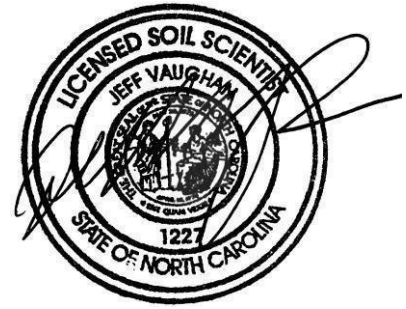




Soil Suitability for Domestic Sewage Treatment and Disposal Systems

Floyd Rd.
Creedmoor, NC 27522
Granville County Parcel ID:
089700265747 & 089700372014

Prepared For:	Mark Williams
Prepared By:	Jeff Vaughan, Ph.D., L.S.S. Senior Agronomist/Soil Scientist Brent Purdum, Assistant Soil Scientist
Report Date:	May 23, 2025



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**Soil Suitability for Sewage Treatment and Disposal Systems
Floyd Rd. Creedmoor, NC 27522
Granville County Parcel ID: 089700265747 & 089700372014**

PREPARED FOR: Mark Williams

PREPARED BY: Jeff Vaughan
Brent Purdum

DATE: May 23, 2025

Soil suitability for domestic sewage treatment and disposal systems was evaluated on May 19, 2025, for properties located at Floyd Rd. Creedmoor, NC. Brent Purdum, Connor Britt, and Ash Doyen of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. A detailed explanation of the soil evaluation will follow. Property reference maps are in Attachment 1.

The total property area evaluated is approximately 2.5 acres. The property is mostly wooded with several drainage features.

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.

The yellow area exhibited soil characteristics and soil depths (13" or greater) that is suitable for pre-treatment drip septic systems. These areas are shown on the map in Attachment 2. The total area is approximately 27,774 sqft.

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.

The major soil types on this property are Creedmoor coarse sandy loam (map symbols CrB and CrC). The Granville County Soil Survey indicates that septic system installation in these soils is severe (Attachment 4).

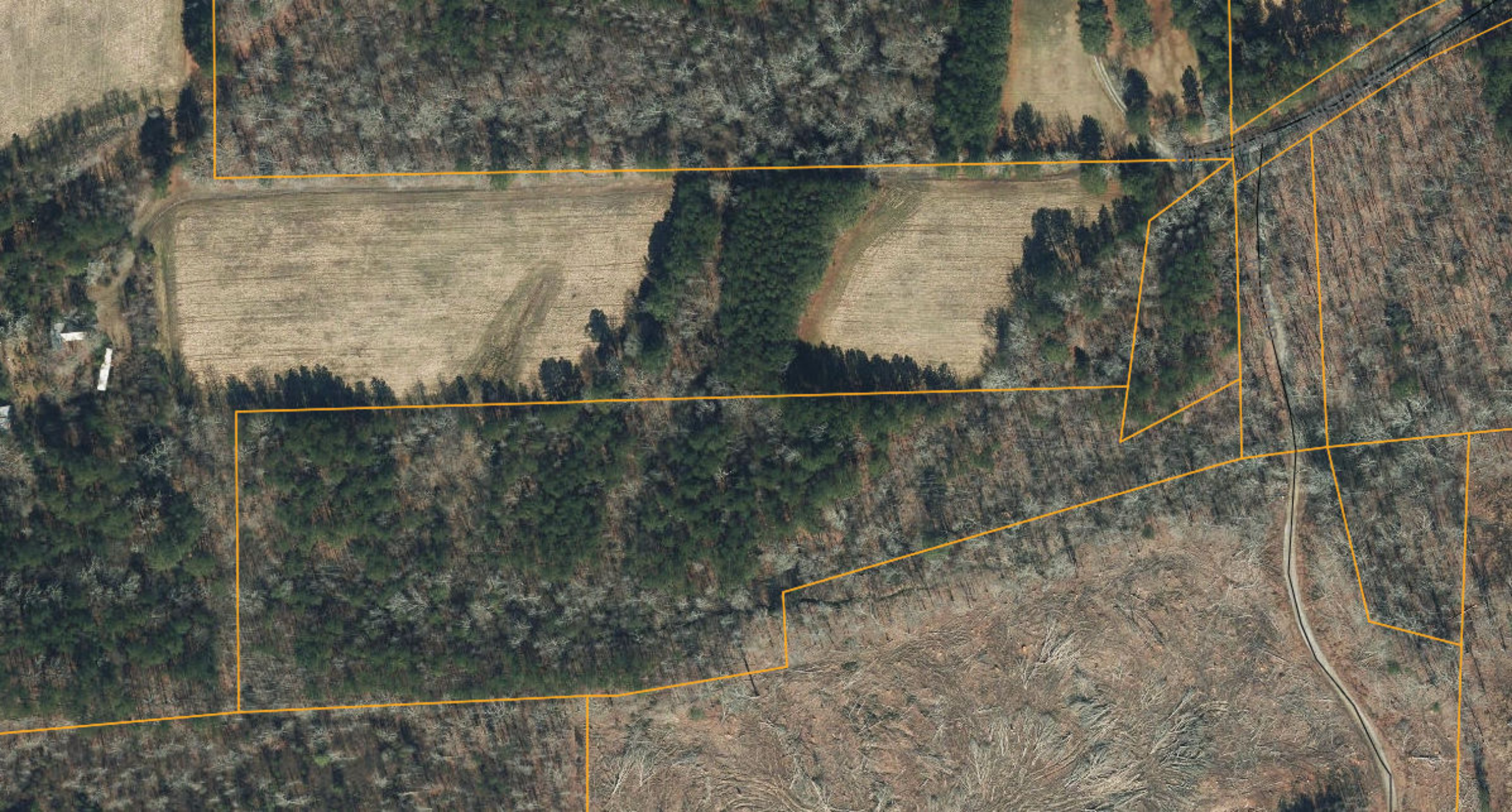
The land area required for a subsurface drip septic system is calculated based on the size of the proposed facility and the Long-Term Acceptance Rate (LTAR) of the soil. The LTAR range for the suitable soils on this property is 0.05 – 0.1 GPD/ft² based on the most restrictive soil texture in the subsoil. The LTAR suggested by AWT for most of the subsurface drip suitable soil is 0.1 GPD/ft², but the final LTAR for specific septic system types and septic drainfield locations will be set by the Granville County Health Department. Generally, 11,000 ft² of suitable soil for drip septic systems is required for a 3-bedroom home. The detailed computations are in Attachment 5.

Conclusions

Based on the results of this evaluation, the installation of sub-surface drip systems with pre-treatment seems very probable on this property in the areas designated on the map in Attachment 2. A detailed site plan, additional fieldwork, and design will be needed to maximize the space. The approximate cost to permit this type of system is \$10,000-\$12,000. The approximate cost to install a pre-treated drip system is \$60,000-\$70,000

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

ATTACHMENT 1: Property Reference Map



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



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Preliminary Soil Evaluation

Mark Williams
Granville Co., NC
PIN: 089700265747
& 089700372014

GIS Acres: ~8.7



Area for Septic:

~27,774 sq. ft.

Soil Types:

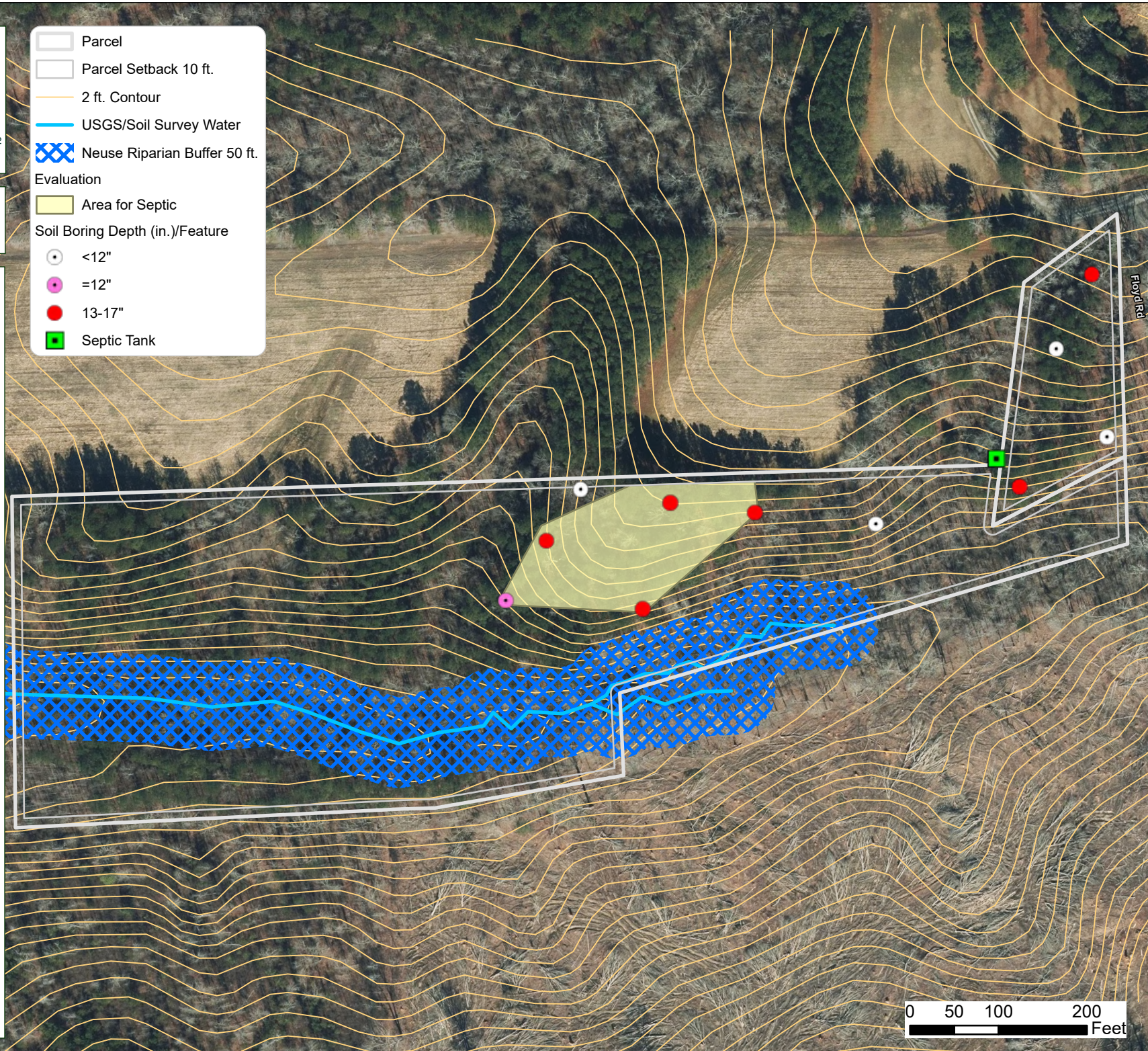
CrB, CrC-
Creedmoor coarse sandy loam

Notes:

In Neuse Riparian Buffer
No mapped NWI wetlands

Drawn By: Clara Frickmann
Reviewed By: Brent Purdum
Date: 5/22/2025

- Parcel
- Parcel Setback 10 ft.
- 2 ft. Contour
- USGS/Soil Survey Water
- Neuse Riparian Buffer 50 ft.
- Evaluation**
 - Area for Septic
- Soil Boring Depth (in.)/Feature**
 - <12"
 - =12"
 - 13-17"
 - Septic Tank



0 50 100 200
Feet



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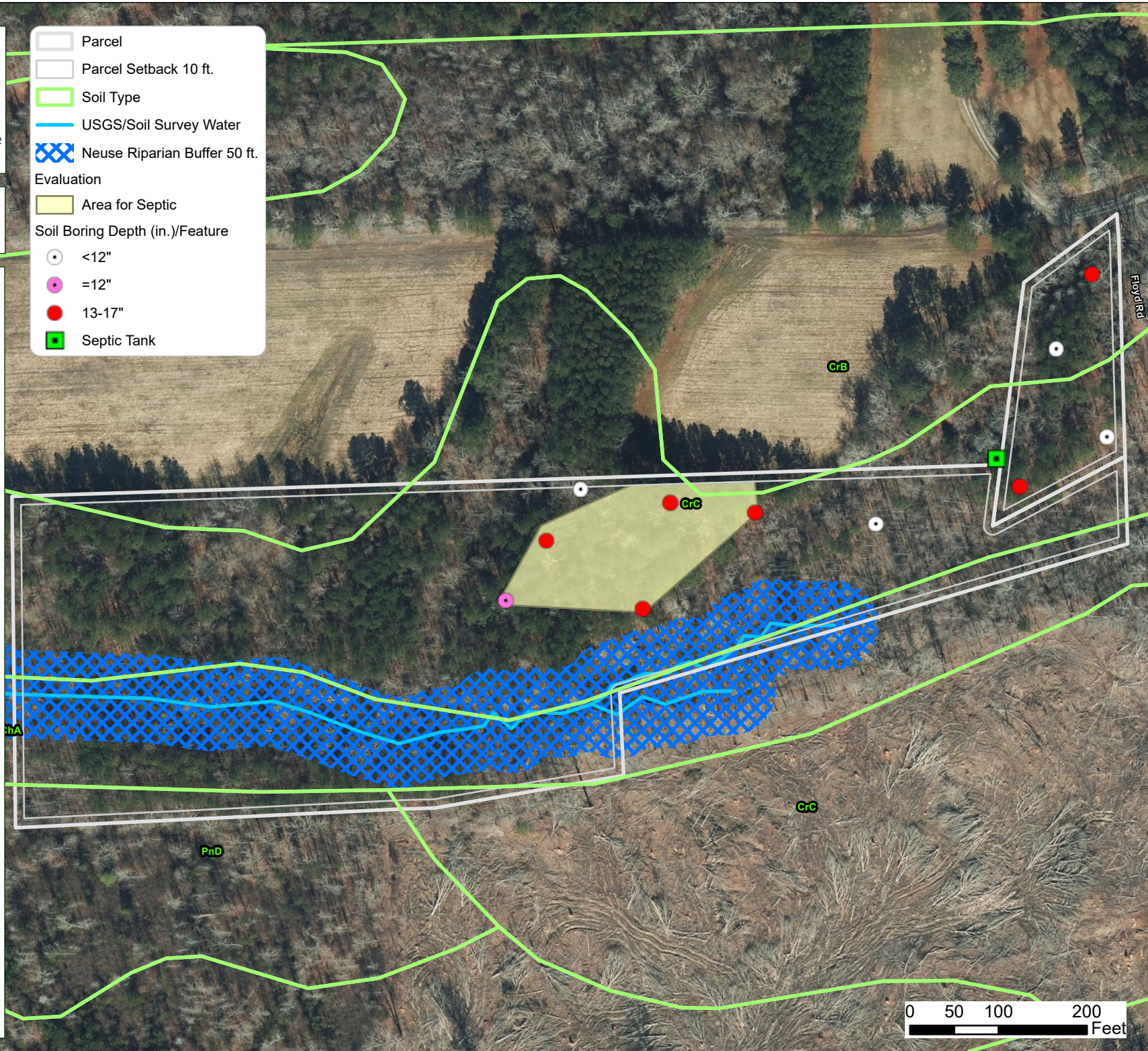
CrB, CrC-
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-  Parcel
-  Parcel Setback 10 ft.
-  Soil Type
-  USGS/Soil Survey Water
-  Neuse Riparian Buffer 50 ft.
- Evaluation**
-  Area for Septic
- Soil Boring Depth (in.)/Feature**
-  <12"
-  =12"
-  13-17"
-  Septic Tank



0 50 100 200
Feet

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

Property ID#: 089700265747 & 089700372014
Property Recorded: _____
County: Granville

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

Applicant: Mark Williams
Address: 3527 Lavender Ln.
Wake Forest, NC 27587

Owner: X Agent: _____ Phone: (585) 747-2237
Date Evaluated: 05/19/2025
Proposed Facility: Residential
Property Size: Approximately 2.5 acres evaluated

Location Site: Floyd Rd. Creedmoor, NC 27522

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 4-12"	10YR 6/3	None	None	SL	GR	NEXP	NS, NP	Fr
Bt1 12-15"	10YR 6/4	None	None	SCL	ABK	SEXP	SS, SP	Fr
Bt2 15+"	10YR 6/4	10YR 6/1	2, m, D	SCL	M	EXP	S, P	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		

Comments: _____

EVALUATED BY: Brent Purdum, Connor Britt, and Ash Doyen
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 10.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "fair," and other terms. Absence of an entry indicates that the soil was not rated. 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.	Severe: wetness.	Fair: wetness, too clayey.
ApB----- Appling	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
ApC----- Appling	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
AuC*: Appling-----	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
Urban land.					
CaB, CeB2----- Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
CeC2----- Cecil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
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.
CoA----- Congaree	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
CrB----- Creedmoor	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
CrC----- Creedmoor	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
EnB----- Enon	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.

See footnote at end of table.

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

Drip Septic System Area Computation

Client Name:	<i>Williams</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>Williams</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>Williams</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.