Engineers and Soil Scientists

Agri-Waste Technology, Inc.
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Soil Suitability for Domestic Sewage Treatment and Disposal Systems

Rock Mill Rd. Henderson, NC 27537

Vance County PIN: 054102028

Prepared For:	Kristie Rehders, Client
Prepared By:	Jeff Vaughan, Ph.D., L.S.S. Senior Agronomist/Soil Scientist
	Brent Purdum, Assistant Soil Scientist
Report Date:	July 3, 2024

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PREPARED FOR: Kristie Rehders, Client

PREPARED BY: Jeff Vaughan
Brent Purdum

DATE: July 3, 2025

Soil suitability for domestic sewage treatment and disposal systems was evaluated on July 1, 2025, for property located at Rock Mill Rd. located near Henderson, NC. Brent Purdum and Connor Britt 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 11.67 acres of the property were evaluated. The property is mostly open field. There is a powerline easement at the front and moderate slopes on the property (Attachment 2).

Soil Suitability for Domestic Sewage Treatment and Disposal Systems

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 a powerline easement, which is 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 (24" or greater) that are suitable for shallow conventional trench septic systems. The area is approximately 404,451 ft^2.

Typical profile descriptions of the suitable soil for this property are in Attachment 3. Two distinct soil profiles were 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) sandy clay loam and clay loam 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 slightly sticky and non-plastic to slightly plastic wet soil consistence.

The mapped soil types on this property are predominantly Appling sandy loam (labeled as ApB) and Wedowee sandy loam (labeled as WeD). The Vance 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/ft^2 for shallow conventional and conventional septic systems based on the most restrictive soil texture in the subsoil. The LTAR suggested by AWT is 0.25-0.275 GPD/ft^2, but the final LTAR for specific septic system types and septic drainfield locations will be set by the Vance County Health Department. The detailed computations are in Attachment 5.

Conclusions

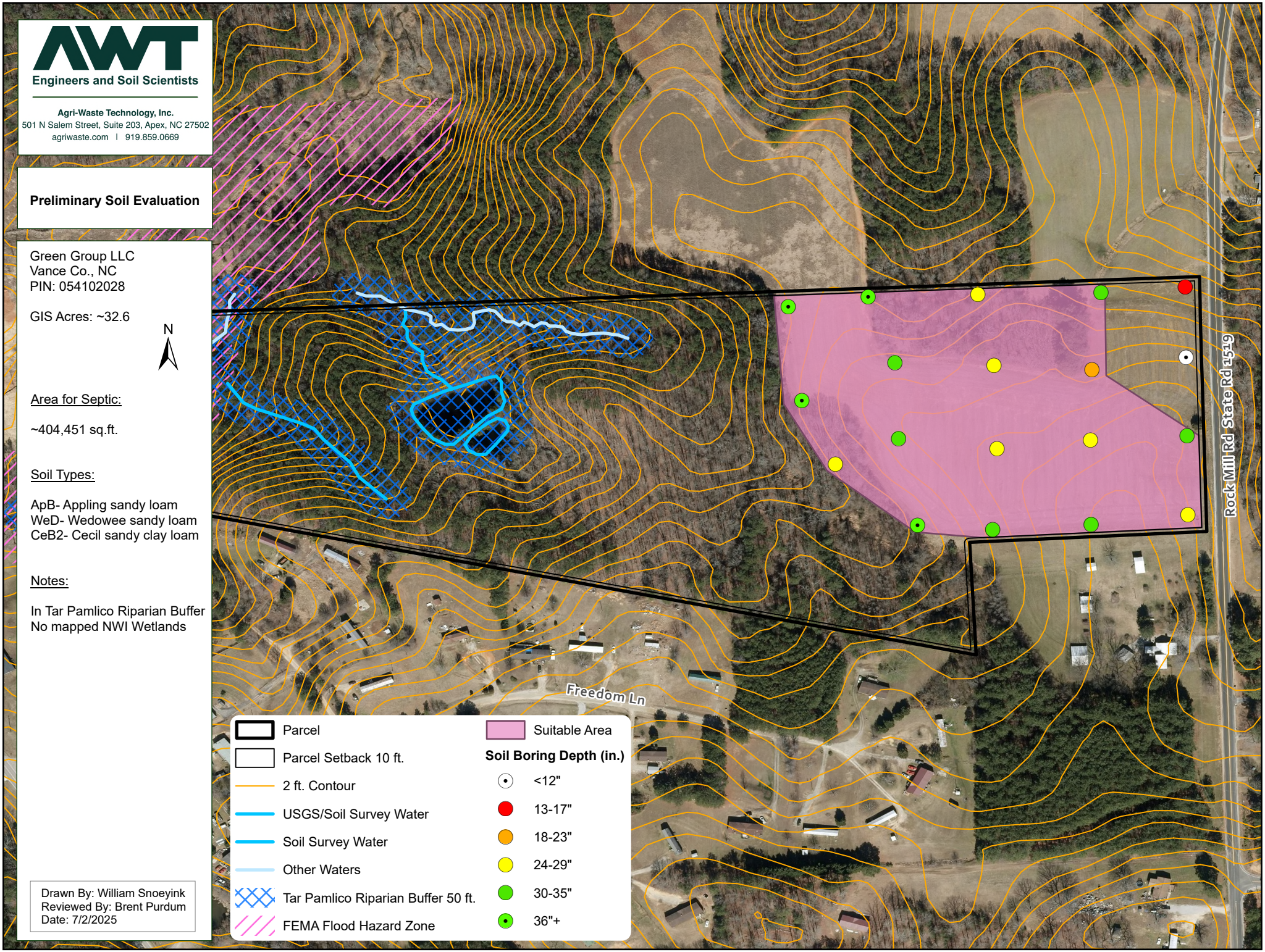
Based on the results of this evaluation, the installation of conventional septic systems seems very probable on this property in the areas designated on the map in Attachment 2.

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

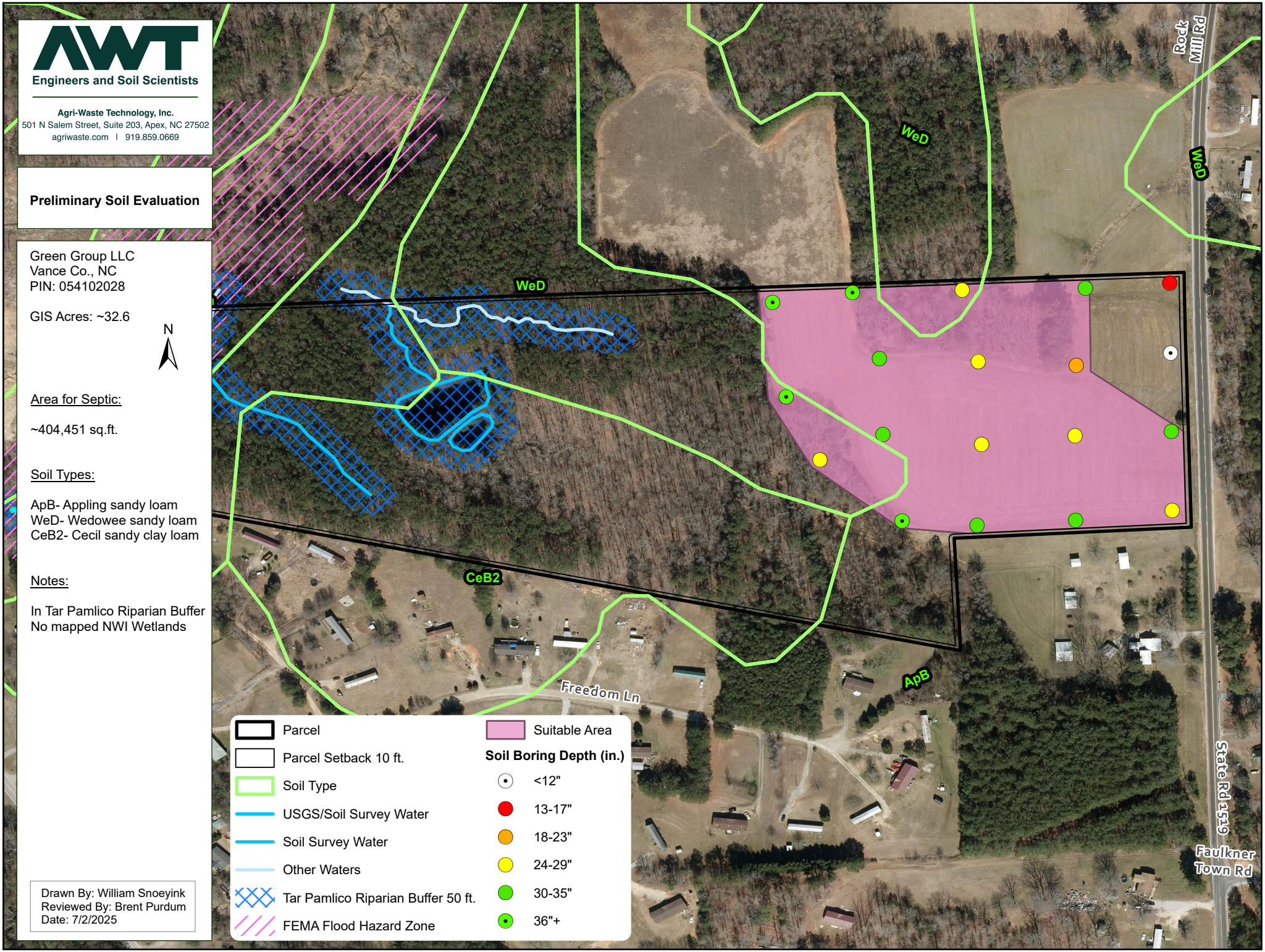
ATTACHMENT 1: Property Reference Map


541 02010
0541 02028
0541D01013
0541D01024
0541D01014
0541D01025
0541D01026
0541D01015
0541D01016
0541D01027
0541D01029
0541D01031
0541D01033
0541D01035
0541 02034
ROCK MILL RD
ROCK MILL RD

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



Surface water and/or bad topo areas have not been officially evaluated for stream ID according to local regulatory requirements. This map is intended for preliminary purposes only and not to be used as a plat/survey or can it be assumed all streams are identified on this property.



Surface water and/or bad topo areas have not been officially evaluated for stream ID according to local regulatory requirements. This map is intended for preliminary purposes only and not to be used as a plat/survey or can it be assumed all streams are identified on this property.

ATTACHMENT 3: Typical Profile Descriptions of Suitable Soil

Property ID#: 054102028
Property Recorded: .
County: Vance .

SOIL/SITE EVALUATION
FOR
ON-SITE WASTEWATER SYSTEM

Applicant: Kristie Rehder
Address: 815 Water Street Rd.
Tampa, FL 33602

Buyer: ___ Agent: X Phone: (980) 350 9803
Date Evaluated: 07/01/2025
Proposed Facility: Residential
Property Size: Approximately 11.67 acres evaluated

Location Site: Rock Mill Rd. Henderson, NC 27505
Water Supply: On Site Well__ 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 5/3**	**None**	**None**	**SL**	**GR**	**NEXP**	**NS, NP**	**Vfr**
E 4-7"	**10YR 6/3**	**None**	**None**	**SL**	**GR**	**SEXP**	**NS, NP**	**Vfr**
Bt1 7-18"	**7.5YR 6/6**	**None**	**None**	**SCL**	**SBK**	**SEXP**	**SS, SP**	**Fr**
Bt2 18-36"	**5YR 6/6**	**None**	**None**	**CL**	**SBK**	**SEXP**	**SS, SP**	**Fr**

.0503 Landscape Pos/Slope %	- Suitable, <15%	Profile LTAR	- 0.25-0.275 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:

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 5/3**	**None**	**None**	**SL**	**GR**	**NEXP**	**NS, NP**	**Vfr**
E 4-10"	**10YR 6/4**	**None**	**None**	**SL**	**GR**	**SEXP**	**NS, NP**	**Vfr**
Bt 10-24"	**10YR 5/6**	**None**	**None**	**CL**	**SBK**	**SEXP**	**SS, SP**	**Fr**
Bt2 24-28"	**10YR 6/6**	**2.5YR 4/8, 10YR 8/6**	**2, m, D**	**CL**	**SBK**	**SEXP**	**SS, SP**	**Fr**
C	**7.5YR 7/6**	**2.5YR 4/8, 10YR 8/6**	**2, m, D**	**SCL**	**SBK**	**SEXP**	**NS, NP**	**Fr**

.0503 Landscape Pos/Slope %	- Suitable, <15%	Profile LTAR	- 0.25-0.275 GPD/ft^2
.0504 Wetness Condition	- Suitable	System Type	- Suitable for shallow conventional and conventional systems due to texture, structure, and depth.
.0506 Saprolite	- Suitable		
.0507 Restrictive Horizon	- Suitable		
.0509 Profile Classification	- Suitable		

Comments:

TYPICAL PROFILE EVALUATED BY: Brent Purdum

LEGEND OF ABBREVIATIONS FOR SITE EVALUATION FORM

LANDSCAPE POSITION	TEXTURE GROUP	TEXTURE CLASS	.1955 LTAR (gal/day/sqft)
		S - Sand	1.2 - .08
CC - Concave Slope	I	LS - Loamy Sand	
CV - Convex Slope			
DS - Debris Slump		SL - Sandy Loam	0.8 - 0.6
D - Depression	II	L - Loam	
DW - Drainage Way			
FP - Flood Plain		SCL - Sandy Clay Loam	0.6 - 0.3
FS - Foot Slope	III	CL - Clay Loam	
H - Head Slope		SiL - Silt Loam	
I - Interflueve		Si - Silt	
L - Linear Slope		SiCL - Silt Clay Loam	
N - Nose Slope			
P - Pocosin		SC - Sandy Clay	0.4 - 0.1
R - Ridge	IV	C - Clay	
S - Shoulder		SiC - Silty Clay	
T - Terrace		O - Organic	

STRUCTURE	MOIST CONSISTENCE	MOTTLES	WET CONSISTENCE
		1 - Few	NS - Non Sticky
G - Single Grain	Vfr - Very Friable	2 - Common	SS - Slightly Sticky
M - Massive	Fr - Friable	3 - Many	S - Sticky
CR - Crumb	Fi - Firm		VS - Very Sticky
GR - Granular	Vfi - Very Firm	F - Faint	
SBK - Subgranular Blocky	Efi - Extremely Firm	D - Distinct	NP - Non Plastic
ABK - Angular Blocky		P - Prominent	SP - Slightly Plastic
PL - Platy			P - Plastic
PR - Prismatic		f - Fine	VP - Very Plastic
		m - Medium	
		c - Coarse	

ATTACHMENT 4: Soil Survey Information

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ApB, AuB[1]---- Appling	Moderate: percs slowly.	Moderate: slope, seepage.	Moderate: too clayey.	Slight----	Fair: too clayey.
CeB2---- Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey, seepage.	Slight----	Fair: too clayey.
CeD2---- Cecil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: too clayey, seepage.	Moderate: slope.	Fair: too clayey, slope.
CuB[1]---- Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey, seepage.	Slight----	Fair: too clayey.
Cw---- Chewacla	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Good.
DuB---- Durham	Moderate: wetness.	Moderate: slope, seepage.	Slight----	Slight----	Good.
GeB---- Georgeville	Moderate: percs slowly.	Moderate: slope, seepage.	Moderate: too clayey.	Slight----	Poor: too clayey.
GeD---- Georgeville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Poor: too clayey.
GoC, GoE---- Goldston	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: seepage.	Poor: small stones, thin layer.
HeB---- Helena	Severe: percs slowly, wetness.	Moderate: slope.	Severe: too clayey.	Slight----	Poor: too clayey, hard to pack.
IrB---- Iredell	Severe: percs slowly, wetness.	Severe: wetness.	Severe: too clayey, wetness.	Severe: wetness.	Poor: thin layer.
LgB---- Lignum	Severe: percs slowly, wetness.	Severe: wetness.	Severe: depth to rock, wetness.	Severe: wetness.	Poor: too clayey.
LoB---- Louisburg	Moderate: depth to rock.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
LoD---- Louisburg	Moderate: depth to rock.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: slope.
LoE---- Louisburg	Severe: slope.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: slope.
NaB---- Nason	Moderate: depth to rock.	Moderate: slope, seepage.	Severe: too clayey.	Slight----	Poor: too clayey.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
NaD---------- Nason	Moderate: slope, depth to rock.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey.
PaE---------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Pt.[1] Pits					
TaE---------- Tatum	Severe: slope.	Severe: slope.	Severe: slope, too clayey, depth to rock.	Severe: slope.	Poor: slope, too clayey.
UL.[1] Udorthents					
VaB---------- Vance	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight----------	Poor: too clayey.
WeD---------- Wedowee	Moderate: percs slowly, slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: too clayey, area reclaim, slope.
WeE---------- Wedowee	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Wh---------- Wehadkee	Severe: wetness.	Severe: floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Poor: wetness. wetness.
WkC---------- Wilkes	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: thin layer.
WkE---------- Wilkes	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, seepage, slope.	Severe: slope, seepage.	Poor: thin layer.
WoA---------- Worsham	Severe: percs slowly, wetness.	Slight----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey.

[1] See description of the map unit for composition and behavior characteristics.

ATTACHMENT 5: Septic System Area Computation Spreadsheets

Conventional Septic System Area Computation

Client Name:	*Green Group*	
Number Bedrooms:	*3*	
Design Flow (gal/day):	360	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.25*	
Trench Bottom Area (ft^2):	1440	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	480	
Minimum Field Area Required (ft^2):	4320	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	3240	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	10800	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	8100	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	12960	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	9720	(25% reduction from above)

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

Client Name:	*Green Group*	
Number Bedrooms:	*4*	
Design Flow (gal/day):	480	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.25*	
Trench Bottom Area (ft^2):	1920	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	640	
Minimum Field Area Required (ft^2):	5760	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	4320	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	14400	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	10800	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	17280	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	12960	(25% reduction from above)

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

Client Name:	*Green Group*	
Number Bedrooms:	*5*	
Design Flow (gal/day):	600	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.25*	
Trench Bottom Area (ft^2):	2400	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	800	
Minimum Field Area Required (ft^2):	7200	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	5400	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	18000	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	13500	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	21600	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	16200	(25% reduction from above)

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

Conventional Septic System Area Computation

Client Name:	*Green Group*	
Number Bedrooms:	*3*	
Design Flow (gal/day):	360	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.275*	
Trench Bottom Area (ft^2):	1309.091	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	436.3636	
Minimum Field Area Required (ft^2):	3927.273	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	2945.455	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	9818.182	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	7363.636	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	11781.82	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	8836.364	(25% reduction from above)

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

Client Name:	*Green Group*	
Number Bedrooms:	*4*	
Design Flow (gal/day):	480	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.275*	
Trench Bottom Area (ft^2):	1745.455	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	581.8182	
Minimum Field Area Required (ft^2):	5236.364	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	3927.273	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	13090.91	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	9818.182	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	15709.09	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	11781.82	(25% reduction from above)

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

Client Name:	*Green Group*	
Number Bedrooms:	*5*	
Design Flow (gal/day):	600	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.275*	
Trench Bottom Area (ft^2):	2181.818	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	727.2727	
Minimum Field Area Required (ft^2):	6545.455	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	4909.091	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	16363.64	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	12272.73	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	19636.36	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	14727.27	(25% reduction from above)

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