

## SOIL SERVICES, PLLC

PO BOX 91115 ♦ RALEIGH, NC ♦ 27675

---

October 4, 2024  
Project No. 2146-1

eKingdom Estates LLC  
Attn: Robert Krebs  
187 E. Warm Springs Rd, Ste 183  
Las Vegas, NC 89119

**Re: Detailed Soil/Site Evaluation  
Georgie Dr Property (Approx. 4.95 Acres)  
215 & 316 Georgie Dr, Harnett County  
PIN No. 0601-87-0462.000 & 0601-88-0190.000**

Dear Mr. Krebs:

Soil Services, PLLC completed a detailed soil/site evaluation for the Georgie Dr property was completed on October 1, 2024. The evaluation was performed during moist soil conditions in accordance with 15A NCAC 18E "Laws and Rules for Sewage Treatment and Disposal Systems" and "Regulations Governing Sewage treatment and Disposal in Wake County, Amended 11.19.21" and/or Local Regulations for preliminary planning purposes.

Soil characteristics and landscape suitability relative to on-site wastewater systems were evaluated through hand auger borings and ground-truthing. Auger boring locations and suitable soil lines were flagged in the field with flagging tape. Field data was used to generate the attached Soil/Site Evaluation map. Representative soil borings are attached and were described in accordance with criteria found in the USDA-NRCS "Field Book for Describing and Sampling Soils."

### Results

The project site is located in the Lower Piedmont and Upper Coastal Plain region. The predominant upland soil series found on-site were Blaney & Pacolet series. The Blaney series contains a sandy clay subsurface and loamy sand surface. The Pacolet series has a clay subsurface over a loamy sand surface. These series contain 24-36 inches or more of suitable soil and are potentially suitable for conventional, modified conventional, ultra-shallow or low pressure pipe subsurface septic systems. There is a small disturbed area on 316 Georgie that is unsuitable for septic systems. There is also unsuitable topography on both lots. These areas are not considered suitable for conventional, modified conventional, ultra-shallow or low pressure pipe subsurface septic systems. The soil areas with less than 24 inches of suitable soil are potentially suitable for alternative systems such as pretreatment systems, subsurface drip irrigation, or surface drip or spray irrigation systems. Soil Services can provide additional information about these systems upon request.

The potentially suitable soil areas are depicted on the Soil/Site Evaluation Map in the hatched areas. The "UN" areas have less than 24 inches of suitable soil depth or contain other unsuitable features

such as unsuitable landscape position, fill material, disturbed soil, streams, wetlands, existing structures, etc. These areas are typically considered unsuitable for conventional system types.

The suitable soil area should be taken into account during the planning process. Sufficient suitable soil should be designated for septic system and repair for each lot. Site elements such as house, garage, pool, driveway, walkway, etc. should be located outside of the suitable soil areas designated for the septic system and repair. Additional information about planning can be found in the Recommendations section of this report.

Final site planning and septic system permits are reviewed and obtained from Harnett County Environmental Services. Each lot shall be reviewed and permitted through the Local County Health Department. Suitable soil areas should be protected. Any disturbance to these areas could render them unsuitable. Disturbance of the areas may include but is not limited to grading, filling, paving, tree/stump removal, construction, trafficking, etc. Soil services reserves the right alter the results of this report based on further investigation.

### **Recommendations**

The efficacy of the usable soil area can depend on the size and configuration of the area as well as the location and configuration of the septic drainlines. The septic drainlines must run on contour throughout the length of the entire line (i.e. the septic line must stay on the same elevation throughout the length of the line). Therefore, topographic irregularities can greatly increase the minimum space requirements for any given system. Septic system size also vary based on the intended use of the system as well as the loading rate (LTAR) of the soil the system is cited within. Daily design flow rates are assigned to the intended use of the site and a cumulative design flow rate is used to size the system. The design flow for a single family residence is based on the number of bedrooms in the residence. Therefore a 4-bedroom residence would have a larger system than a 3-bedroom residence assuming all else is the same. The loading rate of a soil or long-term acceptance rate (LTAR) is assigned based upon soil characteristics of the site (texture, structure, mineralogy, porosity, etc.). A lower LTAR means the soil permeability is low which results in a larger system relative to a higher LTAR (more permeable soil). The septic system and repair must also meet all required setbacks from existing and proposed site element (see 15A NCAC 18E .0601 attached) which further increase the minimum space required for the septic system and repair.

A field layout of the system maybe completed to determine whether a suitable soil area(s) can potentially support the proposed intended use of the site. The intended use as well as the factors mentioned previously can be used to estimate the space required for septic system and repair A four-bedroom, single-family residence with a design flow of 480 gallons per day (120 gallons per bedroom per day) requires 12,000 to 16,000 square feet of useable soil area or 1,350 to 1,600 linear feet of conventional drain line (system and repair) or 1,280 to 2,000 linear feet of low pressure pipe (LPP) drain line (system and repair). Estimates reference the "Laws and Rules for Sewage Treatment and Disposal Systems" and are based on an LTAR range of 0.25 to 0.30 gallons per day per square foot (gpd/ft<sup>2</sup>) for conventional and modified conventional drain line and 0.10 to 0.15 gpd/ft<sup>2</sup> for LPP drain line. Actual drain field may require more area and/or linear footage of drain line depending upon site conditions. The final LTAR is assigned to a site/lot by the Harnett County Environmental Services after their detailed site evaluation.

### **Conclusion**

This report discusses potentially suitable/useable soil areas found on this site and does not guarantee or imply any approval or permit will be given by local, County and/or State governing

agencies. Soil Services specializes in the evaluation of soils for the purpose of wastewater treatment/disposal systems as well as the layout and design of such systems. Soil Services is contracted for its professional opinion and cannot ensure the client will obtain any or all of the permit or approvals needed from the local, County and/or State governing agencies.

Anyone making financial investments/commitments should be fully aware of all permit requirements for this tract prior to final dedication. Each lot requires a septic permit prior to obtaining a building permit. The County Health Department will conduct a detailed site evaluation for each lot to determine the location of site elements as well as septic system and repair type and location. After the detailed site evaluation is complete, the County Health Department will make a final determination. Soil Services can assist you in the field layout of the wastewater treatment system, subdivision recordation, and/or the individual permitting process if requested.

Soil Services, PLLC would be pleased to assist you in any future site analysis needs. Please contact Sarah I. Menser at (919) 745-1928 with any requests, questions or concerns.

Sincerely,  
**Soil Services, PLLC**



Sarah I. Menser, LSS  
NC License No. 1304

10/4/24

Attachments:

- Site Analysis Summary
- Soil Profile Description(s)
- Detailed Soil/Site Evaluation Map

## Soil/Site Evaluation Summary

### 15A NCAC 18E

**.0502** Slope:

- ☒ <65% (S) ☐ >65% (U) ☐ Wetlands (U)  
☐ Gullies/Ravines (U) ☐ Depression (U)

**.0503** (1) Texture Group:

- Group I (S): ☐ Sand ☐ Loamy Sand  
Group II (S): ☐ Sandy Loam ☐ Loam  
Group III (S): ☐ Silt ☐ Silt Loam  
☒ Sandy Clay Loam ☐ Clay Loam  
☐ Silty Clay Loam  
Group IV (S): ☒ Sandy Clay ☐ Silty Clay  
☒ Clay

(2) Structure:

- ☐ Crumb/Granular (S) ☒ Block Like < 1" (S)  
☐ Block Like > 1" (U) ☐ Prismatic < 2" (S)  
☐ Prismatic > 2" (U) ☐ Platy (U)  
☐ Single Grain (S) ☐ Massive (U)

(3) Clay Mineralogy:

- ☒ Slightly Expansive(S) ☐ Expansive (U)

**.0504** Depth to Soil Wetness (Chroma 2 Indicator):

- ☒ >12" (Group 2-4) & >18" (Group 1) (S)  
☐ <12" (Group 2-4) & <18" (Group 1) (U)

**.0505** Soil Depth:

- ☒ >18" (S) ☐ <18" (U)

**.0506** Saprolite:

- ☒ Not Present (S) ☒ Present & Minimum Separation Met (S)  
☐ Present & Minimum Separation Not Met (U)

**.0507** Restrictive Horizon (3" thick or more):

- ☒ >18" (S) ☐ <18" (U)

**.0508** Available Space (only if layout has been done):

- System and Repair Available? ☐ Yes ☐ No ☒ NA

**.0509** Overall Site Suitability:

- ☒ S ☐ U

## **.0601 Location of Sanitary Sewage Systems**

(a) Every wastewater system shall be located the minimum setbacks from the site features specified in Table IX. The setback shall be measured on the ground surface, unless otherwise specified in this Rule, from the nearest wastewater system component sidewall or as otherwise specified in a system specific rule or PIA Approval.

Any transient or non-transient non-community water supply well, community well, shared water supply well, well that complies with 15A NCAC 18A .1700, or water supply spring	100
A private drinking water well or upslope spring serving a single family dwelling unit	50
Any other well or source not listed in this table, excluding monitoring wells	50
Surface waters classified WS-I, from ordinary high-water mark	100
Waters classified SA, from mean high-water mark	100
Any Class I or Class II reservoir, from normal water level	100
Lake or pond, from normal water level	50
Any other stream, non-water supply spring, or other surface waters, from the ordinary high-water mark	50
Tidal influenced waters, such as marshes and coastal waters, from mean high-water mark	50
Permanent stormwater retention basin, from normal water level	50
Any water line, unless the requirements of Paragraph (i) have been met	10
Closed loop geothermal wells	15
Building foundation and deck supports	5
Patio, porch, stoop, lighting fixtures, or signage, including supporting structures such as posts or pilings	1
Any basement, cellar, or in-ground swimming pool	15
Buried storage tank or basin, except stormwater	10
Above ground swimming pool and appurtenances that require a building permit	5
Top of slope of embankment or cuts of two feet or more vertical height with a slope greater than 50 percent	15
Top of slope of embankment or cuts of two feet or more vertical height with a slope greater than 33 percent and less than or equal to 50 percent	15
If the site has suitable soil depth that extends for a minimum horizontal distance of 15 feet from the edge of the dispersal field, no minimum setback is required.	
Top of slope of embankment or cuts of two feet or more vertical height with a slope less than 33 percent	0
Groundwater lowering system, as measured on the ground surface from the edge of the feature	25
Downslope interceptor drains and surface water diversions with a vertical cut of more than two feet, as measured on the ground surface from the edge of the feature	15
Upslope and sideslope interceptor drains and surface water diversions with a vertical cut of more than two feet, as measured on the ground surface from the edge of the feature	10
A stormwater collection system as defined in 15A NCAC 02H .1002(48), excluding gutter drains that connect to a stormwater collection system, with a vertical cut of more than two feet as measured from the center of the collection system	10
Bio-retention area, injection well, infiltration system, or dry pond	25
Any other dispersal field, except designated dispersal field repair area for project site	20
Any property line	10
Burial plot or graveyard boundary	10
Above ground storage tank from dripline or foundation pad, whichever is more limiting	5
Utility transmission and distribution line poles and towers, including guy wires, unless a greater setback is required by the utility company	5
Utility transformer, ground-surface mounted	5
Underground utilities	5

## **Blaney**

### Soil Profile Description

<b>HORIZON</b>	<b>DEPTH (in)</b>	<b>MATRIX COLOR (MUNSELL)</b>	<b>MOTTLE COLOR (MUNSELL)</b>	<b>TEXTURE</b>	<b>STRUCTURE</b>
A	0-3	10YR 3/1	-	SL	Wk Gr
E1	3-9	2.5Y 4/2	-	S	Wk Gr
E1	9-25	10YR 6/3	-	S	S Gr
Bt1	25-38	7.5YR 6/4	10YR 7/4	SCL	Mo SBK
Bt2	38-50	7.5YR 6/4	7.5YR 7/6	SC	Mo SBK

**Notes:**

- 1) Soil similar to the Blaney Soil Series.
- 2) Soil described from auger boring.

## **Pacolet**

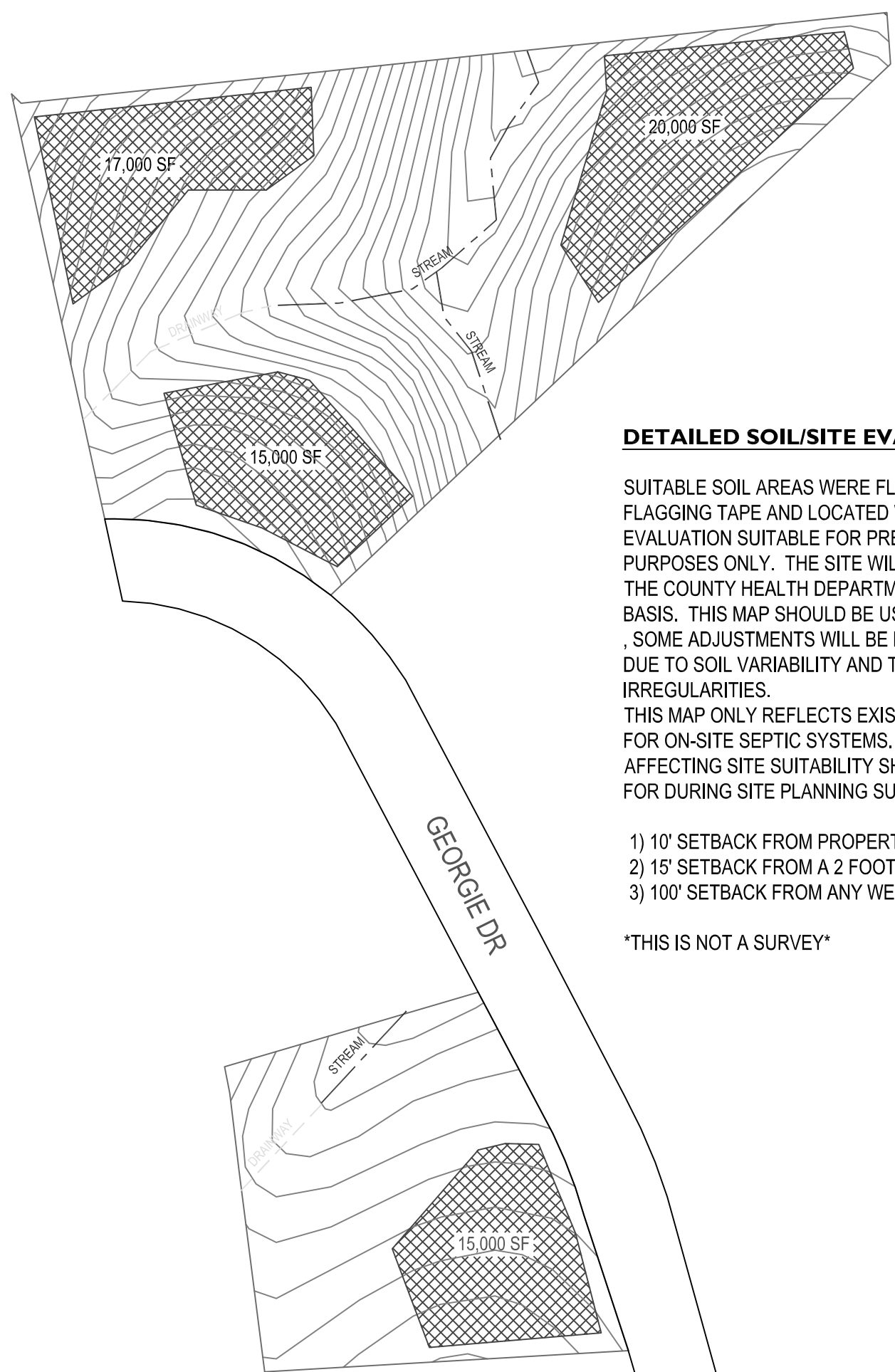
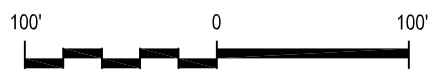
### Soil Profile Description

<b>HORIZON</b>	<b>DEPTH (in)</b>	<b>MATRIX COLOR (MUNSELL)</b>	<b>MOTTLE COLOR (MUNSELL)</b>	<b>TEXTURE</b>	<b>STRUCTURE</b>
Ap	0-6	10 YR 4/4	-	SL	WK M GR
Bt1	6-13	2.5 YR 4/8	-	C	MO M SBK
Bt2	26-13	2.5 YR 4/8	-	C	MO M SBK
BC	35+	5 YR 4/4	7.5 YR 6/8	CL	WK M SBK

**Notes:**

- 1) Soil similar to the Pacolet Soil Series.
- 2) Soil described from auger boring.

GRAPHIC SCALE  
1" = 100'



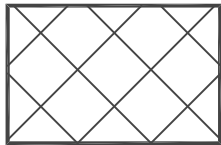
**DETAILED SOIL/SITE EVALUATION**

SUITABLE SOIL AREAS WERE FLAGGED WITH ORANGE FLAGGING TAPE AND LOCATED WITH A GPS RECEIVER. EVALUATION SUITABLE FOR PRELIMINARY PLANNING PURPOSES ONLY. THE SITE WILL REQUIRE APPROVAL BY THE COUNTY HEALTH DEPARTMENT ON A CASE BY CASE BASIS. THIS MAP SHOULD BE USED AS A GENERAL GUIDE , SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND TOPOGRAPHIC IRREGULARITIES. THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC SYSTEMS. OTHER CONSIDERATIONS AFFECTING SITE SUITABILITY SHOULD BE ACCOUNTED FOR DURING SITE PLANNING SUCH AS:

- 1) 10' SETBACK FROM PROPERTY BOUNDARY
- 2) 15' SETBACK FROM A 2 FOOT CUT BANK
- 3) 100' SETBACK FROM ANY WELL

\*THIS IS NOT A SURVEY\*

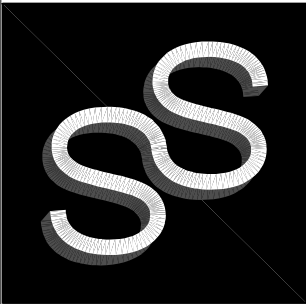
**LEGEND**



Areas contain soils similar to Blaney & Pacolet soil series with 24 to 30 inches or more of useable material (clay or sandy clay texture) and have the potential for conventional, modified conventional, ultra-shallow or low pressure pipe septic systems .

**UN**

Unsuitable areas due to soil wetness condition, soil depth, clay mineralogy, and/or landscape position.



**SOIL SERVICES, PLLC**

PO BOX 91115, RALEIGH, NC 27675  
OFFICE: (919) 745-1928 FAX: (919) 375-3969  
WWW.SOILSERVICES.US

Sheet Title:

**DETAILED SOIL/SITE EVALAUTION**

Project:

**215 & 316 GEORGIE DR**

Location:

**HARNETT CO., NC**

Client:

**EKINGDOM ESTATES LLC**

Project No.: ROCK QUARRY

Project Manager:  
SM

Drawn:  
SM

Scale:  
1":60'

Field Work:  
NA

Sheet No.:

**1 of 1**