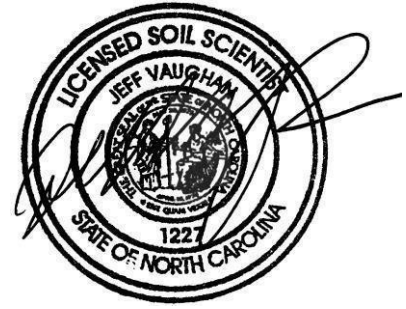




Soil Suitability for Domestic Sewage Treatment and Disposal Systems

NC Hwy 98. Louisburg, NC
Franklin County PIN: 2800-76-7833 & 2800-86-5441

Prepared For:

EF One c/o Kent Cummings

Prepared By:

Jeff Vaughan, Ph.D., L.S.S.

Senior Agronomist/Soil Scientist

Brent Purdum, Assistant Soil Scientist

Report Date:

October 13, 2025



Agri-Waste Technology, Inc.

1225 Crescent Green, Suite 250, Cary NC 27518
agriwaste.com | 919.859.0669

**Soil Suitability for Domestic Sewage Treatment and Disposal Systems
NC Hwy 98. Louisburg, NC (Franklin County)**

PREPARED FOR: EF One c/o Kent Cummings

PREPARED BY: Jeff Vaughan
Brent Purdum

DATE: October 13, 2025

Soil suitability for domestic sewage treatment and disposal systems was evaluated on October 3, 2025, for property located at NC Hwy 98. near Louisburg, NC. Brent Purdum, Jordan Harris, and Connor Britt of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. A detailed soil evaluation of the land area will follow. Property reference maps are in Attachment 1.

The total area across both parcels is approximately 44 acres. The properties contain several drainage features, steep slopes, and are mostly wooded.

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 (Attachment 2). A portion of the property contained drainage features, complex topography, and/or unsuitable soils and, thus, are unsuitable for 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 possible 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.

Area 1 (see map in Attachment 2) evaluated on the property exhibited soil characteristics and soil depths (18" or greater) that are suitable for drip septic systems. This area is approximately 122,588ft².

Area 2 (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 or conventional trench septic systems. This area is approximately 626,409ft².

Area 3 (see map in Attachment 2) evaluated on the property exhibited soil characteristics and soil depths (16" or greater) that are suitable for drip septic systems. This area is approximately 69,375ft².

Typical profile descriptions of the suitable soil for these properties are in Attachment 3. Three distinct soil profiles were observed in the soil borings on the property.

The mapped soil types on this property are Wedowee sandy loam (labeled as WeB), Wake-Wateree-Wedowee xomplex (labeled as WbD), Wake-Saw-Wedowee complex (labeled as WaB), and Chewacla and Wehadkee soils (labeled as ChA). The Franklin County Soil Survey indicates that moderate to severe limitations exist for septic systems installed in these soil types (Attachment 4).

The land area required for a shallow 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/ft² for shallow conventional septic systems based on the most restrictive soil texture in the subsoil. The LTAR suggested by AWT is 0.275 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.

The land area required for a drip 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 0.05 – 0.15 GPD/ft² for drip septic systems based on the most restrictive soil texture in the subsoil. The LTAR suggested by AWT is 0.1 GPD/ft², but the final LTAR for specific septic system types and septic drainfield locations will be set by the Franklin County Health Department and possibly will be based on saturated hydraulic conductivity tests. The detailed computations are in Attachment 5.

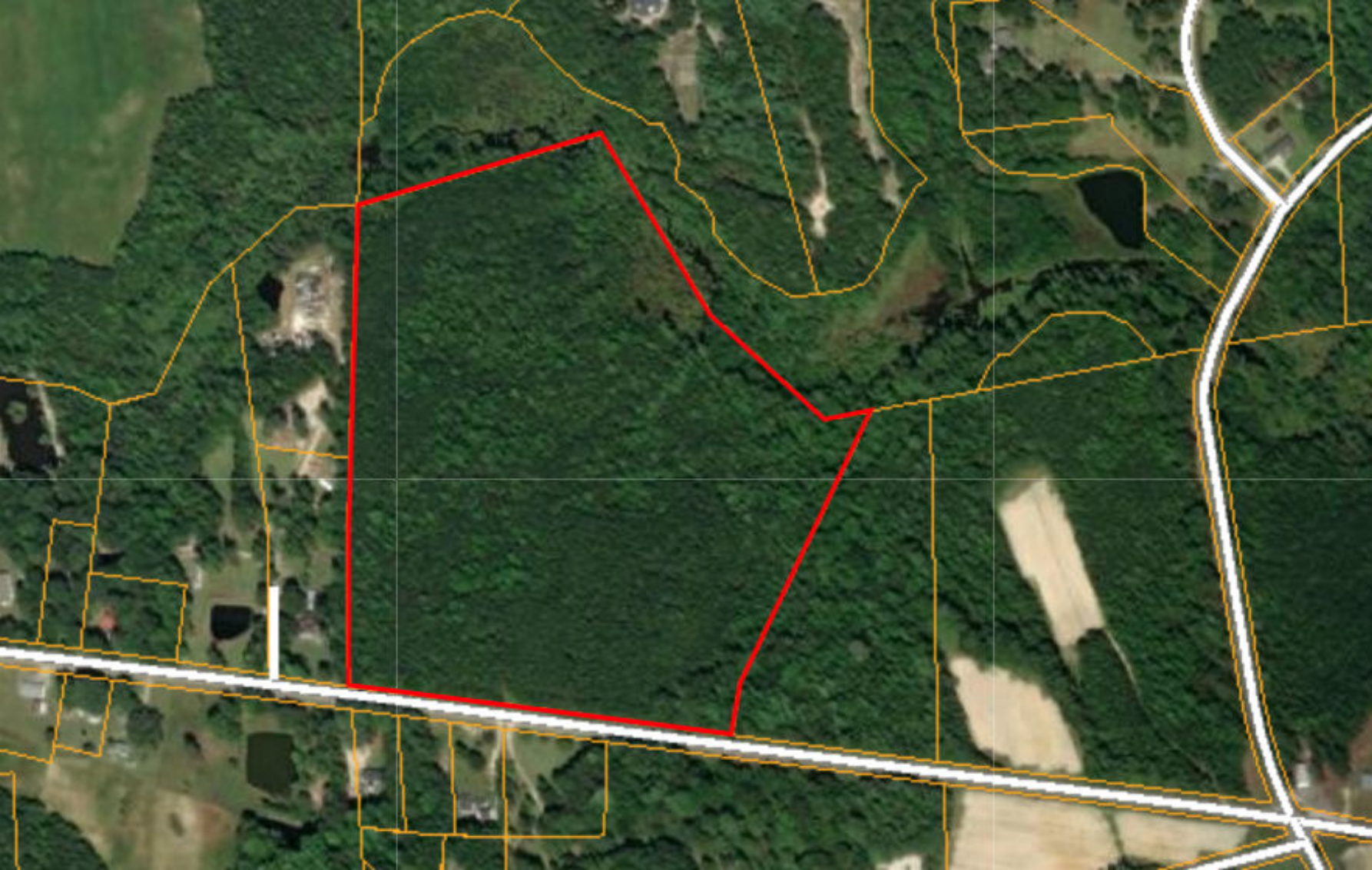
Typically, the area required for a septic system is 3,000 – 5,000 ft² (initial and repair) per bedroom.

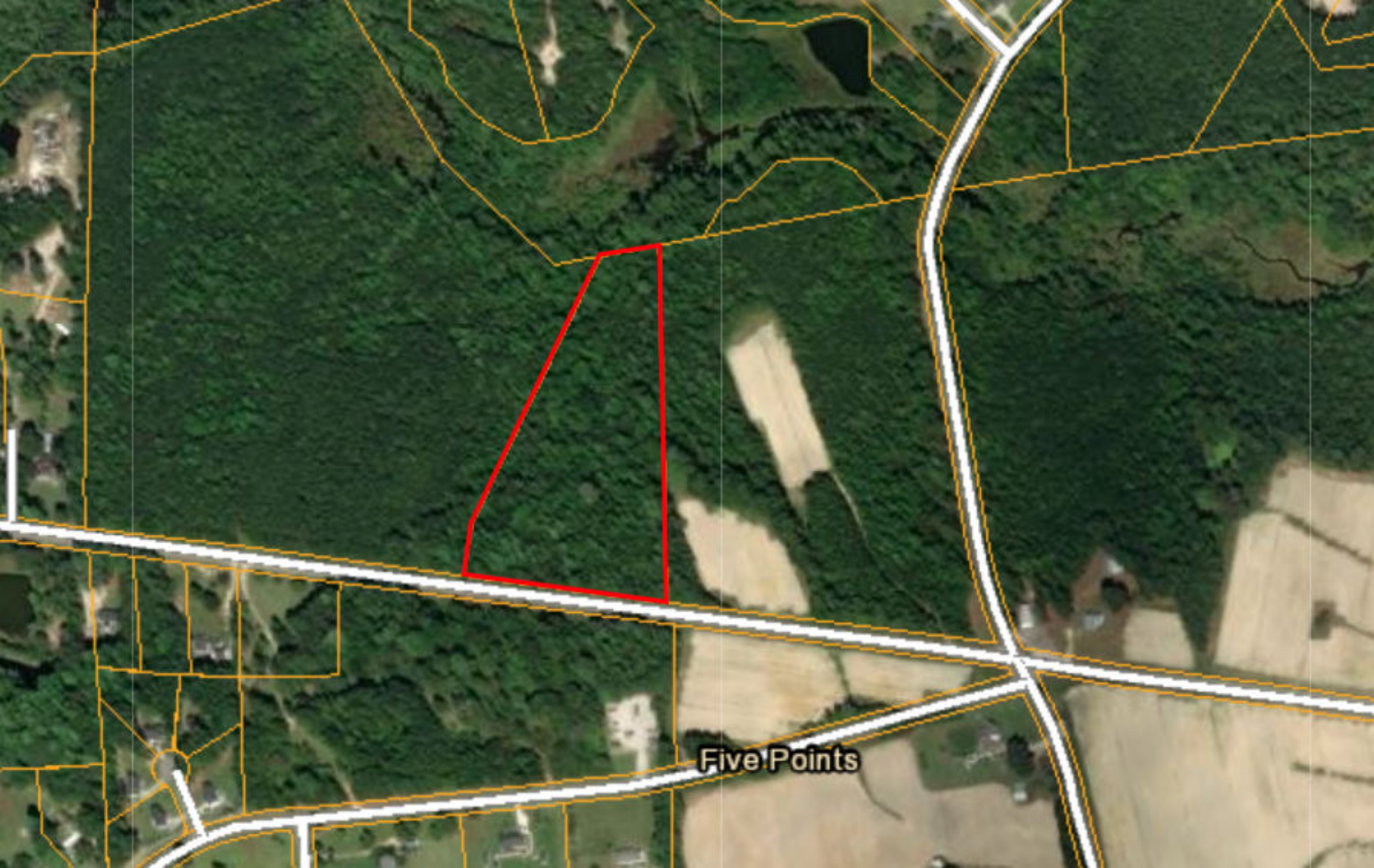
Conclusions

Based on the results of this evaluation, the installation of conventional, shallow conventional, low-profile chamber, or drip septic systems seems very probable on this property in the area designated on the map in Attachment 2. Layouts and design work will be necessary when the plans start to develop to maximize the usable soils area.

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

ATTACHMENT 1: Property Reference Map





Five Points

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



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Preliminary Soil Evaluation

EF One
Franklin Co., NC
PIN: 2800-76-7833
and 2800-86-5441

GIS Acres: ~44



Area for Septic:

Area 1: ~122,588 sq. ft.
Area 2: ~626,409 sq. ft.
Area 3: ~69,375 sq. ft.

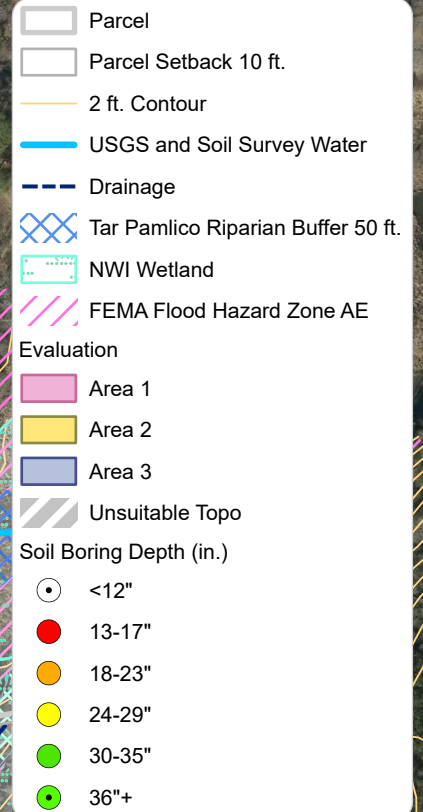
Soil Types:

ChA: Chewacla and
Wehadkee soils
WaB: Wake-Saw-Wedowee
complex
WbD: Wake-Wateree-
Wedowee complex
WeB: Wedowee sandy loam

Notes:

In Tar Pamlico Riparian
Buffer

Drawn By: Clara Frickmann
Reviewed By: Brent Purdum
Date: 10/8/2025



0 100 200 400
Feet

State Rd 98



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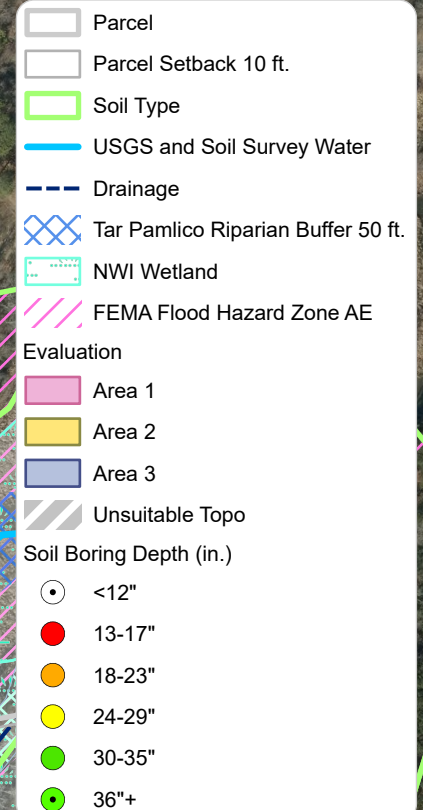
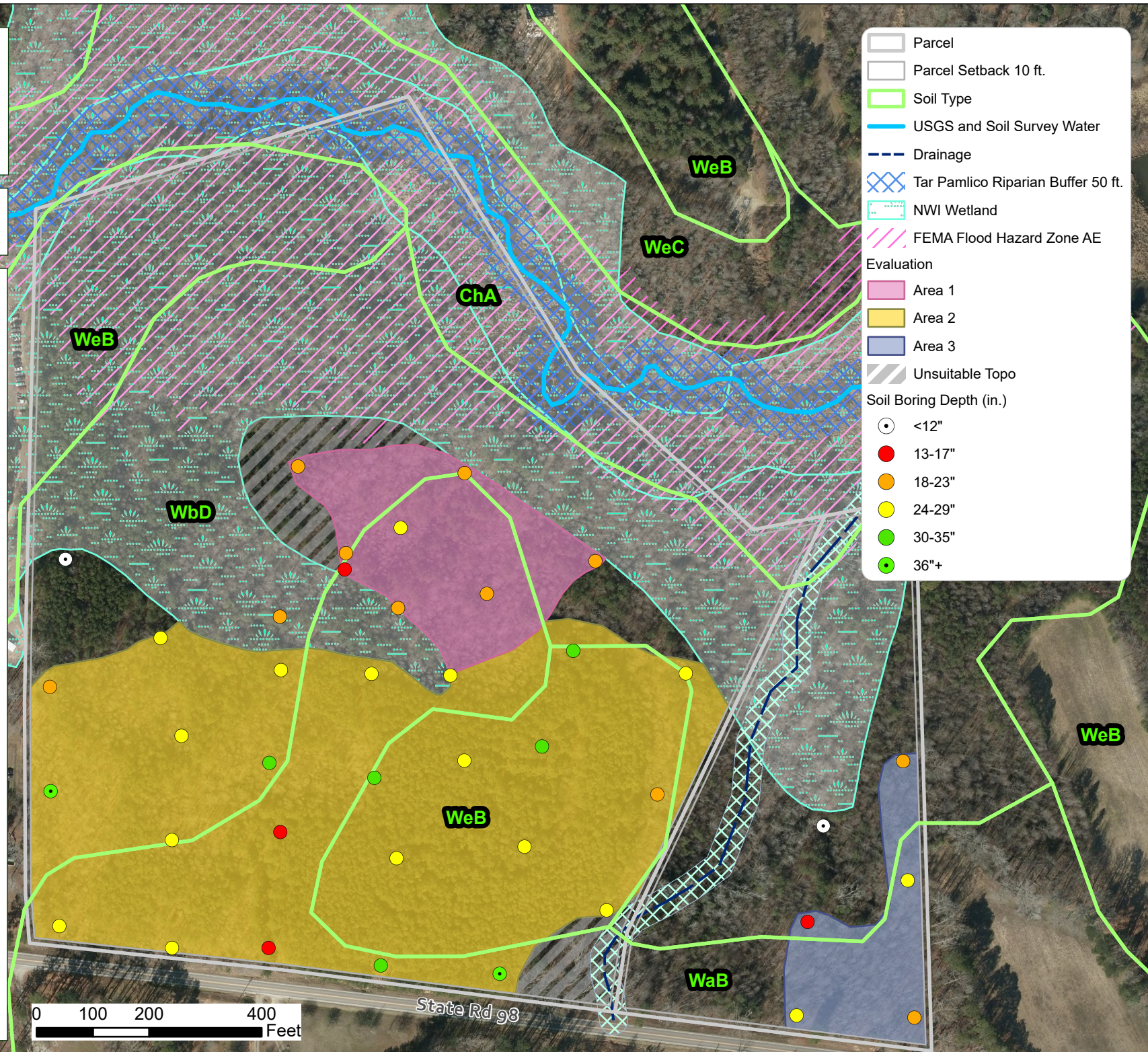
Soil Types:

ChA: Chewacla and
Wehadkee soils
WaB: Wake-Saw-Wedowee
complex
WbD: Wake-Wateree-
Wedowee complex
WeB: Wedowee sandy loam

Notes:

In Tar Pamlico Riparian
Buffer

Drawn By: Clara Frickmann
Reviewed By: Brent Purdum
Date: 10/8/2025



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

Property ID#: 2800-76-7833 and 2800-86-5441
Property Recorded: _____
County: Franklin

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

Applicant: Ef One c/o Kent Cummings
Address: 6801 Winding Ridge Rd.
Zebulon, NC 27597

Phone: (919) 604-5430
Date Evaluated: 10/03/2025
Proposed Facility: Residential
Property Size: Approximately 44 acres evaluated

Location Site: NC Hwy 98 Louisburg, NC

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 0-6"	10YR 4/2	None	None	SL	GR	NEXP	NS, NP	Vfr
E 6-10"	10YR 6/3	None	None	SL	GR	NEXP	NS, NP	Fr
Bt1 10-18"	10YR 6/6	None	None	C	SBK	SEXP	SS, SP	Fr
Bt2 18-24"	7.5YR 5/6	10YR 7/8	1, c, D	C	SBK	SEXP	SS, SP	Fi
BC 24-30"	7.5YR 5/6	10YTR 7/8; 7.5YR 7/4	3, c, D	CL	SBK	SEXP	SS, SP	Fi

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

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 6/3	None	None	SL	GR	NEXP	NS, NP	Fr
Bt1 8-12"	10YR 6/6	None	None	C	SBK	SEXP	SS, SP	Fr
Bt2 12-14"	7.5YR 5/6	10YR 7/8	1, c, D	C	SBK	SEXP	SS, SP	Fi
BC 14-18"	7.5YR 5/6	10YTR 7/8; 7.5YR 7/4	3, c, D	CL	SBK	SEXP	SS, SP	Fi

.0503 Landscape Pos/Slope %	- Suitable, <15%	Profile LTAR	- 0.1 GPD/ft ²
.0504 Wetness Condition	- Suitable	System Type	- Suitable for drip systems due to texture, structure, and depth.
.0506 Saprolite	- Suitable		
.0507 Restrictive Horizon	- Suitable		
.0509 Profile Classification	- Suitable		

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 6/3	None	None	SL	GR	NEXP	NS, NP	Fr
Bt1 8-12"	10YR 6/6	None	None	C	SBK	SEXP	SS, SP	Fr
Bt2 12-16"	7.5YR 5/6	5YR 5/8	1, m, D	C	SBK	SEXP	SS, SP	Fi
Bt3 16-22"	7.5YR 5/6	10YTR 7/2; 5YR 5/8	2, m, D	CL	SBK	SEXP	SS, SP	Fi

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

EVALUATED BY: Brent Purdum, Jordan Harris, Connor Britt

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

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "fair," and other terms. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AaA----- Altavista	Severe: wetness.	Severe: wetness.	Severe: wetness, too acid.	Severe: wetness.	Poor: too acid.
ApB----- Appling	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
CaB----- Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
CaC----- Cecil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
CeB2----- Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
ChA*: Chewacla-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
Wehadkee-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness, thin layer.
DuA----- Duplin	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, hard to pack, wetness.
GeB----- Georgeville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
GeC, GgC----- Georgeville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
GhB, GkB2----- Georgeville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
GmD*: Georgeville-----	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.

See footnote at end of table.

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
VnB----- Varina	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
VnC----- Varina	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
WaB*: Wake-----	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, seepage, small stones.
Saw-----	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
WaB*: Wedowee-----	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----	Slight-----	Fair: small stones.
WbD*: Wake-----	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, seepage, small stones.
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.
WcE*: Wake-----	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
Wateree-----	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
WdE*: Wateree-----	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
Rion-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.

See footnote at end of table.

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

Conventional Septic System Area Computation

Client Name:	EF One
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:	EF One
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:	EF One
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.

Drip Septic System Area Computation

Client Name:	<i>EF ONE</i>
Number Bedrooms:	3
Design Flow (gal/day):	360 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft ²):	0.1
Trench Bottom Area (ft ²):	3600 (Design flow/LTAR)
Trench Width (ft):	0
On-center distance between trenches (ft):	2
Trench Bottom Length (ft):	1800
Minimum Field Area Required (ft ²):	3600 (Trench Bottom Length*Trench on-center distance)
Total Field Area Required (ft ²) ⁽¹⁾ :	9000 (Minimum field area*2.5)
Total Field Area Required (ft ²) ⁽¹⁾ :	10800 (Minimum field area*3)

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

Client Name:	<i>Radford, Melissa</i>
Number Bedrooms:	4
Design Flow (gal/day):	480 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft ²):	0.1
Trench Bottom Area (ft ²):	4800 (Design flow/LTAR)
Trench Width (ft):	0
On-center distance between trenches (ft):	2
Trench Bottom Length (ft):	2400
Minimum Field Area Required (ft ²):	4800 (Trench Bottom Length*Trench on-center distance)
Total Field Area Required (ft ²) ⁽¹⁾ :	12000 (Minimum field area*2.5)
Total Field Area Required (ft ²) ⁽¹⁾ :	14400 (Minimum field area*3)

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

Client Name:	<i>Radford, Melissa</i>
Number Bedrooms:	5
Design Flow (gal/day):	600 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft ²):	0.1
Trench Bottom Area (ft ²):	6000 (Design flow/LTAR)
Trench Width (ft):	0
On-center distance between trenches (ft):	2
Trench Bottom Length (ft):	3000
Minimum Field Area Required (ft ²):	6000 (Trench Bottom Length*Trench on-center distance)
Total Field Area Required (ft ²) ⁽¹⁾ :	15000 (Minimum field area*2.5)
Total Field Area Required (ft ²) ⁽¹⁾ :	18000 (Minimum field area*3)

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