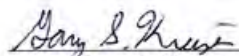


Soil and Site Evaluation For
Sewage Treatment and Disposal Systems
Adjacent to 211 WH McLean Lane
Bunnlevel, NC
(APN 120556 0166 02)
Harnett County

July 6, 2023


Gary S. Kreiser



919-741-8589

soilandsepticsolutions@gmail.com

The LSS evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2)

INTRODUCTION

Soil & Septic Solutions performed an on-site subsurface wastewater system investigation on approximately 1.18 acres (APN 120556 0166 02) located on WH McLean Lane in Harnett County, North Carolina on July 1, 2023. The plan is for a 3 bedroom home. The property will require the use of a private well.

The property was evaluated in accordance with North Carolina statutes for waste disposal ("Laws and Rules for Sewage Treatment and Disposal Systems", Sections .1940 through .1944).

This LSS evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2). Based on this evaluation a 3 bedroom, septic layout has been provided to document there is enough space for an initial and repair system.

At the time of the investigation the property was mostly grassed with some early successional trees growing in the western portion of the property.

INVESTIGATION METHODOLOGY

Soil borings were made with a hand-turned auger in the study area. Observations of the landscape (slope, drainage patterns, past use, etc.) as well as soil properties (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) to a depth \geq 48 inches when possible were recorded. Soil color was determined with a Munsell Soil Color Chart. From these observations, potentially suitable areas for wastewater disposal were identified.

A handheld global positioning system (GPS) with sub-meter accuracy was used to locate each soil boring as well as other pertinent site features.

FINDINGS

Five (5) hand auger borings were made on the property, logged, and their locations are shown in the Soil Boring Location Exhibit. Soil boring logs are attached.

Depth to wetness was the limiting factor at the site (See attached boring logs). All five borings were at least 26 inches to wetness. The soil texture ranged from sandy loam to sandy clay loam. A long term acceptance rate (LTAR) of 0.4 gpd/ft² was assigned to these soils. The soils are considered provisionally suitable with a shallow place septic system. It is estimated that there is an area of approximately 8,000 ft² (See attached Soil Boring Location Exhibit).

SYSTEM DESIGN

3 bedroom house

A design flow of 360 gallons per day as well as a long term acceptance rate (LTAR) of 0.4 gpd/ft² was used in the calculation of the required sizing of the septic system. The initial and repair systems can be gravel or an Accepted Status System. The use of an Accepted Status System would allow for a 25% reduction in length. Three lines, 100 feet each were laid out in the suitable soil area (See Septic Layout Exhibit) for the initial system. Three additional lines, 100 feet each were laid out and are designated for the repair system. The initial system and repair will be gravity. Distribution can be either a D-Box or serial.

After slope correction recommended maximum downslope trench bottom depth is 16 inches for both the initial and repair systems. The septic tank will need to have a minimum capacity of 900 gallons. The proposed septic system (See the Septic Layout Exhibit) is over 50 feet away from the proposed new well.

Attached are the wastewater soil/site evaluation forms, location sketch of borings, and system layout.

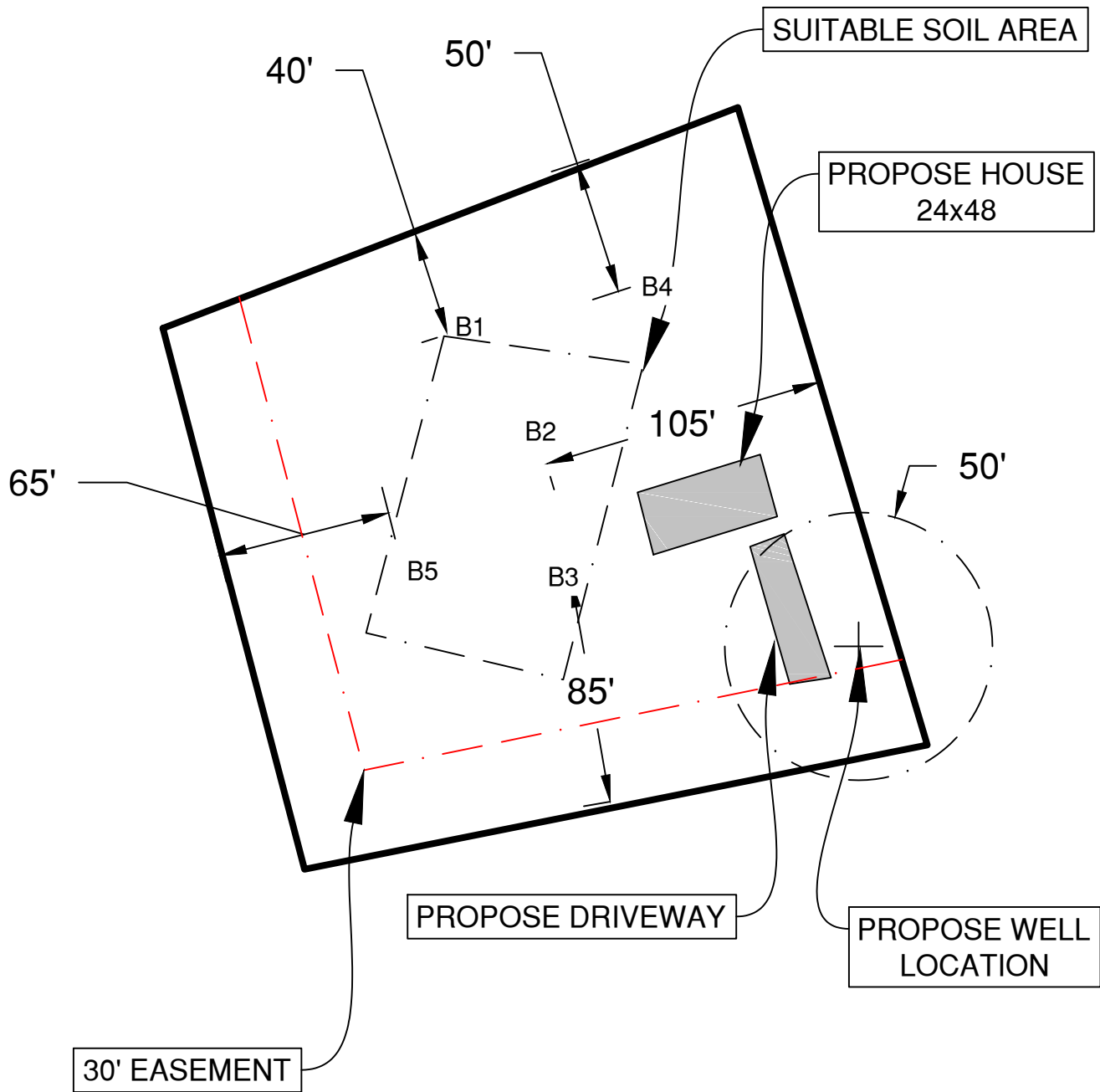
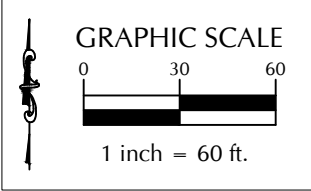
The septic installer contractor shall install the primary system on contour, see the attached site plan for the primary system. Installation must meet all state and local regulations for septic system installation. The area designated on the site plan for the septic system and repair must remain undisturbed (no mechanical clearing, excavation, heavy traffic, or other significant site disturbing activities) until authorized by the health department.

Sincerely,

A handwritten signature in cursive script that reads "Gary Kruse".

Attachments:

- 1) Soil boring locations
- 2) System Specifications
- 3) System Layout
- 4) Soil boring logs
- 5) Property Owner Acknowledgement of G.S. 130A-335(a2) and (a3)
- 6) Improvement Permit Form for G.S. 130A(a2)/SL2022-11



WH MCLEAN LANE

SOIL BORING LOCATIONS

SOIL & SEPTIC SOLUTIONS

**BWH McLean Lane
3 bedroom house**

Number of bedrooms: 3
 Initial system LTAR: 0.4
 Initial trench length: 300 feet – Gravel or 225 feet – Accepted Status System.

Repair system LTAR: 0.4
 Repair system length: 300 feet – gravel or 225 feet – Accepted Status System.

SYSTEMS DELINEATION

Line	Flag Color	Length	Design Length Installation	Rod Reading	Elevation	System Type
1	Blue	100	100	3.83	101.0	Initial
2	Red	100	100	4.75	100.1	Initial
3	Yellow	100	100	5.58	99.3	Initial
4	Double Blue	105	100	6.54	98.3	Repair
5	Double Yellow	105	100	7.33	97.5	Repair
6	Double Red	105	100	8.17	96.7	Repair

B.M. = 100.00' - iron pin property corner H.I. = 4.83'

System Notes

Initial

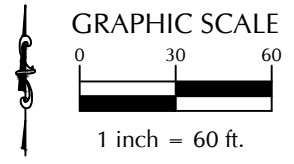
- A maximum trench depth on the downslope side of 16 inches is recommended for the initial system.
- 3x 100' drain lines were field delineated for the initial system (300')
- Drain lines were placed on at least 9-foot centers
- Distribution Method – gravity to D-Box or serial distribution
- Soil cap required and to extend 5' beyond trenches

Repair

- A maximum trench depth on the downslope side of 16 inches is recommended for the repair system.
- 3x 100' drain lines were field delineated for the initial system (300')
- Distribution Method – gravity to D-Box or serial distribution
- Soil cap required and to extend 5' beyond trenches

INITIAL SYSTEM: GRAVEL OR ACCEPTED STATUS
360 GPD
LINES: 1,2,3
3 X 100' TRENCHES
0.4 LTAR
16" MAXIMUM DOWNSLOPE TRENCH BOTTOM
MINIMUM 900 GALLON SEPTIC TANK
D BOX OR SERIAL DISTRIBUTION
SOIL CAP TO EXTEND 5' BEYOND TRENCHES
TYPE AND PLACEMENT OF SOIL COVER TO BE
APPROVED BY COUNTY HEALTH DEPARTMENT

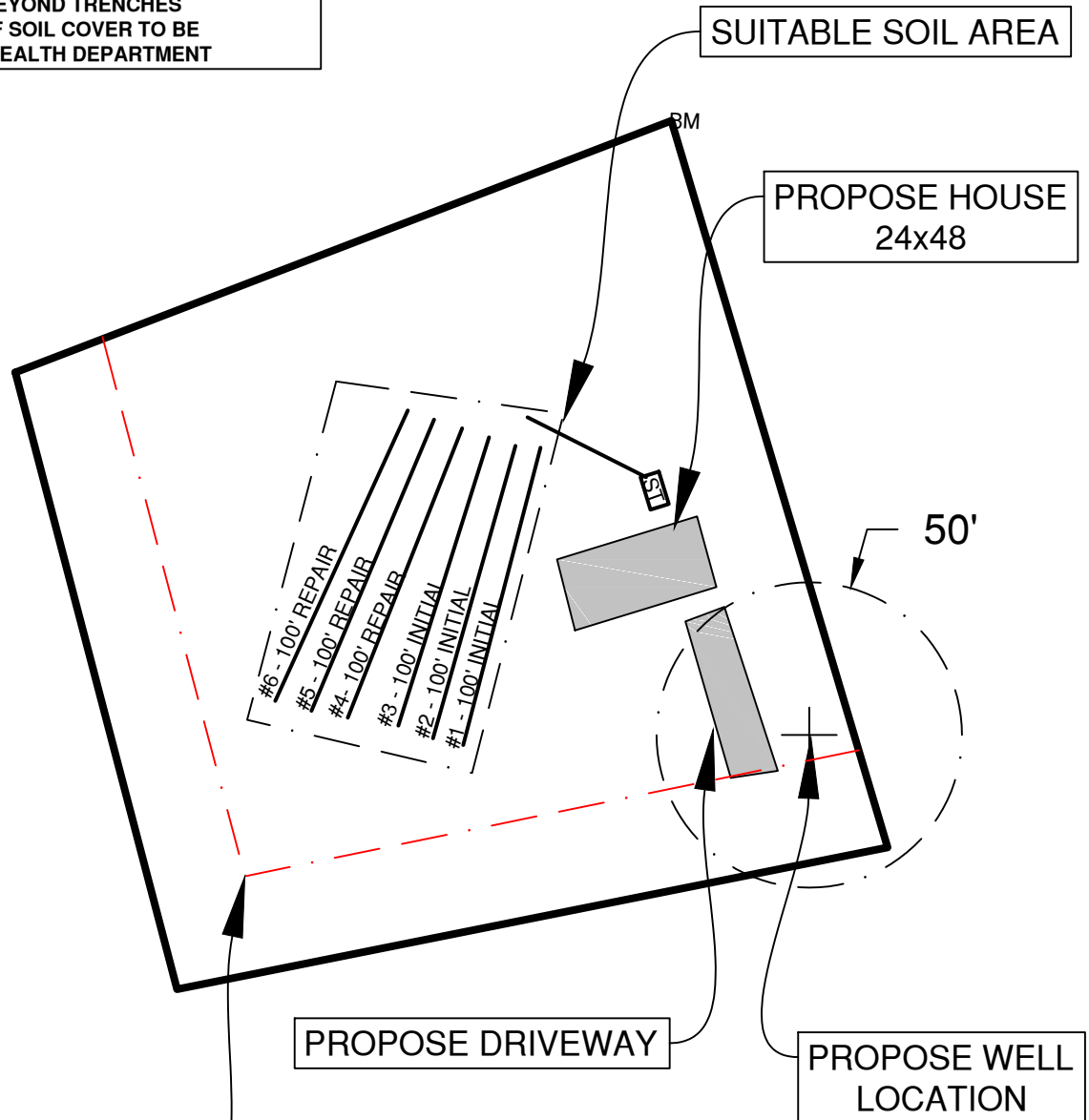
REPAIR SYSTEM: GRAVEL OR ACCEPTED STATUS
360 GPD
LINES: 4,5,6
3 X 100'
0.4 LTAR
16" MAXIMUM DOWNSLOPE TRENCH BOTTOM
D BOX OR SERIAL DISTRIBUTION
SOIL CAP TO EXTEND 5' BEYOND TRENCHES
TYPE AND PLACEMENT OF SOIL COVER TO BE
APPROVED BY COUNTY HEALTH DEPARTMENT



SYSTEMS DELINEATION

Line	Flag Color	Length	Design Length Installation	Rod Reading	Elevation	System Type
1	Blue	100	100	3.83	101.0	Initial
2	Red	100	100	4.75	100.1	Initial
3	Yellow	100	100	5.58	99.3	Initial
4	Double Blue	105	100	6.54	98.3	Repair
5	Double Yellow	105	100	7.33	97.5	Repair
6	Double Red	105	100	8.17	96.7	Repair

B.M. = 100.00' - iron pin property corner H.I. = 4.83'



NOTES:

- 1) NOT A SURVEY - PLOT PLAN SUPPLIED BY PROPERTY OWNER.
- 2) TANK AND TRENCHES TO BE LOCATED MINIMUM OF 10' FROM PROPERTY LINE AND MINIMUM OF 5' FROM ANY BUILDING FOUNDATION.
- 3) DO NOT CUT, FILL OR ALTER DRAINFIELD OR REPAIR AREA.
- 4) COMPLY WITH ALL SETBACKS

WH MCLEAN LANE

SEPTIC LAYOUT

SOIL & SEPTIC SOLUTIONS

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM
 (Complete all fields in full)

OWNER: _____ APPLICATION DATE: _____
 ADDRESS: WH MCLEAN LANE DATE EVALUATED: 7/1/23
 PROPOSED FACILITY: 3 BR PROPOSED DESIGN FLOW (.1949): 360 PROPERTY SIZE: 1.18
 LOCATION OF SITE: _____ PROPERTY RECORDED: _____

WATER SUPPLY: Private Public Well Spring Other _____
 EVALUATION METHOD: Auger Boring Pit Cut TYPE OF WASTEWATER: Sewage Industrial Process Mixed

P R O F I L E #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941)		OTHER PROFILE FACTORS				PROFILE CLASS & LTAR
			.1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	.1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	
1	L 5%	0-5	GR/SL	VFR/NP/NS/NEXP	10YR 4/3	-	-	-	0.6
		5-30	GR/SL	VFR/NP/NS/NEXP	10YR 7/4				
		30+	GR/SL	VFR/NP/NS/NEXP	10YR 6/2				
2	L 5%	0-5	GR/SL	VFR/NP/NS/NEXP	10YR 4/3	S	-	-	0.4
		5-20	GR/SL	VFR/NP/NS/NEXP	10YR 7/4				
		20-48	SBK/SCL	FR/SS/SP/SEXP	10YR 6/8 @30" 10YR 6/2 DEPELETIONS				
3	L 5%	0-5	GR/SL	VFR/NP/NS/NEXP	10YR 4/3	S	-	-	0.4
		5-15	GR/SL	VFR/NP/NS/NEXP	10YR 7/4				
		15-48	SBK/SCL	FR/SS/SP/SEXP	10YR 6/8 10YR 6/2 DEPELTIONS @ 36"				
4	L 5%	0-5	GR/SL	VFR/NP/NS/NEXP	10YR 4/3	-	-	-	0.4
		5-15	GR/SL	VFR/NP/NS/NEXP	10YR 7/4				
		15-30	SBK/SCL	FI/SS/SP/SEXP	10YR6/8 10YR 6/2 DEPLETIONS @ 26"				
		30-48	M/SCL	FI/SS/SP/SEXP					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM	OTHER FACTORS (.1946): _____ SITE CLASSIFICATION (.1948): <u>PS - SHALLOW PLACED SYSTEM</u> EVALUATED BY: <u>GARY KREISER</u> OTHER(S) PRESENT: _____
Available Space (.1945)	YES		
System Type(s)	GRAVEL OR	ACCEPTED	
Site LTAR	0.4	0.4	

COMMENTS: _____

LEGEND

use the following standard abbreviations

LANDSCAPE POSITION	GROUP	SOIL	CONVENTIONAL	LPP	MINERALOGY/	STRUCTURE	
		TEXTURE	.1955 LTAR*	.1957 LTAR*	CONSISTENCE		
CC (Concave Slope)	I	S (Sand)	1.2 - 0.8	0.6 - 0.4	SEXP (Slightly Expansive)	G (Single Grain)	
CV (Convex Slope)		LS (Loamy Sand)			EXP (Expansive)	M (Massive)	
D (Drainage Way)	II	SL (Sandy Loam)	0.8 - 0.6	0.4 - 0.3		CR (Crumb)	
DS (Debris Slump)		L (Loam)				GR (Granular)	
FP (Flood Plain)	III	Si (Silt)	0.6 - 0.3	0.3 - 0.15		SBK (Subangular Blocky)	
FS (Foot Slope)		SiCL (Silty Clay Loam)				ABK (Angular Blocky)	
H (Head Slope)		CL (Clay Loam)				PL (Platy)	
L (Linear Slope)		SCL (Sandy Clay Loam)				PR (Prismatic)	
N (Nose Slope)		SiL (Silt Loam)					
R (Ridge)	IV	SC (Sandy Clay)	0.4 - 0.1	0.2 - 0.05			
S (Shoulder Slope)		SiC (Silty Clay)					
T (Terrace)		C (Clay)					
		O (Organic)			None	None	

MOIST

WET

VFR (Very Friable)
 FR (Friable)
 FI (Firm)
 VFI (Very Firm v. Very Sticky)
 EFI (Extremely Firm)

NS (Non-sticky)
 SS (Slightly Sticky)
 S (Sticky)
 VS (Very Sticky)
 NP (Non-plastic)
 SP (Slightly Plastic)
 P (Plastic)
 VP (Very Plastic)

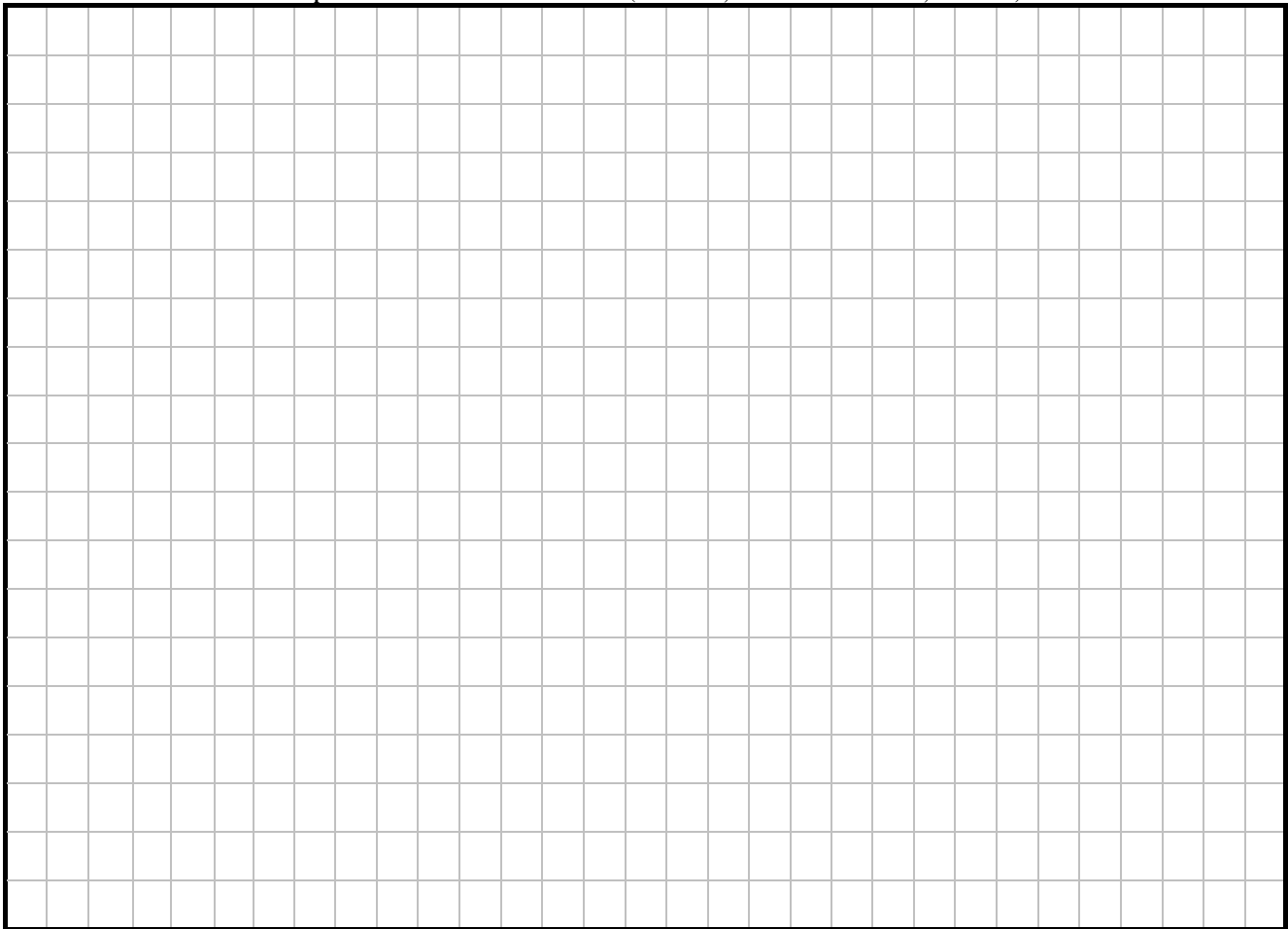
*Adjust LTAR due to depth, consistence, structure, soil wetness, landscape, position, wastewater flow and quality.

NOTES

- 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
- CLASSIFICATION** S (Suitable), PS (Provisionally Suitable), or U (Unsuitable)

Evaluation of saprolite shall be by pits.
 Long-term Acceptance Rate (LTAR): gal/day/ft²

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



SOIL/SITE EVALUATION
(Continuation Sheet-Complete all field in full)

PROPERTY ID #: _____
DATE OF EVALUATION: 7/1/23
COUNTY: HARNETT

P R O F I L E #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZ ON DEPTH (IN.)	SOIL MORPHOLOGY (.1941)		OTHER PROFILE FACTORS				PROFILE CLASS & LTAR
			.1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	.1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	
5	L 5%	0-5	GR/SL	VFR/NP/NS/NEXP	10YR 4/3	S	-	-	0.4
		5-20	GR/SL	VFR/NP/NS/NEXP	10YR 7/4				
		20-48	SBK/SCL	FR/SS/SP/SEXP	10YR 6/8 10YR 6/2 DEPELTIONS @ 33"				

COMMENTS: _____

In accordance with G.S. 130A-335(a2) a LSS evaluation may be submitted in conjunction with a complete application to the Local Health Department. The application shall include all information described in 15A NCAC 18A .1937(d) and be accompanied by a signed and dated statement from the applicant that states the following:

“The LSS/LG evaluation(s) attached to this application is to be used to issue an Improvement Permit in accordance with G.S. 130A-335(a2) and (a3).”.

Owner: Elizabeth Piatt

Date: 2023-07-06

IMPROVEMENT PERMIT FOR G.S. 130A-335(a2)/SL2022-11

PIN/Lot Identifier: APN 120556 0166 02

Issued To: Liberty Land Group LLC

Property Location: WH McLean Lane Bunnlevel

Subdivision: _____ Lot #: _____ Block: _____ Section: _____

LSS Report Provided: Yes No

If yes, name and license number of LSS: Gary Kreiser

New Repair Expansion System Relocation

Proposed Structure: 3 bedroom

Proposed Wastewater System Type: llc (Initial) llc (Repair)

Fill System: Yes No If yes, specify: New Existing (when adding more than 6 inches of fill to system area please provide a fill plan)

Proposed Design Daily Flow: 360 GPD Proposed LTAR (Initial): 0.4 Proposed LTAR (Repair): 0.4

Design Wastewater Strength: domestic high strength industrial process

Number of bedrooms: 3 Number of Occupants: 6 Other: _____

Pump Required: Yes No May be required based upon final location and elevations of facilities

Artificial Drainage Required: Yes No If yes, please specify details: _____

Type of Water Supply: Private well Public well Municipal Supply Spring Other: _____

Drainfield location meets requirements of Rule .1945: Yes No

Drainfield location meets requirements of Rule .1950: Yes No

Permit valid for: Five years [site plan submitted pursuant to GS 130A-334(13a)] No expiration [plat submitted pursuant to GS 130A-334(7a)]

Permit conditions:

Licensed Soil Scientist Print Name: Gary Kreiser

Licensed Soil Scientist Signature: Gary Kreiser Date: 7/6/2023

The LSS evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2).

See attached site sketch

This Section for Local Health Department Use Only

Initial submittal received: _____ by _____
Date Initials

Permit Number: _____

G.S. 130A-335(a4) states the following: *'If a local health department fails to act on an application for an improvement permit submitted pursuant to subsection (a3) of the section within 10 business days of receipt of a complete application, the local health department shall issue the improvement permit.'*

In accordance with G.S. 130A-335(a3) the improvement permit application is:

Incomplete (If box is checked, information in this section is required.)

The following items are missing:

Copies of this were sent to the LSS and the Owner on _____
Date

State Authorized Agent: _____ Date: _____

Denied (See attached report.)

Copies of this were sent to the LSS and the Owner on _____
Date

State Authorized Agent: _____ Date: _____

Complete

State Authorized Agent: _____ Date of Issuance: _____

This Improvement Permit is issued pursuant to G.S. 130A-335 (a2), (a3), and (a4) using the signed and sealed LSS/LG evaluation(s) attached here. The issuance of this permit by the Health Department in no way guarantees the issuance of other permits. The permit holder is responsible for checking with appropriate governing bodies in meeting their requirements. This site is subject to revocation if the site plan, plat, or the intended use changes, or if information submitted in the application was falsified, inaccurate or misleading. The Improvement Permit shall not be affected by a change in ownership of the site. This permit is subject to compliance with the provisions of the Laws and Rules for Sewage Treatment and Disposal and to conditions of this permit. The location and identification of all property lines, easements, water lines, and other appropriate utilities shall be the responsibility of the owner.

The Department, the Department's authorized agents, and the local health departments shall be discharged and released from any liabilities, duties, and responsibilities imposed by statute or in common law from any claim arising out of or attributed to evaluations, submittals, or actions from a licensed soil scientist or licensed geologist pursuant to GS 130A-335(a2).

Improvement Permit Expiration Date: _____

See attached site sketch

Signature Certificate

Reference number: DINTS-EHPNU-KTWVE-RWAGJ

Signer

Timestamp

Signature

Elizabeth Piatt

Email: elise@libertylandsales.com
Shared via link

Sent: 07 Jul 2023 02:07:39 UTC
Viewed: 07 Jul 2023 02:09:06 UTC
Signed: 07 Jul 2023 02:11:34 UTC



IP address: 75.142.168.37
Location: North Richland Hills, United States

Document completed by all parties on:

07 Jul 2023 02:11:34 UTC

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