Engineers and Soil Scientists

Agri-Waste Technology, Inc.
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Soils & Site Evaluation Report – On-site Wastewater Systems

8430 Charlie Stovall Road
Oxford, NC 27565

Prepared For: Aric Swanger, Client

Prepared By: Christopher McGee, LSS
Senior Soil Scientist

Trent Bostic, SST
Associate Soil Scientist

Report date: January 11, 2021

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LICENSED SOIL SCIENTIST
CHRISTOPHER E. MCGEE
1324
STATE OF NORTH CAROLINA

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DATE: January 11, 2021

Agri-Waste Technology, Inc. (AWT) was contracted by Aric Swanger to perform a soils & site evaluation for property located at 8430 Charlie Stovall Road, Oxford, NC. A single-family residence is proposed for this property. Municipal wastewater and drinking water services are not available in the area; therefore, an on-site wastewater (septic system) and individual well will be required. The following report and attachments summarize the findings of the evaluation performed by Trent Bostic on January 7, 2021.

Only part of the property was evaluated to determine the feasibility of a single-family residence with an on-site (septic) system. The property is mostly wooded. There is evidence of both natural and anthropogenic topographic features. Drainage ditches are scattered across the property and mostly align with the contour map provided.

Findings

Soils on the property are mapped Georgeville series in the Soil Survey issued by the Natural Resources Conservation Service. The soils observed on the property are similar to the typical characteristics of the Georgeville soil series as well as other competing variants. Hand auger borings were advanced during the evaluation, and from these collective borings, typical profile descriptions were developed. The typical profile descriptions can be found in Attachment 1 of this report. Most of the evaluated area contains provisionally suitable soils greater than 27 inches. The provisionally suitable areas are identified on the evaluation map in Attachment 2.

All usable areas are estimated based on GPS/GIS mapping. Any unusable or unsuitable areas in the vicinity of the evaluated area are also shown on the evaluation map. The drainage area is not acceptable for septic systems.

Soil boring locations/depths are noted on the attached evaluation map. An estimate of required space for different sizes of septic systems is included in Attachment 3. Typically, a 6-bedroom conventional septic system requires about 9,000-12,000ft^2 (9,000-12,000ft^2 is also needed for the required repair/reserve area).

Conclusions

Based on the site findings, there appears to be enough provisionally suitable area for a 4, 5, or 6-bedroom conventional septic system. A pump may be required if the system is installed uphill of the proposed house location. The square footage of the suitable area is noted on the soil evaluation map. These areas do not include future setbacks from other features that can only be factored in during detailed evaluation work. It is important to remember to consider the space occupied by the proposed home, driveways/roads, wells (if necessary), and other factors. A field layout may be required to obtain a permit to install the system, especially if large footprint home, or greater than six bedrooms are desired.

Note: This report does not replace a septic permit. All permits must be issued by Granville County Health Department.

We appreciate the opportunity to assist you. Please contact us with any questions, concerns, or comments upon review of this package.

Sincerely,

Christopher McGee, LSS

Summary of Attachments

Attachment 1: Typical Profile Descriptions
Attachment 2: AWT Evaluation Map
Attachment 3: Example Loading Rate & Area Calculations

ATTACHMENT 1: Typical Profile Descriptions

Property PIN#: 096900407527
County: Granville

SOIL/SITE EVALUATION
FOR
ON-SITE WASTEWATER SYSTEM

Applicant: Swanger
Address: 4952 Stonewood Pines Dr
Knightdale, NC 27545

Owner: X Agent: ___ Phone: 919-247-0209
Dates Evaluated: 01/07/2021
Proposed Facility: Single Family Residences
Property Size: 13 ac

Location Site: 8430 Charlie Stovall Road
Water Supply: On Site Well X Comm. Well___ Public___ Other___ Evaluation Method: Auger Boring: X Pit___

PROFILE 1: Typical Profile Description (Georgeville Silt Loam)

Horizon/ Depth (IN)	Matrix	Mottles	Mottle Abundance / Contrast	(a)(1) Texture	(a)(2) Structure	(a)(3) Minerology	Consistence (Wet)	Consistence (Moist)
A 0-4"	**10YR 4/4**	-	-	**SiL**	**GR**	**NEXP**	**NS, NP**	**Fr**
Bt1 4-28"	**5YR 5/6**	-	-	**C**	**2SBK**	**NEXP**	**SS, SP**	**Fr**
Bt2 28-36+"	**2.5YR 4/6**	**F2D 5YR 4/8**	**20%**	**C**	**2SBK**	**NEXP**	**SS, SP**	**Fr**

.1940 Landscape Pos/Slope %	PS	Profile LTAR	0.275 GPD/Ft^2
.1942 Wetness Condition	PS	System Type	Conventional/Shallow Conventional
.1943/.1956 Saprolite	PS		
.1944 Restrictive Horizon	PS		
.1948 Profile Classification	PS		

Comments: Some saprolite at depths ranging 27-26 inches

EVALUATED BY: Trent Bostic
COMMENTS:

LEGEND OF ABBREVIATIONS FOR SOIL/SITE EVALUATION FORM

LANDSCAPE POSITION
CC – Concave Slope
CV – Convex Slope
DS – Debris Slump
D – Depression
DW – Drainage Way
FP – Flood Plain
FS – Foot Slope
H – Head Slope
I – Interfluve
L – Linear Slope
N – Nose Slope
P – Pocosin
R – Ridge
S – Shoulder
T – Terrace

STRUCTURE
G – Single Grain
M – Massive
CR – Crumb
GR – Granular
SBK – Subangular Blocky
ABK – Angular Blocky
PL – Platy
PR – Prismatic
(w in front denotes "weak")

MOTTLES
1 – Few
2 – Common
3 – Many

f – Fine
m – Medium
c – Coarse

F – Faint
D – Distinct
P – Prominent

MOIST CONSISTENCE
VFr – Very Friable
Fr – Friable
Fi – Firm
VFi – Very Firm
EFi – Extremely Firm

WET CONSISTENCE
NS – Non Sticky
SS – Slightly Sticky
S – Sticky
VS – Very Sticky

NP – Non Plastic
SP – Slightly Plastic
P – Plastic
VP – Very Plastic

MINERALOLOGY
NEXP – Non Expansive
SEXP – Slightly Expansive
EXP – Expansive

TEXTURE GROUP	TEXTURE CLASS	.1955 LTAR (gal/day/sq.ft.)
I	S – Sand LS – Loamy Sand	1.2 – 0.8
II	SL – Sandy Loam L – Loam	0.8 – 0.6
III	SCL – Sandy Clay Loam CL – Clay Loam SiL – Silt Loam Si – Silt SiCL – Silty Clay Loam	0.6 – 0.3
IV	SC – Sandy Clay SiC – Silty Clay C – Clay	0.4 – 0.1

ATTACHMENT 2: AWT Evaluation Map

AWT
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Preliminary
Soil Evaluation

Aric Swanger
Granville Co., NC

Map#: 096900407527

N

Suitable Area:

~ 47,055 sq.ft.

Soil Type:

GeB/GeC-Georgeville silt loam

- Parcel
- Parcel Buffer 10'
- 2 ft. Contour
- Soil Type

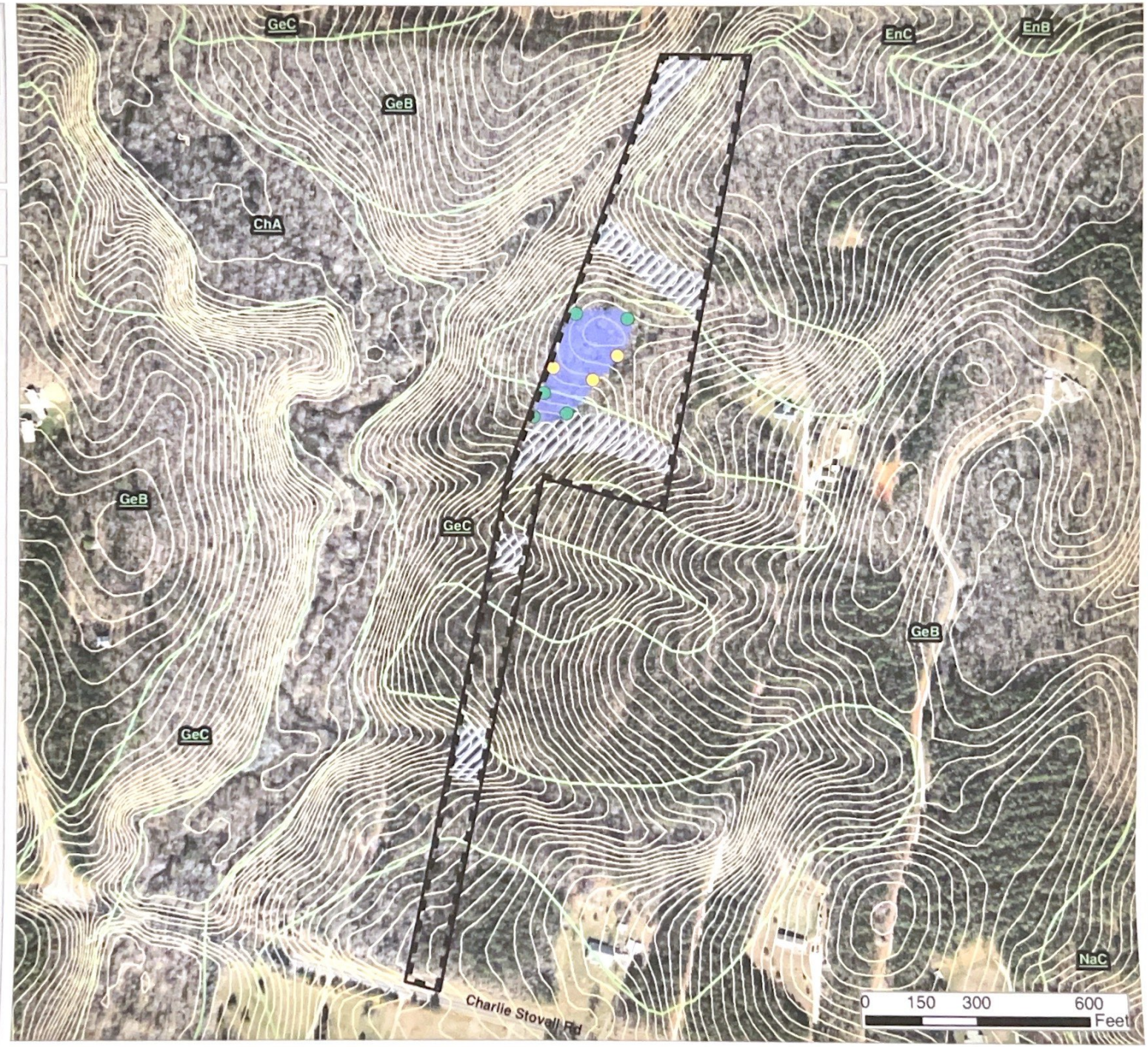
Soil Boring Depth (in.)

- 24-29"
- 30-35"
- 36"

Evaluation

- Suitable for Septic
- Unsuitable Topo

Drawn By: Jake Davidson
Reviewed By:Trent Bostic
Date: 1/8/2021



ATTACHMENT 3: **Example Loading Rate & Area Calculations**

Conventional Septic System Area Computation

Created by: JV
Created on: 6/20/2001
Updated on: 1/11/2021

Client Name:	*Swanger*	
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:	*Swanger*	
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.

Client Name:	*Swanger*	
Number Bedrooms:	*6*	
Design Flow (gal/day):	720	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.275*	
Trench Bottom Area (ft^2):	2618.182	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	872.7273	
Minimum Field Area Required (ft^2):	7854.545	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	5890.909	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	19636.36	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	14727.27	(25% reduction from above)
Total Field Area Required (ft^2)$^{(1)}$:	23563.64	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	17672.73	(25% reduction from above)

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