

SOIL SCIENTING VAUGHTAN

Agri-Waste Technology, Inc.
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Soil Suitability for Domestic Sewage Treatment and Disposal Systems Birchwood Trails – Lot 45 Olive Branch Rd. Fuquay Varina, NC 27526 (Harnett County)

January 31, 2024

Soil suitability for domestic sewage treatment and disposal systems was evaluated on April 24, 2023, for the property located at Olive Branch Rd. in Fuquay Varina, NC (Harnett County). Jeff Vaughan, Heath Clapp, and Trent Bostic of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. This evaluation was done to facilitate permitting for a septic system for a 4-bedroom home. This report and attached documents were prepared to this application is to be used to issue an Improvement Permit in accordance with G.S. 130A-335(a2) and (a3). The LSS evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2).

A drawing of the site plan, septic layout, septic system design, and soil pit locations is included in Attachment 1. Profile descriptions for each soil boring are included in Attachment 2.

Site Conditions

The total property area is approximately .48 acres. The house and septic area are wooded. The proposed septic system for the property is a pressure manifold fed, accepted status system for initial and repair. The home is proposed near the front of the lot and the septic system is proposed to the rear of the house.

Soil Suitability for Domestic Sewage Treatment and Disposal Systems

The drawing in Attachment 1 details the property boundaries, soil pit locations, and layout of drain field trenches. Multiple soil pits and borings were advanced within the proposed septic system area on the property. The site has been evaluated and meets the soil and site evaluations criteria set forth in 15A NCAC Subchapter 18E – Wastewater Treatment and Dispersal Systems.. All soil pits/borings were provisionally suitable for a conventional style trench. Soil pits/borings are within the proposed drainfield area.

The layout shown in Attachment 1 indicates there is available space for a four-bedroom accepted system. The initial system can be installed with the use of an accepted status drainfield based on the layout in the field.

The proposed LTAR (Long Term Acceptance Rate) by AWT is 0.4GPD/ft². The soils on this property are group III soils within the distribution and treatment zone as used to define the LTAR. With an LTAR of 0.4GPD/ft², 600 linear feet of trench is necessary to support a 4-bedroom home for the initial and repair system with the use of an accepted trench product. The maximum slope corrected trench depth is 22 inches. The attached drawings substantiate that the necessary linear footage of trench can be installed on the property for the initial and repair system.

Any logging, disturbances, or grading done in the usable area or within the proposed setbacks will change the potential of using the area designated for a drainfield. Prior to moving forward with the development on the property, the Harnett County Health Department should be contacted to complete the necessary Construction Oversight and to issue an OP (Operations Permit) for the property once the septic system has been installed.

Conclusions

An IP (Improvement Permit) and CA (Construction Authorization) for this property can be issued with the site plan that is in Attachment 1. A CA permit will be required to secure a building permit for the property. The county issues an Operation Permit after the system has been installed to meet the specifications of the Authorization to Construct. Additional septic layouts have been or will be performed as needed. It will be critical to not disturb any of the proposed septic area or there is a risk that the IP and CA will be revoked. The LSS/AOWE Evaluation and attached documents were prepared to this application is to be used to issue an Improvement Permit in accordance with G.S. 130A-335(a2) and (a3). The LSS/AOWE evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2) and (a5).

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

Sincerely,

Jeff Vaughan, NC LSS

Jeff M/

Permit #:	



ROY COOPER • Governor

KODY H. KINSLEY • Secretary

MARK BENTON • Deputy Secretary for Health

SUSAN KANSAGRA • Assistant Secretary for Public Health

Division of Public Health

Submittal Includes:	(a2) Improvement Permit	(a2) Construction Authorization	1 Fee \$	
	IMPROVEM	IENT PERMIT FOR G.S. 130A-3	335(a2)	
County:				
Property Location:				
Subdivision (if applicat	ole)	Lot #:	Block:	Section:
LSS Report Provided: `	Yes No No			
If yes, name and licens	se number of LSS:			
New 🗌	Expansion	System Relocation	Change of	Use
Proposed Structure:				
Number of bedrooms:	Number of Occupants:	Other:		
Design Wastewater St	rength: domestic	high strength indu	strial process	
Proposed Design Daily	Flow: GPD	Proposed LTAR (Initial):	Proposed LTAR (Rep	air):
Proposed Wastewater	System Type*:	(Initial) Pump	Required: Yes	No May be required
Proposed Wastewater	System Type*:	(Repair) Pump	Required: Yes	No May be required
*Please include systen	n classification for proposed wastew	vater system types in accordance with 1	5A NCAC 18A .1961 To	able V(a)
Saprolite System (initia	al): 🗌 Yes 🔲 No Saprolit	e System (repair): 🗌 Yes 🔲 No		
Fill System (Initial):	Yes No If yes, specify: Ne	w Existing (when adding more tha	in 6 inches of fill to sys	stem area provide a fill plan)
Fill System (repair):	Yes No If yes, specify: Ne	ew Existing (when adding more that	an 6 inches of fill to sy	stem area provide a fill plan)
Usable Soil Depth (Init	ial): Usable S	Soil Depth (Repair):		
Max. Trench Depth (In	itial)‡: Max. Tr	ench Depth (Repair)‡:	[‡] Measured on the	downhill side of the trench
Artificial Drainage Req	uired: Yes No If yes, pleas	se specify details:		
Type of Water Supply:	Private well Public well	Shared well Municipal Suppl	y Spring	Other:
Drainfield location me	ets requirements of Rule .1945: Ye	s No Drainfield location med	ets requirements of Ru	ule .1950: Yes 🔲 No 🗌
Permit valid for: 🗌 Fi	ve years [site plan submitted pursu	ant to GS 130A-334(13a)] 🔲 No expira	ation [plat submitted	oursuant to GS 130A-334(7a)
Permit conditions:				
Licensed Soil Scientist	1 1/ 1//	<i>J</i>		
Licensed Soil Scientist	MellV /		Date:	
	The LSS evalvation is being submit	tted pursuant to and meets the require	ments of G.S. 130A-3	35(a2).

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES • DIVISION OF PUBLIC HEALTH

See attached site sketch



Permit #:

This Section for Local Health Department Use Only

	Initial submittal received:		by	
		Date	Initials	
G.S. 130A-335(a3) states the follow	ving:			
When an applicant for an Improvement Pedepartment, the common form developed within five business days of receiving the appearant includes all of the required component department to cure the deficiencies in the list is complete within five business days after act within any period set out in this subsect common form for use as the Improvement	by the Department, and a soil evaluation plication, conduct a completeness revents. If the local health department de some seed to complete the Improvement may over the local health of the local health department receives the local health department the failure the failure.	on pursuant to su view of the submin termines that the nt Permit. The app department shall he additional info	bsection (a2) of this section, tal. A determination of com Improvement Permit is inco Vicant may submit additiona make a final determination o rmation from the applicant.	the local health department shall, oleteness means that the Improvemen mplete, the local health department il information to the local health as to whether the Improvement Permit fithe local health department fails to
The review for completeness of th Permit is determined to be:	is Improvement Permit was co	nducted in ac	cordance with G.S. 130	A-335(a3). This Improvement
☐ Incomplete (If box is checked,	information in this section is r	equired.)		
The following items are missing:	5/6		198	N.
Copies of this were sent to the LSS		VZ 2	433	
		Date		
State Authorized Agent:	1 1 2 1 2		Dat	e:
☐ Complete	1 95//8			2 1/2
State Authorized Agent:		-11/-30	Dat	e:
This Improvement Permit is issue attached here. The issuance of the permit holder is responsible for coto revocation if the site plan, plat ownership of the site. This permit Disposal and to the conditions of The Department, the Department any liabilities, duties, and response valuations, submittals, or action	his permit by the Health Depar hecking with appropriate gove , or the intended use changes t is subject to compliance with this permit. I's authorized agents, and the sibilities imposed by statute o	ertment in no verning bodies The Improventhe provision local health derin common le	vay guarantees the issi in meeting their requi ement Permit shall not ns of the Laws and Rul epartments shall be di aw from any claim aris	uance of other permits. The rements. This permit is subject be affected by a change in es for Sewage Treatment and ischarged and released from sing out of or attributed to
Improvement Permit Expiration C	Pate:			

See attached site sketch



Permit #:	
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Re-submittal of Improvement Permit

							\neg
	LHD USE ONLY:	This IP resubmittal rece	eived:	Date	by	Initials	
The following it	tems are being resub	omitted pursuant to G.S. 1	130A-335(a3) f	for issuance o	f the Improv	vement Permit:	
				THE STATE OF THE S			
		THE	SIAI	Eor	A Pr		
is accurate and		hereby a her					n this re-submittal cable federal,
Signature	e of Licensed Soil Scientis	st			Date		
	The section below	w is for Local Health Depart	tment use after s	submittal of it	ems noted as	missing above.	
LHD Follow-u	p Completenes	s Review of Improve	ment Permi				
	completeness of this ermit is determined	s Improvement Permit re I to be:	e-submittal was	conducted i	n accordanc	e with G.S. 130	A-335(a3). This
☐ Incomplete	(If box is checked, i	nformation in this sectio	n is required.)				
The following ite	ems are missing:						
Copies of this w	ere sent to the LSS	and the Applicant on	Date				
State Authorized	d Agent:				D	ate:	
☐ Complete							
State Authorized	d Agent:				D	ate:	



Permit #:	
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CONSTRUCTION AUTHORIZATION FOR G.S. 130A-335(a2)

County:			
AOWE/PE Plans/	/Evaluations Provided	d: Yes 🔲 No 🗀	If yes, name and license number of AOWE/PE:
Facility Type:			
New	☐ Expansion	Repair	System Relocation Change of Use
Basement?	Yes	☐ No	Basement Fixtures?
Type of Wastewa	ater System*		(Initial) (Repair)
*Please include s	system classification	for proposed was	stewater system types in accordance with 15A NCAC 18A .1961 Table V(a)
Design Daily Flov	w:	GPD W	/astewater Strength: ☐ domestic ☐ high strength ☐ industrial process
	4-120 Section 53, En ovide engineering do		Utilizing Low-flow Fixtures and Low-flow Technologies?
Installation Requ	uirements/Condition	<u>15</u>	
Septic Tank Size:	: gallons	Total Trench/E	Bed Length: feet Trench/Bed Spacing: feet on center
Trench/Bed Wid	th: inches	LTAR:	gpd/ft²
Soil Cover:	_ inches Slope C	orrected Maximu	m Trench/Bed Depth [‡] : inches * Measured on the downhill side of the trench
Aggregate Depth	n:inches al	oove pipe	inches below pipeinches total
Pump Tank Size ((if applicable):	gallons	Requires more than 1 pump? Yes No
Pump Requireme	ents: ft. TDH	vs GPM	Grease Trap Size (if applicable): gallons
Distribution Met	thod: Serial	D-Box or Paralle	el
Artificial Drainag	ge Required: Yes	No 🗌 If yes, p	olease specify details:
<u>egal Agreemen</u>	ts (If the answer is "	es" to any type o	of legal agreements, please attach a copy of the agreement.)
Multi-party Agre	eement Required [.19	937(h)]:	□No
Easement, Right-	-of-Way, or Encroach	nment Agreement	t Required [.1938(j)]: Yes No
Declaration of Re	estrictive Covenants:	Yes No	0
Pre-Construction	n Conference Require	ed: Yes 🔲 No	
Conditions:			OLIAM VIDEN
		1	
The construction	n and installation req	uirements of Rule	es .1950, .1952, .1954, .1955, .1956, .1957, .1958, and .1959 are incorporated by reference
into this permit a	and shall be met. Sy	stems shall be ins	stalled in accordance with the attached system layout.
AOWE/PE Print N	Name:		A Expiration Date:
AOWE/PE Signat	ture:	11/1//	Expiration Date: Certification Date: Number
-	//	// • //	irsuant to and meets the requirements of G.S. 130A-335(a2) and (a5).
	·	•	
			VALUATO
			"mmmmum"

See attached site sketch



Permit #:

This Section for Local Health Department Use Only

	Initial submittal received:		у
		Date	Initials
G.S. 130A-335(a5) states the foll	_		
mprovement Permit and Construction A Department, and any necessary signed a singineer or a person certified pursuant to department shall, within five business do the Construction Authorization or Improved the English of the Components needed to conditional information to the local health Authorization. The local health department fails to act within five busing ply for the building permit for the project of the english of the building permit for the project of the englished engineer submitting the evaluation or Improvement Permit and engineer, the local health department shall he partment, the local health department, the local health department and the engineer, the local health department shall health shall heal	uthorization application together, the pe nd sealed plans or evaluations conducted of Article 5 of Chapter 90A of the General lys of receiving the application, conduct of vement Permit and Construction Authorization ization or Improvement Permit and Construction Authorization of department to cure the deficiencies in the ent shall make a final determination as to iness days after the local health department lest out in this subsection, the applicant ect upon the decision of completeness of ment or if the local health department fail ion pursuant to this subsection may required	rmit fee charged by the lot by a person licensed pur Statutes as an Authorized a completeness review of a truction Authorization is it or Improvement Permit as the Construction Authorization are treceives the additional may treat the failure to a fail to act within five busing lest that the local health of Joon written request of the uthorization or Improvem	ation together, submits a Construction Authorization, or an an acal health department, the common form developed by the suant to Chapter 89C of the General Statutes as a licensed of On-Site Wastewater Evaluator, the local health the submittal. A determination of completeness means that required components. If the local health department encomplete, the local health department shall notify the not Construction Authorization. The applicant may submit action or Improvement Permit and Construction and Information from the applicant. If the local health act as a determination of completeness. The applicant may reaction or Improvement Permit and Construction ess days. The Authorized On-Site Wastewater Evaluator or department revoke or suspend the Construction are Authorized On-Site Wastewater Evaluator or licensed then Permit and Construction Authorization pursuant to G.S.
The review for completeness of	this Construction Authorization v	was conducted in acc	cordance with G.S. 130A-335(a5). This
Construction Authorization is de	termined to be:		
☐ Incomplete (If box is checke	d, information in this section is r	equired.)	
The following items are missing:			
Copies of this were sent to the A	OWE/PE and the Applicant on _	Date	4V 76 //
State Authorized Agent:			Date:
Complete	In leaves	- Tel 65	
State Authorized Agent:	W ZPRIL	12 1776	Date of Issuance:
attached here. This Construction Construction Authorization shall to compliance with the provision The Department, the Department in liabilities, duties, and respondans, evaluations, preconstructive General Statutes as a license Authorized On-Site Wastewater agents, and the local health department in the statement in the statem	n Authorization is subject to rev I not be affected by a change in ns of the Laws and Rules for Sev nt's authorized agents, and the nsibilities imposed by statute of tion conference findings, submit ed engineer or a person certified Evaluator in GS 130A-335(a2),	ocation if the site pl ownership of the si wage Treatment and local health departn r in common law fro ctals, or actions from d pursuant to Article (a5), and (a7). The D nd bear liability for	ing the signed and sealed plans or evaluations an, plat, or the intended use changes. The te. This Construction Authorization is subject I Disposal and to the conditions of this permit. Intents shall be discharged and released from any claim arising out of or attributed to a a person licensed pursuant to Chapter 89C of 5 of Chapter 90A of the General Statutes as an epartment, the Department's authorized their actions and evaluations and other pursuant to GS 130A-337.
Construction Authorization Exp	ration Date:		
·		_	

See attached site sketch



Permit #:

Re-submittal of Construction Authorization

	THD LICE ONLY:	This CA resultmittal resolved:		by	
	LHD 03E ONLY.	This CA resubmittal received:	Date	by Initials	
The following in	tems are being resub	mitted pursuant to G.S. 130A-33	55(a5) for issuance of	of the Construction Authoriz	zation:
		ST	ATE	<i>y</i>	
l,			at the information re	equired to be included with	this re-submittal
is accurate and		or (Print Name) t of my knowledge and that the lations, rules, and ordinances.	proposed Construct	tion Authorization meets al	l applicable
Signatur	e of Authorized On-Site V			Date	
		v is for Local Health Department use		ems noted as missing above.	
LHD Follow-ւ	up Completeness	Review of Construction A	uthorization		
	completeness of this on Authorization is d	Construction Authorization re-s etermined to be:	submittal was condu	icted in accordance with G.	S. 130A-335(a5).
☐ Incomplete (If box is checked, in	formation in this section is requi	red.)		
The following it	ems are missing:				
		TASSE OLIAL	M VIDERLY	. //	
Copies of this w	rere sent to the AOV	/E/PE and the Applicant on	Date		
State Authorize	d Agent:			Date:	
☐ Complete					
State Authorize	d Agent:			Date:	



SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

	WNER: Ballentine Associates APPLICATION DATE: 1/31/2024 DDRESS: 221 Providence Road, Chapel Hill, NC 27514 EVALUATION DATE: 4/24/2023 - 1/29/2024 ROPERTY ID: Lot 45 COUNTY: Harnett PROPERTY RECORDED: No										
PROPE	RTY ID:	Lot 45			COUNTY:	Ha	rnett	PROPER	TY RECOR	DED: No	
PROPC	SED FACILITY FION OF SITE:	: Single Far	nily Resid	dence	_ PROPOSED I	DESIGN FL :	OW (.0400)): <u>480 GP</u>	' <u>D</u> PROP DRDED:]	ERTY SIZE: _	0.48 ac
	R SUPPLY: Ξ 1										'V'
	JATION METH									☐ High Strengt	
		D. Linage	Boring			TITEOI	WINSIEWI	TIER.	Domestic		II - II , , , ,
P R O F			SOIL	MORI	PHOLOGY	ОТН	ER PROF	ILE FAC	ГORS		
I L E	.0502 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	.05 STRUC TEXT	TURE/	.0503 CONSISTE NCE/ MINERALO GY	.0504 SOIL WETNE SS/ COLOR	.0505 SOIL DEPTH	.0506 SAPRO CLASS	.0507 RESTR HORIZ	.0509 PROFILE CLASS & LTAR*	.0502(d) SLOPE CORRECTIO N
1,	2-3%	A 0-6"	LS; GR		NS; NP; VFr	10YR 3/3	36"	-	-	Suitable	35" Slope Corrected Depth
2, 3,		Е 6-20"	LS; GR		NS; NP; VFr	10YR 7/6 2.5YR 5/8				0.4 GPD/Ft2	
4		Bt1 20-36"+	SCL, SBI	<u> </u>	SS; SP; Fi-Fr	2.5110 3/6					
						-					
						-					
						- -					
						_					
						_					
						-					
DI	ESCRIPTION	INITIAL SY	STEM	REPA	AIR SYSTEM						
Availabl	le Space (.0508)	Suitable		Suitabl		SITE CLAS	SIFICATIO	N (0500)	Suitable		
System 7	Γype(s)	Accepted Pro Manifold	essure	Accept					Jeff Vaughan		
Site LTA	AR	0.4 GPD/Ft2	<u> </u>	0.4 GP	D/Ft2	EVALUATI OTHER(S) I	PRESENT:		Heath Clapp		
	m Trench Depth	22"		22"							
Comme	nts:				1						
											

LEGEND

LANDSCAPE POSITION	SOIL GROUP	SOIL TEXTURE	CONVENTIONAL LTAR (gpd/ft²)	SAPROLITE LTAR (gpd/ft²)	LPP LTAR (gpd/ft²)	MINERALOGY/ CONSISTENCE		STRUCTURE
CC (Concave slope)		S (Sand)		0.6 - 0.8		MOIST	WET	SG (Single grain)
CV (Convex Slope)	I	LS (Loamy sand)	0.8 - 1.2	0.5 -0.7	0.4 -0.6	Lo (Loose)	NS (Non-sticky)	M (Massive)
D (Drainage way)	II	SL (Sandy loam)	0.6 - 0.8	0.4 -0.6	0.3 - 0.4	VFR (Very friable)	SS (Slightly sticky)	GR (Granular)
FP (Flood plain)		L (Loam)		0.2 - 0.4		FR (Friable)	S (Sticky)	SBK (Subangular blocky)
FS (Foot slope)		SiL (Silt loam)		0.1 - 0.3		FI (Firm)	VS (Very sticky)	ABK (Angular blocky)
H (Head slope)		SCL (Sandy clay loam)		0.05 - 0.15**		VFI (Very firm)	NP (Non-plastic)	PR (Prismatic)
L (Linear Slope)	III	CL (Clay loam)	0.3 - 0.6		0.15 - 0.3	EFI (Extremely firm)	SP (Slightly plastic)	PL (Platy)
N (Nose slope)		SiCL (Silty clay loam)					P (Plastic)	
R (Ridge/summit)		Si (Silt)		None			VP (Very plastic)	
S (Shoulder slope)		SC (Sandy clay)				SEXP (Slightly	expansive)	
T (Terrace)	IV	SiC (Silty clay)	0.1 - 0.4		0.05 - 0.2	EXP (Exp	ansive)	
TS (Toe Slope)		C (Clay)						•
		O (Organic)	None			1		

HORIZON DEPTH In inches below natural soil surface DEPTH OF FILL In inches from land surface RESTRICTIVE HORIZON Thickness and depth from land surface

SAPROLITE S(suitable) or U(unsuitable); Evaluation of saprolite shall be by pits.

SOIL WETNESS Inches from land surface to free water or inches from land surface to soil colors with chroma 2 or less - record Munsell color chip designation

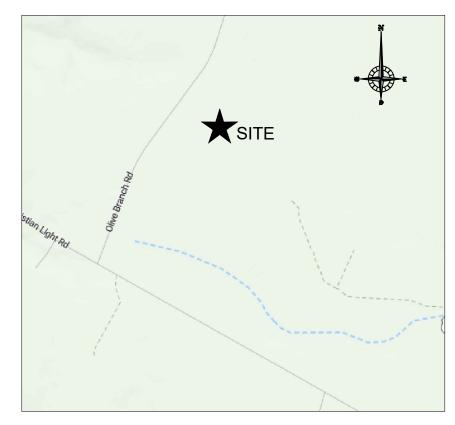
CLASSIFICATIONS (Suitable) or U (Unsuitable)

Show profile locations and other site features (dimensions, reference or benchmark, and North).

^{*} Adjust LTAR due to depth, consistence, structure, soil wetness, landscape, position, wastewater flow and quality.

**Sandy clay loam saprolite can only be used with advanced pretreatment in accordance with 15A NCAC 18E .1200.

BIRCHWOOD TRAILS - LOT 45					
Project Location	Olive Branch Rd				
	Fuquay Varina, NC 27526				
	Harnett County				
	PIN:				
Project Owner	Ballentine Associates, PA				
	221 Providence Rd				
	Chapel Hill, NC 27514				
	919-929-0481				
	dillons@ballentineassociates				
Project Consultant	Jeff Vaughan, L.S.S				
	(919) 367-6313				
	Trent Bostic				
	(919) 367-6322				
	Agri-Waste Technology, Inc.				
	501 N. Salem Street, Suite 203				
	Apex, NC 27502				
	(919) 859-0669				
	(919) 233-1970 Fax				
System Overview	Single Family Residence				
	Four (4) Bedroom, 480 gpd				
	Pressure Manifold Distribution				
	Accepted/Innovative Trench Product				



VICINITY MAP

Sheet Index

Sheet 1	Cover Sheet
Sheet 2	Property Layout
Sheet 3	Primary Drain Field
Sheet 4	Repair Drain Field
Sheet 5	Detail Sheet 1
Sheet 6	Detail Sheet 2
Sheet 7	Excavation Safety



Ballentine Associates, PA Birchwood Trails - Lot 45

Project Location:
Olive Branch Rd
Fuquay Varina, NC 27526
Harnett County
PIN: ----

Project Owner:
Ballentine Associates, PA
221 Providence Rd
Chapel Hill, NC 27514
919-929-0481
dillons@ballentineassociate

NC ONSITE WASTEWATER EVALUATOR SEAL



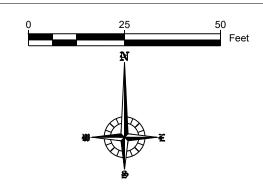
rey. Issued date description

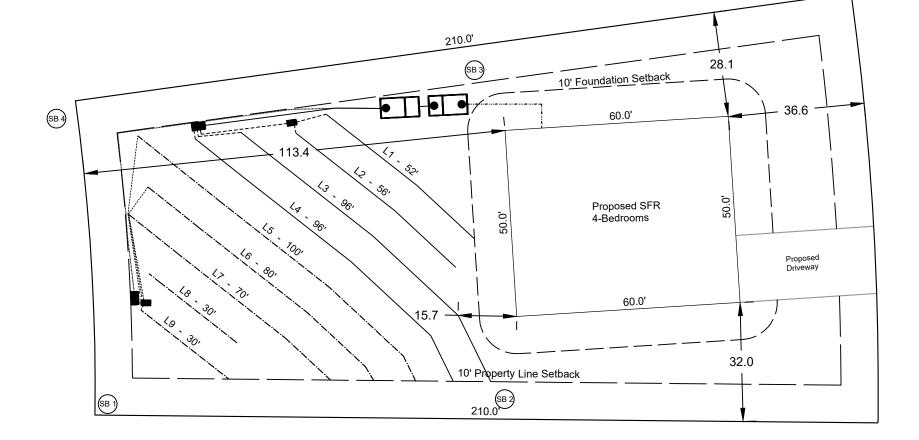
SHEET TITLE

Cover Sheet

DRAWING NUMBER









Agri-Waste Technology, Inc. 501 N. Salem Street, Suite 203 Apex, North Carolina 27502 919-859-0669 www.agriwaste.com

Ballentine Associates, PA Birchwood Trails - Lot 45

Project Location:
Olive Branch Rd
Fuquay Varina, NC 27526
Harnett County
PIN: ----

Project Owner:
Ballentine Associates, PA
221 Providence Rd
Chapel Hill, NC 27514
919-929-0481 dillons@ballentineas

NC ONSITE WASTEWATER EVALUATOR SEAL



REV, ISSUED DATE DESCRIPTION

SHEET TITLE

Property Layout

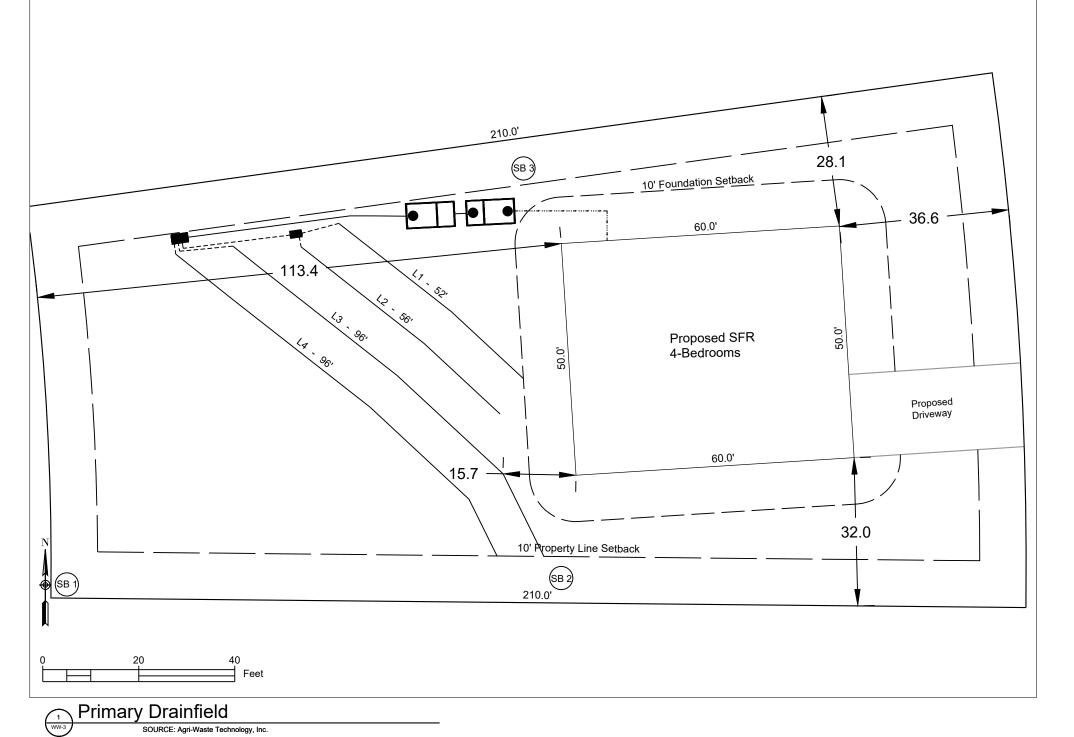
DRAWN BY:	CREATED ON:
H. Clapp	1/31/2024
REVISED BY: ####	REVISED ON:
RELEASED BY:	RELEASED ON:
####	####

DRAWING NUMBER

General Drainfield Notes:

- Clear all trees less than 8" in diameter (measured at a height 3' from soil surface) from the drainfield.
- 2. Vegetation that will re-grow from a cut stump shall be stumped or pulled from the ground. Stumps shall not be pushed over.
- 3. Drainfield area shall be cleared of all leaves, pine straw, debris, etc. The accumulated material shall be removed from the drainfield.
- 4. In clayey soils, sides of trenches shall be raked and limed per manufacturer's instructions.
- 5. Supply lines shall be installed with a minimum of 18" cover.
- 6. The trenches shall be backfilled appropriately so that no low areas are present.
- 7. Apply lime over the drainfield area as needed. Seed fine fescue over the drainfield at the rate recommended by the seed manufacturer. Hand rake the seed into the soil surface. Straw the seeded area at the rate of 1.5-2 bales per 1000 sq. ft.

DRAINFIELD INFO	Primary					
Proposed Type of System/Distribution:		Pump to Pres	sure Manifold			
		using Chambers				
		1.		-	E. /E. (1.
	Flag	Line		Flow	Flow/Foot	Line
Line No.	Color	Length (ft)	Тар	(gpm)	(gpm/ft)	L.T.A.R.
1	blue	52	1/2in SCH 40, Split	3.56	0.068	0.513
2	White	56	1/2in SCH 40, Split	3.56	0.063	0.476
3	purple	96	1/2in SCH 40	7.11	0.074	0.556
4	red	96	1/2in SCH 40	7.11	0.074	0.556
_	Total	300	Total	21.33	Avg.	0.525





Agri-Waste Technology, Inc. 501 N. Salem Street, Suite 203 Apex, North Carolina 27502 919-859-0669 www.agriwaste.com

Ballentine Associates, PA Birchwood Trails - Lot 45

Project Location:
Olive Branch Rd
Fuquay Varina, NC 27526
Harnett County
PIN:

Project Owner:
Ballentine Associates, PA
221 Providence Rd
Chapel Hill, NC 27514
919-929-0481
dillons@ballentineassociate



REY, ISSUED DATE DESCRIPTION

SHEET TITLE

Primary Drainfield

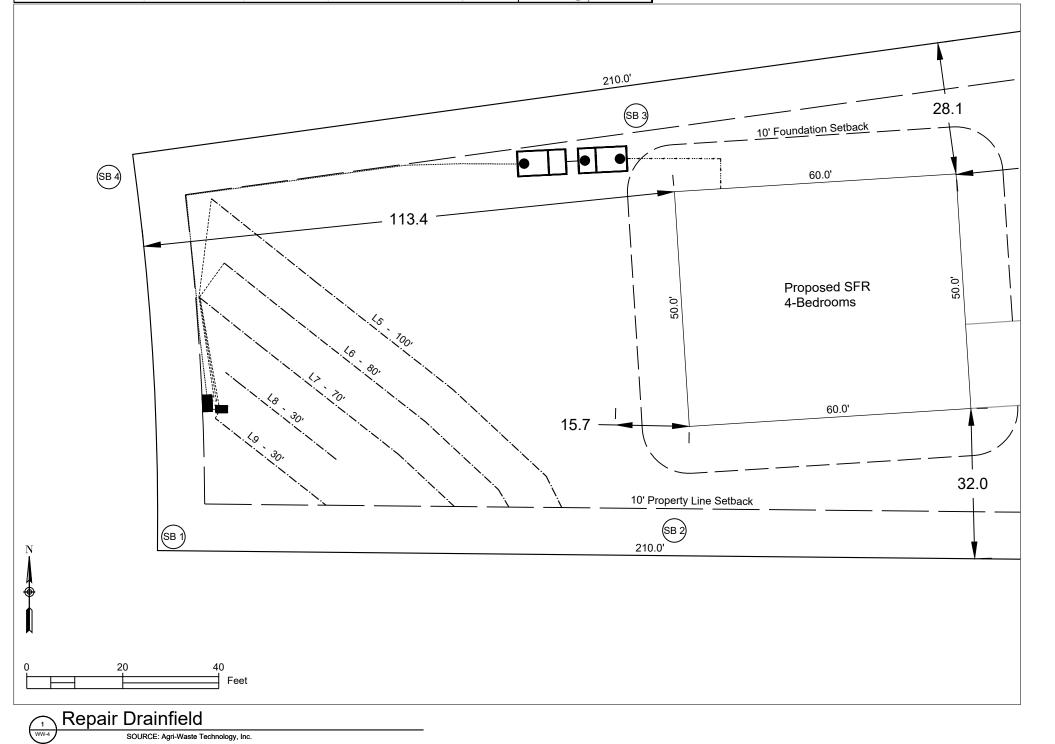
DRAWN BY:
H. Clapp
CREATED ON:
1/31/2024
REVISED BY:
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RELEASED BY:
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RELEASED BY:
#####

DRAWING NUMBER

General Drainfield Notes:

- Clear all trees less than 8" in diameter (measured at a height 3' from soil surface) from the drainfield.
- Vegetation that will re-grow from a cut stump shall be stumped or pulled from the ground. Stumps shall not be pushed over.
- Jrainfield area shall be cleared of all leaves, pine straw, debris, etc. The accumulated material shall be removed from the drainfield.
- 4. In clayey soils, sides of trenches shall be raked and limed per manufacturer's instructions.
- 5. Supply lines shall be installed with a minimum of 18" cover.
- 6. The trenches shall be backfilled appropriately so that no low areas are present.
- 7. Apply lime over the drainfield area as needed. Seed fine fescue over the drainfield at the rate recommended by the seed manufacturer. Hand rake the seed into the soil surface. Straw the seeded area at the rate of 1.5-2 bales per 1000 sq. ft.

DRAINFIELD INFO	Repair					
Proposed Type of Sys	tem/Distribution:	Pump to Pres	sure Manifold			
		using EZflow				
	Flag	Line		Flow	Flow/Foot	Line
Line No.	Color	Length (ft.)		(gpm)	(gpm/ft)	L.T.A.R.
5	yellow	100	3/4in SCH 80	10.10	0.101	0.542
6	blue	80	1/2in SCH 40	7.11	0.089	0.477
7	white	70	1/2in SCH 40	7.11	0.102	0.545
8	purple	30	1/2in SCH 80, Split	2.74	0.091	0.490
9	red	30	1/2in SCH 80, Split	2.74	0.091	0.490
	Total	310	Total	29.8	Avg.	0.509





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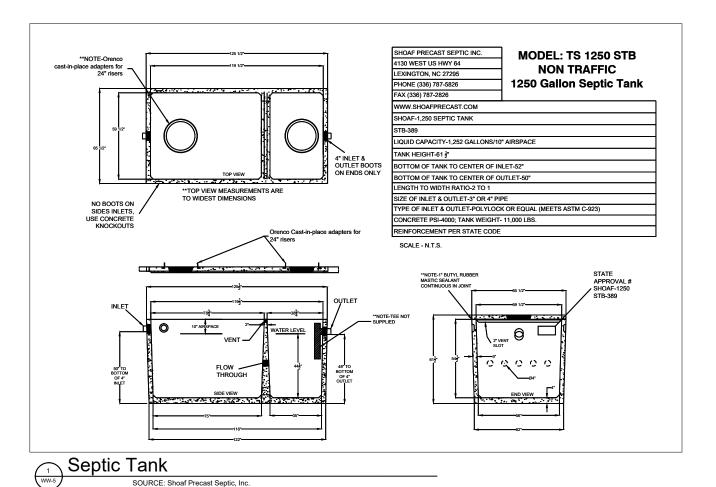
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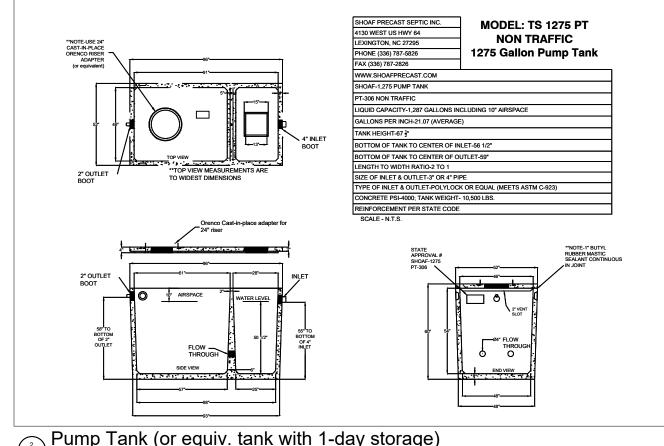
SHEET TITLE

Repair Drainfield

DRAWN BY:
H. Clapp
CREATED ON:
1/31/2024
REVISED BY:
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RELEASED BY:
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RELEASED BY:
####

DRAWING NUMBER





SOURCE: Shoaf Precast Septic, Inc.

NOTES

1. Installation to follow all NC DHHS and Harnett County applicable rules and regulations.

2. Harnett County to perform construction inspections and final system certification.

3. Septic Tank to have approved effluent filter.

4. Contractor to abide by all safety regulations during system installation.

5. Contractor shall backfill around all access areas such that storm water is shed away from potential entry points.

6. Invert elevations of all components to be verified in field by contractor to insure proper operation.

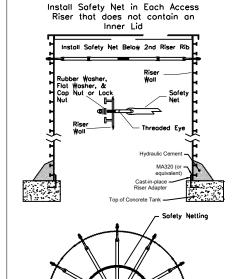
7. All system piping to be SCH40 PVC (except where noted).

8. All gravity elbows to be long radius or long sweeping type elbows.

9. Actual installation and placement of treatment system to be overseen by Contractor.

10. Tanks to be set on 6" minimum gravel base. Use #5 or #57 stone for base.

- 11. Contractor to seed and/or mulch disturbed areas to coincide with existing landscape. Area shall not be left with uncovered
- 12. Mount Control Panel a minimum of 24" above grade.
- 13. Power to panel to be installed by licensed electrician per code. One 15-amp circuit and one 20-amp circuit with individual neutrals to be run from house to control panel.
- 14. All risers to have cast—in—place tank adapters and be single-piece riser. Risers to extend 6" above soil surface and be designed to prevent surface water inflow.
- 15. Backfill around tank(s) shall be gravel or tank hole shall be over-excavated a minimum of 2' in all directions to allow for mechanical tamping of backfill.
- 16. All penetrations to be sealed.
- 17. Spigot to be located on outside of building within 50' of
- 18. All pressure lines to maintain 18" min. cover.
- 19. Contractor to adjust tank placement to meet site constraints.



sandpaper.
Use a clean cloth and acetane or olcohol to clean the bonding surfoces of the adapter and riser. The bonding surfaces must be clean and dry for a good fit and watertight joint. Let the acetane or alcohol dry completely, solv Adhesive

odopter. One 7-02 packet of MA320 adhesive is typical for one 24" riser.

1. If the riser has penetrations, align the riser correctly.

2. Firmly press the riser onto the adopter until the bottom of the riser is resting on the concrete (cost-in-odopters) or the adopter liange (botted-down adopters). Twist the riser back and forth slightly to fully seet it on to create a good bond.

3. Apply a bead of methacrylate adhesive to the inside of the access riser-adopter joint.

4. Use a tangue depressor, putty knife, or clean cloth to make a continuous fillet on the inside of the access riser-adopter joint.

4. Apply hydraulic cement to bond

3.5. Apply hydraulic cement to bond outer riser wall and top of tank.

4. Ensure safety net and inner lid are

FOR RISER WALL PENETRATIONS						
Grommet Size, Inches (Nominal IPS Pipe Size)	Hole Saw Size, Inches					
1/2	1					
3/4	1 1/4					
1	1 9/16					
1 1/4	1 3/4					
1 1/2	2 1/8					
2	2 3/4					
3	3 7/8					

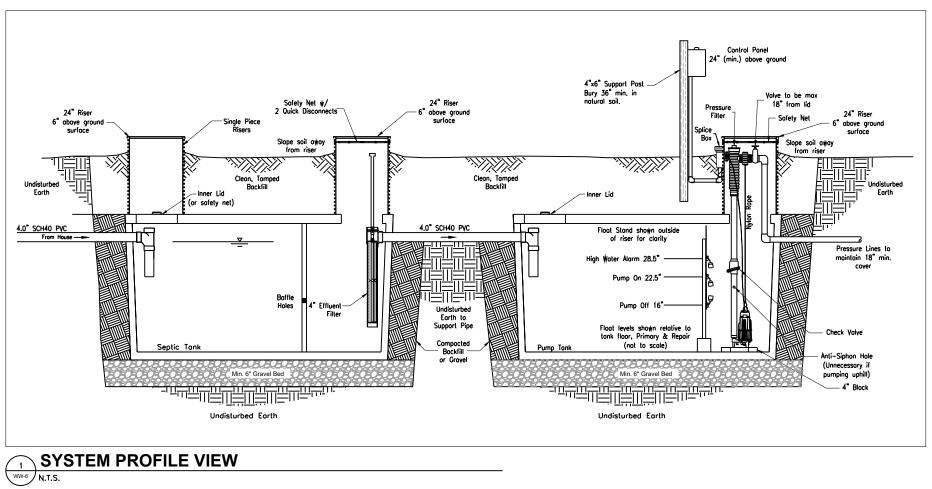
Riser Safety Nets

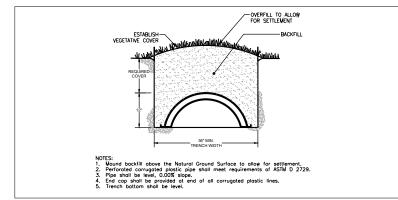
NOTE: Install 4 Ring Clamps i 8" (or larger) Filter is Used

SOURCE: SIM-TECH. Inc.



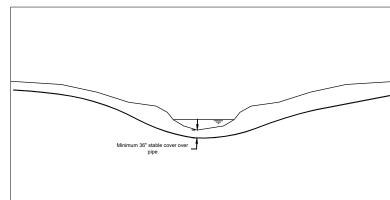
DRAWING NUMBER

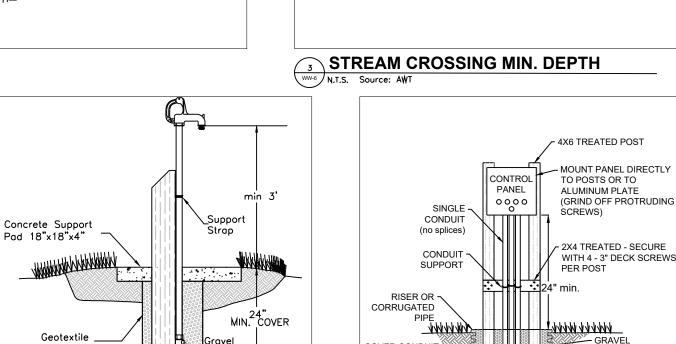




TRENCH X-SECTION (Typical)

WW-6 N.T.S. Source: AWT





6 CONTROL PANEL SUPPORT WW-6 N.T.S. SOURCE: AWT

- 2X4 TREATED - SECURE WITH 4 - 3" DECK SCREWS **COVER CONDUIT** MINIMUM 18" TO PUMP TANK ♥ → TO PUMP TANK TO POWER SOURCE € ALL CONDUIT INSTALL MULTIPLE TO BE 3/4 " (min) CONDUITS AS NEEDED 2' BURIAL DEPTH MINIMUM

Fabric

4"x4" Treated Post

48" burial (min)

Side View End View PRESSURE MANIFOLD INSTALLATION (Typical) - For Illustration Only

WW-6 N.T.S. SOURCE: AWT

SEE TAP SHEET FOR

Orientation of manifold will depend on

with location of tanks and drainlines

where it is located on the lot in conjunction

ACTUAL NUMBER OF TAPS AND TAP SIZES

YARD HYDRANT (if required)

N.T.S. SOURCE: AWT

Drain Hole

Galvanized

Elbow

Supply Line

501 N. Salem Street, Suite 203 Apex, North Carolina 27502 919-859-0669 www.agriwaste.com

Ballentine Associates, PA Birchwood Trails - Lot 45

Project Location: Olive Branch Rd Fuquay Varina, NC 27526 Harnett County PIN: ----

Project Owner Ballentine Associates, PA 221 Providence Rd Chapel Hill, NC 27514 919-929-0481 dillons@ballentine



rev. Issued date description

SHEET TITLE

Detail Sheet 2

CREATED ON: DRAWN BY: H. Clapp 1/31/2024 REVISED ON: REVISED BY: #### RELEASED BY: RELEASED ON:

DRAWING NUMBER

Trenching and Excavation Safety

The employer must comply with the trenching and excavation requirements of 29 CFR 1926.651 and 1926.652 or comparable OSHA-approved state plan requirements

Inspection of Excavations

OSHA standards require that a competent person inspect trenches daily and as conditions change before worker entry to ensure elimination of excavation hazards. A competent person is an individual who is capable of identifying existing and predictable hazards or working conditions that are hazardous, unsanitary, or dangerous to workers, soil types and protective systems required, and who is authorized to take prompt corrective measures to eliminate these hazards and conditions.

OSHA standards require safe access and egress to all excavations, including ladders, steps, ramps, or other safe means of exit for employees working in trench excavations 4 feet (1.22 meters) or deeper. These devices must be located within 25 feet (7.6 meters) of all workers.

Heavy equipment and trucks should stay as far as possible from the edge of any trench. Always use pads under stabilizers to minimize ground pressures that could lead to failures

"Cemented soil" means a soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand-size sample cannot be crushed into powder or individual soil particles by finger "Cohesive soil" means clay (fine grained soil), or soil with a high clay content, which has cohesive strength.

Cohesive soil does not crumble, can be excavated with vertical sideslopes, and is plastic when moist. Cohesive soil is hard to break up when dry, and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.

"Dry soil" means soil that does not exhibit visible signs of moisture content.

"Fissured" means a soil material that has a tendency to break along definite planes of fracture with little

resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

"Granular soil" means gravel, sand, or silt (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

"Lavered system" means two or more distinctly different soil or rock types arranged in lavers. Micaceous

seams or weakened planes in rock or shale are considered layered.

"Moist soil" means a condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some e material will exhibit signs of cohesion between particles.

"Plastic" means a property of a soil which allows the soil to be deformed or molded without cracking, or

EXCAVATIONS IN TYPE A SOILS

appreciable volume change.

"Saturated soil" means a soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or

All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 3/2:1.

"Soil classification system" means, for the purpose of this subpart, a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the characteristics of the deposits and the characteristics of the deposits and the environmental conditions of exposure.

"Stable rock" means natural solid mineral matter that can be excavated with vertical sides and remain intact

"Submerged soil" means soil which is underwater or is free seeping.

"Type A" means cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) (144 kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type

However, no soil is Type A if: The soil is fissured; or

- The soil is subject to vibration from heavy traffic, pile driving, or similar effects; or
- (iii) The soil has been previously disturbed; or
- (iv) The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four
- horizontal to one vertical (4H:1V) or greater; or

 (v) The material is subject to other factors that would require it to be classified as a less stable material

- (i) Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5
- tsf (144 kPa); or

 (ii) Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam.

) Previously disturbed soils except those which would otherwise be classed as Type C soil
- (iv) Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration; or
- (vi) Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

"Type C" means

- Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less; or
- (ii) Granular soils including gravel, sand, and loamy sand; or (iii) Submerged soil or soil from which water is freely seeping; or
- (iv) Submerged rock that is not stable or
- (v) Material in a sloped, layered system where the layers dip into the excavation or a slope of four horizontal to one vertical (4H:1V) or steeper

"Unconfined compressive strength" means the load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.

"Wet soil" means soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohe properties when moist will lose those cohesive properties when wet.

(c) Requirements

- (1) Classification of soil and rock deposits. Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, Type B, or Type C in accordance with the definitions set forth in paragraph (b) of this appendix.
- (2) Basis of classification. The classification of the deposits shall be made based on the results of at least one visual and at least one manual analysis. Such analyses shall be conducted by a competent person using tests described in paragraph (d) below, or in other recognized methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.
- (3) Visual and manual analyses. The visual and manual analyses, such as those noted as being acceptable in paragraph (d) of this appendix, shall be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properly the properties, factors, and conditions affecting the classification of the deposits.
- (4) Layered systems. In a layered system, the system shall be classified in accordance with its weakest layer. However, each laver may be classified individually where a more stable laver lies under a less stable laver
- (5) Reclassification. If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the changes shall be evaluated by a competent person. The deposit shall be sified as necessary to reflect the changed circumstances

(d) Acceptable visual and manual tests

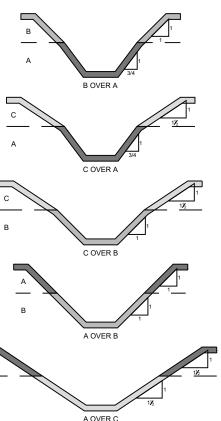
- (1) Visual tests. Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil
- of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained material material is cohesive material. Soil composed primarily of coarse-grained sand or
- breaks up easily and does not stay in clumps is granular.
- (iii) Observe the side of the opened excavation and the surface area adjacent to the excavation. Crack-like openings such as tension cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of
- (iv) Observe the area adjacent to the excavation and the excavation itself for evidence of existing utility and
- surface water, water seeping from the sides of the excavation, or the location of the level of the water
- (vii) Observe the area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

(2) Manual tests. Manual analysis of soil samples is conducted to determine quantitative as well as qualitative

- (i) Plasticity. Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/8-inch in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a two inch (50 mm) length of 1/8-inch thread can be held on one end without
- (ii) Dry strength. If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or sitt). If the soil is dry and falls into clumps which break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand or silt. If the dry soil breaks into clumps which do not break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered unfissured.
- (iii) Thumb penetration. The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. (This test is based on the thumb penetration test described in American Society for Testing and Materials (ASTM) Standard designation D2488 - "Standard Recommended Practice for Description of Soils (Visual - Manual Procedure).") Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb; however, they can be penetrate by the thumb only with very great effort. Type C soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb, and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as practicable after excavation to keep to a minimum the effects of exposure to drying influences. If the excavation is later exposed to wetting influences (rain, flooding), the classification of the soil must be changed accordingly
- (iv) Other strength tests. Estimates of unconfined compressive strength of soils can also be obtained by use of a pocket penetrometer or by using a hand-operated shearvane.
- (v) Drying test. The basic purpose of the drying test is to differentiate between cohesive material with fissures, unfissured cohesive material, and granular material. The procedure for the drying test involved. drying a sample of soil that is approximately one inch thick (2.54 cm) and six inches (15.24 cm) in eter until it is thoroughly dry:
- (A) If the sample develops cracks as it dries, significant fissures are indicated.
- (B) Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as an unfissured cohesive material and the unconfined compressive strength should be determined.

 (C) If a sample breaks easily by hand, it is either a fissured cohesive material or a granular material.
- To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

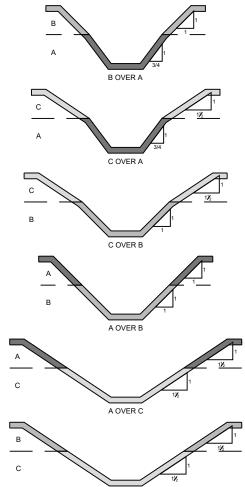
All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable



All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

EXCAVATIONS IN LAYERED SOILS

slope for each layer as set forth below



20' Max

20' Max

taken as samples from excavated material.

- (i) Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range gravel is granular material.

 Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that
- potentially hazardous situations.
- other underground structures, and to identify previously disturbed soil.

 (v) Observe the opened side of the excavation to identify layered systems. Examine layered systems to
- identify if the layers slope toward the excavation. Estimate the degree of slope of the layers.

 (vi) Observe the area adjacent to the excavation and the sides of the opened excavation for evidence of

All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1½:1.

SIMPLE SLOPE

VERTICALLY SIDED LOWER PORTION

All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of 1½:1. The support or shield m must extend at least 18 inches above the top of the vertical sid

EXCAVATIONS IN TYPE C SOILS

properties of soil and to provide more information in order to classify soil properly

501 N. Salem Street, Suite 203 Apex, North Carolina 27502 919-859-0669 www.agriwaste.com

> Ballentine Associates, PA Birchwood Trails - Lot 45

Olive Branch Rd Fuquay Varina, NC 27526 Harnett County

oiect Owner:

Ballentine Associates, PA 221 Providence Rd Chapel Hill, NC 27514 dillons@ballentineas

NC ONSITE WASTEWATER EVALUATOR SEAL



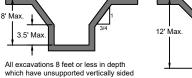
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SHEET TITLE

Excavation Safety

DRAWN BY: CREATED ON: 1/31/2024 H. Clapp REVISED BY: REVISED ON: #### RELEASED ON: RELEASED BY: ####

drawing number



lower portions shall have a maximum

3.5' Ma All excavations more than 8 feet but not more

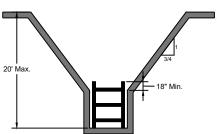
Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a

maximum allowable slope of 1/2:1

vertical side of 31/2 feet than 12 feet in depth with unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 31/2 fee

All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 3/2:1

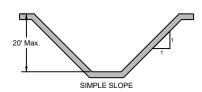
All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of 3/4:1. The support or shield system must extend at least 18 inches above the top of the vertical side



All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under § 1926.652(b).

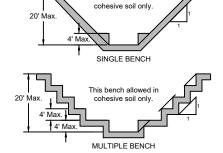
EXCAVATIONS IN TYPE B SOILS

All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.

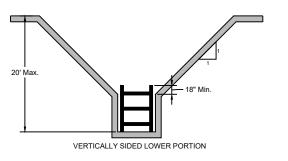


All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maxium bench dimensions as follows

This bench allowed in



All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of 1:1. The support or shield system must extend at least 18 inches above the top of the vertical side.



All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

Septic System Design - Summary Page

Engineers and Soil Scientists

Agri-Waste Technology, Inc.

501 N Salem Street, Suite 203, Apex. NC 27502 agriwaste.com | 919.859.0669

Project Manager:

Jeff Vaughan, PhD, LSS jvaughan@agriwaste.com

919-859-0669

Engineer:

Heath Clapp

hclapp@agriwaste.com

Project: Birchwood Trails, Lot 45

Property: Olive Branch Road,

Fuguay Varina, NC 27526

Subdiv.: Lot #: 45

Owner: Ballentine Associates, PA

Address: 221 Providence Road,

Chapel Hill, NC 27514

Phone: 919-929-0481

EHS:

Email: dillons@ballentineassociates.com

PIN:

Date:

County:

Permit #:

Type of System:

0

III b

1/31/2024

Harnett

Soil Parameters

Soil Evaluation By:

LTAR:

0.400

gpd/ft²

Special Conditions/Notes:

Design Parameters

Type of Establishment: Residence, 5 or fewer bedrooms

Unit: Bedroom # of Units:

Septic Tank Specifications

Min. Tank Capacity: 1,000 gal **Actual Tank Volume:** 1,250 gal **Tank Manufacturer:** Shoaf

Tank Model: TS 1250 STB

Exterior Interior

Length: 125.5 119.5 in. Width: 65.5 59.5 in. Depth: 62.0 54.5 in.

Primary Drainfield Specifications

Type of Distribution: Parallel Pressure Manifold

Trench Media: Chambers **Trench Width:** 3 ft **Trench Depth:** 22 in.

(or as specified on permit)

Trench Bottom Area: 1200 **Minimum Drain Line:** 300

Actual Drain Line: 305 5

Number of Lines: Minimum Line Spacing:

9

 ft^2

ft

ft

ft O.C.

Wastewater Treatment System Design Calculations

Project: Birchwood Trails, Lot 45 **Location:** Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Septic Tank Sizing

Daily Flow Estimate:

Unit	# of Units	Flow/Unit	Flow/Day	
Bedroom	4	120	480	
		Q=	480	gpo

Septic Tank Minimum Capacity:

Per NCAC T15A:18A .1952(b)(1):

For individual residences with 4 bedrooms,

Minimum Liquid Capacity (V)= 1,000 gal

Septic Tank Specs: Manufacturer:

acturer: Shoaf

Model: TS 1250 STB

Volume: 1,250 gal Weight: 11,000 lbs

Exterior Interior
Length: 125.5 119.5 in.
Width: 65.5 59.5 in.
Depth: 62.0 54.5 in.

Shape of Risers: Circular

Diameter: 2.00 ft

Pump Tank Storage & Float Settings

Project: Birchwood Trails, Lot 45 **Location:** Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Tank Manufacturer Shoaf

Tank Model TS 1275 PT

Interior Height (in.) 60.5 in. Avg. Storage 21.07 gal/in.

Primary System

<u>Elevations</u>, measured from bottom towards top (0 = Interior Bottom of Tank):

Top of pump (including 4" block) 14.1 in. (Pump height = 10 1/16")

Pump Off 16.0 in.

Pump On 22.5 in. (set for dose volume)
Alarm On 28.5 in. (6 in. above On Float)

Emergency Storage Available

Pump Tank 674 gal
Days of Storage 1.40 days
(determined from "interior top of tank" - "High Water Alarm")

Repair System

Elevations, measured from bottom towards top (0 = Interior Bottom of Tank):

Top of pump (including 4" block)

16.1 in. (Pump height = 12 1/16")

Pump Off 18.0 in.

Pump On 25.0 in. (set for dose volume)
Alarm On 31.0 in. (6 in. above On Float)

Emergency Storage Available

Pump Tank 622 gal
Days of Storage 1.29 days
(determined from "interior top of tank" - "High Water Alarm")

ELEVATIONS

Project: Birchwood Trails, Lot 45 Location: Olive Branch Road, Fuquay Varina, NC 27526

County:	Harnett	
Benchmark	0	
BM Elev	0 ft	
Septic Tank	1,250 gal	
Ground Surface	1,250 gai	291.50 ft
Depth of Soil Cover	16 in.	1.33 ft
Overall Ht of Tank	61.5 in.	5.13 ft
Elev, Base of Tank		285.04 ft
Ht to 4" Inlet Invert	50 in.	4.17 ft
Elev, 4" Inlet Invert		289.21 ft
Ht to 4" Outlet Invert	48 in.	4.00 ft
Elev, 4" Outlet Invert		289.04 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		284.54 ft
Pump Tank	1275 gal	
Ground Surface		291.50 ft
Depth of Soil Cover	18 in.	1.50 ft
Overall Ht of Tank	67.5 in.	5.63 ft
Elev, Base of Tank		284.38 ft
Ht to 4" Inlet Invert	54.5 in.	4.54 ft
Elev, 4" Inlet Invert		288.92 ft
Ht to 2" Outlet Invert	58 in.	4.83 ft
Elev, 2" Outlet Invert		289.21 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		283.88 ft
ST Inlet Pipe		
Grade @ Stub-out		291.5 ft
Depth of Stub-out, top		1.5 ft
Elev, Stub-out Invert		289.65 ft
Elev @ ST Inlet Invert		289.21 ft
Length		10 ft
Slope		4.4 %
Pipe, ST to PT		
ID	4 in.	0.33 ft
OD	4.5 in.	0.38 ft
Elev, ST Outlet Invert		289.04 ft
Elev, PT Inlet Invert		288.92 ft
Length		4 ft
Slope		3.1 %
Cover over inlet pipe		1.94 ft
Pump Reqmt.		
Floor Thickness	4 in.	0.33 ft
Elev, Pump Tank Floor		284.71 ft
Pump Block Ht.	4 in.	0.33 ft
Elev, Pump Intake		285.04 ft
Grade @ Primary Manifold		292.50 ft
Grade @ Repair Manifold		202 75 6
		293.75 ft
Min. Cover	18 in.	293.75 π 1.50 ft
Min. Cover Max Elev, Repair	18 in.	
	18 in.	1.50 ft

Drainfield Design

Project Birchwood Trails, Lot 45
Location Olive Branch Road,

Fuquay Varina, NC 27526

County Harnett

Drainfield Sizing

Primary			
LTAR	0.4 gpd/ft ²		
Daily Design Flow	480 gpd	Type of Drainfield Media	Chambers
Req. Drainfield Area	1,200 ft ²	Required Drainline	
Trench Width, Eff.	3 ft	After 25% Reduction	300 ft
Required Drainline	400 ft	Minimum Line Spacing	9 ft (O.C.)
Repair			
LTAR	0.4 gpd/ft ²		
Daily Design Flow	480 gpd	Type of Drainfield Media	EZflow
Req. Drainfield Area	1,200 ft ²	Required Drainline	
Trench Width, Eff.	3 ft	After 25% Reduction	300 ft
Required Drainline	400 ft	Minimum Line Spacing	9 ft (O.C.)

Drainfield Layout

			Elevation	Line Length	Used as	Used as
Line	Use	Flag Color	(ft)	(ft)	Primary (ft)	Repair (ft)
1	Layout Line	blue		52	52.0	
2	Layout Line	White		56	56.0	
3	Layout Line	purple		96	96.0	
4	Layout Line	red		96	96.0	
5	Layout Line	yellow		100		100.0
6	Layout Line	blue		80		80.0
7	Layout Line	white		70		70.0
8	Layout Line	purple		30		30.0
9	Layout Line	red		30		30.0
		•	Total	610	300	310
			Count	9	4	5

Note: Line length totals are shown to the nearest foot.

For Chambers or Low-profile Chambers:

Effective trench lengths are shown. Add 1' for total installation length.

PRESSURE MANIFOLD DESIGN (Primary)

Site Information

Project: Birchwood Trails, Lot 45 **Location:** Oliva Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Design Information

Estimated Daily Flow
L.T.A.R.
0.4 gal/day/ft²
L.T.A.R. + 5%
Trench Width
Line Length Required
Length after 25% Reduction

480 gal/day/ft²
0.420 gal/day/ft²
3 ft.
400 ft.

Length after 25% Reduction

0.523 gal/day/ft²

L.T.A.R. Reduced 0.533 gal/day/ft 2 L.T.A.R. Reduced + 5% 0.560 gal/day/ft 2

DRAINFIELD INFO. - Primary

Proposed Type of System/Distribution: Pump to Pressure Manifold

using Chambers

Line No.	Flag Color	Line	Ton	Flow	Flow/Foot	Line L.T.A.R.
LINE NO.	Coloi	Length (ft)	Тар	(gpm)	(gpm/ft)	L.I.A.R.
1	blue	52	1/2in SCH 40, Split	3.56	0.068	0.513
2	White	56	1/2in SCH 40, Split	3.56	0.063	0.476
3	purple	96	1/2in SCH 40	7.11	0.074	0.556
4	red	96	1/2in SCH 40	7.11	0.074	0.556
	Total	300	Total	21.33	Avg.	0.525

Note: Line lengths are calculated in 5' increments to reflect use of EZflow product.

Total Run Time	22.50	min.
Drainfield Capacity	195.9	gal
% of Drainfield Cap	69.9%	

(Req. Range 66-75%)

Dose Volume 136.9 gal/dose Run Time/Dose 6.4 minutes

Range 5-7 minutes unless uphill, checked (Per tank manufacturer's specifications)

Volume/depth 21.07 gal/in.
Estimated Drawdown 6.50 in.

Manifold Box

Number of Taps	3	with	1	Split(s)
Manifold Length	3.0	ft.	(approximate)	

PRESSURE MANIFOLD SYSTEM DESIGN (Repair)

Site Information

Project: Birchwood Trails, Lot 45
Location: Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Design Information

Estimated Daily Flow 480 gal/day L.T.A.R. 0.4 gal/day/ft 2 L.T.A.R. + 5% 0.420 gal/day/ft 2 Trench Width 3 ft. 400 ft. Length after 25% Reduction 300 ft

 $\begin{array}{ccc} \text{L.T.A.R. Reduced} & 0.533 \text{ gal/day/ft}^2 \\ \text{L.T.A.R. Reduced} + 5\% & 0.560 \text{ gal/day/ft}^2 \\ \end{array}$

DRAINFIELD INFO. - Repair

Proposed Type of System/Distribution: Pump to Pressure Manifold

using EZflow

	Flag	Line		Flow	Flow/Foot	Line
Line No.	Color	Length (ft.)		(gpm)	(gpm/ft)	L.T.A.R.
5	yellow	100	3/4in SCH 80	10.10	0.101	0.542
6	blue	80	1/2in SCH 40	7.11	0.089	0.477
7	white	70	1/2in SCH 40	7.11	0.102	0.545
8	purple	30	1/2in SCH 80, Split	2.74	0.091	0.490
9	red	30	1/2in SCH 80, Split	2.74	0.091	0.490
	Total	310	Total	29.8	Avq.	0.509

Note: Line lengths are calculated in 5' increments to reflect use of EZflow product.

Total Run Time	16.11 min.
Drainfield Capacity	202.4 gal
% of Drainfield Can	72 9%

(Req. Range 66-75%)

Dose Volume 147.6 gal/dose Run Time/Dose 5.0 minutes

Range 5-7 minutes unless uphill, checked (Per tank manufacturer's specifications)

Volume/depth 21.07 gal/in. Estimated Drawdown 7.00 in.

Manifold Box

Number of Taps 4 with 1 Split(s)
Manifold Length 3.5 ft. (approximate)

PUMP DESIGN

System (initial/repair): Primary

County:

Project: Birchwood Trails, Lot 45 Location: Olive Branch Road, Fuquay Varina, NC 27526

Harnett

Friction Losses

Suction Head	0 ft (submersible 0)
Elev. Difference (highest point from pump)	5.96 ft
Design Pressure At Outlet	
Supply Line - 2" Schedule 40 PVC	
Pipe Diameter, Nominal 2 in.	
Pipe Diameter (ID) 2.047 in.	Flow 21.33 gpm
Pipe Length 47 ft	Velocity 2.08 ft/sec
Pipe Length for Fittings 4.7 ft	Meets requirement that 2 ft/s $< v < 5$ ft/s.
Equivalent Length 51.7 ft	
Estimated Friction Loss in Supply Line	0.45 ft
Friction Loss - Taps/Special Fittings	3.5 ft
TOTAL	11.91 ft.

Flow for Anti-Siphon Hole

3/16 in. Hole Diameter Hole Flowrate 1.43 gpm

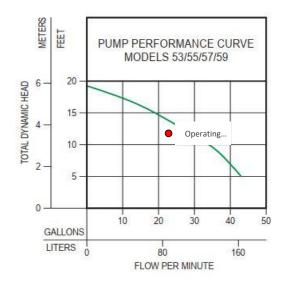
Pump Efficiency 0.7 (assumed, typical) Motor Efficiency 0.9 (assumed for electric pumps) 22.76 gpm Flow

Required Horsepower

0.11 hp **11.91 ft** TDH

Pump Selection

i unip ocicotion	
Manufacturer:	Zoeller
Model:	N53
Horsenower.	0.3



PUMP DESIGN

System (initial/repair): Repair

Birchwood Trails, Lot 45 **Project:** Location: Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Friction Losses

Friction Losses		
Suction Head	0 ft	(submersible 0)
Elev. Difference (highest point from pump)	7.21 ft	
Design Pressure At Outlet	2 ft	
Supply Line - 2" Schedule 40 PVC		
Pipe Diameter, Nominal 2 in.		
Pipe Diameter (ID) 2.047 in.	Flow	29.8 gpm
Pipe Length 114 ft	Velocity	2.91 ft/s
Pipe Length for Fittings 11.4 ft	Mee	ets requirement that 2 ft/s < v < 5 ft/s.
Equivalent Length 125.4 ft		
Estimated Friction Loss in Supply Line	2.02 ft	
	0.5	
Friction Loss - Taps/Special Fittings	3.5 ft	
TOTAL	14.73 ft.	

Flow for Anti-Siphon Hole

Hole Diameter 3/16 in. Hole Flowrate 1.59 gpm

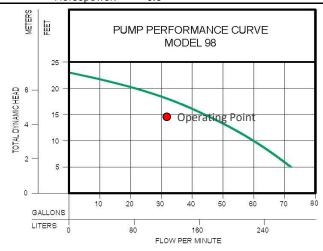
Pump Efficiency 0.7 (assumed, typical) Motor Efficiency 0.9 (assumed for electric pumps) Flow 31.39 gpm

0.19 hp

Required Horsepower TDH 14.73 ft.

Pump Selection





Septic Tank Buoyancy Calculation

Project: Birchwood Trails, Lot 45
Location: Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Tank Size (nominal) 1250 gal

Properties/Assumptions:

. reperieson todampaterio.		
Min. liquid level to be maintain	ed in tank at all ti	mes after initial installation.
Min. depth to water table Effluent Density Concrete Density	12.0 in. 62.4 lb/ft ³ 142.6 lb/ft ³	from ground surface (Specific Weight of Water)
Soil App. Sp. Grav.	1.3	(typical value)
Soil Cover Over Tank	12 in.	(minimum)
Additional Cover	4 in.	for pipe grade
Unsubmerged wt of soil	81.1 lb/ft ³	
Submerged wt of soil	49.9 lb/ft ³	50% Porosity Assumed

Tank Dimensions (from supplier):

Tank Dimensions	(пот варрі	101).			
		<u>Exterior</u>		<u>Inter</u>	<u>ior</u>
		Тор	Bottom	Тор	Bottom
Tank	Length	125.5	122.0	119.5	116.0 in.
	Width	65.5	62.0	59.5	56.0 in.
	Height	58.5	(w/o lid)	54.5	in.
Lid	Length	125.5 i	in.		
	Width	65.5 i	in.		
	Height	3.0 i	in.		
Aı	rea of Riser	Openings	6.28 ft ²		
		_			
Permanent	Liquid Dept	th in Tank	0.0 in		0.00 ft
		_			
	Tar	nk Weight	11,000 lb	(per manufacturer)

Buoyancy Force Calculation:

Buoyancy Force Specific Weight of Water x Displaced Volume

Displaced Volume 283.5 ft³ *

Buoyancy Force 17,689 lb.

Weight Calculation:

Tank Weight	11000 lb		
Water Weight in Tank	0 lb	Volume	0.0 ft ³ *
Soil Weight Over Tank	4966 lb		
Soil Friction Force	4037 lb		
Total Weight	20,004 lb		

Factor of Safety = 1.13

Note: Total weight must be greater than buoyancy force so that tank will not float during high water table conditions.

^{*} Volume calculated by the prismoidal formula.

Pump Tank Buoyancy Calculation

Project: Birchwood Trails, Lot 45 **Location:** Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Tank Size (nominal) 1275 gal

Properties/Assumptions:

Min. liquid level to be maintained in tank at all times after initial installation.					
Min. depth to water table Effluent Density	12 in. 62.4 lb/ft ³	from ground surface (Specific Weight of Water)			
Concrete Density Soil App. Sp. Grav.	142.6 lb/ft ³ 1.3	(typical value)			
Soil Cover Over Tank		(minimum)			
Additional Cover	6 in.	for pipe grade			
Unsubmerged wt of soil	81.1 lb/ft ³				
Submerged wt of soil	49.9 lb/ft ³	50% porosity assumed			

Tank Dimensions (from supplier):

Tank Dimensions (nom supplier).								
			<u>Exterior</u>			<u>Interior</u>		
			Тор	Botton	n To	ор	Bottom	
	Tank	Length	108.0	104	.0	102.0	98.0	in.
		Width	58.0	54	.0	52.0	48.0	in.
		Height	64.5	(w/o lid)		60.5		in.
	Lid	Length	108.0	in.				
		Width	58.0	in.				
		Height	3.0	in.				
	Are	ea of Riser	Openings	3.:	L4 ft ²			
Peri	manent I	iquid Dep	th in Tank	0	.0 in.		0.00	ft
				-				
		Tai	nk Weight	1050	00 lb	(1	per manuf	acturer)

Buoyancy Force Calculation:

Buoyancy Force Specific Weight of Water x Displaced Volume Displaced Volume 234.1 ft ³ *
Buoyancy Force Specific Weight of Water x Displaced Volume

Weight Calculation:

Tank Weight	10500 lb		
Water Weight in Tank	0 lb	Volume	0.0 ft ³ *
Soil Weight Over Tank	4281 lb		
Soil Friction Force	4227 lb		
Total Weight	19,008 lb		

Factor of Safety = 1.30

Note: Total weight must be greater than buoyancy force so that tank will not float during high water table conditions.

^{*} Volume calculated by the prismoidal formula.



CERTIFICATE OF LIABILITY INSURANCE

CGARKALNS

DATE (MM/DD/YYYY) 1/12/2024

AGRITEC-01

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER. AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

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PRODUCER	CONTACT Connie Garkains					
Hartsfield & Nash Agency, Inc.	PHONE (A/C, No, Ext): (919) 556-3698 FAX (A/C, No): (919) 5					
10405 Ligon Mill Rd., Ste´H Wake Forest, NC 27587	E-MAIL ADDRESS: Connie@hartsfield-nash.com					
	INSURER(S) AFFORDING COVERAGE					
	INSURER A : Selective Insurance Company of the Southeast 3992					
INSURED	INSURER B : ACCIDENT FUND INSURANCE COMPANY OF AMERICA	10166				
Agri-Waste Technology Inc	INSURER C: Evanston Insurance Company					
501 N. Salem St Ste 203	INSURER D:					
Apex, NC 27502	INSURER E :					
	INSURER F:					

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR	INSR TYPE OF INSURANCE		SUBR	POLICY NUMBER	POLICY EFF	POLICY EXP (MM/DD/YYYY)	P		
Α	N				\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	,,	EACH OCCURRENCE	\$	2,000,000
	CLAIMS-MADE X OCCUR		s	2253659	1/18/2024	1/18/2025	DAMAGE TO RENTED PREMISES (Ea occurrence)	\$	300,000
							MED EXP (Any one person)	\$	10,000
							PERSONAL & ADV INJURY	\$	2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	\$	4,000,000
	POLICY X PRO-						PRODUCTS - COMP/OP AGG	\$	4,000,000
	OTHER:							\$	
Α	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	\$	1,000,000
	X ANY AUTO		s	2253659	1/18/2024	1/18/2025	BODILY INJURY (Per person)	\$	
	OWNED SCHEDULED AUTOS						BODILY INJURY (Per accident)	\$	
	HIRED AUTOS ONLY NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	\$	
								\$	
Α	UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE						EACH OCCURRENCE	\$	2,000,000
			S	2253659	1/18/2024	1/18/2025	AGGREGATE	\$	2,000,000
	DED RETENTION \$							\$	
В	B WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N						X PER OTH- STATUTE ER		
			100003072 1/18/2024 1/18/2025 E.L. EACH ACC	E.L. EACH ACCIDENT	\$	1,000,000			
	(Mandatory in NH)						E.L. DISEASE - EA EMPLOYEE	\$	1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - POLICY LIMIT	\$	1,000,000
С	Prof & Pollution			KLV3ENV104078	8/22/2023	8/22/2024	Each Claim		5,000,000
Α	Leased / Rented		S	2253659	1/18/2024	1/18/2025	Equipment		25,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER	CANCELLATION				
This is ONLY For Informational Purposes Contact Agency for Specific Holder info to be added *	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.				
	AUTHORIZED REPRESENTATIVE				
	Connie garaline				