

RECONNAISSANCE SOIL & SITE EVALUATION

Schley Road
PIN: 9887738604
Orange County, NC
Three Oaks Job # 18-764

Prepared For:

Mark O'Neal
Pickett-Sprouse
3805-A University Drive
Durham, NC 27717

Prepared By:



324 Blackwell Street, Suite 1200
Durham, NC 27701
(919) 732-1300

July 16, 2018



John C. Roberts



INTRODUCTION & SITE DESCRIPTION

A Reconnaissance Soil & Site Evaluation was performed on a 30-acre tract located on the west side of Schley Road in Orange County, NC (PIN: 9887738604). Three Oaks Engineering (Three Oaks) was obtained to determine if suitable soils exist within the tract to support subsurface wastewater systems for at least three single-family residences. The property was evaluated in accordance with Orange County and North Carolina statutes for waste disposal (“Orange County Regulations for Wastewater Treatment and Disposal Systems”, effective February 26, 2015 and “Laws and Rules for Sewage Treatment and Disposal Systems”, amended July 1, 2016).

INVESTIGATION METHODOLOGY

The field survey was conducted on July 2, 2018, by John C. Roberts, LSS and Evan T. Morgan, LSS-IT. Soil borings were advanced with a hand-auger and soil color was determined using a Munsell Soil Color Chart. Observations of the landscape as well as soil properties (depth, texture, structure, soil wetness, restrictive horizons, etc.) were recorded.

FINDINGS

Thirty-eight (38) soil borings were advanced and their locations noted on Figure 1. Detailed soil boring descriptions are attached.

Soil borings rated as Provisionally Suitable for Modified/Alternative Systems typically exhibited a friable or firm silty loam or silty clay loam textured surface with weak, medium, subangular blocky structure. Upper subsurface horizons exhibited a friable or firm clay loam, silty clay loam or clay texture with weak, medium, subangular blocky structure that ranged in depth from 24 to 30 inches. Lower subsurface horizons exhibited unsuitable soil characteristics such as soil wetness and/or >50% parent material.

Soil borings rated as Provisionally Suitable for Subsurface Drip Systems typically exhibited a friable or firm silt loam, silty clay loam, clay loam, or clay texture with weak, medium, subangular blocky. Usable soil depths ranged from 13 to 23 inches below the existing surface. Lower subsurface horizons exhibited unsuitable soil characteristics such as soil wetness and/or >50% parent material.

Soil borings rated as Unsuitable exhibited soil wetness, >50% parent material, and/or rock occurring within 12 inches of the soil surface. Unsuitable landscapes were also identified within the tract and include farm terraces, drainageways, a stream and a pond. Setbacks area also shown on Figure 1 that include a 50-ft setback from the pond and neighboring wells and 100-ft from the stream.

DISCUSSION

Two areas rated as Provisionally Suitable for Modified/Alternative Systems were identified along the northern property line (Figure 1). Based on observed soil characteristics, a long-term acceptance rate (LTAR) of 0.25 GPD/sq-ft is anticipated for

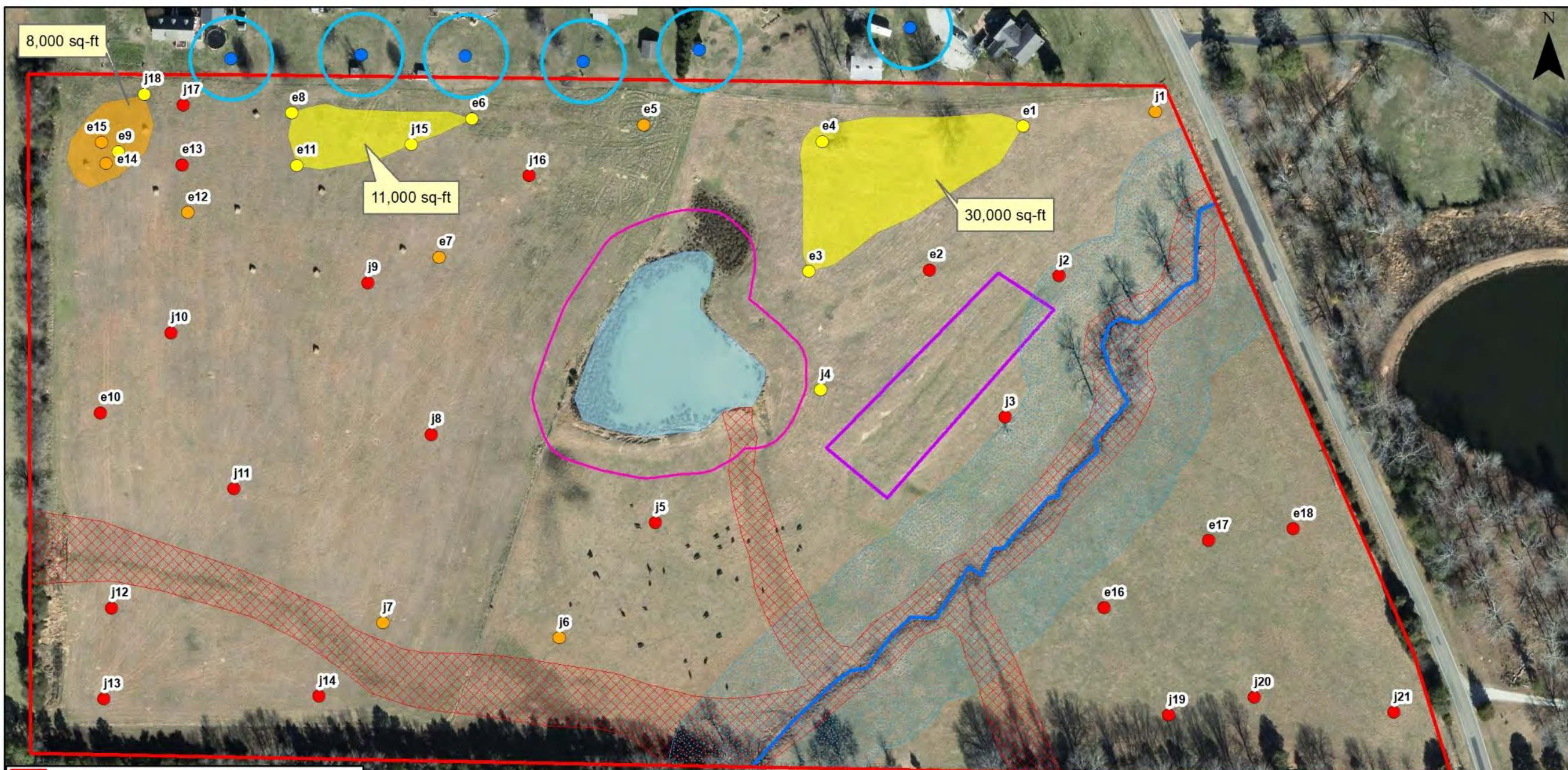
these areas and would require approximately 12,000 to 14,000 sq-ft of usable soil to support the initial system and repair area for a four-bedroom home. The usable soil area in the east portion of the tract encompasses approximately 30,000 sq-ft. Based on the soil and site characteristics, this area could potentially support the septic systems (initial and repair) for 2 four-bedroom houses.

The second area, located in the west portion of the tract, encompasses approximately 11,000 sq-ft. Based on the soil and site characteristics, this area will likely support an initial system for a four-bedroom house. The area rated as Provisionally Suitable for Subsurface Drip Systems to the west of the second area may be needed as repair area.

CONCLUSIONS

The findings presented herein represent Three Oaks' professional opinion based on our Reconnaissance Soil and Site Evaluation and knowledge of the current laws and rules governing on-site wastewater systems in Orange County and North Carolina. Two areas soil rated as Provisionally Suitable for Modified/Alternative Systems were identified in within the lot that could potentially support the septic system requirements for 3 four-bedroom houses. Septic system layouts will be needed to determine if the extent and configuration of any proposed septic system in each area. It is recommended this work be completed before subdividing.

Soils naturally change across a landscape and contain many inclusions. As such, attempts to quantify them are not always precise and exact. Due to this inherent variability of soils and the subjectivity when determining limiting factors, there is no guarantee that a regulating authority will agree with the findings of this report. An Improvement Permit for a subsurface septic system would be issued by Orange County Environmental Health (OCEH). Any concurrence with the findings of this report would be made by OCEH at the time an Improvement Permit is issued.



Parcel Boundary

Soil Borings

- Provisionally Suitable for Modified/Alternative Systems
- Provisionally Suitable for Subsurface Drip Systems
- Unsuitable
- Well

Provisionally Suitable for Modified/Alternative Systems

Provisionally Suitable for Subsurface Drip Systems

- Stream
- 100-ft Stream Buffer
- Pond
- 50-ft Pond Setback
- 50-ft Well Setback
- Drainageway
- Terraces



**Reconnaissance
Soil & Site
Evaluation**

Schley Road
PIN: 9887738604

Orange County, North Carolina

Date: July 2018

Scale: 0 60 120 Feet

Job No.: 18-765

Drawn By: ETM Checked By: JCR

Figure
1

Soil Evaluation Form

Three Oaks Engineering
324 Blackwell Street, Suite 1200
Durham, NC 27701
919.732.1300

Sheet 1 of 4
 Job: 18-765
 County: Orange
 Date: 7-2-18

Soil Borings

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Landscape Position	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS
Slope (%)	12	12	12	2	2	5	2	4	4	6
Horizon 1 Depth	14	12	12	12	17	10	6	6	6	6
Texture	C	SICL	SICL	SICL	PM	SICL	SICL	SICL	SICL	SICL
Consistence	F1	F1	F1	FR	AR	FR	FR	FR	FR	FR
Structure	SBL	SBL	SBL	SBL		SBL	SBL	SBL	SBL	SBL
Clay Mineralogy	SE	SE	SE	SE		SE	SE	SE	SE	SE
Horizon 2 Depth				14		20	23	14	14	14
Texture				SICL		SICL	SICL	SICL	SICL	SICL
Consistence				FR		F1	FR	FR	FR	F1
Structure				SBL		SBL	SBL	SBL	SBL	SBL
Clay Mineralogy				SE		SE	SE	SE	SE	SE
Horizon 3 Depth				30				14		
Texture				SICL				C		
Consistence				FR				VF1		
Structure				SBL				ABL		
Clay Mineralogy				SE				E		
Horizon 4 Depth				AR						
Texture				@						
Consistence				30						
Structure										
Clay Mineralogy										
Horizon 5 Depth										
Texture										
Consistence										
Structure										
Clay Mineralogy										
Soil Wetness								<12		<12
Restrictive Horizon										
Saprolite										
Other	14-PM	PM	PM	AR@30	PM/AR	PM/AR	PM-23		PM-12	<12/PM
CLASSIFICATION	PS-Drip	U	U	PS	U	PS-Drip	PS-Drip	U	U	U
LTAR (gpd/ft ²)										

Comments:

PM = >50% Parent Material
 AR = Auger Refusal

Evaluated by: JCR

Soil Evaluation Form

Three Oaks Engineering
324 Blackwell Street, Suite 1200
Durham, NC 27701
919.732.1300

Sheet 2 of 4
 Job: 18-765
 County: Orange
 Date: 7-2-18

Soil Borings

	J11	J12	J13	J14	J15	J16	J17	J18	J19	J20	J21
Landscape Position	L	L	L	L	L	L	L	L	L	L	L
Slope (%)	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	6-8	8-10	6-8
Horizon 1 Depth	12	12	12	12	28	12	12	24	12	12	12
Texture	SICL	SICL	SICL	SICL	SICL	SICL	SICL	SICL	SICL	SICL	SICL
Consistence	FR	FR	FR	FR	FR	FR	FR	FI	FI	FI	FI
Structure	SBK	SBK	SBK	SBK	SBK	SBK	SBK	SBK	SBK	SBK	SBK
Clay Mineralogy	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Horizon 2 Depth							AR				AR
Texture											
Consistence											
Structure											
Clay Mineralogy											
Horizon 3 Depth											
Texture											
Consistence											
Structure											
Clay Mineralogy											
Horizon 4 Depth											
Texture											
Consistence											
Structure											
Clay Mineralogy											
Horizon 5 Depth											
Texture											
Consistence											
Structure											
Clay Mineralogy											
Soil Wetness		<12	<12	<12	28	<12					<12
Restrictive Horizon	PM-12		PM-12	PM-12	PM-28	PM-12		PM-24	PM-12		
Saprolite											
Other							AR-12				
CLASSIFICATION	U	U	U	U	PS	U	U	PS	U	U	U
LTAR (gpd/ft ²)											

Comments: PM >50% Parent Material
 AR = Auger Refusal

Evaluated by: JCR

Soil Evaluation Form

Three Oaks Engineering
324 Blackwell Street, Suite 1200
Durham, NC 27701
919.732.1300

Sheet 3 of 4
 Job: 18-765
 County: Orange
 Date: 7-2-18

Soil Borings

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10
Landscape Position	L	L	L	L	L	L	L	L	L	S
Slope (%)	0-2	0-2	2-4	0-2	2-4	2-5	2-4	2-4	2-4	4-6
Horizon 1 Depth	26	2	6	27	14	10	6	4	6	6
Texture	C	SCL	SL	C	SCL	SL	SL	SL	SCL	SCL
Consistence	FI	FI	FR	FI	FR	FR	FR	FR	FR	FR
Structure	SBK	SBK	SBK	SBH	SBK	SBH	SBK	SBH	SBH	SBH
Clay Mineralogy	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Horizon 2 Depth		AR	27	30	20	26	16	25	22	8
Texture			SCL	SCL	C	SCL	SCL	SCL	C	C
Consistence			FI	FR	FI	FR	FR	FR	FI	VFI
Structure			SBK	Om	SBK	SBH	SBK	SBK	SBH	Om
Clay Mineralogy			SE	SE	SE	SE	SE	SE	SE	E
Horizon 3 Depth			30		22	26	19	29	28	
Texture			C		CL	C	SCL	C	CL	
Consistence			FI		FR	FI	FI	FI	FI	
Structure			Om		Om	Om	Om	SBH	SBK	
Clay Mineralogy			SE		SE	SE	SE	SE	S,P	
Horizon 4 Depth										
Texture										
Consistence										
Structure										
Clay Mineralogy										
Horizon 5 Depth										
Texture										
Consistence										
Structure										
Clay Mineralogy										
Soil Wetness										
Restrictive Horizon	pm-26		pm-27	pm-27	pm-20	pm-26	pm-16	pm-29	pm-28	Ext-6
Saprolite										
Other		AR-S								
CLASSIFICATION	PS	U	PS	PS	PS-drip	PS	PS-drip	PS	PS	U
LTAR (gpd/ft ²)										

Comments: pm >50% Parent Material
 AR = Auger Refusal

Evaluated by: ETM

Soil Evaluation Form

Three Oaks Engineering
324 Blackwell Street, Suite 1200
Durham, NC 27701
919.732.1300

Sheet 4 of 4
 Job: 18-705
 County: Orange
 Date: 7-2-18

Soil Borings

	E11	E12	E13	E14	E15	E16	E17	E18		
Landscape Position	L	L	L	L	L	L	L	L		
Slope (%)	2-4	2-4	2-4	2-4	2-4	4-6	6-8	4-6		
Horizon 1 Depth	4	8	4	8	6	4	6	8		
Texture	S:L	S:CL	SCL	S:CL	S:CL	S:L	S:L	S:CL		
Consistence	FR	FR	FR	FR	FR	FR	FR	FR		
Structure	SBM	SBM	SBM	SBK	SBK	SBK	SBK	SBK		
Clay Mineralogy	SE	SE	SE	SE	SE	SE	SE	SE		
Horizon 2 Depth	16	14	8	18	17	17	10	12		
Texture	CL	C	C	C	C	S:L	S:L	SCL		
Consistence	FR	FI	UFI	FI	FI	UFR	UFR	FR		
Structure	SBM	SBK	OM	SBK	SBK	OM	OM	OM		
Clay Mineralogy	SE	S,P	E	S,P	SE	SE	SE	SE		
Horizon 3 Depth	26			AR	20'					
Texture	C				S:CL					
Consistence	FI				FR					
Structure	SBK				OM					
Clay Mineralogy	SE				SE					
Horizon 4 Depth										
Texture										
Consistence										
Structure										
Clay Mineralogy										
Horizon 5 Depth										
Texture										
Consistence										
Structure										
Clay Mineralogy										
Soil Wetness						87				
Restrictive Horizon	PM-26	PM-14	Exp-4		PM-17	PM-28	PM-6	PM-8		
Saprolite										
Other				AR-18						
CLASSIFICATION	PS	PS-chip	LI	PS-chip	PS-chip	LI	LI	LI		
LTAR (gpd/ft ³)										

Comments: PM 75% Parent Material
 AR = Auger Refusal

Evaluated by: ETM