Engineers and Soil Scientists

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

247 Wise Rd, Dunn, NC 28334

Harnett County PIN: 1537114801.000

Prepared For:	Ed Mercer, Client
Prepared By:	Jeff Vaughan, Ph.D., L.S.S. Senior Agronomist/Soil Scientist
	Brent Purdum, Assistant Soil Scientist
Report Date:	March 1, 2024

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PREPARED FOR: Ed Mercer

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DATE: March 1, 2024

Soil suitability for domestic sewage treatment and disposal systems was evaluated on February 26, 2024, for property located at Wise Rd. located near Dunn, 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 1 acre of the property was evaluated. The property is part of a large field. There is an existing home, well, farmland, and septic system on the front portion of the property (Attachment 3).

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. Approximately 7 soil borings were advanced on the property and the soil evaluated (Attachment 3). 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 3) evaluated on the property exhibited soil characteristics and soil depths (24" or greater) that are provisionally suitable for conventional systems. The area is approximately 38,291 ft^2.

Typical profile description of the provisionally 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: a deep yellowish-brown subsoil.

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

The mapped soil type on this property is predominantly Norfolk loamy sand (map symbols NoB). The Harnett 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 provisionally suitable soils on this property is 0.1 – 0.4 GPD/ft^2 for shallow conventional septic systems based on the most restrictive soil texture in the subsoil. The LTAR suggested by AWT is 0.35 GPD/ft^2, but the final LTAR for specific septic system types and septic drainfield locations will be set by the Harnett County Health Department. The detailed computations are in Attachment 5.

Conclusions

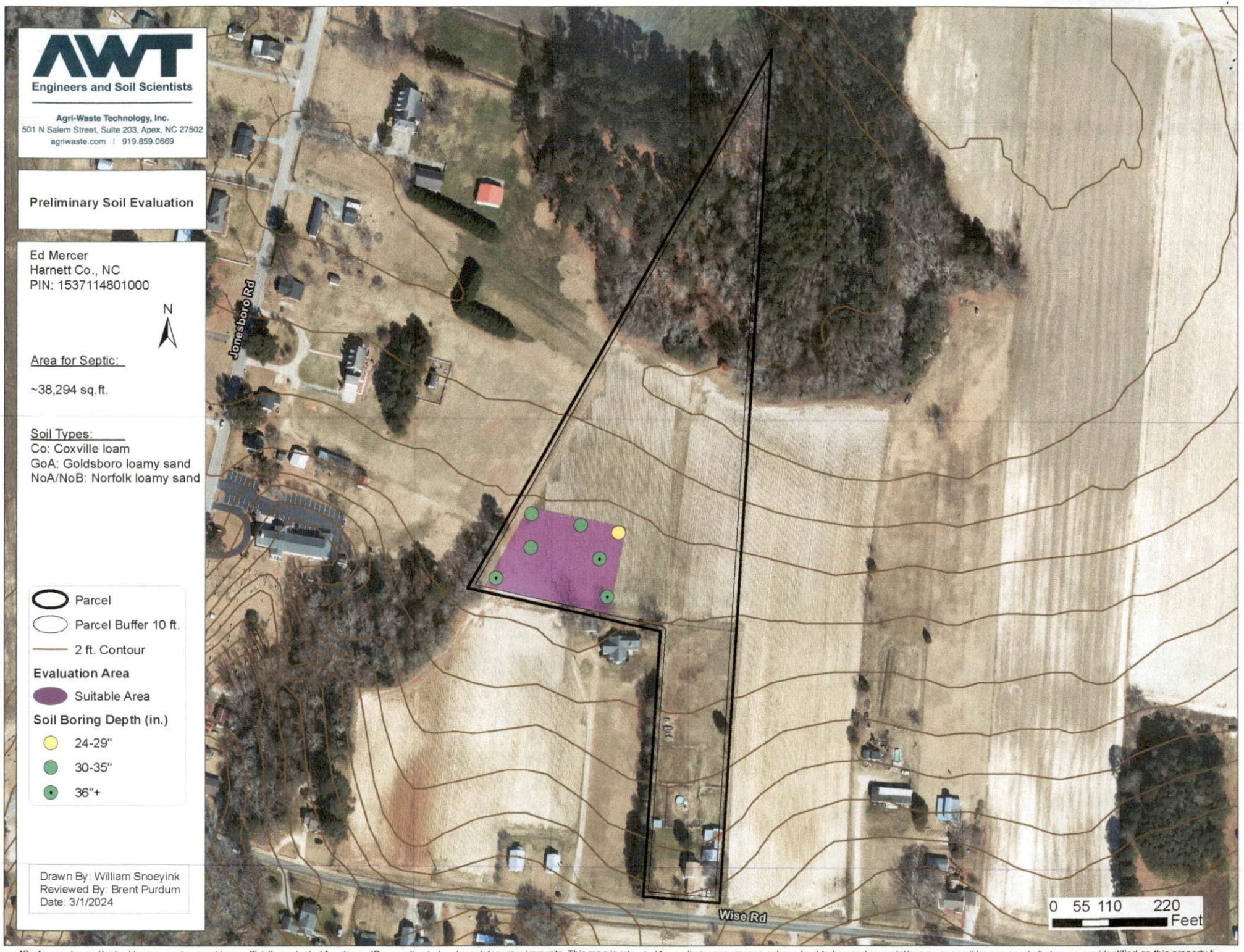
Based on the results of this evaluation, the installation of conventional systems seems very probable on this property in the area designated on the map inAttachment 2.

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

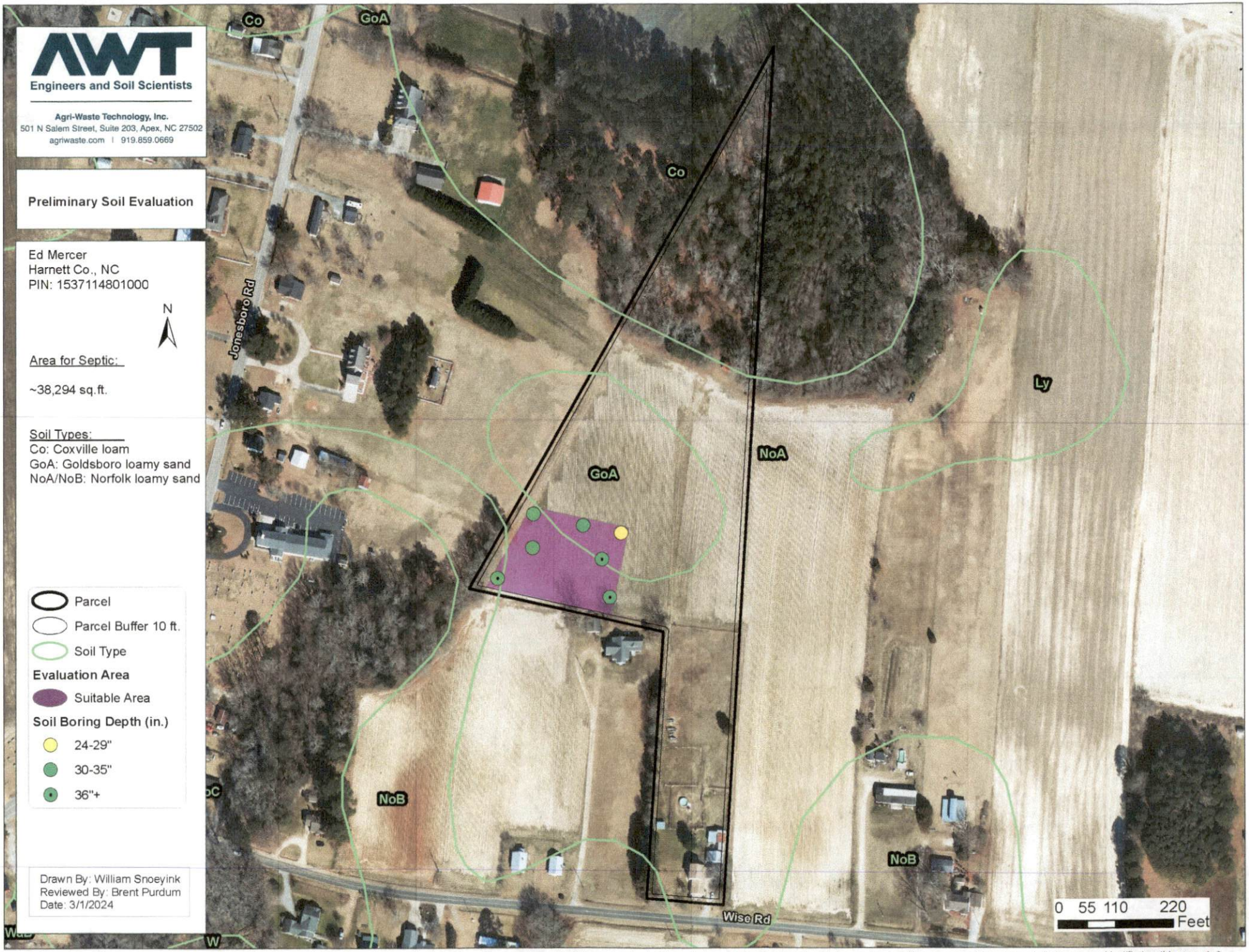
ATTACHMENT 1: Property Reference Map


Jonesboro Rd
Grove Presbyterian Church, EPC
1808
Wise Rd
Wise Rd
Carol St
Google

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 Provisionally Suitable Soil

Property ID#: 1537114801.000
Property Recorded: .
County: Harnett .

SOIL/SITE EVALUATION
FOR
ON-SITE WASTEWATER SYSTEM

Applicant: Ed Mercer
Address: 247 Wise Rd.
Dunn, NC 28334

Buyer: Agent: X Phone: (910) 226-4157
Date Evaluated: 02/26/2024
Proposed Facility: Residential
Property Size: Approximately 3.3 acres evaluated

Location Site: 274 Wise Rd. Dunn, NC 28334 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	(a)(1) Texture	(a)(2) Structure	(a)(3) Minerology	Consistence Wet	Consistence Moist
A 0-7"	**10YR 5/2**	**None**	**None**	**SL**	**GR**	**NEXP**	**NS, NP**	**Vfr**
A 7-14"	**10YR 6/4**	**None**	**None**	**SL**	**GR**	**NEXP**	**NS, NP**	**Vfr**
Bt1 14-30"	**10YR 5/6**	**None**	**None**	**SCL**	**SBK**	**SEXP**	**SS, SP**	**Fr**
Bt2 30-36+"	**10YR 5/6**	**10 YR 6/2; 5YR 5/8**	**2, m, D**	**SCL**	**SBK**	**SEXP**	**SS, SP**	**Fr**

.1940 Landscape Pos/Slope %	- Suitable, <15%	Profile LTAR	- 0.35 GPD/ft^2
.1942 Wetness Condition	- Suitable	System Type	- Provisionally suitable for shallow conventional systems due to texture, structure, and depth.
.1943/.1956 Saprolite	- Suitable		
.1944 Restrictive Horizon	- Suitable		
.1948 Profile Classification	- Provisionally suitable		

Comments: Norfolk loamy sand. Some soil wetness indicators around 30-36 become dominant.

EVALUATED BY: Brent Purdum
COMMENTS:

LEGEND OF ABBREVIATIONS FOR SITE EVALUATION FORM

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

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

ATTACHMENT 4: Soil Survey Information

TABLE 10.--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
HaB---------- Helena	Severe: wetness, percs slowly.	Slight----------	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
LaB---------- Lakeland	Slight----------	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
LnB---------- Lillington	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
LnD---------- Lillington	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
LnE---------- Lillington	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
LoF---------- Louisa	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: seepage, depth to rock, slope.	Poor: slope, depth to rock, thin layer.
Ly---------- Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
MaA---------- Marlboro	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight----------	Fair: too clayey.
MaB---------- Marlboro	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----------	Fair: too clayey.
Na---------- Nahunta	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
NeD---------- Nason	Moderate: slope, depth to rock, percs slowly.	Severe: slope.	Severe: too clayey, depth to rock.	Moderate: slope, depth to rock.	Poor: too clayey, hard to pack.
NeE---------- Nason	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: slope, too clayey, hard to pack.
NoA, NoB---------- Norfolk	Moderate: wetness, percs slowly.	Moderate: seepage, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
NoC---------- Norfolk	Moderate: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope.
NuB*: Norfolk----------	Moderate: wetness, percs slowly.	Moderate: seepage, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.

See footnote at end of table.

ATTACHMENT 5: Septic System Area Computation Spreadsheets

Conventional Septic System Area Computation

Created by: JV
Created on: 6/20/2001
Updated on: 3/1/2024

Client Name:	*Ed Mercer*	
Number Bedrooms:	*3*	
Design Flow (gal/day):	360	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.35*	
Trench Bottom Area (ft^2):	1028.571	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	342.8571	
Minimum Field Area Required (ft^2):	3085.714	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	2314.286	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	7714.286	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	5785.714	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	9257.143	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	6942.857	(25% reduction from above)

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

Client Name:	*Ed Mercer*	
Number Bedrooms:	*4*	
Design Flow (gal/day):	480	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.35*	
Trench Bottom Area (ft^2):	1371.429	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	457.1429	
Minimum Field Area Required (ft^2):	4114.286	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	3085.714	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	10285.71	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	7714.286	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	12342.86	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	9257.143	(25% reduction from above)

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

Client Name:	*Ed Mercer*	
Number Bedrooms:	*5*	
Design Flow (gal/day):	600	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.35*	
Trench Bottom Area (ft^2):	1714.286	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	571.4286	
Minimum Field Area Required (ft^2):	5142.857	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	3857.143	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	12857.14	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	9642.857	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	15428.57	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	11571.43	(25% reduction from above)

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