1.1
		12-48	SBK/C	FI/SS/SP/SEXP	2.5YR 4/6					

COMMENTS: _____

