



Agri-Waste Technology, Inc.
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Soil Suitability for Domestic Sewage Treatment and Disposal Systems Birchwood Trails – Lot 74 Olive Branch Rd. Fuquay Varina, NC 27526 (Harnett County) December 6, 2023

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 pit are included in Attachment 2.

The total property area is approximately .55 acres. The house and septic area are partially an open field, and partially wooded. The proposed septic system for the property is a pressure manifold fed, accepted status system for initial and repair.

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. Soil pits/borings were examined to determine soil suitability for on-site sewage disposal systems in accordance with 15A 18A .1900 Rules for Sewage Treatment and Disposal 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 for the primary system 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 failur	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 or cion 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:	

SECTION PROPERTY ID #: Lot 74
COUNTY: Harnett
SOIL/SITE EVALUATION

Sheet __1__ *of* __2_

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

(Complete all fields in full)

ADD PROI	NT: RESS: <u>221 Pro</u> POSED FACILIT	vidence Rd. Cl ΓY: _Single Fa	mily Resid	NC 27: lence	514 I _PROPOSEI			:04/24/20	023	TION DATE_ PROPERTY		
LOC	ATION OF SITE	: Olive Bran	ch Rd. Fuc	uay Va	arina, NC 275	<u> 26</u>	GN FLOW (.19 Other		PROPERT	Y RECORDEI	D: <u>No</u>	
	ER SUPPLY:		Public	\square W		ng 🗆	Other					
EVA	LUATION MET	HOD: ∐ Au	ger Boring	□ Pi	t \square Cut	T	YPE OF WAST	EWATER:		e 🗌 Industrial	Process	
P R O F I L	.1940 LANDSCAPE	HORIZON	SOI		RPHOLOG 1941)	¥Y	I	OTI PROFILE		S		
#	POSITION/ SLOPE %	DEPTH (IN.)	.194: STRUCT TEXTU	URE/	.194 CONSISTI MINERA	ENCE/	.1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR	
1,		A 0-6"	LS; Gr		NS; NP; VFr		10YR 3/3				Provisionally Suitable	
2		E 6-20"	LS; Gr		NS; NP; VFr		10YR 7/6	26"			Suitable	
3		Bt1 20-36"	SCL; SBK		SS; SP; Fi-Fr		2.5YR 5/8	36"			0.4GPD/ft2	
4		A 0-4" E 4-18"	LS; Gr		NS; NP; \		10YR 3/3				Provisionally Suitable	
		Bt1 18-30	LS; Gr " SCL · S	SBK	NS; NP; \	<u>/⊦r</u> -i-Fr	10YR 7/6 2.5YR 5/8	30"			-	
		Bt2 30"+			S; SP; Fi		2.5YR 5/8 10YR 6/2				0.4GPD/ft2	
		1			1		•	•				
	DESCRIPTION	INITIAL	SYSTEM	REPA	AIR SYSTEM		R FACTORS (
Available Space (.1945) Provisionally Suitable				Provi Suita	visionally SITE		CLASSIFICAT UATED BY:					
System Type(s) Pressure Manifed Accepted				Press Acce	ure Manifold pted							

LEGEND

Site LTAR

COMMENTS

 $0.4GPD/Ft^2$

 $0.4GPD/Ft^2$

use the following standard abbreviations

	use the following standard abbreviations									
LANDSCAPE POSITION	GROUP	SOIL <u>TEXTURE</u>	CONVENTIONAI .1955 LTAR*	LPP .1957 LTAR*	MINERALOGY/ CONSISTENCE	STRUCTURE				
CC (Concave Slope) CV (Convex Slope) D (Drainage Way)	I	S (Sand) LS (Loamy Sand)	1.2 - 0.8	0.6 - 0.4	SEXP (Slightly Expansive) EXP (Expansive)	G (Single Grain) M (Massive) CR (Crumb)				

DS (Debris Slump) FP (Flood Plain) FS (Foot Slope)	П	SL (Sandy Loam) L (Loam)	0.8 - 0.6	0.4 - 0.3		GR (Granular) SBK (Subangular Blocky) ABK (Angular Blocky)
H (Head Slope)	III	Si (Silt)	0.6 - 0.3	0.3 - 0.15		PL (Platy)
L (Linear Slope)		SiCL (Silty Clay Loam)				PR (Prismatic)
N (Nose Slope)		CL (Clay Loam)				
R (Ridge)		SCL (Sandy Clay Loam)			MOIST	WET
S (Shoulder Slope)		SiL (Silt Loam)				
T (Terrace)					VFR (Very Friable)	NS (Non-sticky)
	IV	SC (Sandy Clay)	0.4 - 0.1	0.2 - 0.05	FR (Friable)	SS (Slightly Sticky)
		SiC (Silty Clay)			FI (Firm)	S (Sticky)
		C (Clay)			VFI (Very Firm v. Very Sticky)	VS (Very Sticky)
		O (Organic)	None	None	EFI (Extremely Firm)	NP (Non-plastic) SP (Slightly Plastic)
	**** *********					

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

P (Plastic) VP (Very Plastic)

 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)

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

S (Suitable), PS (Provisionally Suitable), or U (Unsuitable)

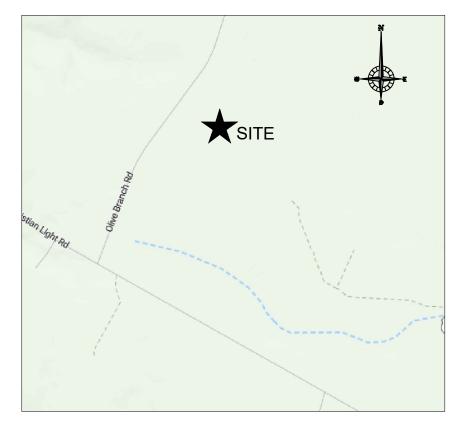
CLASSIFICATION S (S Evaluation of saprolite shall be by pits.

NOTES

Long-term Acceptance Rate (LTAR): gal/day/ft²

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

BIRCHWOOD T	RAILS - LOT 74
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 74

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



REV. ISSUED DATE DESCRIPTION

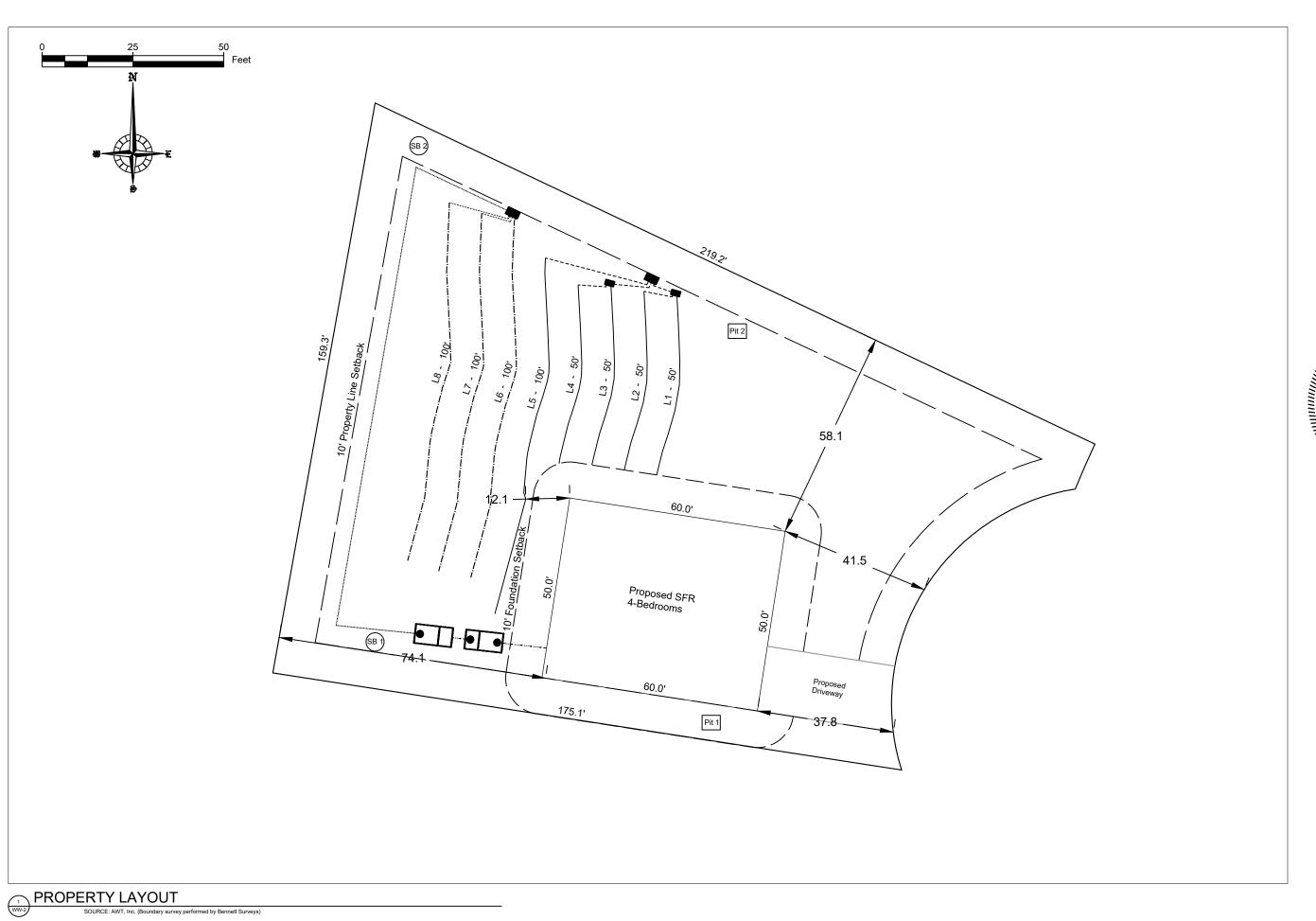
SHEET TITLE

Cover Sheet

DRAWING NUMBER

WW-1





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 74

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: H. Clapp	CREATED ON: 12/6/2023
REVISED BY: ####	REVISED ON:
RELEASED BY: ####	RELEASED ON:

DRAWING NUMBER

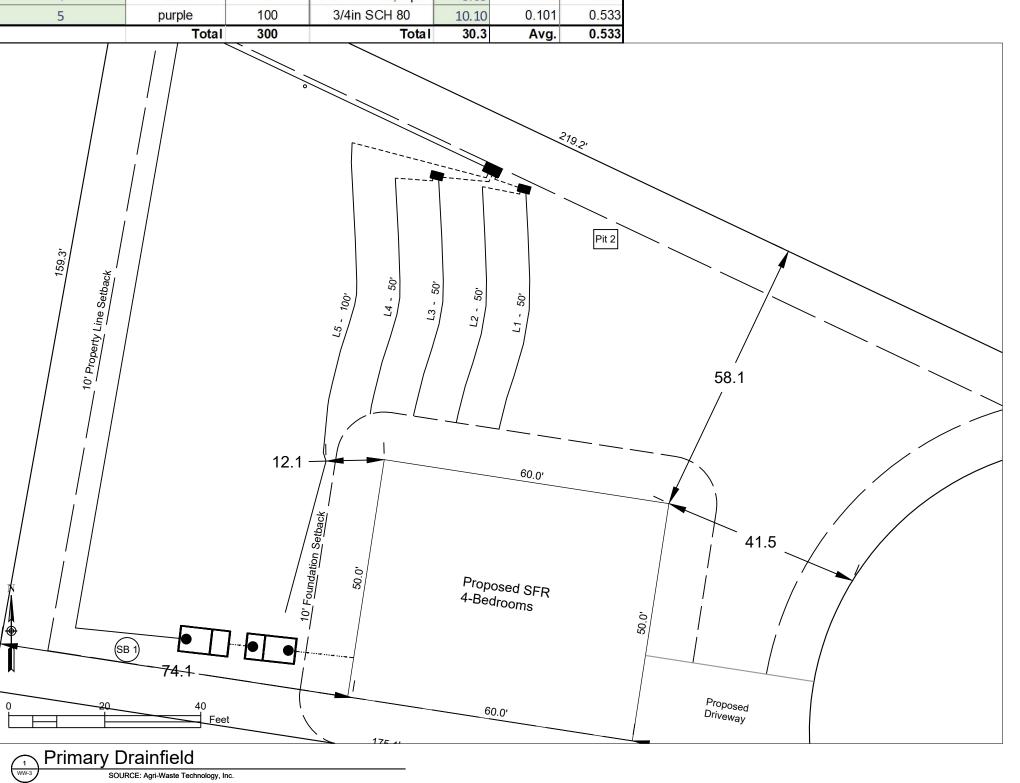
WW-2

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.
- Drainfield area shall be cleared of all leaves, pine straw, debris, etc. The accumulated material shall be removed from the drainfield.
- In clayey soils, sides of trenches shall be raked and limed per manufacturer's instructions.
- Supply lines shall be installed with a minimum of 18" cover.
- The trenches shall be backfilled appropriately so that no low areas are present.
- 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 Sys	stem/Distribution:	Pump to Pres	sure Manifold			
		using EZflow	1			
			*			
	Flag	Line		Flow	Flow/Foot	Line
Line No.	Color	Length (ft)	Тар	(gpm)	(gpm/ft)	L.T.A.R.
1	purple	50	3/4in SCH 80, Split	5.05	0.101	0.533
2	red	50	3/4in SCH 80, Split	5.05	0.101	0.533
3	white	50	3/4in SCH 80, Split	5.05	0.101	0.533
4	blue	50	3/4in SCH 80, Split	5.05	0.101	0.533
5	purple	100	3/4in SCH 80	10.10	0.101	0.533
	Total	300	Total	30.3	Λvα	0.533

SOURCE: Agri-Waste Technology, Inc.





Apex, North Carolina 27502 919-859-0669 www.agriwaste.com

Ballentine Associates, PA Birchwood Trails - Lot 74

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

Ballentine Associates, PA 221 Providence Rd Chapel Hill, NC 27514 919-929-0481

rey, issued date description

SHEET TITLE

Primary Drainfield

DRÁWN BY: CREATED ON: H. Clapp REVISED ON: REVISED BY: RELEASED ON: RELEASED BY:

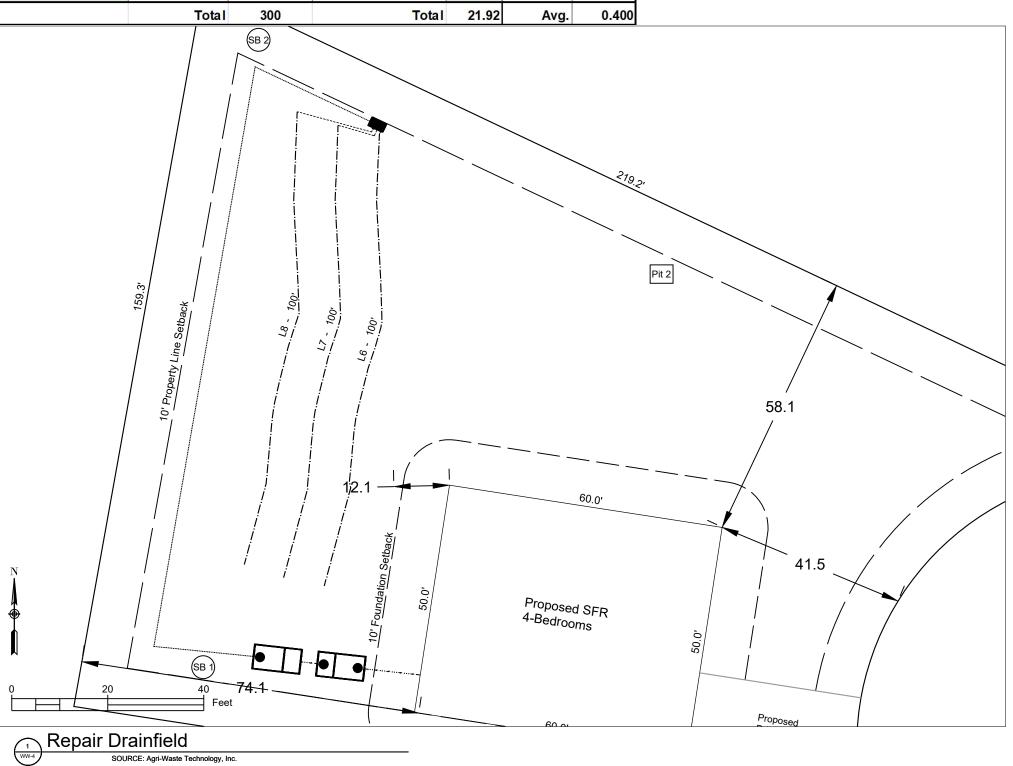
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General Drainfield Notes:

- 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.
- Drainfield area shall be cleared of all leaves, pine straw, debris, etc. The accumulated material shall be removed from the drainfield.
- In clayey soils, sides of trenches shall be raked and limed per manufacturer's instructions.
- Supply lines shall be installed with a minimum of 18" cover.
- The trenches shall be backfilled appropriately so that no low areas are present.
- 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	stem/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.
6	orange	100	1/2in SCH 80	5.48	0.055	0.400
7	yellow	100	1/2in SCH 80	5.48	0.055	0.400
8	red	100	1/2in SCH 80	5.48	0.055	0.400
	Total	300	Total	21 92	Ava	0.400

SOURCE: Agri-Waste Technology, Inc.





Apex, North Carolina 27502 919-859-0669 www.agriwaste.com

Ballentine Associates, PA Birchwood Trails - Lot 74

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

Ballentine Associates, PA 221 Providence Rd Chapel Hill, NC 27514 919-929-0481

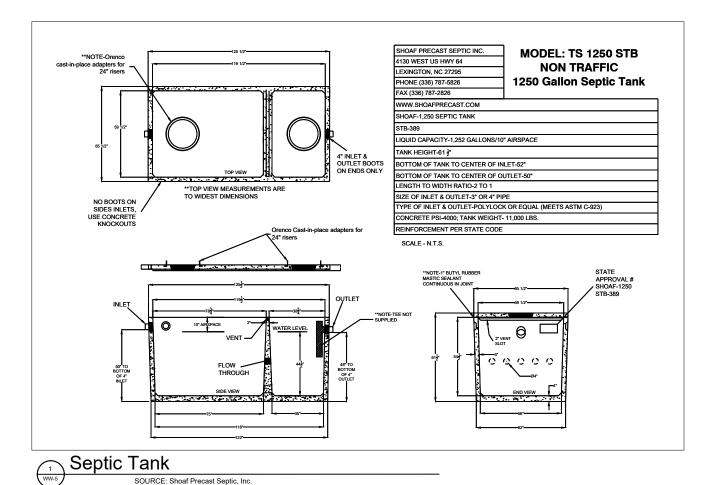
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SHEET TITLE

Repair Drainfield

DRÁWN BY: CREATED ON: H. Clapp REVISED ON: REVISED BY: RELEASED ON: RELEASED BY:

DRAWING NUMBER



ISER INSTALLATION INSTRUCTIONS:

the adapter and riser with sandapper. Use a clean cloth and acetone or alcohol to clean the bonding surfaces of the adapter and riser. The bonding surfaces must be clean and dry for a good fit and waterlight joint. Let the acetone or alcohol dry completely. Ply Adhesive
Apply a bead of methacrylate adhesive to the outside of the adapter. One 7-ox packet of MA320 adhesive is typical for one 24* riser.

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

3. Install Riser

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

3.2. Firmly press the riser anto the odopter until the bottom of the riser is resting on the concrete (cost-in-adopters) or the adapter llange (botted-down adopters). Twist the riser back and forth slightly to fully seat it on to create a good band.

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

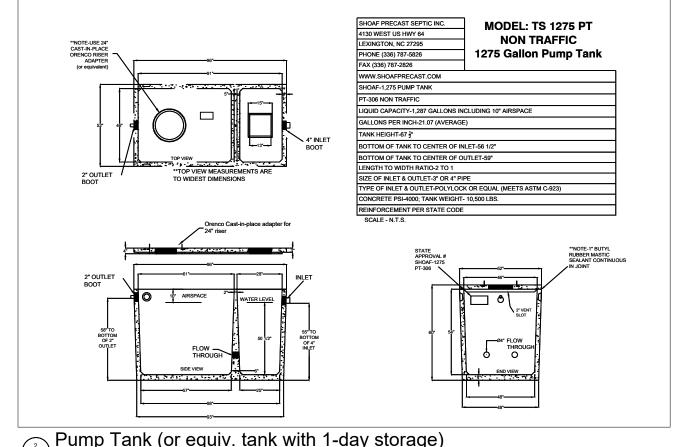
3.4. Use a tangue depressor, putty knife, or clean cloth to make a continuous fillet on the inside of the access riser-adopter joint.

3.5. Apply hydraulic cement to band outer riser wall and top of lank.

4. Ensure safety net and inner lid are in place and secured.

FOR RISER WALL PENETRATIONS

e Saw Size, Inc



SOURCE: Shoaf Precast Septic, Inc.

NOTES

2. Harnett County to perform construction inspections and final

4. Contractor to abide by all safety regulations during system

5. Contractor shall backfill around all access areas such that

6. Invert elevations of all components to be verified in field by

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

9. Actual installation and placement of treatment system to be

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.

- 1. Installation to follow all NC DHHS and Harnett County applicable rules and regulations.
- system certification.
- 3. Septic Tank to have approved effluent filter.
- installation.
- storm water is shed away from potential entry points.
- contractor to insure proper operation.
- 7. All system piping to be SCH40 PVC (except where noted).
- elbows.
- overseen by Contractor.

Riser Safety Nets

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

Install Safety Net in Each Access

Riser that does not contain an

Inner Lid

SOURCE: SIM-TECH. Inc.

REV. ISSUED DATE DESCRIPTION

501 N. Salem Street, Suite 203

Apex, North Carolina 27502

919-859-0669

www.agriwaste.com

Ballentine Associates, PA

Birchwood Trails - Lot 74

Fuquay Varina, NC 27526

Ballentine Associates, PA 221 Providence Rd

Chapel Hill, NC 27514

919-929-0481

dillons@ballentin

Olive Branch Rd

Harnett County

Project Owner

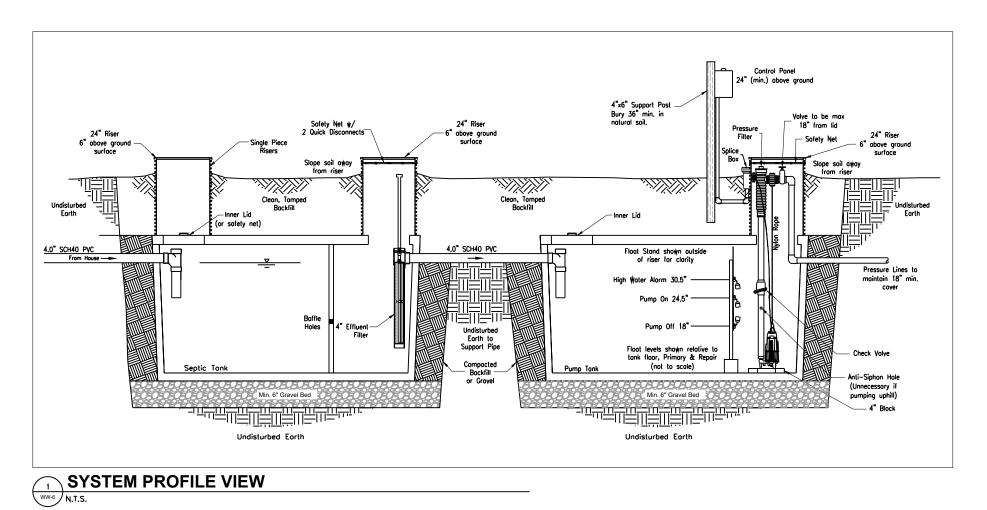
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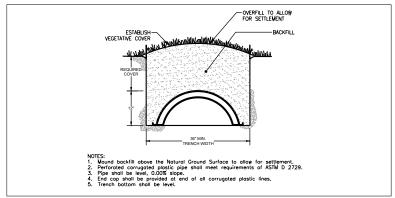
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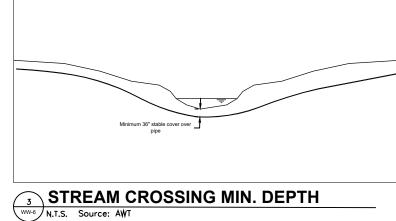
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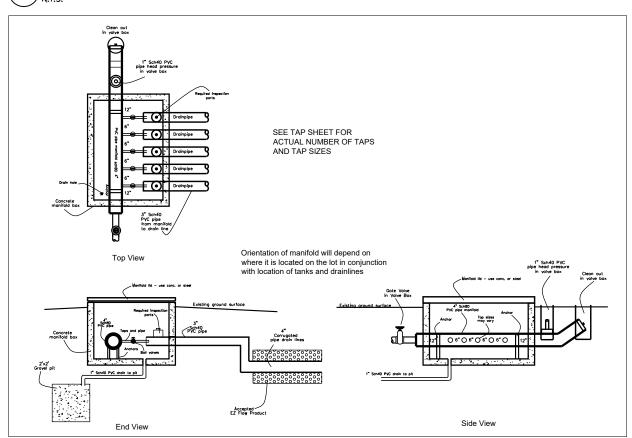
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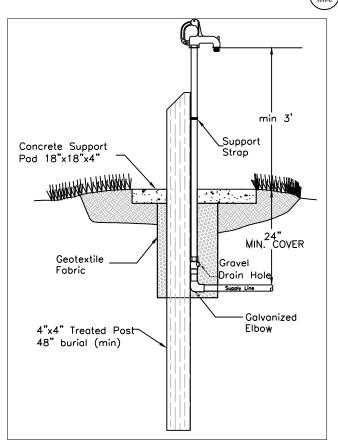


TRENCH X-SECTION (Typical) WW-6 N.T.S. Source: AWT



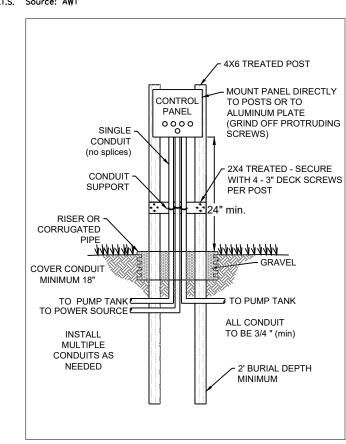


PRESSURE MANIFOLD INSTALLATION (Typical) - For Illustration Only WW-6 N.T.S. SOURCE: AWT



YARD HYDRANT (if required)

N.T.S. SOURCE: AWT



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

rev. Issued date description SHEET TITLE Detail Sheet 2 CREATED ON: DRÁWN BY: H. Clapp 12/6/2023 REVISED ON: REVISED BY:

RELEASED BY:

DRAWING NUMBER

RELEASED ON:

WW-6

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

Ballentine Associates, PA Birchwood Trails - Lot 74

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

Ballentine Associates, PA 221 Providence Rd

Chapel Hill, NC 27514 919-929-0481

dillons@ballentine

Project Location:

Project Owner

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 ve 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

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 "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

20' Max

20' Max

- (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 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 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 gravel is granular material.

 Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that
- 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 potentially hazardous situations.
- (iv) Observe the area adjacent to the excavation and the excavation itself for evidence of existing utility and 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
- 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.

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

(2) Manual tests. Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil and to provide more information in order to classify soil properly

(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

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Ballentine Associates, PA

Birchwood Trails - Lot 74

Fuquay Varina, NC 27526

Ballentine Associates, PA 221 Providence Rd

NC ONSITE WASTEWATER EVALUATOR SEAL

WAO MILL

Number

10003E

ALUATOR THIRININI WHITE

rev. Issued date description

SHEET TITLE

DRAWN BY:

REVISED BY:

H. Clapp

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RELEASED BY: ####

drawing number

Excavation Safety

CREATED ON: 12/6/2023

REVISED ON:

RELEASED ON:

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Chapel Hill, NC 27514

dillons@ballentineas

Olive Branch Rd

Harnett County

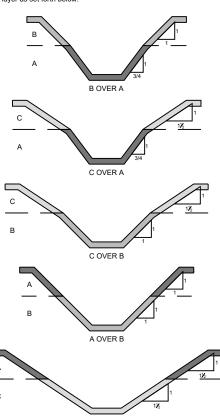
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- (ii) Dry strength. If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or sitt). If the soil is dry and falls into clumps which break up into 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.

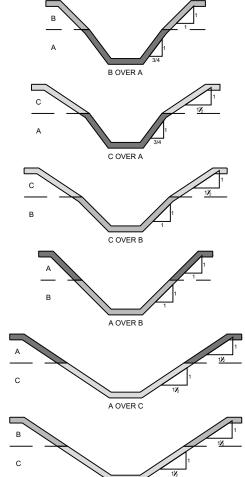
EXCAVATIONS IN LAYERED SOILS

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



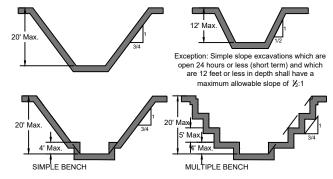
All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

slope for each layer as set forth below

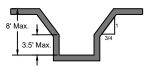


EXCAVATIONS IN TYPE A SOILS

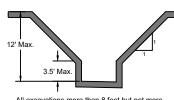
All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 3/2:1.



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

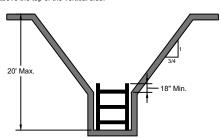


All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 31/2 feet



All excavations more than 8 feet but not more 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

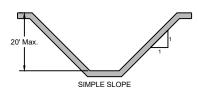
All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of 3/4:1. The support or shield system must extend at least 18 inches above the top of the vertical side



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).

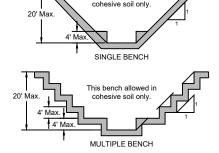
EXCAVATIONS IN TYPE B SOILS

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

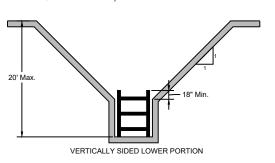


All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maxium bench dimensions as follows

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

501 N Salem Street, Suite 203, Apex, NC 2750 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 74

Property: Olive Branch Road,

Fuquay Varina, NC 27526

Subdiv.:

Lot #: 74

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

12/6/2023

Harnett

III b

Soil Parameters

Soil Evaluation By:

LTAR: 0.400

Special Conditions/Notes:

Design Parameters

Type of Establishment: Residence, 5 or fewer bedrooms

gpd/ft²

Unit: Bedroom # of Units: 4

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: EZflow
Trench Width: 3 ft
Trench Depth: 22 in.

(or as specified on permit)

Trench Bottom Area: 1200
Minimum Drain Line: 300

Actual Drain Line: 300
Number of Lines: 5

Minimum Line Spacing: 9

9

 ft^2

ft

ft

ft O.C.

Wastewater Treatment System Design Calculations

Project: Birchwood Trails, Lot 74 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	
			0	
			0	
		Q=	480	g

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:

Shoaf Model: TS 1250 STB

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

Interior Exterior 119.5 Length: 125.5 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 74 **Location:** Olive Branch Road,

Fuguay 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)

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

Pump Off 18.0 in.

Pump On 24.5 in. (set for dose volume)
Alarm On 30.5 in. (6 in. above On Float)

Emergency Storage Available

Pump Tank 632 gal
Days of Storage 1.32 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) 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")

ELEVATIONS

Project: Birchwood Trails, Lot 74
Location: Olive Branch Road,
Fuquay Varina, NC 27526

County:	Harnett	
Dan ahasa ada	0	
Benchmark BM Elev	0 0 ft	
DIVI LIEV	0 10	
Septic Tank	1,250 gal	
Ground Surface		294.00 ft
Depth of Soil Cover	16 in.	1.33 ft
Overall Ht of Tank	61.5 in.	5.13 ft
Elev, Base of Tank	FO :	287.54 ft
Ht to 4" Inlet Invert	50 in.	4.17 ft 291.71 ft
Elev, 4" Inlet Invert Ht to 4" Outlet Invert	48 in.	4.00 ft
Elev, 4" Outlet Invert	40 111.	291.54 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation	<u> </u>	287.04 ft
Pump Tank	1275 gal	
Ground Surface		294.00 ft
Depth of Soil Cover	18 in.	1.50 ft
Overall Ht of Tank	67.5 in.	5.63 ft
Elev, Base of Tank	Γ4 Γ in	286.88 ft
Ht to 4" Inlet Invert	54.5 in.	4.54 ft 291.42 ft
Elev, 4" Inlet Invert Ht to 2" Outlet Invert	58 in.	4.83 ft
Elev, 2" Outlet Invert	J6 III.	291.71 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		286.38 ft
ST Inlet Pipe		
Grade @ Stub-out		294 ft
Depth of Stub-out, top		1.5 ft
Elev, Stub-out Invert Elev @ ST Inlet Invert		292.15 ft 291.71 ft
Length		10 ft
Slope		4.4 %
5.475		
Pipe, ST to PT		
ID	4 in.	0.33 ft
OD	4.5 in.	0.38 ft
Elev, ST Outlet Invert		291.54 ft
Elev, PT Inlet Invert		291.42 ft
Length		4 ft 3.1 %
Slope Cover over inlet pipe		3.1 % 1.94 ft
Cover over inlet pipe		1.54 10
Pump Reqmt.		
Floor Thickness	4 in.	0.33 ft
Elev, Pump Tank Floor		287.21 ft
Pump Block Ht.	4 in.	0.33 ft
Elev, Pump Intake		287.54 ft
Grade @ Primary Manifold		295.50 ft
Grade @ Repair Manifold		294.50 ft
Min. Cover	18 in.	1.50 ft
Max Elev, Repair		293.00 ft

Elev Diff, Repair

5.46 ft

Drainfield Design

Project Birchwood Trails, Lot 74
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	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.)
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	purple		50	50.0	
2	Layout Line	red		50	50.0	
3	Layout Line	white		50	50.0	
4	Layout Line	blue		50	50.0	
5	Layout Line	purple		100	100.0	
6	Layout Line	orange		100		100.0
7	Layout Line	yellow		100		100.0
8	Layout Line	red		100		100.0
	•		Total	600	300	300
			Count	8	5	3

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

PRESSURE MANIFOLD DESIGN (Primary)

Site Information

Birchwood Trails, Lot 74 Project: Location: Oliva Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Design Information

Estimated Daily Flow 480 gal/day 0.4 gal/day/ft² L.T.A.R. 0.420 gal/day/ft² L.T.A.R. + 5% Trench Width 3 ft. 400 ft. Line Length Required Length after 25% Reduction 300 ft 0.533 gal/day/ft² L.T.A.R. Reduced

0.560 gal/day/ft² L.T.A.R. Reduced + 5%

DRAINFIELD INFO. - Primary

Proposed Type of System/Distribution: Pump to Pressure Manifold

using EZflow

	Flag	Line		Flow	Flow/Foot	Line
Line No.	Color	Length (ft)	Тар	(gpm)	(gpm/ft)	L.T.A.R.
1	purple	50	3/4in SCH 80, Split	5.05	0.101	0.533
2	red	50	3/4in SCH 80, Split	5.05	0.101	0.533
3	white	50	3/4in SCH 80, Split	5.05	0.101	0.533
4	blue	50	3/4in SCH 80, Split	5.05	0.101	0.533
5	purple	100	3/4in SCH 80	10.10	0.101	0.533
	Total	300	Total	30.3	Avg.	0.533

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

Total Run Time	15.84 min.
Drainfield Capacity	195.9 gal
% of Drainfield Can	69.9%

(Req. Range 66-75%)

Dose Volume 136.9 gal/dose Run Time/Dose

4.5 minutes Range 5-7 minutes unless uphill, checked Volume/depth 21.07 gal/in. (Per tank manufacturer's specifications) Estimated Drawdown 6.50 in.

Manifold Box

Number of Taps 3 with 2 Split(s) Manifold Length 3.0 ft. (approximate)

PRESSURE MANIFOLD SYSTEM DESIGN (Repair)

Site Information

Project: Birchwood Trails, Lot 74
Location: Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Design Information

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

DRAINFIELD INFO. - Repair

Proposed Type of System/Distribution: Pump to Pressure Manifold

using EZflow

Line No.	Flag Color	Line Length (ft.)		Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
6	orange	100	1/2in SCH 80	5.48	0.055	0.400
7	yellow	100	1/2in SCH 80	5.48	0.055	0.400
8	red	100	1/2in SCH 80	5.48	0.055	0.400
	Total	300	Total	21.92	Avg.	0.400

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

Total Run Time 21.90 min.
Drainfield Capacity 195.9 gal
% of Drainfield Cap 69.9%

% of Drainfield Cap 69.9% (Req. Range 66-75%)

6.50 in.

Dose Volume 136.9 gal/dose
Run Time/Dose 6.2 minutes
Volume/depth 21.07 gal/in.

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

Manifold Box

Estimated Drawdown

Number of Taps 3 with 0 Split(s)
Manifold Length 3.0 ft. (approximate)

PUMP DESIGN

System (initial/repair): Primary

Project: Birchwood Trails, Lot 74
Location: Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Friction Losses

Suction Head	0 ft	(submersible 0)
Elev. Difference (highest point from pump)	6.46 ft	
Design Pressure At Outlet	2 ft	
Supply Line - 2" Schedule 40 PVC		
Pipe Diameter, Nominal 2 in.	Пош	20.2 anm
Pipe Diameter (ID) 2.047 in.	Flow	30.3 gpm
Pipe Length 219 ft	Velocity	2.95 ft/sec
Pipe Length for Fittings 21.9 ft	Me	eets requirement that 2 ft/s < v < 5 ft/s.
Equivalent Length 240.9 ft		
Estimated Friction Loss in Supply Line	4.01 ft	
Friction Loss - Taps/Special Fittings	3.5 ft	
TOTAL	15.96 ft.	

Flow for Anti-Siphon Hole

Hole Diameter 3/16 in.
Hole Flowrate 1.66 gpm

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

Flow 31.96 gpm

Required Horsepower 0.20 hp

TDH 15.96 ft

Pump Selection

Manufacture	Zoeller
Mode	N98
Horsepowe	0.5

PUMP DESIGN

System (initial/repair): Repair

Project: Birchwood Trails, Lot 74
Location: Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Friction Losses

Suction Head	0 ft	(submersible 0)
Elev. Difference (highest point from pump)	5.46 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	21.92 gpm
Pipe Length 177 ft	Velocity	2.14 ft/s
Pipe Length for Fittings 17.7 ft	Me	ets requirement that 2 ft/s < v < 5 ft/s.
Equivalent Length 194.7 ft		
Estimated Friction Loss in Supply Line	1.78 ft	
Friction Loss - Taps/Special Fittings	3.5 ft	
TOTAL	12.74 ft.	

Flow for Anti-Siphon Hole

Hole Diameter 3/16 in.
Hole Flowrate 1.48 gpm

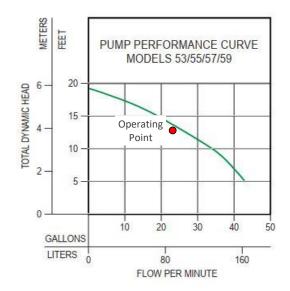
Pump Efficiency 0.7 (assumed, typical)
Motor Efficiency 0.9 (assumed for electric pumps)

Flow 23.40 gpm

Required Horsepower 0.12 hp **TDH** 12.74 ft.

Pump Selection

. ump concern	
Manufacturer:	Zoeller
Model:	N53
Horsepower:	0.3



Septic Tank Buoyancy Calculation

Project: Birchwood Trails, Lot 74
Location: Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Tank Size (nominal) 1250 gal

Properties/Assumptions:

. reperties, tosamptismo		
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):

Talik Dillielisiolis (nom oupp	101).			
		<u>Exterior</u>		<u>Inter</u>	<u>ior</u>
		Top	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	n.		
	Width	65.5 i	n.		
	Height	3.0 i	n.		
Are	ea of Riser	Openings	6.28 ft ²		
Permanent L	iquid Dep	th in Tank	0.0 in		0.00 ft
		_			
	Tai	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 74 **Location:** Olive Branch Road,

Fuquay Varina, NC 27526

County: Harnett

Tank Size (nominal) 1275 gal

Properties/Assumptions:

Min. liquid level to be mainta	ined in tank at all tir	mes after initial installation.
Min. depth to water table Effluent Density Concrete Density	12 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	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):

Talik Di	IIIIerisioris	(пош ѕирр	iliei).				
	·		<u>Exterior</u>		<u>Int</u>	<u>Interior</u>	
			Тор	Bottom	Тор	Bottom	
	Tank	Length	108.0	104.	0 102.0	98.0	in.
		Width	58.0	54.	52.0	48.0	in.
		Height	64.5	(w/o lid)	60.5	5	in.
	Lid	Length	108.0	in.			
		Width	58.0	in.			
		Height	3.0	in.			
	Are	ea of Riser	Openings	3.1	4 ft ²		
					_		
P	ermanent l	Liquid Dep	th in Tank	0.	o in.	0.00	ft
					_		
		Ta	nk Weight	1050	0 lb	(per manuf	acturer)

Buoyancy Force Calculation:

Buoyancy Force Specific Weight of Water x Displaced Volume				
Displaced Volume	234.1 ft ³ *			
Buoyancy Force	14,606 lb			

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.



GKROHL



ACORD'

1/23/2023

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).

PRODUCER	CONTACT Connie Garkalns	_			
Hartsfield & Nash Agency, Inc. 10405 Ligon Mill Rd., Ste H	PHONE (A/C, No, Ext): (919) 556-3698 FAX (A/C, No): (919)	556-8758			
Wake Forest, NC 27587	E-MAIL ADDRESS: Connie@hartsfield-nash.com				
	INSURER(S) AFFORDING COVERAGE				
	INSURER A: Selective Insurance Company of the Southeast				
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	TYPE OF INSURANCE	ADDL SI	UBR	POLICY EFF (MM/DD/YYYY)	POLICY EXP	LIMIT	s
A	X COMMERCIAL GENERAL LIABILITY			,,	<u>,</u>	EACH OCCURRENCE	\$ 2,000,000
	CLAIMS-MADE X OCCUR		S 2253659	1/18/2023	1/18/2024	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- JECT LOC					PRODUCTS - COMP/OP AGG	\$ 4,000,000
	OTHER:						\$
A	AUTOMOBILE LIABILITY					COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
	X ANY AUTO		S 2253659	1/18/2023	1/18/2024	BODILY INJURY (Per person)	\$
	OWNED SCHEDULED AUTOS					BODILY INJURY (Per accident)	\$
	HIRED AUTOS ONLY NON-OWNED AUTOS ONLY					PROPERTY DAMAGE (Per accident)	\$
							\$
Α	X UMBRELLA LIAB X OCCUR					EACH OCCURRENCE	\$ 2,000,000
	EXCESS LIAB CLAIMS-MADE		S 2253659	1/18/2023	1/18/2024	AGGREGATE	\$ 2,000,000
	DED RETENTION\$						\$
В	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY					X PER OTH- STATUTE ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED?	N/A	100003072	1/18/2023	1/18/2024	E.L. EACH ACCIDENT	\$ 1,000,000
	(Mandatory in NH)					E.L. DISEASE - EA EMPLOYEE	
	If yes, describe under DESCRIPTION OF OPERATIONS below					E.L. DISEASE - POLICY LIMIT	\$ 1,000,000
С	Prof & Pollution		MKLV3ENV103400	8/22/2022		Each Claim	5,000,000
Α	Leased / Rented		S 2253659	1/18/2023	1/18/2024	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

Bina Krohl