DEPARTMENT OF ENVIRONMENT, HEALTH, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

Sheet ___ of ___
PROPERTY ID #: ___
COUNTY: ___

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Known
ADDRESS: ___
APPLICANT: ___
APPLICATION DATE: ___
DATE EVALUATED: 10-21-92
PROPOSED FACILITY: ___
PROPOSED DESIGN FLOW (.1949): ___
PROPERTY SIZE: ___
LOCATION OF SITE: Lot Le 3 Oakbrook
PROPERTY RECORDED: ___
WATER SUPPLY: ☐ Private ☐ Public ☐ Well ☐ Spring ☐ Other ___
EVALUATION METHOD: ☐ Auger Boring ☐ Pit ☐ Cut
TYPE OF WASTEWATER: ☐ Sewage ☐ Industrial Process ☐ Mixed

Now Lot 56

PROFILE #	1940 LAND-SCAPE POSITION/ SLOPE %	HORI-ZON DEPTH (IN.)	SOIL MORPHOLOGY (1941) 1941 STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (1941) 1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS 1942 SOIL WETNESS/ COLOR	1943 SOIL DEPTH	1956 SAPRO CLASS	1944 RESTR HORIZ	PROFILE CLASS & LTAR
1	S 0-2%	0-17	Sa/Lb brn c/cl fr sp sl/p						
		17-36	wk sab mass rdsh gry Sa/Lb fr ss/sp sl/p						
		36-60	wk sab rdsh brn Lsa/Lb fr ss/sp sl/p						
		wet @ 56"	Sa/Lb 56"+						
2		0-7	sa brn sl/cl						
		7-26	Sa/Lb c/cl fr ss/sp						
		26-36	wk sab-mass rdsh gry Sa/Lb fr ss/sp						
		36-48	wk sab brn Lsa/Lb fr ss/sp/p						
			wet @ 48"						
3		0-10	sa brn sl/cl						
		10-36	Sab rdsh brn mass gry Lsa/Lb fr ss/sp						
		36-48	wk sab rdsh brn Lsa/Lb fr ss/sp/p						
		Sap impervious @ 48"+							
4									

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)		
System Type(s)		
Site LTAR		

OTHER FACTORS (.1946): ___
SITE CLASSIFICATION (.1948): ___
EVALUATED BY: ___
OTHER(S) PRESENT: ___

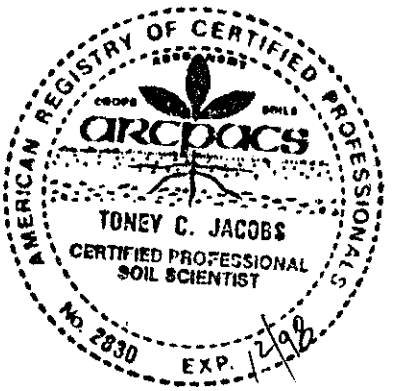
LOT 56 OAKBROOK SUBDIVISION

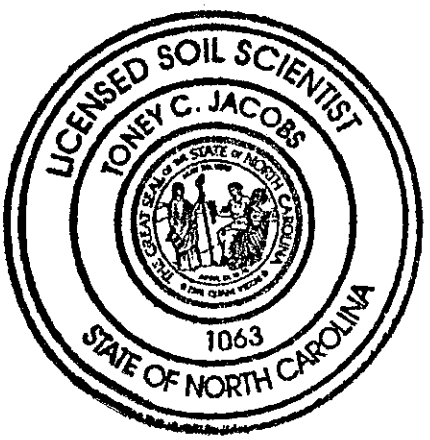
RECLASSIFICATION BY .1948(d) USING SAND LINED TRENCH THROUGH QUESTIONABLE SAPROLITE INTO PROVISIONALLY SUITABLE SAPROLITE

by

Toney C. Jacobs & Associates, Inc.
Consulting Soil Scientists
168 Broadbill Drive
Mooresville, N. C. 28115

May 26, 1997





To: Mr. David Hinson, R. S.
Iredell County Health Dept.
Mooresville, N. C. 28115

Mr. Mike Krom
19 Yacht Cove
Mooresville, N. C. 28115

Toney C. Jacobs, CPSS

SAND LINED TRENCH GRAVITY DISTRIBUTION CONVENTIONAL SYSTEM

Design Considerations

This system is proposed for a single family residential lot of 1.10 acres in a newly developed community of modest single family homes in southern Iredell County. Because of drainage easements on 3 sides, there is some lost usable area. The system is designed for a 3 bedroom home to be served by a private well water supply. Because this is a new 1996 plat, the proposed drainfield does require a 100% repair area. This reclassification also applies to the repair. The subsurface approximately 24 - 36" of soil material is questionably unsuitable saprolite over provisionally suitable saprolite per the 1995 rule change. Two saprolite samples were collected from the lot for particle size analysis. Both were sandy loam with clay at 8 and 15 percent (analysis enclosed). These pits closely resemble the Lockhart Series which has a deep BC and C horizon of sandy loam (enclosed portion of SCS blue sheet). By denuding the top 36" in the drainfield area the site is provisionally suitable by rule .1948(d). This is not feasible, but placing the lines 18" deeper allows for conventional gravity technology and a higher application rate (0.4 - 0.6). Overall, the saprolite has a fine sandy loam texture. Using the low end of this range the system should have a very good expectation of service. The need for a French drain is not indicated, and the road ditch and drainage ditches will serve as surface interceptors.

Location

The approximately 1.10 acres building lot is on the right, 0.36 miles off Hwy. 21, Iredell County, N. C.

Reference

(1) *Laws and Rules for Ground Absorption Sewage Disposal Systems 15A NCAC 18A. 1900,* NCDEHNR-DEH.

(2) Hoover, M. T., R. Evans, T. Hinson, R. Health. (no date) *Performance of Sand Lined Trench Septic Systems on Wet, Clayey Soils in Northeastern North Carolina.* College of Agriculture & Life Sciences, NCSU.

Recommendation

Three hundred (300) lineal feet of gravity lines with approximately equal repair. Repair system can have many modified or alternative options if needed.

Ownership Responsibility for a Gravity Distribution System

Conservation measures should be undertaken in plumbing fixture specifications to minimize the volume of wastewater entering the disposal system, including, but not limited to the following precautions:

(a) Provide water conserving plumbing fixtures within the facility. Waterclosets must be 1.6 gal. flush (per code). Shower head should also have restrictions or be of low volume design.

(b) Develop conservative water use habits.

System must be properly installed by a *qualified* and *competent* contractor following the requirements of the Iredell County Department of Environmental Health, DEH, the N.C. Building Code, and Plumbing Code. This plan, as any, is a guide to a minimum standard, but cannot take the place of experience and common sense.

Components of System

1. Two compartment septic tank - 1000 gal.
2. Distribution box with speed levers
3. Conventional laterals with gravity distribution over 18" of sand in ground absorption trenches, 3 feet wide, level end to end, as flagged in the field. If the installer does not understand this or its importance, he should not begin construction until certain of all requirements.

Construction Sequence

1. Contour has been flagged as noted on drawing and in specifications.
2. Carefully install laterals and speed line box according to the attached design layout.
3. Carefully backfill distribution trench to grade with clean clay or clay loam soil fill material which is carefully placed and compacted.
4. The installation contractor shall stabilize the area of construction by planting with Kentucky 31 tall Fescue and mulching. Area to be limed and fertilized with 0.5 tons lime, 75 units of N, 150 units P, and 100 units of K per disturbed acre. This is approximately one tenth acre.
5. The septic tank shall consist of an approved 1000 gallon capacity reinforced, precast watertight, concrete tank with full baffle and shall have easy access to each chamber from ground level for inspection. The first chamber of the septic tank shall consist of 2/3 to 3/4 of the volume of the total tank and the baffle shall contain a horizontal opening across the tank at about midway . Locate the septic tank at such height as to provide approximately 8" of cover soil over top of the tank.

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6. Final Landscaping: After the system is installed, the absorption field should be reshaped to shed rainwater and be free of low areas to insure that the system will not be overloaded with excess rainwater and run-on.

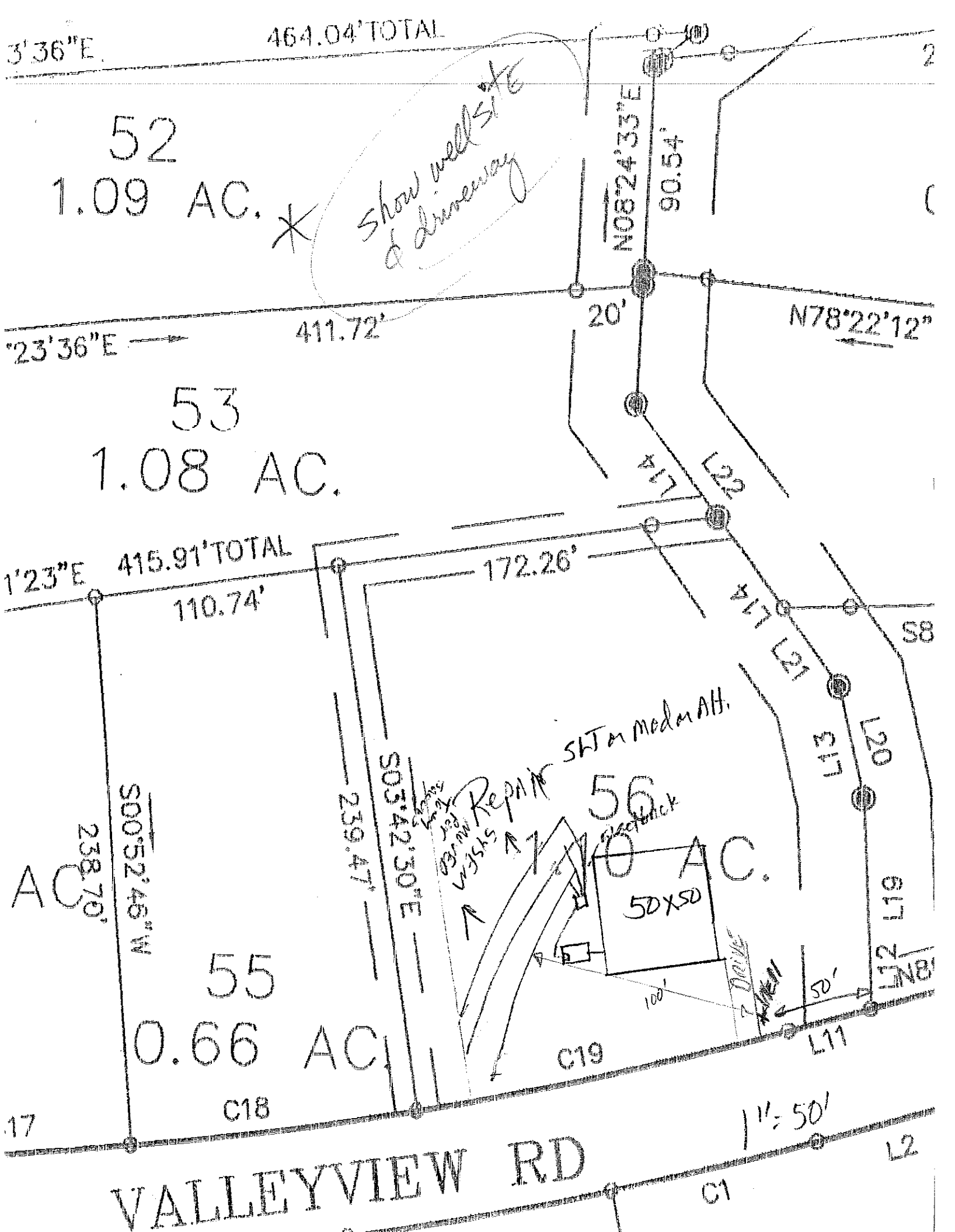
Concluding Note:

This plan was done to facilitate permitting by the Iredell County Health Department by an agent of the owner. Any additions, or additional requirement[s], or deletions to enhance design or workability which will facilitate a permit are welcomed and may be made by note on this plan without returning entire design. The designer realizes that most plans can be changed and/or improved upon. The installer must realize that this is an exact plan and must be installed with exacting measurements. Should the installer desire a change, it must be approved by the health department in writing. If there are questions, please give me a call.

Design Specifications

Lot 56 - Oakbrook Subdivision

Daily design flow:	360 gpd. - 3 bedroom house
Septic tank size:	1000 gal. (2 compartments)
Effluent loading rate:	0.4 gpd/sf conventional
Number and length of laterals:	3 lines of 100' each end-fed Repair same configuration.
Trenches	36" wide, 42" deep, backfill 18" sand, 12" stone with normal distribution pipe in stone, 12" soil cover


3'36"E
464.04'TOTAL
52
1.09 AC.
show well site & driveway
N08°24'33"E
90.54'
20'
N78°22'12"
"23'36"E
411.72'
53
1.08 AC.
L23
L22
1'23"E
415.91'TOTAL
110.74'
172.26'
L21
L17
L20
L19
L18
S8
S00°52'46"W
238.70'
S00°52'46"W
236.47'
S01°32'30"E
Repair SFT on Mod on Alt.
56
Setback
1.0 AC.
50X50
Drive
100'
50'
55
0.66 AC.
C19
C18
L11
L2
17
1"=50'
VALLEYVIEW RD
C1

TCJ CONSULTING

SITE / SOIL EVALUATION

JOB: Mike Kmon PHONE: _____ DATE: 11/7/96

LOCATION: _____ PIN: _____ COUNTY: _____ PROPERTY SIZE: _____

PROPOSED FACILITY: _____ WATER SUPPLY: On-Site Well__ Community__ Public__ EVALUATION: Auger Boring__ Pit__ Cut_____

WEATHER: _____ ANTECEDENT MOISTURE: _____ SURFACE WATER: _____

abound Mil 51 mw 47

FACTORS	PROFILE 1	PROFILE 2	PROFILE 3	PROFILE 4
LANDSCAPE POSITION-%				
HORIZON I DEPTH	0-6	0-5 A	do	0-3 A
Color - Munsell	bn	dk br	Mottles 2"	br
Texture	sl sil	sl	of PA ✓	sil
Structure	gr	gr		gr
Consistence	fri friable	friable		fri
	moist	v. moist		moist
Boundary	clear			gradual
HORIZON DEPTH II	6-16 B	5-14 e		3-29
Color - Munsell	10YR	dk br		red
Texture	lic cl	scl, sl clay		c
Mottles	NA	NA		NA
Structure	mc cAB	almost st dev		st SAB
Consistence	fri	firm in place NA wet		wet firm
Boundary	clear-good	clear		
HORIZON III DEPTH	16-20 BC	14-37 B		29-36 BC
Color - Munsell	red yel	red		
Texture	cl	c		
Mottles	wht to weathered rock	rock colors/type		
Structure	WfSAB	WCSAB		
Consistence				
	f moist			
Boundary				
HORIZON IV DEPTH	20-36 CB	37-50 BC		36-72 mw Sap
Color - Munsell	red yel			Kaol
Texture	cl			
Mottles	lots wht to red			
Structure	st dev			
Consistence	f moist			
	36-60 C	50-96+ AH 10"		72-120 mw
Boundary	cl	CH W/R		
SOIL WETNESS	sl dry cl			
RESTRICTIVE HORIZON	f moist			
SAPROLITE				
LTAR				
CLASSIFICATION	60-96			

all profiles have fine mica

LEGEND

LANDSCAPE POSITION
R - Ridge Interfl
S - Shoulder
L - Linear slope
S - Foot slope
N - Nose slope
H - Head slope
Cc - Concave slope
Cv - Convex slope
T - Terrace
P - Flood Plain

TEXTURE
s - sand
ls - loamy sand
sl - sandy loam
l - loam
si - silt
sil - silt loam
sicl - silty clay loam
cl - clay loam
scl - sandy clay loam
sc - sandy clay
sic - silty clay
c - clay
Kaol

CONSISTENCE
MOIST / wet
WET
Ns - non-sticky
Ss - slightly sticky
S - sticky
Vs - very sticky

Np - non-plastic
Sp - slightly plastic
P - plastic
Vp - very plastic

MOIST
lo - very friable
fr - friable
fi - firm
vfi - very firm
efi - extremely firm

STRUCTURE
sg - single grain
m - massive
cr - crumb
gr - granular
sab - subangular blocky
ab - angular blocky
pl - platy
pr - prismatic

PARTICLE SIZE ANALYSIS

SERIES: Lockhart LAB ID# - 1
PEDON # 1 COLLECTED 11-7-96
HORIZON: 40-48 inches
SAMPLE SIZE IS 100 GRAMS
BY TCJ
PHOTO: Mike Krom

	30 sec	90 sec	3 hr	10 hr
READING	50	42	25	21
BLANK	6	6	6	6
TEMP C	18	18	18	18

1. Concentration C=R-R1 at
   30 seconds= 44
   90 seconds= 36
   3 hours= 19
   10 hours= 15

2. P=(C/Co)*100
   30 seconds= 44
   90 seconds= 36
   3 hours= 19
   10 hours= 15

3. d=theta / t^.5 * Tcorr
   30 sec d= 55.45838
   90 sec d= 35.02362
   3 hrs d= 3.64
   10 hrs d= 2.05

% sand = 57.8
% silt = 27.37
% clay = 14.82

Textural Class =SANDY LOAM

Established Series
Rev. TRG:JCM
5/83

LOCKHART SERIES

The Lockhart series consists of deep, well drained, moderately rapidly permeable, loamy soils that have a high percentage of pebbles throughout the solum. These soils formed in material mostly weathered from porphyritic granite of the Piedmont Uplands. Slopes range from 2 to 40 percent.

TAXONOMIC CLASS: Loamy-skeletal, mixed, thermic Typic Hapludults.

TYPICAL PEDON: Lockhart gravelly sandy loam--forested. (Colors are for moist soil.)

A--0 to 6 inches; dark grayish brown (10YR 4/2) gravelly sandy loam; weak medium granular structure; very friable; many fine roots; many fine pores; 35 percent pebbles of feldspar 2 to 10 mm in size; medium acid; abrupt smooth boundary. (4 to 7 inches thick)

Bt1--6 to 10 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam; weak medium granular structure; very friable; few fine and medium roots; sand grains coated and bridged with clay; 35 percent pebbles of feldspar; 2 percent pebbles of quartz; moderately acid; clear wavy boundary. (3 to 5 inches thick)

Bt2--10 to 22 inches; yellowish red (5YR 5/8) gravelly sandy clay loam; weak coarse subangular blocky structure; friable, slightly sticky; few fine and medium roots; few faint clay films on faces of peds; few faint clay films continuous on crystals of feldspar; 45 percent pebbles of feldspar; 2 percent pebbles of quartz; moderatley acid; gradual wavy boundary. (8 to 20 inches thick)

Bt3--22 to 42 inches; yellowish red (5YR 4/6) gravelly sandy clay loam; weak coarse subangular blocky structure; friable, slightly sticky; few faint clay films around crystals of feldspar; 45 percent pebbles of feldspar; 2 percent pebbles of quartz; few fine flakes of mica; 1 percent pebbles high in dark colored minerals; moderately acid; gradual wavy boundary. (6 to 24 inches thick)

BC--42 to 54 inches; reddish brown (5YR 5/4) gravelly sandy clay loam; weak coarse subangular blocky structure; friable, slightly sticky; 45 percent pebbles of feldspar; 2 percent pebbles of quartz; few fine flakes of mica; 1 percent pebbles high in dark colored minerals; medium acid; gradual wavy boundary. (8 to 20 inches thick)

GEOGRAPHICALLY ASSOCIATED SOILS: These are the similar Cecil, Louisburg, and Pacolet series, and Appling, Cataula, Wedowee, and Wilkes series. Each of these soils have less than 35 percent coarse fragments in the control section.

DRAINAGE AND PERMEABILITY: Well drained; moderately rapid runoff; moderately rapid permeability.

USE AND VEGETATION: Largely forested to white, red and blackjack oaks, hickory, loblolly and shortleaf pines, and flowering dogwood. Most slopes of less than 15 percent were formerly cleared and farmed but are now in loblolly and shortleaf pines.

DISTRIBUTION AND EXTENT: The Piedmont section of South Carolina, North Carolina, and Georgia. The series is of moderate extent.

SERIES ESTABLISHED: Union County, South Carolina; 1938.

National Cooperative Soil Survey
U. S. A.