

Malcolm Baldwin, P.E., LLC

224 Oak Street
McClellanville, SC 29458
(843) 697-4340

INDIVIDUAL WASTEWATER SYSTEM

Town of McClellanville Office Complex
711 Pinckney Street
TMS# 764-14-00-026
McClellanville, S.C.



Professional Engineer's Seal

System Checklist-

- Avoid disturbance and protect the application site prior and during construction
- Notify Engineer one week prior to start of construction, **843-697-4340**
- When a pump is required, it shall be in a separate tank or chamber in addition to the tanks in the design
- Preserve the septic Bench Mark
- Installer must be SC Licensed Tier 3 Installer

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1.0 SUMMARY

- This site was previously served by an offsite waste treatment system for CCSD. They have sold the site to the Town of McClellanville with an agreement to disconnect from their treatment system. The site was evaluated by a soils scientist and determined not to be suitable for a conventional septic system. This report is for an onsite septic system to serve the new office complex.
- Pursuant to SCDHEC Regulation 61-56, Program 362/610, this engineering report proposes to use an onsite septic system designed using the Alternative Standards to treat domestic wastewater from a single-family residence, drawing of the system is at Attachment 2.
- Professional Soil Classifier John Thorp performed the soil classification work. A copy of his signed and stamped soils report is in attachment 4.
- The effluent disposal system will be a gravity system using the 6" deep, 10' wide, ultra shallow rock bed standards.
- Malcolm Baldwin, P.E., LLC. acknowledges its responsibilities for the design and construction of this system and that this design meets and will function satisfactorily with all the requirements of SCDHEC Regulation 61-56, Program 362/610. The engineer shall be onsite for installation and shall be furnished as-built drawings by the contractor.
- Contractor shall be SC Tier 3 licensed and approved by the engineer for installation of system as designed.
- The engineer is responsible for the preparation of as-built plans of actual installation

2.0 INTRODUCTION

This engineering report proposes a wastewater treatment system based on the alternative standards to treat domestic wastewater from an office complex located at 711 Pinckney Street; TMS# 764-14-00-026; McClellanville, S.C. SCDHEC Regulation 61-56, Program 362/610 authorizes the engineered individual wastewater treatment system. The projected flow from the office complex is 1500 gallons per day, see Appendix 1.

3.0 DESCRIPTION OF PROPOSED TREATMENT SYSTEM

The proposed treatment system includes a 1500 gallon tank for Building #1, the existing 1000 gallon tank will serve Building #2 and a new 1000 gallon tank for Building #3. This is a settling tank that retains the solids that are broken down with an effluent overflow into the drain field. Each septic tank will tie to a 1000 gallon pump tank. The drain field utilizes a 6" thick rock bed with 4" HDPE perforated pipe on 5' centers in the trench bed, 2" from the bottom. The effluent will be distributed through the system in 1" pvc pipe, low pressure distribution system inside the 4" lines. The design utilizes SCDHEC alternative standards of the 362/610 program.

4.0 SOIL PREPARATION

The Soil Classifier prepared the Soils Report. It is at Attachment 4. The following soil preparation is based on his findings and recommendations. The drain field for the lot shall be installed in the designated area as shown on the site plan found in Attachment 2. **Prior to installation of the system, soil preparation requires the removal and replacement of the existing topsoil (A horizon).** Some areas may require greater depths of removal. Engineer's inspection required to ensure all of A horizon has been removed below and 5' beyond the application area. Soils Scientists approval of backfill material is required prior to installation.

Fill material of Texture Class I shall be used as backfill and to raise the system to achieve sufficient vertical separation from the Zone of Seasonal Saturation (Z.S.S.). The first 4" of backfill material to be tilled and mixed in with subsurface material that remains. Based on this, the placement of the bottom of the gravel trench will be determined with 12" of cover. The fill cap can utilize excavated material. The entire drain field area of the property must be graded to provide a slope and swale away from the application area. Road drains downspouts to be piped around the system and into detention basin.

Summary of Findings:

Depth to be removed & replaced 30" all fill and topsoil to be removed

LTAR (application rate) = 0.8 (use 0.7 for factor of safety)

Peak ZOS = 99.5 (Ref elevation from Soils Report Septic)

5.0 DISPOSAL FIELD

The effluent will be disposed of using a gravity system using 4" perforated pipe 5' on center in a 6" thick rock bed. The effluent will be distributed through the system in 1" pvc pipe, low pressure distribution system inside the 4" lines. There shall be a minimum of 12" of cover over the rock bed, A typical drain field layout with total footprint and cross section is in Attachment 2.

The follow summarizes the design for each parcels system:

Minimum separation above the ZOS = 12"

Trench bottom elevation = 100.5

Minimum disposal area including replacement area = 5786 sf

Bed design includes = 600' x 10' rock bed

Bed design for initial system (less repair area) = 400' x 10' rock beds

Taper maximum slope 1:5

System top elevation = 102.0 min

Taper lengths to tie back to existing grade from top of fill = 9' - 11'

6.0 OPERATION & MAINTENANCE

Since the system operates in the same fashion as a conventional septic system, the property owner shall maintain this system in the same manner as SCDHEC recommendation for the maintenance of a conventional septic system.

See attachment 3 for SCDHEC Maintenance Recommendations.

ATTACHMENT 1

CALCULATION

<u>711</u>								Tank	
<u>PINCKNEY</u>								Total Tank	Needed
		UNITS	AREA (SF)	Use	Occupancy: Person/Unit	DLR	Load	Load (gpd)	(gallons)
Tank #1	BLDG A	2	7000	Office	7	15	210	600	1500
		3		Office	4	15	180		
		4		Office/Studio	2	15	120		
		6		Office/Studio	1	15	90		
Tank #2	BLDG B	10	13700	Office/Studio	2	15	300	495	1000
		1		Medical Off Employees	5	15	75		
		1		Medical Office Patients	32	3	96		
		8		Office/Studio	1	15	120		
Tank #3	BLDG C	1	6500	Assebmly Hall	103	3	309	309	1000
							<hr/> 1500		

Alternative Standard for 6" Rock Bed

Builings	4
Total Flow	1500
LTAR	0.7
Width	3
Required Length (if conventional)	714.29
Replacement Area (50%)	1071.4
Side wall factor for: (6" gravel bed)	
width feet	adju
3	1.5
5	1
10	0.54

Required

Site=	3876 sf
Replacement=	1909 sf
	5786 sf

Total	Initial
578.6	387.6

Number of Beds	1	1
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190.9

6" Trench Alt Standards

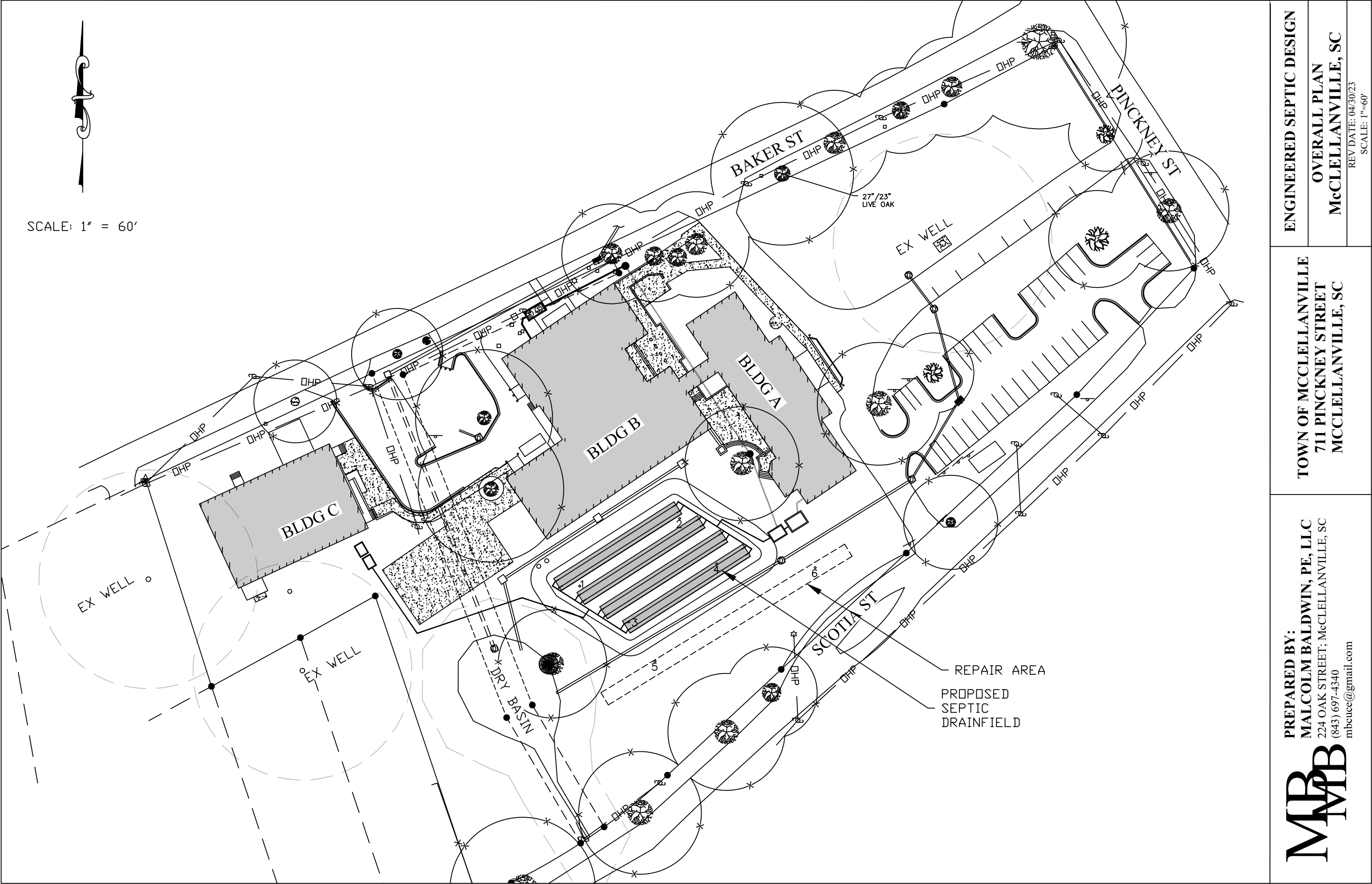
	Depth (in)	
Cover	12	
Rock Trench	6	
Seperation	12	
	30	
Height	2.5	feet
ZSS Elev	99.5	Highest elev from report
Top of bed Elev	102.0	
Lowest Grade	99.8	
Highest Grade	100.3	
Taper	5	:1
Max taper	11.0	feet
Min Taper	8.5	feet

ATTACHMENT 2

DRAINFIELD LAYOUT

&

DRAINFIELD CROSS SECTION



ENGINEERED SEPTIC DESIGN

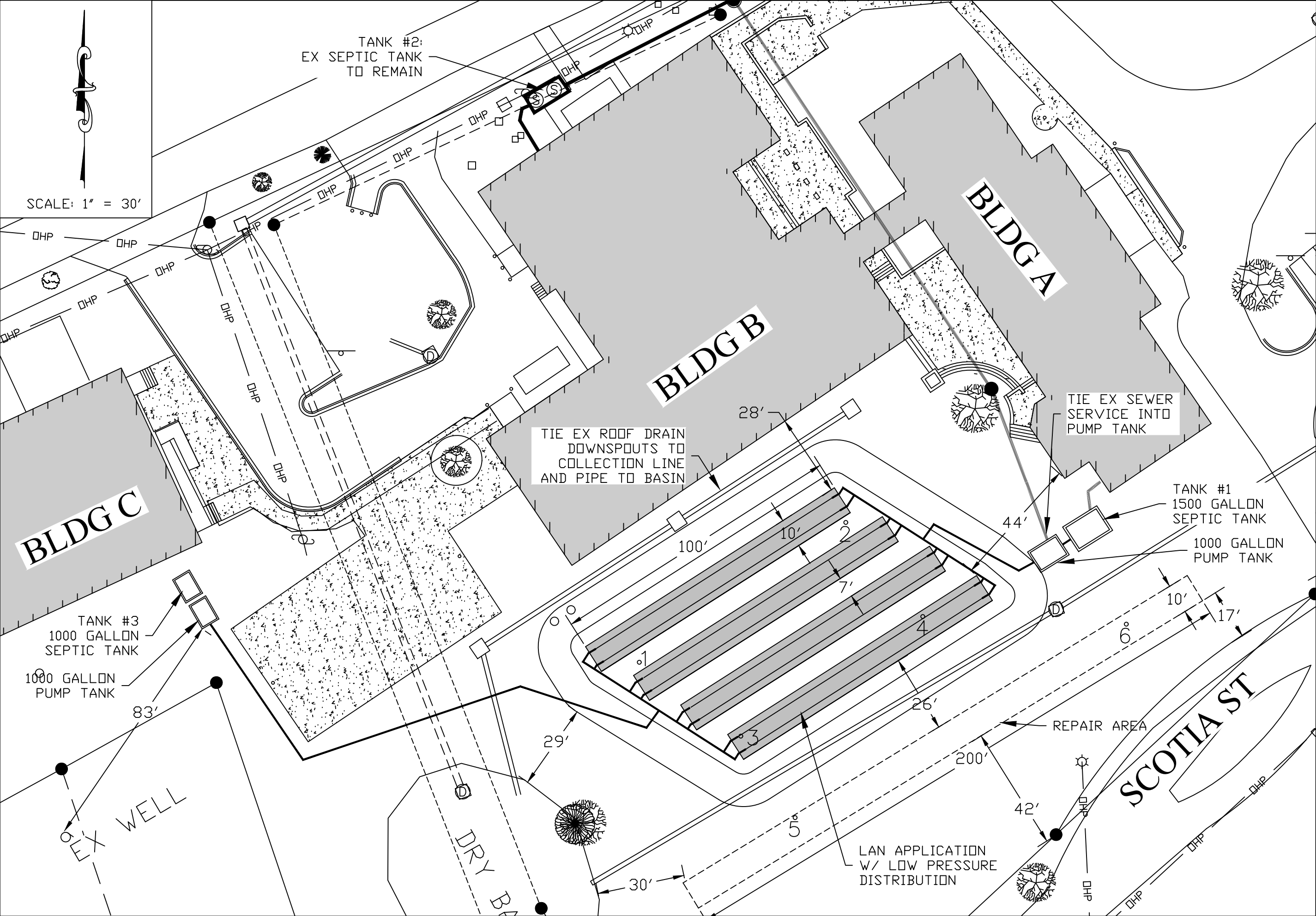
OVERALL PLAN
McCLELLANVILLE, SC

REV DATE: 04/30/23
SCALE: 1"=60'

TOWN OF MCCLELLANVILLE
711 PINCKNEY STREET
MCCLELLANVILLE, SC

PREPARED BY:
MALCOLM BALDWIN, PE, LLC
224 OAK STREET, McCLELLANVILLE, SC
(843) 697-4340
mbcuce@gmail.com

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ENGINEERED SEPTIC DESIGN

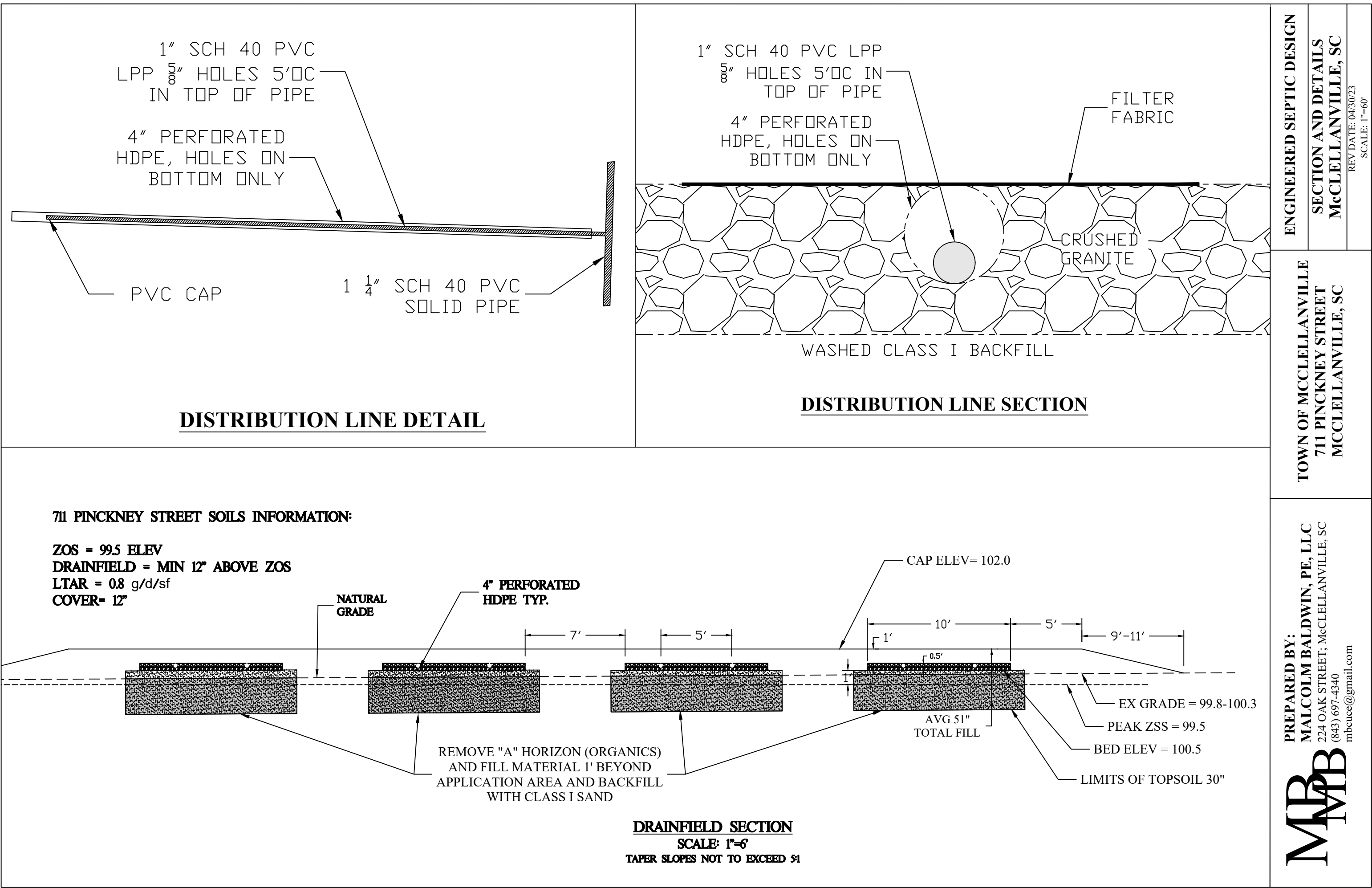
SEPTIC LAYOUT PLAN
McCLELLANVILLE, SC

REV DATE: 04/30/23
SCALE: 1"=60'

TOWN OF MCCLELLANVILLE
711 PINCKNEY STREET
MCCLELLANVILLE, SC

PREPARED BY:
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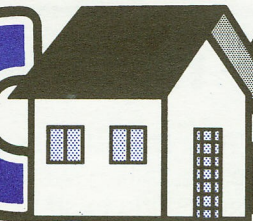
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ATTACHMENT 3

SCDHEC MAINTENANCE RECOMMENDATIONS

SEPTIC SYSTEM



Maintenance

SEPTIC SYSTEM FAILURE

Anytime your septic system is not treating or disposing of sewage in an effective manner, the system is failing. There can be many reasons for system failure. By far, the most common reason for early failure is improper maintenance by homeowners. *Call your county health department or a licensed septic tank contractor if you suspect your system is failing.* Look for the following symptoms:

- ☒ Sewage backs up in your drains or toilets
- ☒ Slowly draining sinks, bathtubs and toilets
- ☒ Wastewater on the ground surface above and near the system
- ☒ Lush green grass over the drainfield, even during dry weather
- ☒ Unpleasant odors around your house
- ☒ Excessive growth of aquatic weeds or algae in surface waters adjacent to your home
- ☒ The presence of nitrates or bacteria in your drinking well test results

WHY MAINTAIN YOUR SEPTIC SYSTEM?

There are three important health reasons for maintaining your septic system.

- ☒ The first reason is the *health of your pocket book*. Poor maintenance results in failed systems requiring repairs at a minimum and sometimes system replacement. Repairs or replacement costs can be thousands of dollars, whereas a periodic inspection and pumping costs about \$150-\$250.
- ☒ The second reason is the *health of your family, your community and the environment*. Untreated sewage water contains disease-causing bacteria and viruses, as well as unhealthy amounts of nitrate and other chemicals. Failed septic systems can allow untreated sewage to seep into wells, groundwater, and surface water bodies, where people get their drinking water and recreate.
- ☒ The third reason is the *health of your economy*. Contamination of water bodies by failed septic systems pollutes water supplies, closes shellfish beds and recreational areas, and creates offensive odors. Quality of life, recreational opportunities, and tourism decline, and with them do the property values and economic vitality of the area.

HOW DO YOU MAINTAIN YOUR SEPTIC SYSTEM?

Proper care of your system requires day-to-day management as well as periodic maintenance. It also requires that you know where your system is located. The more you know about how your system operates and how it should be maintained, the better able you will be to protect your investment in your home and property, protect your family's health, and protect your environment.

Did you know... that a properly designed and installed septic system can be the safest, most economical way to treat your wastewater ***as long as it is properly maintained?***

DO NOT FLUSH...

coffee grinds	dental floss
disposable diapers	kitty litter
sanitary napkins	tampons
cigarette butts	condoms
fats, grease or oil	paper towels
paints	varnishes
thinners	waste oils
photographic solutions	pesticides

TAKING CARE OF YOUR SEPTIC SYSTEM

AN OUNCE OF PREVENTION IS WORTH A TON OF CURE! Committing a little attention to the care of your system can help to avoid the nightmare of a failing system. Assuming that your septic system was properly located, designed, and installed according to state codes, you are now in the driver's seat for the care of your system. By following the recommendations below, you can help your system to work properly for years to come.

DO's:

- ☒ Conserve water to reduce the amount of wastewater that must be treated and disposed of by your system. Doing laundry over several days will put less stress on your system.
- ☒ Repair any leaking faucets or toilets. To detect toilet leaks, add several drops of food dye to the toilet tank and see if dye ends up in the bowl.
- ☒ Divert down spouts and other surface water away from your drainfield. Excessive water keeps the soil from adequately cleansing the wastewater.
- ☒ Have your septic tank inspected yearly and pumped regularly by a licensed septic tank contractor.* *See the chart below for suggested pumping frequencies.*
- ☒ Keep your septic tank cover or lids accessible for inspections and pumpings. Install risers with lids if necessary.
- ☒ Call your county health department or a licensed septic tank contractor whenever you experience problems with your system, or if there are any signs of system failure.
- ☒ Keep a detailed record of repairs, pumpings, inspections, and other maintenance activities. Pass these on to the next homeowner.

PUMP SYSTEM REGULARLY

Suggested Pumping Frequency (Years)

Tank Size (gallons)	NUMBER OF PEOPLE USING THE SYSTEM				
	1	2	4	6	8
1000	12	6	3	2	1
1250	16	8	3	2	1
1500	19	9	4	3	2

Source: Adapted from "Estimated Septic Tank Pumping Frequency," by Karen Mancil, 1984. *Journal of Environmental Engineering*. Volume 110.

* **Pumping your septic tank is probably the single most important thing you can do to protect your system. If the buildup of solids in the tank becomes too high and solids move to the drainfield, this could clog and strain the system to the point where a new drainfield will be needed.**

DON'Ts:

- ☒ Don't drive over your drainfield or compact the soil in any way.
- ☒ Don't dig in your drainfield or build anything over it, and don't cover it with a hard surface such as concrete or asphalt.
- ☒ Don't plant anything over or near the drainfield except grass. Roots from nearby trees and shrubs may clog and damage the drain lines.
- ☒ Don't use a garbage disposal, or at least limit its usage. Disposals increase solids loadings to your tank by about 50%, so you have to pump your tank more often than normally suggested.
- ☒ Don't use your toilet as a trash can or poison your system and the groundwater by pouring harmful chemicals and cleansers down the drain. Harsh chemicals can kill the bacteria that help purify your wastewater. *See the list on the front of this flyer.*
- ☒ Don't put in a separate pipe to carry wash waters to a side ditch or the woods. This graywater contains germs that can spread disease.
- ☒ Don't waste money on septic tank additives. The bacteria needed to treat wastewater is naturally present in sewage. Additives can re-suspend solids causing your drainfield to clog. Additives do not eliminate the need for routine pumping of your tank.
- ☒ Don't allow backwash from home water softeners to enter the septic system.
- ☒ Never enter a septic tank -- toxic gases from the tank can kill. If your system develops problems, get advice from your county health department or a licensed septic tank contractor.

CLEMSON
UNIVERSITY



**OFFICE OF
OCEAN AND COASTAL
RESOURCE MANAGEMENT**

South Carolina Department of Health
and Environmental Control

ATTACHMENT 4

SOILS REPORT

John H. Thorp
Licensed S.C. Soil Classifier
1985 Riviera Drive Suite 103 #207,
Mount Pleasant, SC 29464

April 25, 2023

Michelle McClellan - The Town of McClellanville
405 Pinckney Street
McClellanville, SC 29458

Dear Ms. McClellan,

Thank you for the opportunity to provide my professional soils evaluation **at 711 Pinckney St. in McClellanville, Charleston County, SC (TMS: 764-14-00-026)**. The purpose of this report is to characterize the relevant soil properties within the proposed subsurface wastewater infiltration area for a septic system that complies with SCDHEC Alternative Standard 362/610. My soil borings are marked onsite with orange flag pins labeled S.B.1, S.B.2, S.B.3, S.B.4, S.B.5 and S.B.6.

Please find attached:

1. A site location map and a scaled site plan (Figure 1) and a scaled drawing of the proposed subsurface wastewater infiltration area with my Soil Borings' locations within it (Figure 2).
2. SCDHEC form 1774 and 2 exhibits.

The proposed subsurface wastewater infiltration area is nearly level. I did not encounter any restrictive soil horizons within a depth of 30 inches.

My findings are summarized in Table 1 below:

SOIL BORING #	Depth to Z.O.S (in.)	* LTAR GPD/sq ft	Depth of Fill + Topsoil (in.)	Depth to Restrictive Layer (in.)
1	11	0.80	24	>30
2	11	0.80	30	>30
3	10	0.80	23	>30
4	15	0.80	23	>30
5	9	0.80	22	>30
6	7	0.80	28	>30

ZOS = Zone of Saturation LTAR = Long Term Acceptance Rate

* Refer to Comments on SCDHEC form 1774

NOTE: It is imperative that drainfield construction occur **ONLY** when the soil is very dry in the upper 15 inches to avoid compaction and smearing. After the removal of the topsoil layer, the exposed subsurface soil should not be trafficked upon by equipment prior to the addition of any new Class I fill. Significant rutting or compaction will invalidate the LTAR values in Table 1.

John H. Thorp
Licensed S.C. Soil Classifier
1985 Riviera Drive Suite 103 #207,
Mount Pleasant, SC 29464

I recommend removing a sufficient depth of the surface Fill and buried topsoil ("Fill" and "Ab" horizons) to allow adding at least 12 inches of new Class I fill below the installed depth of the absorptive trenches. This removed soil is suitable as tapers or top-dressing for the newly constructed drainfield. I recommend using uniform sand with Class I texture (< 5% fines and < 1% humus – per Exhibit 1). Lightly disking or tilling in the first 2 to 4 inches of any new Class I fill is recommended to improve uniformity of infiltration.

To assist this drainfield's design and construction, I established a benchmark with an assumed elevation of 100.00 ft. atop a nearby manhole cover, as shown in Figure 2 and Exhibit 2. Note that my topographic measurements were taken with the height rod placed immediately adjacent to each soil boring's opening after removing the surface turf layer.

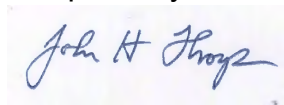
Table 2

SOIL BORING #	Surface Elevation	Elevation of ZOS
1	100.20	99.28
2	100.28	99.36
3	100.21	99.38
4	100.09	98.84
5	100.20	99.45
6	99.82	99.24

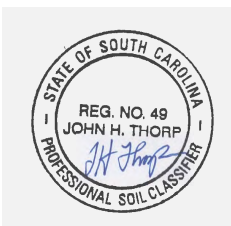
Excluding the surface fill, the area I characterized is similar to the NRCS soil series SeeWee, which is classified in Soil Taxonomy as sandy, mixed, thermic Aeric Alaquods. Most of the soil profiles I described have 5 – 10% more clay content in the subsoil than is typical for this series.

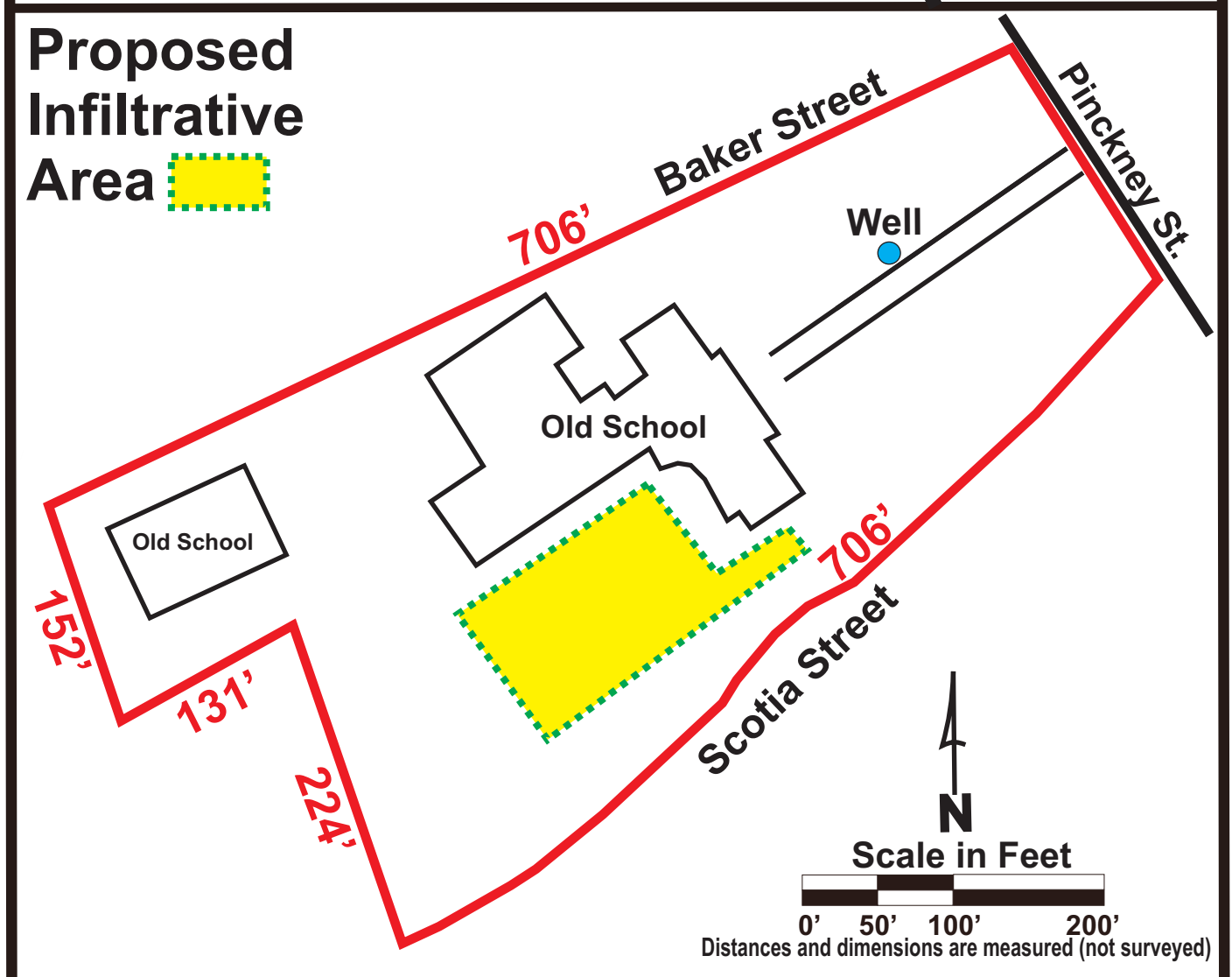
I look forward to explaining my findings to a licensed Engineer of your choice. I am available to inspect the new sandy fill material and pre-construction soil moisture conditions at your request.

Respectfully,



John H. Thorp
S.C. Soil Classifier #49
(843) 860-1960





711 Pinckney Street
McClellanville
Charleston County
TMS: 764-14-00-026
April 25, 2023

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SC Soil Classifier
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Ste. 103 # 207
Mt. Pleasant, SC
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thorp.jh@gmail.com

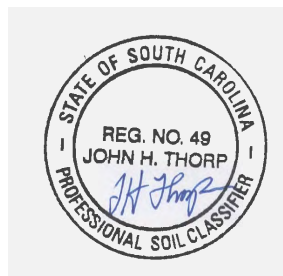
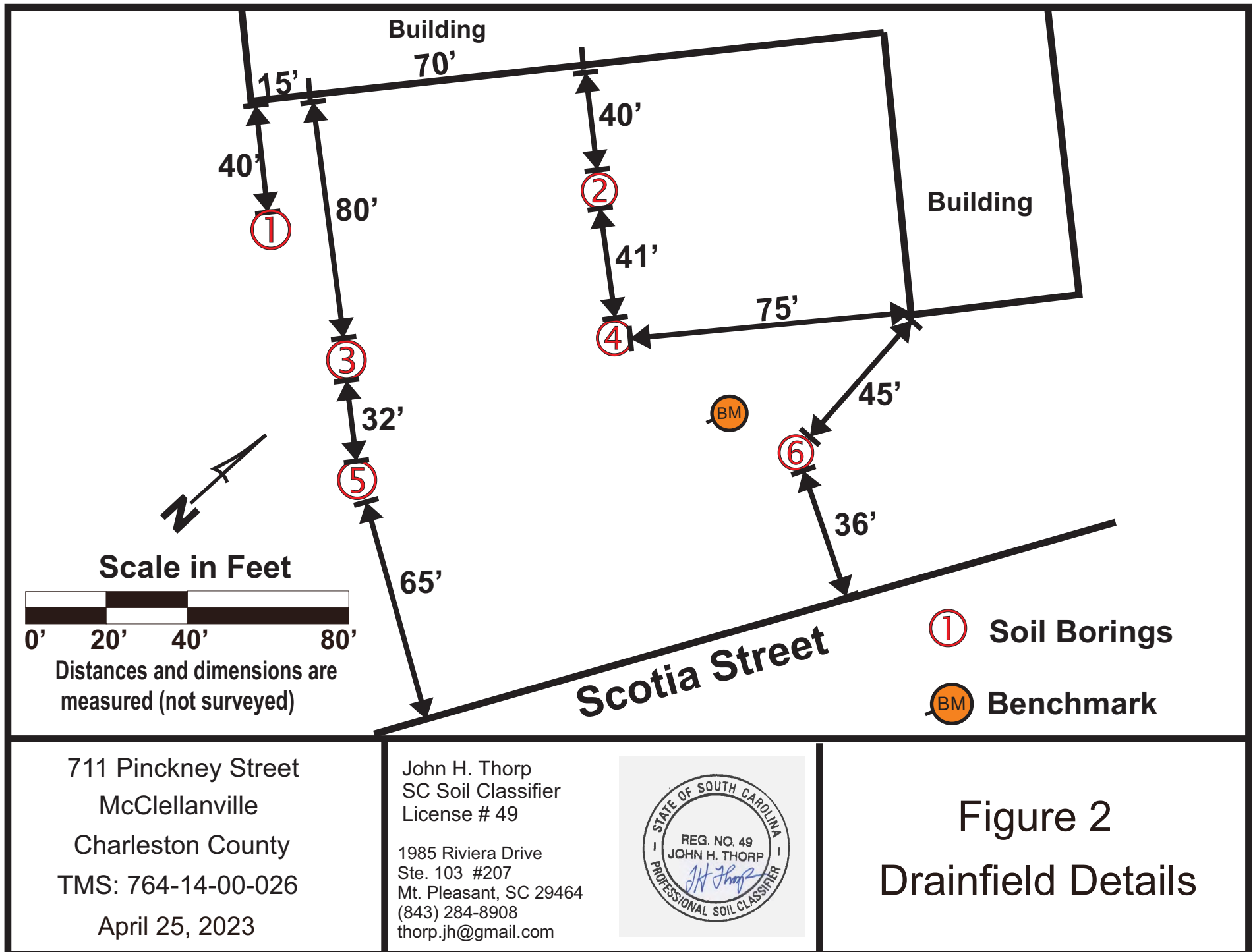
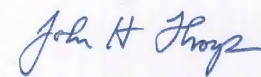
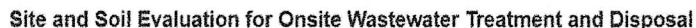


Figure 1
Project Location
& Site Plan



Phone# O (843) 284-8908 M (843) 860-1960

Most Limiting Soil Conditions	Depth (in.) and Description	Most Limiting Soil Conditions	Depth (in.) and Description	Soil Series and Soil Taxonomy	Comments/Recommendations
Zone of Saturation	11 ESTIMATE	Overburden/Fill Material	11 Marginally Suitable	SEEWEE - sandy, mixed, thermic Aeric Alaquods	NOTE: The LTAR values for all six Soil Borings assume removing a sufficient depth of the surface Fill and buried topsoil ("Fill" and "Ab" horizons) to allow replacement with at least 12 inches of new Class I fill below the installed depth of the absorptive trenches.
Clean Saprolite	NONE				
Restrictive Horizon	NONE	Loading Rate ga/ds/ft2	0.80	Vegetation Observed	
Weather Conditions	77F Recent Light Rainfall	Free Water	26	MISCELLANEOUS GRASSES, WEEDS & GLOVER	

Note: The evaluation shall include a completed, scaled site plan including all requirements in the Site and Soil Evaluation instructions for SC Reg. 61-56

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Test Hole # 2

Location Latitude/Longitude: 33°05.253' 79°27.746'

CHARLESTON CO. TMS: 764-14-00-026

Soil Profile		Estimating Soil Saturation			Estimating Soil Permeability							Comments and Other Pertinent Soil Features
Horizon Suffix	Depth (inches)	Matrix Color	Munsell Color (hue, value, chroma)		Texture				Consistence (Moist)			
			Redoximorphic Features/Mottles		LTAR Class	USDA Class	Sticki Class	Plastic. Class		Structure Grade	Type (shape)	
			Concentrations	Depletions								
FILL 1	11	N/A			I	ls	-	-	2	gr	vfr	uni form texture debris- free
FILL 2	30	7.5YR 3/3			I	ls	-	-	1	gr	vfr	uni form texture debris- free

Most Limiting Soil Conditions	Depth (in.) and Description	Most Limiting Soil Conditions	Depth (in.) and Description	Most Limiting Soil Conditions	Depth (in.) and Description	Additional Comments
Zone of Saturation	11 Estimated	Clean Saprolite	NONE	Restrictive Horizon	NONE	
Loading Rate ga/da/ft2	0.80	Free Water	25	Overburden/Fill Material	30 Marginal	

Test Hole # 3 Location Latitude/Longitude: 33° 05.249' 79° 27.754'

Soil Profile		Estimating Soil Saturation			Estimating Soil Permeability							Comments and Other Pertinent Soil Features		
Horizon Suffix	Depth (inches)	Matrix Color	Munsell Color (hue, value, chroma)		Redoximorphic Features/Mottles		Texture			Structure			Consistence (Moist)	
					Concentrations	Depletions	LTAR Class USDA Class	Sticki Class	Plastic. Class	Grade	Type (shape)			
FILL	17	N/A					II / - IV	sl / c	-	-	2	sbk	fr	cloddy structure debris - free medium humus content *1st Red. = Ox. feature at 23 in.
Ab	23	10YR 3/1					II	sl	-	-	2	gr	vfr	
Bg	30	* 10YR 4/2					II	sl	-	-	1	sbk	vfr	
Most Limiting Soil Conditions		Depth (in.) and Description		Most Limiting Soil Conditions		Depth (in.) and Description		Most Limiting Soil Conditions		Depth (in.) and Description		Additional Comments		
Zone of Saturation		10 estimated		Clean Saprolite		NONE		Restrictive Horizon		NONE				
Loading Rate ga/da/R2		0.80		Free Water		27		Overburden/Fill Material		17 marginal				

Test Hole # 4 Location Latitude/Longitude: 33° 05.254' 79° 27.745'

CHARLESTON CO. TMS: 764-14-00-026

CHARLESTON CO. TWC: 1071100020

Soil Profile		Estimating Soil Saturation			Estimating Soil Permeability							Comments and Other Pertinent Soil Features	
Horizon Suffix	Depth (inches)	Matrix Color	Munsell Color (hue, value, chroma)										
			Redoximorphic Features/Mottles		Texture				Structure		Consistence (Moist)		
			Concentrations	Depletions	LTAR Class	USDA Class	Sticki Class	Plastic. Class	Grade	Type (shape)			
FILL	15	N/A			II	sl	-	-	2	gr	vfr	uniform texture debris-free	
Ab	23	10YR 3/1			II	sl	-	-	2	gr	vfr		
Bg	30	* 10YR 5/2			II	sl	-	-	1	sbk	vfr	* 1st Red.-Ox. feature at 15 in.	
Most Limiting Soil Conditions		Depth (in.) and Description		Most Limiting Soil Conditions		Depth (in.) and Description		Additional Comments					
Zone of Saturation		15 estimated		Clean Saprolite		NONE							
Loading Rate gal/da/ft2		0380		Free Water		29		15 marginal					

Test Hole # 5 Location Latitude/Longitude: 33° 05.243' 79° 27.751'

Soil Profile		Estimating Soil Saturation			Estimating Soil Permeability							Comments and Other Pertinent Soil Features
Horizon Suffix	Depth (inches)	Matrix Color	Munsell Color (hue, value, chroma)		Texture				Structure		Consistence (Moist)	
			Redoximorphic Features/Mottles		LTAR Class	USDA Class	Sticki Class	Plastic. Class	Grade	Type (shape)		
		Concentrations	Depletions									
A	2	10YR 3/2			II	sl	-	-	2	gr	vfr	medium humus content
FILL	16	N/A			II/IV	sl/c	-	-	2	sbk	fr	cloddy structure debris-free
Ab	22	10YR 3/1			II	sl	-	-	2	gr	vfr	medium humus content
Bg	30 *	10YR 5/2			II	sl	-	-	1	sbk	fr	* 1st Red.-Ox. feature at 22 in.
Most Limiting Soil Conditions		Depth (in.) and Description		Most Limiting Soil Conditions		Depth (in.) and Description		Additional Comments				
Zone of Saturation		9 estimated		Clean Saprolite		NONE		Restrictive Horizon				
Loading Rate ga/da/ft2		0.80		Free Water		26		Overburden/Fill Material				

Test Hole # 6 Location Latitude/Longitude: 33° 05.255' 79° 27.728'

Soil Profile		Estimating Soil Saturation			Estimating Soil Permeability							Comments and Other Pertinent Soil Features
Horizon Suffix	Depth (inches)	Matrix Color	Munsell Color (hue, value, chroma)		Texture							
			Redoximorphic Features/Mottles		Texture				Structure		Consistence (Moist)	
			Concentrations	Depletions	LTAR Class	USDA Class	Stikl Class	Plastic Class	Grade	Type (shape)		
FILL	21	n/A			II	sl	—	—	2	gr	vfr	uniform texture debris-free
Ab	28	10YR 3/2			II	sl	—	—	2	gr	vfr	medium humus content
Bg	30	10YR 5/2			II	sl	—	—	1	sbk	vfr	* 1 st Red.-Ox. feature at 7 in.
Most Limiting Soil Conditions		Depth (in.) and Description		Most Limiting Soil Conditions		Depth (in.) and Description		Additional Comments				
Zone of Saturation		7 estimated		Clean Saprolite		NONE						
Loading Rate ga/da/ft2		0.80		Free Water		22		21 marginal				

Land Use/Earth Cover

Barren
Artificial Cover
Row Crop
Pasture
Shrub Brush
Immature forest
Mature forest

Landform

Hillslope
Flood Plain
Depression
Ridge
Terrace
Island
Beach

Hillslope-Profile Position

Summit
Shoulder
Backslope
Footslope
Toeslope

Slope Shape

L-Linear
V-Convex
C-Concave
eg. CC, LC, CC

Stickiness Class

SO - Non sticky
SS - Slightly sticky
MS - Moderately sticky
VS - Very Sticky

Horizon

O - Organic matter OM
A - Mineral and Organic
E - Mineral, loss of clay, OM
B - Mineral, development of color and structure
C - Mineral, No development of color and structure
R - Bedrock

Suffix

a - Highly decomposed OM
b - Buried Horizon
c - Concretions
e - Moderately decomposed OM
g - Gray Matrix color
h - Illuvial OM accumulation
i - Slightly decomposed OM
m - Strong cementation

p - Plow Layer
r - soft bedrock
s - Illuvial sesquioxide accumulation
ss - Slickensides
t - Illuvial accumulation of clay
v - Plinthite
w - Weak color or structure in B only
x - Fragipan

Plasticity Class

PO - Non Plastic
SP - Slightly Plastic
MP - Moderately Plastic
VP - Very Plastic

LTAR Class

I
II
III
IV

USDA Class

cos - Coarse Sand
s - Sand
fs - Fine Sand
vfs - Very Fine Sand
lcos - Loamy Coarse Sand
ls - Loamy Sand
lvfs - Loamy Very Fine Sand

cosl - Coarse Sandy Loam
sl - Sandy Loam
fsl - Fine Sandy Loam
vfsl - Very Fine Sandy Loam
l - Loam
sil - Silt Loam
si - Silt

sil - Silty Clay Loam
cl - Clay Loam
scl - Sandy Clay Loam
sc - Sandy Clay
sic - Silty Clay
c - clay

Grade (Structure)

0 - Structureless
1 - Weak
2 - Moderate
3 - Strong

Type (Structure)

gr - Granular
abk - Angular Blocky
sbk - Subangular Blocky
pl - Platy
pr - Prismatic
cpr - Columnar
sg - Single Grain
m - Massive

Consistence (Moist)

l - Loose
vfr - Very Friable
fr - Friable
fi - Firm
vfi - Very Firm
ef - Extremely Firm
sr - Slightly Rigid
r - Rigid
vr - Very Rigid

EXHIBIT 1 - TOPSOIL REMOVAL & CLASS I SAND FILL

EXHIBIT 1

Soil surface "grade"

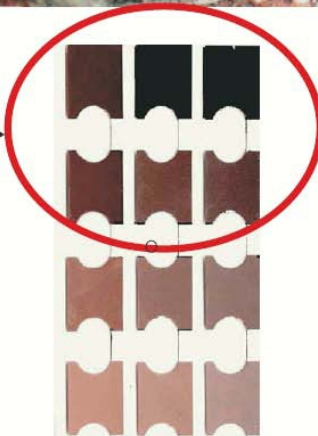
SURFACE FILL &
Humus-Rich Topsoil
"A" Horizon
To be removed



Low Humus Mineral Horizon
Do not compact or smear !



Typical Topsoil Colors
7.5YR or 10YR or 2.5YR
2/1, 3/1, 3/2, 3/3



Recommended Clean, Washed Class I Sand



EXHIBIT 2

