



Soil Suitability for Domestic Sewage Treatment and Disposal Systems

NC 56 Hwy.
Castalia, NC 27816
Franklin County PIN: 014699

Prepared For:	Renovations & Resolutions, LLC
Prepared By:	Jeff Vaughan, Ph.D., L.S.S. Senior Agronomist/Soil Scientist Brent Purdum, Assistant Soil Scientist
Report Date:	March 24, 2025



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Brent Purdum

DATE: March 24, 2025

Soil suitability for domestic sewage treatment and disposal systems was evaluated on March 21, 2025, for property located at NC 56 Hwy. located near Castalia, NC. Brent Purdum of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. A detailed soil evaluation of the land area will follow. A property reference map is in Attachment 1. The property map detailing soil suitability for septic systems and soil types can be found in Attachment 2.

Approximately 2 acres of the property were evaluated. The property is mostly a wooded area. There is a compacted/filled area near the front of the property (Attachment 2).

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The aerial map in Attachment 2 details the approximate property boundaries, soil boring locations, soil types, and soil areas for septic systems. Numerous soil borings were advanced on the property and the soil evaluated (Attachment 3). A portion of the property contained fill and compacted soils, which are unsuitable septic systems. However, this evaluation was merely a preliminary review to determine what potential this land might have for domestic sewage treatment and disposal systems. Therefore, specific types of septic systems, exact locations of future drainfields and repair areas, plus buffers from property lines (current and potential future lot lines), building foundations, wells, etc. are not fully considered. These things will need to be more fully considered as the plans develop for the potential future of this site. It is likely that additional soil evaluations will be required once lot layouts are considered and developed for this property so that septic system types and the location of a septic drainfield can be more fully and appropriately considered.

The purple area (see map in Attachment 2) evaluated on the property exhibited soil characteristics and soil depths (30" or greater) that are suitable for conventional trench septic systems. The area is approximately 57,293 ft².

Typical profile descriptions of the suitable soil for this property are in Attachment 3. One distinct soil profile was observed in the soil borings on the property with conventional soil depths.

The suitable soil borings had the following characteristics. No restrictive horizons were found in any soil borings within 24" of the soil surface. Soil texture was suitable and was estimated to be sandy loam near the soil surface (A horizons) and clay loam to clay in the subsoil (B horizons). Soil structure was suitable and was estimated to be granular near the soil surface (A horizons) and subangular in the subsoil (B horizons). Clay mineralogy was suitable with very friable to friable moist soil consistence and non-sticky to sticky and non-plastic to plastic wet soil consistence.

The mapped soil types on this property are predominantly Wedowee sandy loam (labeled as WeB). The Franklin County Soil Survey indicates that moderate limitations exist for septic systems installed in these soil types (Attachment 4).

The land area required for a conventional septic system is calculated based on the size of the proposed home and the Long-Term Acceptance Rate (LTAR) of the soil. The LTAR range for the suitable soils on this property is 0.1 – 0.4 GPD/ft² for shallow conventional and conventional septic systems based on the most restrictive soil texture in the subsoil. The LTAR suggested by AWT is 0.3 GPD/ft², but the final LTAR for specific septic system types and septic drainfield locations will be set by the Franklin County Health Department. The detailed computations are in Attachment 5.

Conclusions

Based on the results of this evaluation, the installation of conventional septic systems seems very probable on this property in the areas designated on the map in Attachment 2.

We appreciate the opportunity to assist you in this matter. Please contact us with any questions, concerns, or comments.

ATTACHMENT 1: Property Reference Map



051245

5493

203

014699

014485

356

358

193

4703

227

**ATTACHMENT 2: Property Map Detailing Soil Suitability
for Septic Systems and Soil Types**



Engineers and Soil Scientists

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Preliminary Soil Evaluation

Renovations & Resolutions
Franklin Co., NC
PIN: 014699

GIS Acres: ~2



Area for Septic:

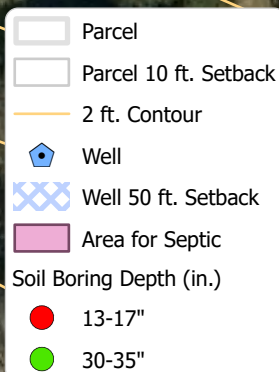
~57,293 sq. ft.

Soil Types:

WeB- Wedowee sandy loam

Notes:

In Tar Pamlico Riparian Buffer
No USGS/Soil Survey Waters
No mapped NWI Wetlands



Drawn By: Clara Frickmann
Reviewed By: Brent Purdum
Date: 3/24/2025

0 20 40 80 Feet



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-  Parcel
-  Parcel 10 ft. Setback
-  Soil Type
-  Well
-  Well 50 ft. Setback
-  Area for Septic
- Soil Boring Depth (in.)**
 -  13-17"
 -  30-35"

Drawn By: Clara Frickmann
Reviewed By: Brent Purdum
Date: 3/24/2025

HeB

WeB

NC56

0 20 40 80
Feet

**ATTACHMENT 3: Typical Profile Descriptions of
Suitable Soil**

Property ID#: 014699
Property Recorded: _____
County: Franklin

**SOIL/SITE EVALUATION
FOR
ON-SITE WASTEWATER SYSTEM**

Applicant: Renovations & Resolutions, LLC
Address: 3187 NC 39 Hwy S
Louisburg, NC 27549

Buyer: _____ Agent: X Phone: (919) 426-5147
Date Evaluated: 03/21/2025
Proposed Facility: Residential
Property Size: Approximately 2 acres evaluated

Location Site: NC 56 Hwy. Castalia, NC 27816

Water Supply: On Site Well X Comm. Well _____ Public _____ Other _____ Evaluation Method: Auger Boring X Pit _____ Cut _____

TYPICAL PROFILE

Horizon/ Depth (IN)	Matrix	Mottles	Mottle Abundance / Contrast	.0503 Texture	.0503 Structure	.0503 Minerology	.0504 Consistence Wet	Consistence Moist
A 0-4"	10YR 4/2	None	None	SL	GR	NEXP	NS, NP	Vfr
E 4-8"	10YR 6/6	None	None	SL	GR	NEXP	NS, NP	Vfr
Bt1 8-16"	7.5YR 5/6	None	None	CL	SBK	SEXP	SS, SP	Fr
Bt2 16-30"	7.5YR 6/6	10YR 6/6	2, m, D	C	SBK	SEXP	SS, SP	Fr
BC 30-36"	7.5YR 6/6	10YR 6/6; 2.5YR 4/6	3, c, D	CL	SBK	SEXP	NS, SP	Fr

.0503 Landscape Pos/Slope %	- Suitable, <15%	Profile LTAR	- 0.3 GPD/ft ²
.0504 Wetness Condition	- Suitable	System Type	- Suitable for conventional systems due to texture, structure, and depth.
.0506 Saprolite	- Suitable		
.0507 Restrictive Horizon	- Suitable		
.0509 Profile Classification	- Suitable		

Comments:

EVALUATED BY: Brent Purdum

COMMENTS: _____

LEGEND OF ABBREVIATIONS FOR SITE EVALUATION FORM

<u>LANDSCAPE POSITION</u>	<u>TEXTURE GROUP</u>	<u>TEXTURE CLASS</u>	<u>.1955 LTAR</u> (gal/day/sqft)
CC - Concave Slope CV - Convex Slope DS - Debris Slump D - Depression DW - Drainage Way FP - Flood Plain FS - Foot Slope H - Head Slope I - Interflueve L - Linear Slope N - Nose Slope P - Pocosin R - Ridge S - Shoulder T - Terrace	I	S - Sand LS - Loamy Sand	1.2 - .08
	II	SL - Sandy Loam L - Loam	0.8 - 0.6
	III	SCL - Sandy Clay Loam CL - Clay Loam SiL - Silt Loam Si - Silt SiCL - Silt Clay Loam	0.6 - 0.3
	IV	SC - Sandy Clay C - Clay SiC - Silty Clay O - Organic	0.4 - 0.1
<u>STRUCTURE</u>	<u>MOIST CONSISTENCE</u>	<u>MOTTLES</u>	<u>WET CONSISTENCE</u>
G - Single Grain M - Massive CR - Crumb GR - Granular SBK - Subgranular Blocky ABK - Angular Blocky PL - Platy PR - Prismatic	Vfr - Very Friable Fr - Friable Fi - Firm Vfi - Very Firm Efi - Extremely Firm	1 - Few 2 - Common 3 - Many F - Faint D - Distinct P - Prominent f - Fine m - Medium c - Coarse	NS - Non Sticky SS - Slightly Sticky S - Sticky VS - Very Sticky NP - Non Plastic SP - Slightly Plastic P - Plastic VP - Very Plastic

ATTACHMENT 4: Soil Survey Information

Table 11.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
GmD*:					
Montonia-----	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
GmE*:					
Georgeville-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Montonia-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
HeB-----	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey, too acid.	Moderate: wetness.	Poor: too clayey, hard to pack, too acid.
HrB-----	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
HrC-----	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
PaC2, PaD2-----	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey, slope.
PuC*:					
Pacolet-----	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----	Slight-----	Fair: too clayey.
Urban land-----	Variable-----	Variable-----	Variable-----	Variable-----	Variable.
RaA*:					
Rains-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Toisnot-----	Severe: cemented pan, wetness.	Severe: seepage, cemented pan.	Severe: wetness.	Severe: cemented pan, wetness.	Poor: cemented pan, wetness.
ReD*:					
Rion-----	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
Wateree-----	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
Wedowee-----	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.

See footnote at end of table.

**ATTACHMENT 5: Septic System Area Computation
Spreadsheets**

Conventional Septic System Area Computation

Client Name:	<i>Renovations & Resolutions</i>
Number Bedrooms:	3
Design Flow (gal/day):	360 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft ²)	0.3
Trench Bottom Area (ft ²):	1200 (Design flow/LTAR)
Trench Width (ft):	3
On-center distance between trenches (ft):	9
Trench Bottom Length (ft):	400
Minimum Field Area Required (ft ²):	3600 (Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft ²):	2700 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	9000 (Minimum field area*2.5)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	6750 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	10800 (Minimum field area*3)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	8100 (25% reduction from above)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.

Client Name:	<i>Renovations & Resolutions</i>
Number Bedrooms:	4
Design Flow (gal/day):	480 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft ²)	0.3
Trench Bottom Area (ft ²):	1600 (Design flow/LTAR)
Trench Width (ft):	3
On-center distance between trenches (ft):	9
Trench Bottom Length (ft):	533.3333
Minimum Field Area Required (ft ²):	4800 (Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft ²):	3600 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	12000 (Minimum field area*2.5)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	9000 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	14400 (Minimum field area*3)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	10800 (25% reduction from above)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.

Client Name:	<i>Renovations & Resolutions</i>
Number Bedrooms:	5
Design Flow (gal/day):	600 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft ²)	0.3
Trench Bottom Area (ft ²):	2000 (Design flow/LTAR)
Trench Width (ft):	3
On-center distance between trenches (ft):	9
Trench Bottom Length (ft):	666.6667
Minimum Field Area Required (ft ²):	6000 (Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft ²):	4500 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	15000 (Minimum field area*2.5)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	11250 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	18000 (Minimum field area*3)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	13500 (25% reduction from above)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.