



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Louisiana Agricultural
Experiment Station and
Louisiana Soil and Water
Conservation Committee

Soil Survey of Bienville Parish, Louisiana



How to Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

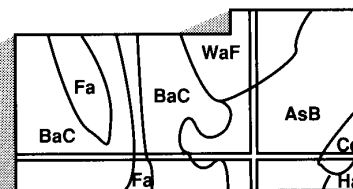
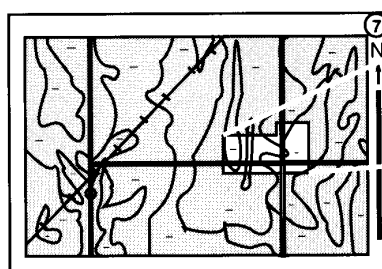
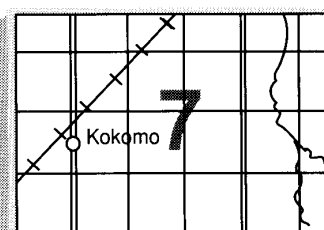
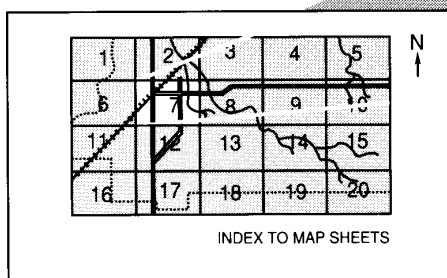
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1991. Soil names and descriptions were approved in 1992. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1991. This survey was made cooperatively by the Natural Resources Conservation Service, the Louisiana Agricultural Experiment Station, and the Louisiana Soil and Water Conservation Committee. The survey is part of the technical assistance furnished to the Saline Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Cover: A field of watermelons overlooking Mill Creek Lake. Watermelon is a major agriculture crop in Bienville Parish.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is <http://www.nrcs.usda.gov> (click on "Technical Resources").

Issued 2001

Contents

Cover	1	BoD—Bowie very fine sandy loam, 5 to 8 percent slopes	44
How to Use This Soil Survey	3	BpC—Boykin loamy fine sand, 1 to 5 percent slopes	45
Contents	5	BPE—Boykin loamy fine sand, 5 to 12 percent slopes	47
Foreword	9	BrC—Briley loamy fine sand, 1 to 5 percent slopes	49
General Nature of the County	12	BRE—Briley loamy fine sand, 5 to 12 percent slopes	50
History and Development	12	BXA—Buxin-Moreland clays, frequently flooded	52
Agriculture	13	ChC—Cahaba fine sandy loam, 1 to 5 percent slopes	54
Climate	13	DaC—Darden loamy fine sand, 1 to 5 percent slopes	56
Transportation	13	DrC—Darley gravelly fine sandy loam, 1 to 5 percent slopes	57
Industry	14	DRE—Darley gravelly fine sandy loam, 5 to 12 percent slopes	59
How This Survey Was Made	14	DuC—Dubach fine sandy loam, 1 to 5 percent slopes	60
Map Unit Composition	15	EcC—Eastwood fine sandy loam, 1 to 5 percent slopes	62
General Soil Map Units	17	ECE—Eastwood fine sandy loam, 5 to 12 percent slopes	64
Soils on Uplands	17	ECF—Eastwood fine sandy loam, 12 to 20 percent slopes	65
1. Sacul-Bowie-Sawyer	17	FoC—Forbing silt loam, 1 to 5 percent slopes	67
2. Mahan-Darley	19	FOE—Forbing silt loam, 5 to 12 percent slopes	69
3. Bellwood-Natchitoches-Sacul	20	GrB—Gurdon silt loam, 1 to 3 percent slopes	70
4. Eastwood-Bowie	21	GyA—Guyton silt loam	72
5. Malbis-Ruston-Beauregard	22	GYO—Guyton-Ouachita silt loams, frequently flooded	74
6. Kolin-Forbing	23	KoC—Kolin silt loam, 1 to 5 percent slopes	76
7. Briley-Betis-McLaurin	24	MaC—Mahan fine sandy loam, 1 to 5 percent slopes	78
Soils on Flood Plains	25	MAE—Mahan fine sandy loam, 5 to 12 percent slopes	79
8. Guyton-Ouachita	26		
9. Buxin-Moreland	27		
Soils on Stream Terraces	27		
10. Gurdon-Dubach-Bienville	28		
Detailed Soil Map Units	31		
Soil Descriptions	31		
BaB—Beauregard silt loam, 1 to 3 percent slopes	31		
BdC—Bellwood silt loam, 1 to 5 percent slopes	33		
BDE—Bellwood silt loam, 5 to 15 percent slopes	35		
BeC—Betis loamy fine sand, 1 to 5 percent slopes	37		
BEE—Betis loamy fine sand, 5 to 12 percent slopes	39		
BIC—Bienville loamy fine sand, 1 to 5 percent slopes	40		
BoC—Bowie very fine sandy loam, 1 to 5 percent slopes	42		

MgB—Malbis fine sandy loam, 1 to 3 percent slopes	81	Soil Properties	131
MgD—Malbis fine sandy loam, 3 to 8 percent slopes	83	Engineering Index Properties	131
MnB—McLaurin fine sandy loam, 1 to 3 percent slopes	85	Physical and Chemical Properties	132
MND—McLaurin fine sandy loam, 3 to 8 percent slopes	87	Soil and Water Features	133
MtB—Metcalf silt loam, 0 to 2 percent slopes	88	Soil Fertility Levels	134
NaC—Natchitoches fine sandy loam, 1 to 5 percent slopes	90	Physical and Chemical Analyses of Selected Soils	139
NAE—Natchitoches fine sandy loam, 5 to 12 percent slopes	92	Classification of the Soils	141
OkC—Oktibbeha silt loam, 1 to 5 percent slopes	94	Soil Series and Their Morphology	141
RuC—Ruston fine sandy loam, 1 to 5 percent slopes	96	Beauregard Series	142
RuD—Ruston fine sandy loam, 5 to 8 percent slopes	97	Bellwood Series	143
ScC—Sacul fine sandy loam, 1 to 5 percent slopes	99	Betis Series	144
SCE—Sacul fine sandy loam, 5 to 12 percent slopes	101	Bienville Series	145
SIC—Sailes loamy fine sand, 1 to 5 percent slopes	103	Bowie Series	146
SLE—Sailes loamy fine sand, 5 to 12 percent slopes	105	Boykin Series	148
SnC—Sawyer very fine sandy loam, 1 to 5 percent slopes	107	Briley Series	149
StC—Shatta silt loam, 1 to 5 percent slopes	108	Buxin Series	150
SVF—Smithdale fine sandy loam, 8 to 20 percent slopes	111	Cahaba Series	151
TrC—Trep loamy fine sand, 1 to 5 percent slopes	112	Darden Series	152
Prime Farmland	115	Darley Series	154
Use and Management of the Soils	117	Dubach Series	155
Crops and Pasture	117	Eastwood Series	156
Woodland Management and Productivity	120	Forbing Series	158
Recreation	123	Gurdon Series	159
Wildlife Habitat	124	Guyton Series	160
Engineering	126	Kolin Series	162
		Mahan Series	163
		Malbis Series	165
		McLaurin Series	166
		Metcalf Series	167
		Moreland Series	169
		Natchitoches Series	170
		Oktibbeha Series	171
		Ouachita Series	173
		Ruston Series	174
		Sacul Series	175
		Sailes Series	177
		Sawyer Series	179
		Shatta Series	180
		Smithdale Series	181
		Trep Series	182

Formation of the Soils	185	Table 8.—Wildlife Habitat	216
Processes of Soil Formation	185	Table 9.—Building Site Development	219
Factors of Soil Formation	186	Table 10.—Sanitary Facilities	223
Landforms and Surface Geology	187	Table 11.—Construction Materials	227
References	191	Table 12.—Water Management	230
Glossary	193	Table 13.—Engineering Index Properties	233
Tables	201	Table 14.—Physical and Chemical Properties of the Soils	240
Table 1.—Temperature and Precipitation	202	Table 15.—Soil and Water Features	244
Table 2.—Freeze Dates in Spring and Fall	203	Table 16.—Fertility Test Data for Selected Soils	246
Table 3.—Growing Season	203	Table 17.—Physical Test Data for Selected Soils	254
Table 4.—Acreage and Proportionate Extent of the Soils	204	Table 18.—Chemical Test Data for Selected Soils	256
Table 5.—Land Capability and Yields per Acre of Crops and Pasture	205	Table 19.—Classification of the Soils	258
Table 6.—Woodland Management and Productivity	208		
Table 7.—Recreational Development	213		

Foreword

This soil survey contains information that can be used in land-planning programs in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to cemented ironstone layers. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of Bienville Parish, Louisiana

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in cooperation with
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Conservation Committee

BIENVILLE PARISH is in north-central Louisiana about 40 miles east of Shreveport (fig. 1). The total area is 526,400 acres, of which 522,000 acres is land and 4,400 acres is water in the form of lakes, reservoirs, and streams. Bienville Parish is bordered on the north by Webster and Claiborne Parishes; on the east by Lincoln and Jackson Parishes; on the south by Winn, Natchitoches, and Red River Parishes; and on the west by Bossier and Webster Parishes. In 1990, according to the Bureau of the Census, the population of Bienville Parish was 15,979. Arcadia, the parish seat, has a population of 3,079 and is the largest city. Other cities and communities are Ringgold, Bienville, Castor, Saline, Jamestown, Fryeburg, Gibsland, Taylor, Bryceland, Mount Lebanon, Mount Olive, Friendship, and Sailes. The parish is mostly rural.

The parish consists of three major physiographic areas—the level and nearly level flood plains, the level to gently sloping stream terraces, and the very gently sloping to moderately steep uplands. Elevation ranges from about 535 feet on Driskill Mountain northeast of Bienville to about 115 feet above sea level on the flood plains in the southeastern part of the parish.

The flood plains of streams that drain the uplands are throughout the parish. They make up about 20 percent of the land area. The soils on flood plains range from loamy to clayey and from well drained to poorly drained. The poorly drained soils are in lower areas and are limited by wetness and flooding. The well drained soils are at a slightly higher elevation on low ridges and on natural levees along abandoned and present stream channels and are limited mainly by flooding (fig. 2).

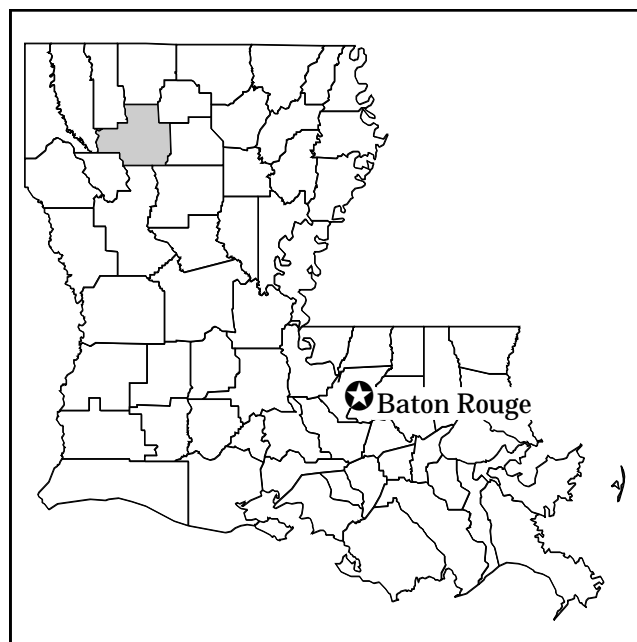


Figure 1.—Location of Bienville Parish in Louisiana.

Most of the acreage is used as woodland. A small acreage is used as pastureland or cropland.

The stream terraces are throughout the parish and make up about 5 percent of the parish. The soils on stream terraces range from sandy to clayey and from



Figure 2.—A flooded upland hardwood bottom area. Areas along Saline Bayou, Black Lake Bayou, and Dugdemona River are subject to frequent flooding.

well drained to poorly drained. They are generally low in natural fertility. Most of the acreage is used as woodland. A small acreage is used for cultivated crops, pasture, or homesites. Steepness of slope, wetness, and low natural fertility are the main limitations for agricultural uses.

The uplands make up the remainder of the land area. The soils on uplands are gravelly, sandy, loamy, or clayey and range from somewhat poorly drained to somewhat excessively drained. They are low in natural fertility. Most of the acreage is used as woodland. A small acreage is used for pasture, crops, or homesites. The main limitations to agricultural uses are steepness of slope and a hazard of erosion.

General Nature of the County

This section gives general information about Bienville Parish. It describes the history and development, agriculture, climate, transportation, and industry.

History and Development

Bienville Parish was named in honor of Bienville, "The Father of Louisiana" and great explorer of the 1700's. Bienville Parish was created in 1848. It was originally a part of Claiborne Parish. Little settlement occurred in what is now Bienville Parish during the

1700's, mainly because there were few navigable waterways and because of a fear of the Natchez Indians and unfriendly relations between the Spanish and French in the area.

Bienville Parish was covered by virgin timber until 1837. Longleaf pine was predominant in the southeast part of the parish. Mixed shortleaf pine and oak were in the uplands and elsewhere.

The abundance of Indian artifacts indicates that the parish was once inhabited by many tribes, especially around the salt domes in the western part of the parish. The four major salt domes are Rayburn, Brush Valley, King's Lick, and Lake Bistineau. During the Civil War, these areas were used extensively for the salt, which was readily available.

Settlement began in Bienville Parish in the 1830's when the Federal government began to sell land. The original parish seat was located in the center of Bienville Parish in a town called Sparta. In 1893, the parish seat was moved to Arcadia.

Agriculture

In the early 1900's, cotton was produced extensively in Bienville Parish. Today, most of the cropland has been converted to woodland or pastureland.

Pasture and hayland are on 26,000 acres in Bienville Parish. According to the Louisiana Summary of Agriculture and Natural Resources of 1990, about 5,000 acres were used to produce hay. The average yield was about 2.1 tons per acre.

In 1990, about 900 acres was planted to cotton in the parish. The average yield was a little more than 1 bale of lint cotton per acre. Sweet potatoes were grown on about 350 acres (fig 3). The average yield was about 275 bushels per acre.

Annually, watermelons are grown on about 300 acres on the sandy soils near Saline. The average yield is about 15,000 pounds per acre. Corn is grown on about 300 acres in the parish, mainly as field corn and feed corn. Other crops produced are Christmas trees, blackberries, blueberries, peaches, grapes, cantaloupe, lima beans, field peas, tomatoes, muscadines, and mayhaws. These commodities are produced on less than 200 acres in small plots throughout the parish.

There are seven dairies and seven poultry operations in Bienville Parish. Poultry production is expected to increase in the parish. Forestry is a big income producer with about 450,000 acres of commercial woodland.

The trend in agriculture in Bienville Parish is relatively stable with a slight increase in growth expected.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Bienville, Louisiana, in the period 1972 to 1986. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 46 degrees F and the average daily minimum temperature is 35 degrees. The lowest temperature on record, which occurred on February 25, 1983, is 4 degrees. In summer, the average temperature is 81 degrees and the average daily maximum temperature is 93 degrees. The highest recorded temperature, which occurred on July 13, 1980, is 106 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 60 inches. Of this, 27 inches, or 45 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 21 inches. The heaviest 1-day rainfall during the period of record was 10.25 inches on May 7, 1978. Thunderstorms occur on about 55 days each year, and most occur in summer.

The average seasonal snowfall is about 1 inch. The greatest snow depth at any one time during the period of record was 5 inches. On the average, 1 day of the year has at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 70 percent of the time possible in summer and 55 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 10 miles per hour, in spring.

Transportation

Bienville Parish is served by a network of highways and roads. Louisiana State Highways 4, 7, 9, 154, and 155; U.S. Highway 80; and Interstate 20 service the major through-traffic in the parish. Numerous other paved state and parish roads are available throughout the parish.

The parish is served by one airport, three major

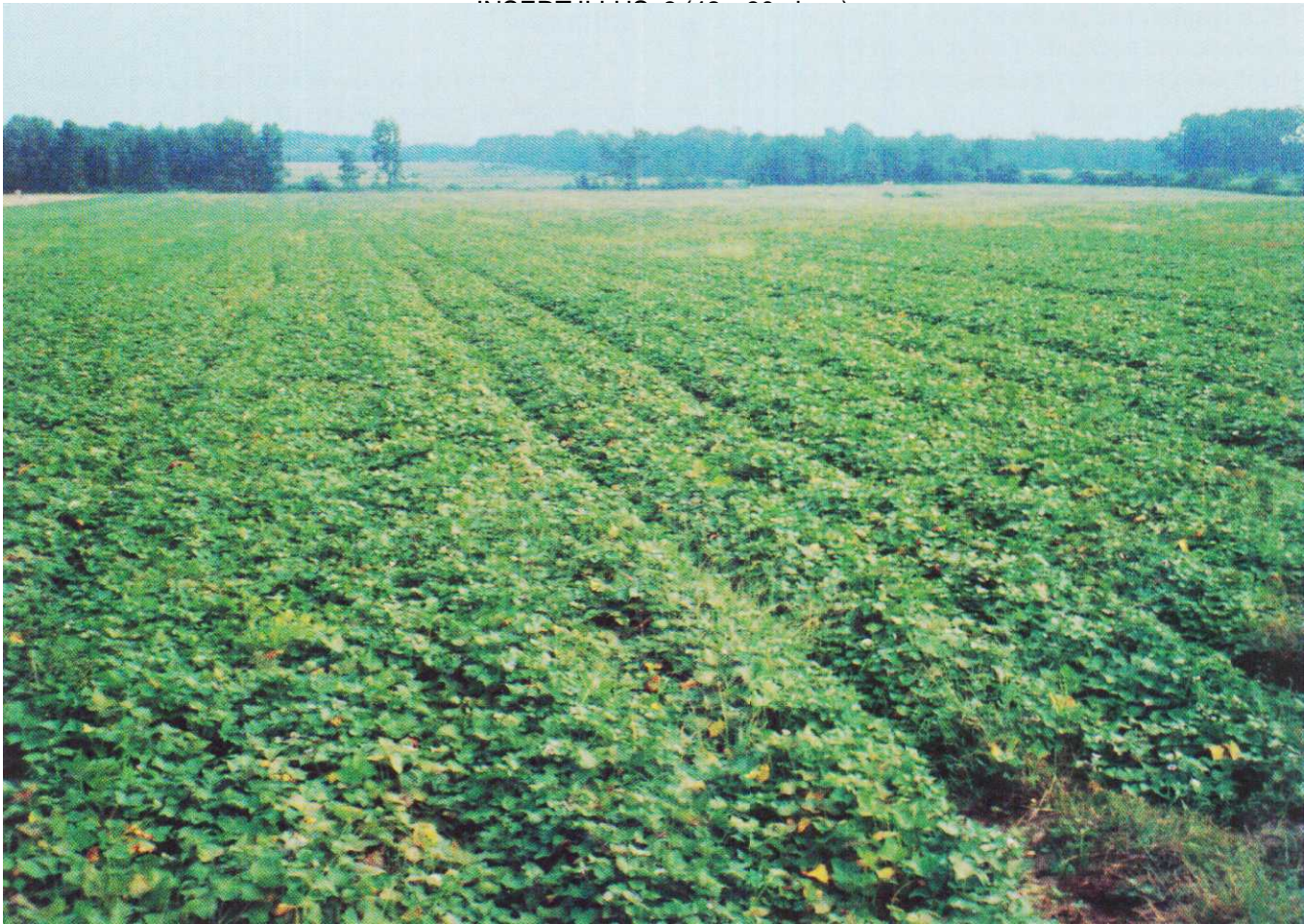


Figure 3.—The loamy soil surface layers in areas near Ringgold, Louisiana, allow local farmers to produce sweet potatoes with a crop rotation of two years fallow and one year sweet potatoes.

railroads, and numerous motor freight carriers. Commercial air service is available in Shreveport, which is less than 40 miles from Arcadia.

Industry

The major industry in the parish supports the production and marketing of timber and other forest products. A few large and several small forest product industries employ many people in Bienville Parish.

Oil and gas is second only to timber production in the total dollar volume contributed to the parish's economy. Service and supply companies related to oil and gas production are also important contributors.

Other major industries in the parish include manufacturers of machinery products, marine products, and bricks. The Bonnie and Clyde Trade Days

held for three days each month attract many visitors to the parish from Louisiana and surrounding states.

Large quantities of sand and gravel have been surveyed for future industrial use. This resource is vast and relatively untapped, offering an almost unlimited supply of sand for silica production.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; and the kinds of crops and native plants growing on the soils.

They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and

tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by two or three kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes.

Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in

the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The soils in the survey area vary widely in their potential for major land uses. Each map unit is rated for *cultivated crops*, *pastureland*, *woodland*, *urban uses*, and *recreational areas*. Cultivated crops are those grown extensively in the survey area. Pastureland refers to land that is producing either native grasses or tame grasses and legumes for livestock grazing. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Intensive recreational areas are campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic.

The boundaries of the general soil map units in Bienville Parish were matched, where possible, with those of the previously published surveys of Claiborne, Red River, and Bossier Parishes; and the previously completed and unpublished surveys of Lincoln, Winn, Jackson, and Webster Parishes. In a few places, however, the names of the map units differ slightly. These differences resulted from changes in soil series concepts, differences in map unit design, and changes in soil patterns near the survey area boundaries.

The general soil map units in this survey have been grouped into three general landscapes.

Descriptions of each of the broad groups and the map units in each group follow.

Soils on Uplands

This group of map units consists of very gently sloping to moderately steep, somewhat excessively drained to somewhat poorly drained, sandy and loamy soils. These soils are on ridgetops and side slopes on uplands. Slopes range from 1 to 20 percent.

The map units in this group make up about 75 percent of the land area. Most of the acreage is used as woodland or pastureland. Areas used as cropland generally are small and scattered. Steepness of slope and moderate or severe hazard of erosion are the main limitations for most uses. Wetness, moderate to very slow permeability, and moderate to very high shrink-swell potential are additional limitations for urban uses.

1. Sacul-Bowie-Sawyer

Setting

Landform: Uplands

Landform position: Sacul and Bowie—ridgetops and side slopes; Sawyer—ridgetops

Distinctive landform features: Landscape is crossed by many drainageways

Slope range: 1 to 12 percent

Composition

Percent of the survey area: 31 percent

Sacul soils—62 percent

Bowie soils—23 percent

Sawyer soils—10 percent

Minor soils—5 percent (includes Briley, Guyton, Ouachita, and Trep soils)

Typical Profile

Sacul

Surface layer: Very dark grayish brown to dark grayish brown fine sandy loam

Subsurface layer: Yellowish brown fine sandy loam

Subsoil layer: Upper part—red clay;
middle part—variegated red and gray clay;
lower part—gray clay loam

Bowie

Surface layer: Brown very fine sandy loam

Subsurface layer: Light yellowish brown very fine sandy loam

Subsoil layer: Upper part—yellowish brown sandy clay loam; middle part—brownish yellow loam; lower part—variegated yellowish brown, light brownish gray, and red sandy clay loam

Sawyer

Surface layer: Brown very fine sandy loam

Subsurface layer: Light yellowish brown very fine sandy loam

Subsoil layer: Upper part—strong brown loam; next layer—strong brown silty clay loam; next layer—yellowish brown silty clay loam; next layer—variegated brownish yellow, red, and light brownish gray silty clay; lower part—gray silty clay

Soil Properties

Sacul

Depth class: Very deep

Drainage class: Moderately well drained

Water table: Perched at 2 to 4 feet

Flooding: None

Permeability class: Slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: High

Slope: Very gently sloping to strongly sloping

Bowie

Depth class: Very deep

Drainage class: Well drained

Water table: Perched at 3.5 to 5 feet

Flooding: None

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Moderate

Slope: Gently sloping or moderately sloping

Sawyer

Depth class: Very deep

Drainage class: Moderately well drained

Water table: Perched at 2 to 3 feet

Flooding: None

Permeability class: Slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Moderate

Slope: Gently sloping or moderately sloping

Use and Management

Major use: Woodland

Other uses: Pastureland, cropland, and residential areas

Agricultural concerns

• **Cropland**

Suitability: Moderately well suited to very poorly suited

Management concerns: Low fertility; erosion hazard; short, complex slopes; and levels of aluminum in the rooting zone that are potentially toxic to plants

• **Pasture and hayland**

Suitability: Well suited to poorly suited

Management concerns: Low fertility; erosion hazard; and short, complex slopes

• **Woodland**

Suitability: Well suited or moderately well suited

Management concerns: Slight or moderate equipment limitation, windthrow hazard, and plant competition

Urban concerns

• **Septic tank absorption fields**

Limitation rating: Severe

Limitations: Wetness and slow percolation

• **Dwellings without basements**

Limitation rating: Sacul—severe; Bowie—slight; Sawyer—moderate

Limitations: Sacul—shrink-swell; Bowie—none; Sawyer—wetness and shrink-swell

• **Local roads and streets**

Limitation rating: Sacul and Sawyer—severe; Bowie—moderate

Limitations: Sacul—shrink-swell and low strength; Bowie and Sawyer—low strength

• **Lawns, landscaping, and golf fairways**

Limitation rating: Sacul—slight or moderate; Bowie and Sawyer—slight

Limitations: Sacul—slope; Bowie and Sawyer—none

Recreational uses

• **Camp and picnic areas**

Limitation rating: Slight or moderate

Limitations: Wetness, slow percolation, and slope

- **Playgrounds**

Limitation rating: Moderate or severe

Limitations: Slope, small stones, wetness, and slow percolation

2. Mahan-Darley

Setting

Landform: Uplands

Landform position: Ridgetops and side slopes

Distinctive landform features: Landscape is crossed by many small drainageways

Slope range: 1 to 12 percent

Composition

Percent of the survey area: 2 percent

Mahan soils—78 percent

Darley soils—8 percent

Minor soils—14 percent (includes Briley, Guyton, Ouachita, and Sacul soils)

Typical Profile

Mahan

Surface layer: Dark brown fine sandy loam

Subsurface layer: Brown fine sandy loam

Subsoil layer: Upper part—red clay; middle part—red clay loam; lower part—red sandy clay loam

Substratum layer: Stratified red sandy clay loam and light brownish gray, yellowish brown, and red sandy loam

Darley

Surface layer: Brown or dark grayish brown gravelly fine sandy loam

Subsoil layer: Upper part—red sandy clay; middle part—alternating layers of red sandy clay and thin ledges of ironstone; lower part—red sandy loam

Soil Properties

Mahan

Depth class: Very deep

Drainage class: Well drained

Water table: More than 6 feet

Flooding: None

Permeability class: Moderate

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Slope: Very gently sloping to strongly sloping

Darley

Depth class: Moderately deep

Drainage class: Well drained

Water table: More than 6 feet

Flooding: None

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Slope: Very gently sloping to strongly sloping

Use and Management

Major use: Woodland

Other uses: Pastureland and residential areas

Agricultural concerns

- **Cropland**

Suitability: Moderately well suited to not suited

Management concerns: Erosion hazard, low fertility, and levels of aluminum in the rooting zone that are potentially toxic to plants

- **Pasture and hayland**

Suitability: Well suited to poorly suited

Management concerns: Erosion hazard and low fertility

- **Woodland**

Suitability: Well suited

Management concerns: Slight or moderate plant competition

Urban concerns

- **Septic tank absorption fields**

Limitation rating: Severe

Limitations: Mahan—slow percolation;

Darley—cemented pan and slow percolation

- **Dwellings without basements**

Limitation rating: Slight or moderate

Limitations: Slope

- **Local roads and streets**

Limitation rating: Mahan—moderate;

Darley—slight or moderate

Limitations: Mahan—low strength and slope;

Darley—slope

- **Lawns, landscaping, and golf fairways**

Limitation rating: Mahan—slight or moderate;

Darley—moderate

Limitations: Mahan—slope; Darley—small stones

Recreational uses

- **Camp and picnic areas**

Limitation rating: Slight or moderate

Limitations: Small stones

- **Playgrounds**

Limitation rating: Moderate or severe
Limitations: Slope and small stones

3. Bellwood-Natchitoches-Sacul

Setting

Landform: Uplands
Landform position: Ridgetops and side slopes
Distinctive landform features: Areas are dissected by branching drainage systems
Slope range: 1 to 15 percent

Composition

Percent of the survey area: 6 percent
Bellwood soils—40 percent
Natchitoches soils—24 percent
Sacul soils—22 percent
Minor soils—14 percent (includes Guyton, Metcalf, Oktibbeha, Ouachita, and Sawyer soils)

Typical Profile

Bellwood

Surface layer: Dark grayish brown silt loam
Subsoil layer: Upper part—yellowish red clay; next layer—red clay; next layer—variegated red and light gray clay; next layer—light gray clay; lower part—light brownish gray clay

Natchitoches

Surface layer: Dark brown or very dark grayish brown fine sandy loam
Subsoil layer: Upper part—red clay; lower part—variegated red and olive clay
Substratum layer: Upper part—variegated olive and red clay; middle part—yellowish red sandy clay; lower part—variegated strong brown, olive, and light brownish gray sandy clay

Sacul

Surface layer: Very dark grayish brown fine sandy loam
Subsurface layer: Dark yellowish brown fine sandy loam
Subsoil layer: Upper part—red clay; lower part—variegated red and gray clay
Substratum layer: Gray clay loam

Soil Properties

Bellwood

Depth class: Very deep
Drainage class: Somewhat poorly drained
Water table: Apparent at 2 to 4 feet
Flooding: None
Permeability class: Slow
Available water capacity: Moderate or high
Natural soil fertility: Low
Shrink-swell potential: High
Slope: Very gently sloping to moderately steep

Natchitoches

Depth class: Deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Very slow
Available water capacity: Low or moderate
Natural soil fertility: Low
Shrink-swell potential: High
Slope: Very gently sloping to strongly sloping

Sacul

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 2 to 4 feet
Flooding: None
Permeability class: Slow
Available water capacity: Moderate or high
Natural soil fertility: Low
Shrink-swell potential: High
Slope: Very gently sloping to strongly sloping

Use and Management

Major use: Woodland

Other uses: Pastureland and residential areas

Agricultural concerns

- **Cropland**

Suitability: Poorly suited or very poorly suited
Management concerns: Erosion hazard, low fertility, levels of aluminum in the rooting zone that are potentially toxic to plants, and poor tilth

- **Pasture and hayland**

Suitability: Moderately well suited to poorly suited
Management concerns: Erosion hazard and low fertility

- **Woodland**

Suitability: Moderately well suited

Management concerns: Severe equipment limitation; moderate seedling mortality, windthrow hazard, and plant competition

Urban concerns

- **Septic tank absorption fields**

Limitation rating: Severe

Limitations: Bellwood and Sacul—wetness and slow percolation; Natchitoches—slow percolation

- **Dwellings without basements**

Limitation rating: Severe

Limitations: Shrink-swell

- **Local roads and streets**

Limitation rating: Severe

Limitations: Low strength and shrink-swell

- **Lawns, landscaping, and golf fairways**

Limitation rating: Bellwood and Sacul—slight or moderate; Natchitoches—moderate

Limitations: Bellwood—slope and slow percolation; Natchitoches—droughty and slope; Sacul—slope

Recreational uses

- **Camp and picnic areas**

Limitation rating: Moderate or severe

Limitations: Slow percolation, wetness, and slope

- **Playgrounds**

Limitation rating: Moderate or severe

Limitations: Slope, slow percolation, small stones, and wetness

4. Eastwood-Bowie

Setting

Landform: Uplands

Landform position: Ridgetops and side slopes

Distinctive landform features: Slopes are steeper near Loggy Bayou and Lake Bistineau

Slope range: 1 to 20 percent

Composition

Percent of the survey area: 4 percent

Eastwood soils—80 percent

Bowie soils—18 percent

Minor soils—2 percent (includes Briley, Guyton, Ouachita, and Sawyer soils)

Typical Profile

Eastwood

Surface layer: Dark yellowish brown, dark grayish brown, or grayish brown fine sandy loam

Subsurface layer: Strong brown fine sandy loam

Subsoil layer: Upper part—red clay; next layer—variegated red, light brownish gray, and light olive brown clay; next layer—variegated red, light brownish gray, and yellowish brown silty clay; lower part—light brownish gray silty clay loam

Substratum layer: Variegated light gray and brown silty clay loam

Bowie

Surface layer: Brown very fine sandy loam

Subsurface layer: Light yellowish brown very fine sandy loam

Subsoil layer: Upper part—strong brown sandy clay loam; middle part—brownish yellow sandy clay loam; lower part—yellowish brown sandy clay loam

Soil Properties

Eastwood

Depth class: Deep

Drainage class: Moderately well drained

Water table: More than 6 feet

Flooding: None

Permeability class: Very slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: High

Slope: Very gently sloping to moderately steep

Bowie

Depth class: Very deep

Drainage class: Well drained

Water table: Perched at 3.5 to 5 feet

Flooding: None

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Moderate

Slope: Gently sloping or moderately sloping

Use and Management

Major use: Woodland

Other uses: Pastureland and residential areas

Agricultural concerns• **Cropland**

Suitability: Moderately well suited to not suited

Management concerns: Erosion hazard, slope, low fertility, and levels of aluminum in the rooting zone that are potentially toxic to plants

• **Pasture and hayland**

Suitability: Well suited to poorly suited

Management concerns: Erosion hazard and low fertility

• **Woodland**

Suitability: Well suited or moderately well suited

Management concerns: Moderate or slight erosion hazard and equipment limitation

Urban concerns• **Septic tank absorption fields**

Limitation rating: Severe

Limitations: Eastwood—slow percolation and slope; Bowie—wetness and slow percolation

• **Dwellings without basements**

Limitation rating: Eastwood—severe; Bowie—slight

Limitations: Eastwood—shrink-swell and slope; Bowie—none

• **Local roads and streets**

Limitation rating: Eastwood—severe; Bowie—moderate

Limitations: Eastwood—shrink swell, low strength, and slope; Bowie—low strength

• **Lawns, landscaping, and golf fairways**

Limitation rating: Eastwood—slight to severe; Bowie—slight

Limitations: Eastwood—slope; Bowie—none

Recreational uses• **Camp and picnic areas**

Limitation rating: Slight to severe

Limitations: Slow percolation and slope

• **Playgrounds**

Limitation rating: Moderate or severe

Limitations: Slow percolation and slope

5. Malbis-Ruston-Beauregard**Setting**

Landform: Uplands

Landform position: Malbis and Ruston—ridgetops and side slopes; Beauregard—ridgetops and toeslopes

Distinctive landform features: Landscape is crossed by many small drainageways

Slope range: 1 to 8 percent

Composition

Percent of the survey area: 13 percent

Malbis soils—40 percent

Ruston soils—19 percent

Beauregard soils—14 percent

Minor soils—27 percent (includes Boykin, Guyton, Kolin, Ouachita, and Shatta soils)

Typical Profile**Malbis**

Surface layer: Dark grayish brown or dark brown fine sandy loam

Subsurface layer: Yellowish brown fine sandy loam

Subsoil layer: Yellowish brown sandy clay loam

Ruston

Surface layer: Grayish brown fine sandy loam

Subsurface layer: Brown fine sandy loam

Subsoil layer: Upper part—yellowish red sandy clay loam; middle part—yellowish red fine sandy loam; lower part—red sandy clay loam

Beauregard

Surface layer: Dark grayish brown silt loam

Subsurface layer: Upper part—dark yellowish brown silt loam; lower part—yellowish brown silt loam

Subsoil layer: Upper part—yellowish brown silt loam; middle part—yellowish brown silty clay loam; lower part—light brownish gray silty clay loam

Soil Properties**Malbis**

Depth class: Very deep

Drainage class: Moderately well drained

Water table: Perched at 2.5 to 4 feet

Flooding: None

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Slope: Gently sloping or moderately sloping

Ruston

Depth class: Very deep

Drainage class: Well drained

Water table: More than 6 feet

Flooding: None

Permeability class: Moderate

Available water capacity: Moderate or high

Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Gently sloping or moderately sloping

Beauregard

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Apparent at 1.5 to 3 feet
Flooding: None
Permeability class: Slow
Available water capacity: Very high
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Gently sloping

Use and Management

Major use: Woodland or pastureland

Other uses: Cropland and residential areas

Agricultural concerns

• **Cropland**

Suitability: Well suited or moderately well suited
Management concerns: Low fertility, erosion hazard, levels of aluminum in the rooting zone that are potentially toxic to plants, and wetness

• **Pasture and hayland**

Suitability: Well suited
Management concerns: Low fertility, erosion hazard, and wetness

• **Woodland**

Suitability: Well suited or moderately well suited
Management concerns: Slight or moderate plant competition, seedling mortality, windthrow hazard, and equipment limitation

Urban concerns

• **Septic tank absorption fields**

Limitation rating: Malbis and Beauregard—severe; Ruston—moderate
Limitations: Malbis and Beauregard—wetness and slow percolation; Ruston—slow percolation

• **Dwellings without basements**

Limitation rating: Malbis and Ruston—slight; Beauregard—moderate
Limitations: Malbis and Ruston—none; Beauregard—wetness

• **Local roads and streets**

Limitation rating: Malbis and Ruston—slight; Beauregard—moderate
Limitations: Malbis and Ruston—none; Beauregard—low strength and wetness

• **Lawns, landscaping, and golf fairways**

Limitation rating: Malbis and Ruston—slight; Beauregard—moderate
Limitations: Malbis and Ruston—none; Beauregard—wetness

Recreational uses

• **Camp and picnic areas**

Limitation rating: Slight or moderate
Limitations: Wetness and slow percolation

• **Playgrounds**

Limitation rating: Moderate or severe
Limitations: Slope

6. Kolin-Forbing

Setting

Landform: Uplands
Landform position: Kolin—ridgetops; Forbing—ridgetops and side slopes
Distinctive landform features: Landscape is crossed by many small drainageways
Slope range: 1 to 12 percent

Composition

Percent of the survey area: 1 percent
 Kolin soils—68 percent
 Forbing soils—15 percent
 Minor soils—17 percent (includes Buxin, Guyton, Malbis, Moreland, Ouachita, and Shatta soils)

Typical Profile

Kolin

Surface layer: Dark grayish brown silt loam
Subsurface layer: Pale brown silt loam
Subsoil layer: Upper part—yellowish brown silt loam and silty clay loam; next layer—yellowish brown silty clay loam with light gray silt coatings; next layer—yellowish brown silty clay; lower part—red clay

Forbing

Surface layer: Very dark brown or dark brown silt loam
Subsurface layer: Brown silt loam
Subsoil layer: Upper part—yellowish red clay; middle part—red clay; lower part—dark red clay

Soil Properties

Kolin

Depth class: Very deep
Drainage class: Moderately well drained

Water table: Perched at 1.5 to 3 feet

Flooding: None

Permeability class: Very slow

Available water capacity: High

Natural soil fertility: Low

Shrink-swell potential: High

Slope: Gently sloping or moderately sloping

Forbing

Depth class: Very deep

Drainage class: Moderately well drained

Water table: More than 6 feet

Flooding: None

Permeability class: Very slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Very high

Slope: Very gently sloping to strongly sloping

Use and Management

Major use: Woodland

Other uses: Pastureland and residential areas

Agricultural concerns

• Cropland

Suitability: Moderately well suited to very poorly suited

Management concerns: Erosion hazard, low fertility, and levels of aluminum in the rooting zone that are potentially toxic to plants

• Pasture and hayland

Suitability: Well suited to poorly suited

Management concerns: Low fertility and erosion hazard

• Woodland

Suitability: Well suited or moderately well suited

Management concerns: Slight or moderate equipment limitation, seedling mortality, windthrow hazard, and plant competition

Urban concerns

• Septic tank absorption fields

Limitation rating: Severe

Limitations: Kolin—wetness and slow percolation; Forbing—slow percolation

• Dwellings without basements

Limitation rating: Severe

Limitations: Shrink-swell

• Local roads and streets

Limitation rating: Severe

Limitations: Low strength and shrink-swell

• Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations: Kolin—wetness;

Forbing—droughtiness and slope

Recreational uses

• Camp and picnic areas

Limitation rating: Severe

Limitations: Slow percolation

• Playgrounds

Limitation rating: Severe

Limitations: Slow percolation

7. Briley-Betis-McLaurin

Setting

Landform: Uplands

Landform position: Ridgetops and side slopes

Distinctive landform features: Landscape is crossed by many small drainageways

Slope range: 1 to 12 percent

Composition

Percent of the survey area: 18 percent

Briley soils—42 percent

Betis soils—31 percent

McLaurin soils—9 percent

Minor soils—18 percent (includes Darden, Guyton, Ouachita, Sacul, and Sailes soils)

Typical Profile

Briley

Surface layer: Dark grayish brown loamy fine sand

Subsurface layer: Upper part—light yellowish brown loamy fine sand; lower part—brown loamy fine sand

Subsoil layer: Upper part—yellowish red sandy clay loam; lower part—red sandy clay loam

Betis

Surface layer: Dark grayish brown loamy fine sand

Subsurface layer: Upper part—brown loamy fine sand; lower part—yellowish brown loamy fine sand

Subsoil layer: Upper part—strong brown loamy fine sand; lower part—pale brown loamy fine sand and yellowish red fine sandy loam

McLaurin

Surface layer: Brown fine sandy loam

Subsurface layer: Dark yellowish brown fine sandy loam

Subsoil layer: Upper part—red sandy loam;
middle part—yellowish red sandy loam with
pockets of very pale brown sand grains;
lower part—red sandy loam

Soil Properties

Briley

Depth class: Very deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Very gently sloping to strongly sloping

Betis

Depth class: Very deep
Drainage class: Somewhat excessively drained
Water table: More than 6 feet
Flooding: None
Permeability class: Rapid
Available water capacity: Low or moderate
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Very gently sloping to strongly sloping

McLaurin

Depth class: Deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Moderate
Available water capacity: Low or moderate
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Gently sloping or moderately sloping

Use and Management

Major use: Woodland

Other uses: Pastureland, cropland, and residential areas

Agricultural concerns

- **Cropland**

Suitability: Moderately well suited to very poorly suited

Management concerns: Droughtiness, erosion hazard, low fertility, and levels of aluminum in the rooting zone that are potentially toxic to plants

- **Pasture and hayland**

Suitability: Moderately well suited to poorly suited
Management concerns: Droughtiness, low fertility, and erosion hazard

- **Woodland**

Suitability: Well suited or moderately well suited
Management concerns: Moderate seedling mortality and plant competition; slight to severe equipment limitation

Urban concerns

- **Septic tank absorption fields**

Limitation rating: Briley—slight or moderate; Betis—severe; McLaurin—slight
Limitations: Briley—slope; Betis—poor filter; McLaurin—none

- **Dwellings without basements**

Limitation rating: Briley and Betis—slight or moderate; McLaurin—slight
Limitations: Briley and Betis—slope; McLaurin—none

- **Local roads and streets**

Limitation rating: Briley and Betis—slight or moderate; McLaurin—slight
Limitations: Briley and Betis—slope; McLaurin—none

- **Lawns, landscaping, and golf fairways**

Limitation rating: Briley and Betis—moderate; McLaurin—slight
Limitations: Briley and Betis—droughtiness and slope; McLaurin—none

Recreational uses

- **Camp and picnic areas**

Limitation rating: Slight or moderate
Limitations: Slope and too sandy

- **Playgrounds**

Limitation rating: Moderate or severe
Limitations: Slope and too sandy

Soils on Flood Plains

The map units in this group consist mainly of level and nearly level, poorly drained, somewhat poorly drained, and well drained, loamy and clayey soils. These soils are subject to frequent flooding. They are in level or depressional areas and on low ridges and natural levees on flood plains. Slopes range from 0 to 2 percent.

The map units in this group make up about 20 percent of the land area. Most of the acreage is used as woodland or pastureland. Seasonal wetness and the hazard of flooding are the main limitations for most uses.

8. Guyton-Ouachita

Setting

Landform: Flood plains

Landform position: Guyton—alluvial flats and depressions; Ouachita—low ridges or natural levees

Distinctive landform features: Landform is undulating depressions and low ridges

Slope range: 0 to 2 percent

Composition

Percent of the survey area: 20 percent

Guyton soils—60 percent

Ouachita soils—25 percent

Minor soils—15 percent (includes Bienville, Cahaba, and Dubach soils)

Typical Profile

Guyton

Surface layer: Grayish brown silt loam

Subsurface layer: Light gray silt loam

Subsoil layer: Upper part—grayish brown silty clay loam with vertical intrusions of grayish brown silt loam; middle part—grayish brown silty clay loam; lower part—gray silt loam

Ouachita

Surface layer: Brown silt loam

Subsoil layer: Upper part—dark yellowish brown silt loam; lower part—yellowish brown silt loam

Substratum layer: Yellowish brown very fine sandy loam

Soil Properties

Guyton

Depth class: Very deep

Drainage class: Poorly drained

Water table: Perched at 0 to 1.5 feet

Flooding: Frequently flooded

Permeability class: Slow

Available water capacity: Very high or high

Natural soil fertility: Low

Shrink-swell potential: Low

Slope: Level to nearly level

Ouachita

Depth class: Very deep

Drainage class: Well drained

Water table: More than 6 feet

Flooding: Frequently flooded

Permeability class: Moderately slow

Available water capacity: High or very high

Natural soil fertility: Low

Shrink-swell potential: Low

Slope: Nearly level to very gently sloping

Use and Management

Major use: Woodland

Other uses: Pastureland and cropland

Agricultural concerns

• Cropland

Suitability: Very poorly suited

Management concerns: Wetness, flooding, low fertility, and levels of aluminum in the rooting zone that are potentially toxic to plants

• Pasture and hayland

Suitability: Poorly suited

Management concerns: Flooding, wetness, and low fertility

• Woodland

Suitability: Moderately well suited

Management concerns: Severe equipment limitation, seedling mortality, windthrow hazard, and plant competition

Urban concerns

• Septic tank absorption fields

Limitation rating: Severe

Limitations: Guyton—flooding, wetness, and slow percolation; Ouachita—flooding and slow percolation

• Dwellings without basements

Limitation rating: Severe

Limitations: Guyton—flooding and wetness; Ouachita—flooding

• Local roads and streets

Limitation rating: Severe

Limitations: Guyton—low strength, wetness, and flooding; Ouachita—flooding

• Lawns, landscaping, and golf fairways

Limitation rating: Severe

Limitations: Guyton—flooding and wetness; Ouachita—flooding

Recreational uses

• Camp and picnic areas

Limitation rating: Severe

Limitations: Flooding and wetness

• Playgrounds

Limitation rating: Severe

Limitations: Wetness and flooding

9. Buxin-Moreland

Setting

Landform: Flood plains

Landform position: Buxin—broad flats and depressions; Moreland—low ridges and natural levees

Distinctive landform features: Landform is undulating depressions and low ridges

Slope range: 0 to 1 percent

Composition

Percent of the survey area: Less than 1 percent

Buxin soils—65 percent

Moreland soils—25 percent

Minor soils—10 percent (includes Eastwood and Forbing soils)

Typical Profile

Buxin

Surface layer: Dark reddish brown clay

Subsoil layer: Upper part—dark reddish brown clay; lower part—dark gray clay

Substratum layer: Dark reddish brown clay

Moreland

Surface layer: Dark reddish brown clay

Subsoil layer: Dark reddish brown clay

Soil Properties

Buxin

Depth class: Very deep

Drainage class: Poorly drained

Water table: Apparent at 0 to 3 feet

Flooding: Frequently flooded

Permeability class: Very slow

Available water capacity: Moderate or high

Natural soil fertility: High

Shrink-swell potential: High

Slope: Level to nearly level

Moreland

Depth class: Very deep

Drainage class: Somewhat poorly drained

Water table: Perched at 0 to 1.5 feet

Flooding: Frequently flooded

Permeability class: Very slow

Available water capacity: Moderate or high

Natural soil fertility: High

Shrink-swell potential: Very high

Slope: Level to nearly level

Use and Management

Major uses: Pastureland and wildlife areas

Other uses: Cropland and woodland

Agricultural concerns

- **Cropland**

Suitability: Very poorly suited

Management concerns: Wetness and flooding

- **Pasture and hayland**

Suitability: Poorly suited

Management concerns: Wetness and flooding

- **Woodland**

Suitability: Poorly suited

Management concerns: Severe equipment limitation, seedling mortality, and windthrow hazard; moderate plant competition

Urban concerns

- **Septic tank absorption fields**

Limitation rating: Severe

Limitations: Flooding, wetness, and slow percolation

- **Dwellings without basements**

Limitation rating: Severe

Limitations: Flooding, wetness, and shrink-swell

- **Local roads and streets**

Limitation rating: Severe

Limitations: Shrink-swell, low strength, and wetness

- **Lawns, landscaping, and golf fairways**

Limitation rating: Severe

Limitations: Buxin—wetness and flooding; Moreland—flooding, wetness, and too clayey

Recreational uses

- **Camp and picnic areas**

Limitation rating: Severe

Limitations: Flooding, wetness, too clayey, and slow percolation

- **Playgrounds**

Limitation rating: Severe

Limitations: Wetness, too clayey, and flooding

Soils on Stream Terraces

The map unit in this group consists of somewhat poorly drained, well drained, and somewhat excessively drained, loamy and sandy soils. Slopes range from 1 to 5 percent.

The map unit in this group makes up about 5 percent of the land area. Most of the acreage is used as woodland. Pastureland and cropland areas are

small and scattered. Low soil fertility, droughtiness, wetness, and the hazard of erosion are the main limitations for most uses.

10. Gurdon-Dubach-Bienville

Setting

Landform: Terraces

Landform position: Gurdon—broad flats;

Dubach—narrow to broad, convex ridges;

Bienville—broad, low ridges

Distinctive landform features: Areas are near major drainageways

Slope range: 1 to 5 percent

Composition

Percent of the survey area: 5 percent

Gurdon soils—46 percent

Dubach soils—29 percent

Bienville soils—15 percent

Minor soils—10 percent (includes Beauregard, Darden, Guyton, and Ouachita soils)

Typical Profile

Gurdon

Surface layer: Grayish brown silt loam

Subsoil layer: Upper part—brown silt loam;

next layer—yellowish brown silt loam;

next layer—yellowish brown silty clay loam;

next layer—variegated yellowish brown, light brownish gray, and strong brown silty clay loam;

lower part—yellowish brown silty clay loam

Dubach

Surface layer: Brown fine sandy loam

Subsurface layer: Yellowish brown fine sandy loam

Subsoil layer: Upper part—strong brown loam;

next layer—strong brown sandy clay loam;

next layer—yellowish brown sandy clay loam;

lower part—brownish yellow sandy clay loam

Bienville

Surface layer: Dark grayish brown loamy fine sand

Subsurface layer: Upper part—brown loamy fine sand; lower part—strong brown loamy fine sand with spots and streaks of very pale brown uncoated sand grains

Subsoil layer: Brown loamy fine sand

Soil Properties

Gurdon

Depth class: Very deep

Drainage class: Somewhat poorly drained

Water table: Perched at 1 foot to 2 feet

Flooding: None

Permeability class: Moderate

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Slope: Gently sloping

Dubach

Depth class: Very deep

Drainage class: Well drained

Water table: Perched at 3.5 to 5 feet

Flooding: None

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Slope: Gently sloping or moderately sloping

Bienville

Depth class: Very deep

Drainage class: Somewhat excessively drained

Water table: Apparent at 4 to 6 feet

Flooding: None

Permeability class: Moderately rapid

Available water capacity: Low or moderate

Natural soil fertility: Low

Shrink-swell potential: Low

Slope: Gently sloping or moderately sloping

Use and Management

Major use: Woodland

Other uses: Pastureland, cropland, and residential areas

Agricultural concerns

• Cropland

Suitability: Well suited or moderately well suited

Management concerns: Erosion hazard, low fertility, wetness, and levels of aluminum in the rooting zone that are potentially toxic to plants

• Pasture and hayland

Suitability: Well suited or moderately well suited

Management concerns: Erosion hazard, wetness, low fertility, and droughtiness

• Woodland

Suitability: Well suited or moderately well suited

Management concerns: Slight to severe equipment limitation and plant competition; moderate windthrow hazard and seedling mortality

Urban concerns**• Septic tank absorption fields**

Limitation rating: Gurdon and Dubach—severe;
Bienville—moderate

Limitations: Wetness

• Dwellings without basements

Limitation rating: Gurdon—severe; Dubach and
Bienville—slight

Limitations: Gurdon—wetness; Dubach and
Bienville—none

• Local roads and streets

Limitation rating: Gurdon—moderate; Dubach and
Bienville—slight

Limitations: Gurdon—low strength and wetness;
Dubach and Bienville—none

• Lawns, landscaping, and golf fairways

Limitation rating: Gurdon and
Bienville—moderate; Dubach—slight

Limitations: Gurdon—wetness; Dubach—none;
Bienville—droughtiness

Recreational uses**• Camp and picnic areas**

Limitation rating: Slight to severe

Limitations: Wetness and too sandy

• Playgrounds

Limitation rating: Moderate or severe

Limitations: Wetness, slope, and too sandy

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under the heading “Use and Management of the Soils.”

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Eastwood fine sandy loam, 1 to 5 percent slopes, is a phase of the Eastwood series.

Some map units are made up of two or more major soils. These map units are called soil complexes.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Buxin-Moreland clays, frequently flooded, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or

soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see “Summary of Tables”) give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

All of the soils on the flood plains in Bienville Parish were mapped at the same level of detail, except for those soils that are subject to frequent flooding. Frequent flooding limits the use and management of the soils, and separating the soils in these areas would be of little importance to the land user.

Most of the soils on the uplands and terraces are in forest land, and the use and management of these areas are not expected to change. Where the landscape consisted of moderately sloping to moderately steep soils, observations were fewer than in less sloping areas.

Soil Descriptions

BaB—Beauregard silt loam, 1 to 3 percent slopes

Setting

Major landform: Uplands

Landform position: Broad ridgetops and toeslopes

Distinctive landform features: Slopes generally are long and smooth

Shape of areas: Irregular

Size of areas: 50 to 250 acres

Slope: Gently sloping

Typical Profile

Surface layer:

0 to 4 inches—dark grayish brown silt loam

Subsurface layer:

4 to 10 inches—dark yellowish brown silt loam

Subsoil layer:

10 to 21 inches—yellowish brown silt loam

21 to 43 inches—yellowish brown silty clay loam

43 to 62 inches—light brownish gray silty clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Water table: Apparent at 1.5 to 3 feet

Flooding: None

Runoff: Slow or medium

Permeability class: Slow

Available water capacity: Very high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Beauregard and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Kolin soils, Malbis soils, Shatta soils, and soils with slopes that range from 3 to 5 percent. Kolin soils are in positions similar to those of the Beauregard soil and have a subsoil that is clayey in the lower part. Malbis and Shatta soils are at a higher elevation than the Beauregard soil. Malbis soils contain more sand in the subsoil than the Beauregard soil and do not have gray iron depletions within 30 inches of the soil surface. Shatta soils have a fragipan.

Land Use

Major land use: Woodland

Other land uses: Pastureland

Cropland

Land capability subclass: IIe

Suitability: Moderately well suited

Adapted crops: Corn, grain sorghum, wheat, cotton, and soybeans

Management concerns:

- Erosion hazard
- Wetness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a wide range of moisture content

- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility and improve tilth
- Excessive cultivation can result in the formation of a tillage pan; this pan can be broken by subsoiling when the soil is dry
- Wetness can delay planting in some areas; shallow ditches can remove excess water on the surface
- Runoff and erosion can be reduced by fertilizing and seeding a cover crop in the fall
- Sheet and rill erosion can be reduced by constructing gradient terraces and farming on the contour
- Most crops respond well to fertilizer and lime, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, white clover, and winter peas; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Wetness
- Low fertility

Management measures:

- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Grazing when the soil is wet results in puddling of the surface layer; drainage is needed in low places
- Proper stocking rates and pasture rotation help to keep the pasture and soil in good condition

Woodland

Woodland suitability group: 2w8

Site index/ordinating species: 90—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, southern red oak, and white oak

Suitability: Moderately well suited

Management concerns:

- Moderate equipment use limitation
- Moderate seedling mortality
- Moderate windthrow hazard
- Moderate plant competition

Management measures:

- Standard wheeled and tracked equipment can cause rutting and compaction of the surface layer if logging is done during the wet seasons; using low-pressure ground equipment or harvesting

during the drier periods reduces the damage to the soil and helps to maintain productivity

- If site preparation is not adequate, competition from undesirable plants can prevent or prolong natural or artificial reestablishment of trees; competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees
- Bedding and surface drainage help to ensure pine seedling survival

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Wetness

Corrective measures:

- Drainage may be needed around the foundations of buildings

Local roads and streets

Limitation rating: Moderate

Limitations:

- Low strength
- Wetness

Corrective measures:

- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed
- Roadside ditches generally are needed to remove excess water more quickly

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Wetness

Corrective measures:

- Lawn and landscaping plants that are tolerant of occasional wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove excess water quickly; addition of some fill material may be necessary

Playgrounds

Limitation rating: Moderate

Limitations:

- Slope
- Wetness

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove excess water quickly

BdC—Bellwood silt loam, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Broad convex ridgetops and shoulder slopes

Distinctive landform features: Slopes generally are long and smooth

Shape of areas: Irregular

Size of areas: 15 to 400 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 3 inches—dark grayish brown silt loam

Subsoil layer:

3 to 11 inches—yellowish red clay

11 to 17 inches—red clay

17 to 26 inches—variegated red and light gray clay

26 to 34 inches—variegated light gray and red clay

34 to 51 inches—light gray clay

51 to 65 inches—light brownish gray clay

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Somewhat poorly drained

Water table: Apparent at 2 to 4 feet

Flooding: None

Runoff: Medium

Permeability class: Slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: High

Composition

Bellwood and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Bowie, Metcalf, Oktibbeha, and Sawyer soils. Bowie soils are at a higher elevation than the Bellwood soil and are loamy throughout. Metcalf and Sawyer soils are at a slightly lower elevation than the Bellwood soil and have a subsoil that is loamy in the upper part. Oktibbeha soils are on broad ridgetops and toeslopes, have concretions of calcium carbonate in the lower part of the subsoil, and are at a slightly higher elevation than the Bellwood soil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IVe

Suitability: Poorly suited

Adapted crops: Small grains, soybeans, and grain sorghum

Management concerns:

- Erosion hazard
- Low fertility
- Poor tilth
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- Early fall seeding, conservation tillage, terraces, diversions, and grassed waterways help to control erosion
- All tillage should be on the contour or across the slope
- Most crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, oats, and wheat are suitable for winter forage

Management concerns:

- Erosion hazard
- Low fertility

Management measures:

- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Grazing when the soil is wet results in puddling of the surface layer; drainage is needed in low places
- Seedbed preparation should be on the contour or across the slope where practical

Woodland

Woodland suitability group: 3c8

Site index/ordinating species: 78—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, white oak, and southern red oak

Suitability: Moderately well suited

Management concerns:

- Severe equipment use limitation
- Moderate seedling mortality
- Moderate windthrow hazard
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally can be used, but equipment use may be limited during rainy periods, generally from December to April
- Standard wheeled and tracked equipment cause soil compaction and rutting if logging is done during the wet seasons; using low-pressure ground equipment or harvesting during the drier periods reduces the damage to the soil and helps to maintain productivity
- Roads and landings require suitable surfacing for year-round use
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe

Limitations:

- Low strength
- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used; standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses**Camp and picnic areas**

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

BDE—Bellwood silt loam, 5 to 15 percent slopes**Setting**

Major landform: Uplands

Landform position: Side slopes

Distinctive landform features: Slopes generally are short and complex

Shape of areas: Irregular

Size of areas: 20 to 300 acres

Slope: Sloping to moderately steep

Typical Profile

Surface layer:

0 to 3 inches—dark grayish brown silt loam

Subsoil layer:

3 to 62 inches—red clay in the upper part; variegated red and light brownish gray clay and light brownish gray clay in the lower part

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Somewhat poorly drained

Water table: Apparent at 2 to 4 feet

Flooding: None

Runoff: Rapid

Permeability class: Slow

Available water capacity: Moderate to high

Natural soil fertility: Low

Shrink-swell potential: High

Composition

Bellwood and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Guyton, Natchitoches, and Sacul soils. Guyton soils are in drainageways and are poorly drained and loamy throughout. Natchitoches soils are at a slightly lower elevation than the Bellwood soil and contain more than 5 percent glauconitic sand in the subsoil. Sawyer soils have a subsoil that is loamy in the upper part. Sacul soils are at a higher elevation than the Bellwood soil and contain less clay in the subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: VIe

Suitability: Very poorly suited

Adapted crops: Small grains

Management concerns:

- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- Practices that can be used to control erosion include early fall seeding, minimum tillage, and construction of terraces, diversions, and grassed waterways
- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to improve fertility, reduce erosion, and maintain tilth
- Most crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Poorly suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, oats, and wheat are suitable for winter forage

Management concerns:

- Erosion hazard
- Low fertility

Management measures:

- Use of equipment is limited in some areas by gullies and steep, complex slopes
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Use of proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Pasture plants respond well to lime and fertilizer

Woodland

Woodland suitability group: 3c8

Site index/ordinating species: 78—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, white oak, and southern red oak

Suitability: Moderately well suited

Management concerns:

- Severe equipment use limitation
- Moderate seedling mortality
- Moderate windthrow hazard
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but equipment use may be limited during wet periods, mainly from December to April
- When the soil surface is wet or moist, roads and skid trails are slippery and may be impassable; this can be overcome by using specialized equipment during wet seasons or logging during dry seasons
- Logging roads require suitable surfacing for year-round use
- Planting trees on the contour helps to control erosion
- Reforestation can be initiated soon after harvesting to reduce erosion and competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe

Limitations:

- Low strength
- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Slope
- Percs slowly

Corrective measures:

- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses**Camp and picnic areas**

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe

Limitations:

- Slope
- Percs slowly

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove rain water quickly

BeC—Betis loamy fine sand, 1 to 5 percent slopes**Setting**

Major landform: Uplands

Landform position: Convex ridgetops

Distinctive landform features: Slopes are moderately long and complex

Shape of areas: Irregular

Size of areas: 20 to 500 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 9 inches—very dark grayish brown loamy fine sand

Subsurface layer:

9 to 23 inches—brown loamy fine sand

23 to 31 inches—yellowish brown loamy fine sand

Subsoil layer:

31 to 52 inches—strong brown loamy fine sand

52 to 70 inches—pale brown loamy fine sand with yellowish red fine sandy loam lamellae

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Somewhat excessively drained

Water table: At more than 6 feet

Flooding: None

Runoff: Very slow

Permeability class: Rapid

Available water capacity: Low or moderate

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Betis and similar soils: 85 to 95 percent

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Briley soils, Darden soils, McLaurin soils, and areas of soils with slopes that are more than 5 percent.

Briley and Darden soils are at a slightly lower elevation than the Betis soil. Briley soils have a loamy subsoil. Darden soils do not have a well developed subsoil. McLaurin soils are in similar landscape positions as the Betis soil and are loamy throughout.

Land Use

Major land use: Woodland

Other land uses: Pastureland, cropland, and residential areas

Cropland

Land capability subclass: IIIs

Suitability: Moderately well suited

Adapted crops: Peanuts and watermelons

Management concerns:

- Droughtiness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a moderate range of moisture content
- Seedbed preparation should be on the contour or across the slope where practical
- The surface layer becomes loose and untrafficable during dry periods in the summer and fall of most years

- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to improve fertility, reduce erosion, and maintain tilth
- Crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Improved bermudagrass, bahiagrass, and crimson clover; ryegrass, oats, and wheat are suitable for winter forage

Management concerns:

- Droughtiness
- Low fertility

Management measures:

- Seedbed preparation should be across the slope to reduce erosion
- The surface layer becomes loose and untrafficable during dry periods in the summer and fall of most years
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Mowing, clipping, or spraying while the soil is moist will overcome most equipment use limitations
- Applications of lime and fertilizer can overcome the low fertility and promote good growth of forage plants

Woodland

Woodland suitability group: 3s2

Site index/ordinating species: 83—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, blackjack oak, and eastern redcedar

Suitability: Moderately well suited

Management concerns:

- Severe equipment use limitation
- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become loose and untrafficable if it is dry and heavy equipment is used
- Logging roads may require suitable surfacing for year-round use
- Replanting can be done in early spring to reduce seedling mortality caused by droughtiness

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Poor filter

Corrective measures:

- An oversize drain field design can help to prevent ground-water pollution from seepage

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:

- Too sandy

Corrective measures:

- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Moderate

Limitations:

- Slope
- Too sandy

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

BEE—Betis loamy fine sand, 5 to 12 percent slopes

Setting

Major landform: Uplands

Landform position: Side slopes

Distinctive landform features: Slopes are short to moderately long and complex

Shape of areas: Irregular

Size of areas: 40 to 500 acres

Slope: Sloping to strongly sloping

Typical Profile

Surface layer:

0 to 12 inches—dark grayish brown loamy fine sand

Subsurface layer:

12 to 36 inches—yellowish brown loamy fine sand

Subsoil layer:

36 to 66 inches—strong brown loamy fine sand in the upper part and pale brown loamy fine sand with strong brown fine sandy loam lamellae in the lower part

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Somewhat excessively drained

Water table: At more than 6 feet

Flooding: None

Runoff: Very slow

Permeability class: Rapid

Available water capacity: Low or moderate

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Betis and similar soils: 85 to 95 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Briley soils, McLaurin soils, areas of soils with slopes that are less than 5 percent or more than 12 percent, and soils that have an eroded surface layer less than 4 inches thick. Briley soils are at a slightly lower elevation than the Betis soil and have a loamy subsoil. McLaurin soils are in positions similar to those of the Betis soil and are loamy throughout.

Land Use

Major land use: Woodland

Other land uses: Pastureland and cropland

Cropland

Land capability subclass: VIe

Suitability: Very poorly suited

Adapted crops: Peanuts and watermelons

Management concerns:

- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants
- Slope
- Droughtiness

Management measures:

- This soil is friable and easy to keep in good tilth; it is easy to work when moist, but traction is poor when the surface layer is dry
- Seedbed preparation should be on the contour or across the slope where practical
- Terraces may be constructed to control erosion and conserve moisture
- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to improve fertility and reduce erosion
- Crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Poorly suited

Adapted plants: Improved bermudagrass, bahiagrass, and crimson clover; ryegrass, oats, and wheat are suitable for winter forage

Management concerns:

- Erosion hazard
- Droughtiness
- Low fertility

Management measures:

- Seedbed preparation should be across the slope to reduce erosion
- Terraces may be constructed to conserve moisture and reduce erosion
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Seedbed preparation, mowing, clipping, or spraying while the soil is moist will help overcome most equipment use limitations
- Applications of lime and fertilizer can overcome the low fertility and promote good growth of forage plants

Woodland

Woodland suitability group: 3s2

Site index/ordinating species: 70—loblolly pine

Adapted trees: Loblolly pine, blackjack oak, post oak, southern red oak, redcedar, and shortleaf pine

Suitability: Moderately well suited

Management concerns:

- Severe equipment use limitation
- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become loose and untrafficable because of the sandy surface layer
- Specialized equipment may be needed during dry periods in the summer and fall
- Logging roads require suitable surfacing for year-round use
- Replanting can be done in early spring to reduce seedling mortality

Urban Uses**Septic tank absorption fields**

Limitation rating: Severe

Limitations:

- Poor filter

Corrective measures:

- An oversize drain field design can help to prevent ground-water pollution from seepage

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Constructing buildings on the less sloping areas, preserving plant cover during construction, and proper landscaping can help to reduce soil erosion and runoff problems

Local roads and streets

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness
- Slope

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses**Camp and picnic areas**

Limitation rating: Moderate

Limitations:

- Slope
- Too sandy

Corrective measures:

- Campsites and picnic areas should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer surface

Playgrounds

Limitation rating: Severe

Limitations:

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

BIC—Bienville loamy fine sand, 1 to 5 percent slopes**Setting**

Major landform: Stream terraces

Landform position: Broad low ridges

Distinctive landform features: Slopes are short and simple

Shape of areas: Irregular

Size of areas: 5 to 150 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 7 inches—dark grayish brown loamy fine sand

Subsurface layer:

7 to 20 inches—brown loamy fine sand

Subsoil layer:

20 to 48 inches—strong brown loamy fine sand with

streaks and spots of very pale brown uncoated sand grains
48 to 72 inches—brown loamy fine sand with pockets of very pale brown uncoated sand grains

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Somewhat excessively drained

Water table: Apparent at 4 to 6 feet

Flooding: None

Runoff: Slow

Permeability class: Moderately rapid

Available water capacity: Low or moderate

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Bienville and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Cahaba soils, Darden soils, Guyton soils, and soils that have a subsoil that consists of a series of lamellae. Cahaba soils are at a slightly higher elevation than the Bienville soil and are loamy throughout. Darden soils are in positions similar to those of the Bienville soil, are on nearby uplands, and do not have a well developed subsoil. Guyton soils are at a lower elevation than the Bienville soil, are on terraces and flood plains, and are poorly drained and loamy throughout.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIs

Suitability: Moderately well suited

Adapted crops: Corn, soybeans, and vegetable crops

Management concerns:

- Droughtiness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- Seedbeds can be prepared in early spring to offset soil droughtiness
- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain

fertility, control erosion, and maintain and improve tilth

- Most cultivated crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved

bermudagrass, bahiagrass, and crimson clover; ryegrass, oats, and wheat are suitable for winter forage

Management concerns:

- Droughtiness
- Low fertility

Management measures:

- Seedbeds can be prepared in early spring to offset the effect of droughtiness
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition
- Pasture plants respond well to lime and fertilizer

Woodland

Woodland suitability group: 2s2

Site index/ordinating species: 96—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, white oak, and green ash

Suitability: Moderately well suited

Management concerns:

- Severe equipment use limitation
- Moderate seedling mortality

Management measures:

- Conventional methods of harvesting timber generally are suitable; however, specialized equipment may be needed for harvesting when the surface layer is dry
- Replanting can be done in early spring to reduce seedling mortality caused by soil droughtiness

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate

Limitations:

- Wetness

Corrective measures:

- An oversize drain field design is needed to overcome occasional wetness in the lower parts of the soil

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses**Camp and picnic areas**

Limitation rating: Moderate

Limitations:

- Too sandy

Corrective measures:

- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Moderate

Limitations:

- Slope
- Too sandy

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

BoC—Bowie very fine sandy loam, 1 to 5 percent slopes**Setting**

Major landform: Uplands

Landform position: Narrow to broad convex ridgetops

Distinctive landform features: Slopes are short to moderately long and complex

Shape of areas: Irregular

Size of areas: 20 to 300 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 6 inches—brown very fine sandy loam

Subsurface layer:

6 to 13 inches—light yellowish brown very fine sandy loam

Subsoil layer:

13 to 65 inches—strong brown sandy clay loam in the upper part, brownish yellow sandy clay loam in the middle part, and yellowish brown sandy clay loam in the lower part

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Water table: Perched at 3.5 to 5 feet

Flooding: None

Runoff: Medium

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Moderate

Composition

Bowie and similar soils: 85 to 95 percent

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Briley soils, Sacul soils, Trep soils, areas of soils with slopes that are more than 5 percent, and areas of soils that have a fine sandy loam surface layer or a surface layer that has been lost to erosion. Briley soils are at a higher elevation than the Bowie soil and have thick sandy surface and subsurface layers. Sacul soils are in similar landscape positions as the Bowie soil and have a clayey and loamy subsoil. Trep soils are at a slightly higher elevation than the Bowie soil and have thick sandy surface and subsurface layers.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIe

Suitability: Moderately well suited

Adapted crops: Corn, cotton, soybeans, and grain sorghum

Management concerns:

- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility, control erosion, and maintain and improve tilth
- Most cultivated crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, oats, and wheat are suitable for winter forage

Management concerns:

- Erosion hazard
- Low fertility

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Proper stocking rates, pasture rotation, and restricted grazing during the wet periods help to keep the pasture and soil in good condition.
- Pasture plants respond well to lime and fertilizer

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 86—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, and blackjack oak

Suitability: Well suited

Management concerns:

- No significant concerns

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if it is wet and heavy equipment is used; this can be overcome by using specialized equipment during wet seasons or logging during dry seasons

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Moderate

Limitations:

- Low strength

Corrective measures:

- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds*Limitation rating:* Moderate*Limitations:*

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

BoD—Bowie very fine sandy loam, 5 to 8 percent slopes**Setting***Major landform:* Uplands*Landform position:* Side slopes*Distinctive landform features:* Slopes are short to moderately long and complex*Shape of areas:* Irregular*Size of areas:* 20 to 200 acres*Slope:* Sloping**Typical Profile***Surface layer:*

0 to 5 inches—brown very fine sandy loam

Subsurface layer:

5 to 10 inches—light yellowish brown very fine sandy loam

Subsoil layer:

10 to 31 inches—yellowish brown sandy clay loam

31 to 44 inches—brownish yellow loam with very pale brown interfingers of very fine sandy loam

44 to 62 inches—variegated red, yellowish brown, and light brownish gray sandy clay loam

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Well drained*Water table:* Perched at 3.5 to 5 feet*Flooding:* None*Runoff:* Medium*Permeability class:* Moderately slow*Available water capacity:* Moderate or high*Natural soil fertility:* Low*Shrink-swell potential:* Moderate**Composition**

Bowie and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Sacul soils, Trep soils, and areas of soils in which the surface layer has been lost to erosion. Sacul soils are in positions similar to those of the Bowie soil and have a loamy and clayey subsoil. Trep soils are at a slightly higher elevation than the Bowie soil and have thick sandy surface and subsurface layers.

Land Use**Major land use:** Woodland**Other land uses:** Pastureland and residential areas**Cropland***Land capability subclass:* IVe*Suitability:* Poorly suited*Adapted crops:* Corn, soybeans, and grain sorghum*Management concerns:*

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Management practices that control erosion are essential
- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility, control erosion, and maintain and improve tilth
- Most crops respond well to fertilizer and lime, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland*Suitability:* Moderately well suited*Adapted plants:* Common and improved

bermudagrass, bahiagrass, and crimson clover; ryegrass, oats, and wheat are suitable for winter forage

Management concerns:

- Erosion hazard
- Low fertility

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Applications of lime and fertilizer can overcome the low fertility and promote good growth of forage plants

- Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 86—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, and blackjack oak

Suitability: Well suited

Management concerns:

- No significant concerns

Management measures:

- Conventional methods of producing and harvesting timber generally are suitable, but the soil may become compacted if it is wet and heavy equipment is used; this can be overcome by using specialized equipment during wet seasons or logging during dry seasons

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Moderate

Limitations:

- Low strength

Corrective measures:

- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Severe

Limitations:

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

BpC—Boykin loamy fine sand, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Broad convex ridgetops

Distinctive landform features: Slopes are moderately long and complex

Shape of areas: Irregular

Size of areas: 20 to 150 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 6 inches—brown loamy fine sand

Subsurface layer:

6 to 15 inches—pale brown loamy fine sand

15 to 27 inches—light yellowish brown loamy fine sand

Subsoil layer:

27 to 81 inches—red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Slow

Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Boykin and similar soils: 85 to 95 percent
 Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Malbis and Ruston soils. Malbis soils are at a lower elevation than the Boykin soil. Ruston soils are in positions similar to those of the Boykin soil. Malbis and Ruston soils are loamy throughout.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIs
Suitability: Moderately well suited
Adapted crops: Peas, peanuts, and watermelons
Management concerns:

- Droughtiness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to conserve moisture and maintain fertility and tilth
- Crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, oats, or wheat are suitable for winter forage

Management concerns:

- Droughtiness
- Low fertility

Management measures:

- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth

- Fertilizer and lime are needed for optimum growth of grasses and legumes
- Proper stocking rates and pasture rotation help to keep the pasture in good condition

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 90—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, southern red oak, and blackjack oak
Suitability: Moderately well suited

Management concerns:

- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Proper site preparation controls initial plant competition, and spraying controls subsequent growth
- Replanting in early spring helps to reduce seedling mortality

Urban Uses

Septic tank absorption fields

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A standard septic tank and drain field design generally are adequate to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses**Camp and picnic areas***Limitation rating:* Moderate*Limitations:*

- Too sandy

Corrective measures:

- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds*Limitation rating:* Moderate*Limitations:*

- Slope
- Too sandy

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

BPE—Boykin loamy fine sand, 5 to 12 percent slopes**Setting***Major landform:* Uplands*Landform position:* Side slopes*Distinctive landform features:* Slopes are short to moderately long and complex*Shape of areas:* Irregular*Size of areas:* 50 to 200 acres*Slope:* Sloping to strongly sloping**Typical Profile***Surface layer:*

0 to 6 inches—brown loamy fine sand

Subsurface layer:

6 to 28 inches—brown loamy fine sand

Subsoil layer:

28 to 65 inches—red sandy clay loam

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Well drained*Water table:* At more than 6 feet*Flooding:* None*Runoff:* Slow*Permeability class:* Moderate*Available water capacity:* Moderate*Natural soil fertility:* Low*Shrink-swell potential:* Low**Composition**

Boykin and similar soils: 85 to 95 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

McLaurin and Ruston soils. McLaurin soils are at a lower elevation than the Boykin soil. Ruston soils are in positions similar to those of the Boykin soil. McLaurin and Ruston soils are loamy throughout.

Land Use**Major land use:** Woodland**Other land uses:** Pastureland and residential areas**Cropland***Land capability subclass:* IVe*Suitability:* Poorly suited*Adapted crops:* Peas, peanuts, and watermelons*Management concerns:*

- Droughtiness
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- Seedbed preparation should be across the slope or on the contour where practical
- Conservation tillage, terraces, and grassed waterways help to control erosion and conserve moisture
- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to improve fertility, reduce erosion, and maintain good tilth
- Most crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland*Suitability:* Moderately well suited*Adapted plants:* Common and improved

bermudagrass, bahiagrass, and crimson clover;

ryegrass, oats, and wheat are suitable for winter forage

Management concerns:

- Droughtiness
- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope to reduce erosion
- Terraces can be constructed to reduce erosion and conserve water
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking rates and pasture rotation help to keep the pasture in good condition
- Pasture plants respond well to lime and fertilizer

Woodland

Woodland suitability group: 2s2

Site index/ordinating species: 92—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, southern red oak, and blackjack oak

Suitability: Moderately well suited

Management concerns:

- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the surface layer may become loose and untrafficable if it is dry
- Specialized equipment may be needed during dry seasons
- Reforestation should be initiated soon after harvesting to reduce erosion and competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees
- Replanting can be done at the earliest possible date to reduce seedling mortality during the drier part of the year

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- The drain field lines should be installed on the contour

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Constructing buildings on the less sloping areas, preserving plant cover during construction, and proper landscaping can help to reduce soil erosion and runoff problems

Local roads and streets

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness
- Slope

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:

- Slope
- Too sandy

Corrective measures:

- Campsites and picnic areas should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer surface

Playgrounds

Limitation rating: Severe

Limitations:

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

BrC—Briley loamy fine sand, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Broad convex ridgetops

Distinctive landform features: Slopes are moderately long and complex

Shape of areas: Irregular

Size of areas: 50 to 200 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 5 inches—loamy fine sand

Subsurface layer:

5 to 21 inches—light yellowish brown loamy fine sand

21 to 28 inches—brown loamy fine sand

Subsoil layer:

28 to 34 inches—yellowish red sandy clay loam

34 to 60 inches—red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Slow or very slow

Permeability class: Moderate

Available water capacity: Moderate

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Briley and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Betis, Sacul, and Trep soils. Betis soils are at a slightly higher elevation than the Briley soil and are sandy throughout. Sacul soils are at a lower elevation than the Briley soil and have a clayey and loamy subsoil. Trep soils are in positions similar to those of the Briley soil and have a brownish or yellowish subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIs

Suitability: Moderately well suited

Adapted crops: Peas, peanuts, watermelons, cotton, corn, wheat, grain sorghum, and soybeans

Management concerns:

- Droughtiness
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over wide range of moisture content
- Seedbed preparation should be on the contour or across the slope where practical
- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility and tilth
- Most crops respond well to fertilizer and lime, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Droughtiness
- Low fertility

Management measures:

- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Fertilizer and lime are needed for optimum growth of grasses and legumes
- Proper stocking and pasture rotation help to keep the pasture in good condition

Woodland

Woodland suitability group: 2s2

Site index/ordinating species: 80—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, southern red oak, blackjack oak, and sweetgum

Suitability: Moderately well suited

Management concerns:

- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Reforestation can be initiated soon after harvesting to reduce competition from undesirable understory plants

- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees
- Replanting can be done at the earliest possible date to reduce seedling mortality

Urban Uses

Septic tank absorption fields

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A standard septic tank and drain field design generally are adequate to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:

- Too sandy

Corrective measures:

- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Moderate

Limitations:

- Slope
- Too sandy

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

BRE—Briley loamy fine sand, 5 to 12 percent slopes

Setting

Major landform: Uplands

Landform position: Side slopes

Distinctive landform features: Slopes are short to moderately long and complex

Shape of areas: Irregular

Size of areas: 50 to 250 acres

Slope: Sloping to strongly sloping

Typical Profile

Surface layer:

0 to 6 inches—dark grayish brown loamy fine sand

Subsurface layer:

6 to 30 inches—brown loamy fine sand in the upper part and pale brown loamy fine sand in the lower part

Subsoil layer:

30 to 60 inches—yellowish red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Slow or very slow

Permeability class: Moderate

Available water capacity: Moderate

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Briley and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Betis soils, Sacul soils, Trep soils, and areas of soils with slopes that are less than 5 percent. Betis soils are at a slightly higher elevation than the Briley soil and are sandy throughout. Sacul soils are at a lower elevation and have a clayey and loamy subsoil. Trep soils are on ridgetops and have a brownish or yellowish subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IVe

Suitability: Poorly suited

Adapted crops: Peas, peanuts, and watermelons

Management concerns:

- Droughtiness
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable and easy to keep in good tilth; it is easy to work when moist, but traction is poor when dry
- Seedbed preparation should be on the contour or across the slope where practical
- Conservation tillage, terraces, and grassed waterways may be constructed to control erosion and conserve moisture
- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to improve fertility, reduce erosion, and maintain good tilth
- Most crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Droughtiness
- Erosion hazard
- Low fertility

Management measures:

- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Seedbed preparation should be on the contour or across the slope where practical
- Terraces can be constructed to conserve moisture and control erosion
- Proper stocking and pasture rotation help to keep the pasture in good condition
- Pasture plants respond well to lime and fertilizer

Woodland

Woodland suitability group: 2s2

Site index/ordinating species: 80—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, southern red oak, blackjack oak, and sweetgum

Suitability: Moderately well suited

Management concerns:

- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Proper site preparation can control initial plant competition, and spraying can control subsequent growth
- Replanting can be done at the earliest possible date to reduce seedling mortality during the drier part of the year

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- The drain field lines should be installed on the contour

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Constructing buildings on the less sloping areas, preserving plant cover during construction, and proper landscaping can help to reduce soil erosion and runoff problems

Local roads and streets

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways*Limitation rating:* Moderate*Limitations:*

- Droughtiness
- Slope

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses**Camp and picnic areas***Limitation rating:* Moderate*Limitations:*

- Slope
- Too sandy

Corrective measures:

- Campsites and picnic areas should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer surface

Playgrounds*Limitation rating:* Severe*Limitations:*

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

BXA—Buxin-Moreland clays, frequently flooded**Setting***Major landform:* Flood plain*Landform position:* Buxin—broad flats and depressions; Moreland—low ridges and natural levees*Distinctive landform features:* Areas are undulating depressions and low ridges*Shape of areas:* Elongated*Size of areas:* 40 to 1,500 acres*Slope:* Level to nearly level**Typical Profile****Buxin***Surface layer:*

0 to 7 inches—dark reddish brown clay

Subsoil layer:

7 to 25 inches—dark reddish brown clay

25 to 50 inches—dark gray clay

Substratum:

50 to 65 inches—dark reddish brown clay

Moreland*Surface layer:*

0 to 13 inches—dark reddish brown clay

Subsoil layer:

13 to 65 inches—dark reddish brown clay

Soil Properties and Qualities**Buxin***Depth class:* Very deep*Drainage class:* Poorly drained*Water table:* Apparent at 0 to 3 feet*Flooding:* Frequently flooded*Runoff:* Slow*Permeability class:* Very slow*Available water capacity:* Moderate or high*Natural soil fertility:* High*Shrink-swell potential:* High**Moreland***Depth class:* Very deep*Drainage class:* Somewhat poorly drained*Water table:* Perched at 0 to 1.5 feet*Flooding:* Frequently flooded*Runoff:* Slow*Permeability class:* Very slow*Available water capacity:* Moderate or high*Natural soil fertility:* High*Shrink-swell potential:* Very high**Composition**

Buxin and similar soils: 57 to 73 percent

Moreland and similar soils: 27 to 43 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to flooding and wetness limitations)

Dissimilar soils: 0 percent

Contrasting Inclusions

None

Land Use

Major land use: Pastureland and wildlife areas

Other land uses: Cropland and woodland

Cropland

Land capability subclass: Vw

Suitability: Very poorly suited

Adapted crops: Soybeans and grain sorghum in drier years

Management concerns:

- Wetness
- Flooding

Management measures:

- This soil is difficult to keep in good tilth and can be worked only within a narrow range of moisture content
- Proper row arrangement, field ditches, and suitable outlets are needed to remove excess surface water
- Land grading and smoothing will improve surface drainage and permit more efficient use of farm equipment
- Seedbed preparation can be delayed until the flooding hazard has passed
- Minimum tillage and returning all crop residue to the soil or regularly adding other organic matter help to maintain soil tilth and content of organic matter

Pasture and hayland

Suitability: Poorly suited

Adapted plants: Common bermudagrass, bahiagrass, white clover, and ryegrass

Management concerns:

- Wetness
- Flooding

Management measures:

- Grazing when the soil is wet results in compaction of the surface layer and damage to the plant community
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Periodic mowing or clipping helps to maintain uniform growth, discourages selective grazing, and reduces clumpy growth

Woodland

Woodland suitability group: 3w6

Site index/ordinating species: 70—green ash

Adapted trees: Green ash, bald cypress, water hickory, Nuttall oak, black willow, honeylocust, and sugarberry

Suitability: Poorly suited

Management concerns:

- Severe equipment use limitation
- Severe seedling mortality
- Severe windthrow hazard
- Moderate plant competition

Management measures:

- Conventional methods of producing and harvesting timber generally are suitable, but the surface becomes sticky and boggy if it is wet and heavy equipment is used
- Logging roads require suitable surfacing for year-round use
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees
- Replanting can be delayed until the flooding hazard has passed to reduce seedling mortality

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Flooding
- Wetness
- Percs slowly

Corrective measures:

- None feasible unless areas are drained and protected from flooding
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe

Limitations:

- Flooding
- Wetness
- Shrink-swell

Corrective measures:

- None feasible unless areas are drained and protected from flooding

Local roads and streets

Limitation rating: Severe

Limitations:

- Shrink-swell
- Low strength
- Wetness

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil
- Roadside ditches are needed to remove excess water quickly

Lawns, landscaping, and golf fairways*Limitation rating:* Severe*Limitations:*

- Wetness
- Flooding

Corrective measures:

- Lawn and landscaping plants that are tolerant of wetness and flooding should be used
- Traffic should be restricted during periods when the topsoil is saturated

Recreational Uses**Camp and picnic areas***Limitation rating:* Severe*Limitations:*

- Flooding
- Wetness
- Too clayey
- Percs slowly

Corrective measures:

- None feasible unless areas are drained, filled, and protected from flooding

Playgrounds*Limitation rating:* Severe*Limitations:*

- Too clayey
- Wetness
- Flooding

Corrective measures:

- None feasible unless areas are drained, filled, and protected from flooding

ChC—Cahaba fine sandy loam, 1 to 5 percent slopes**Setting***Major landform:* Stream terraces*Landform position:* Broad flats*Distinctive landform features:* Slopes are short to moderately long and simple*Shape of areas:* Irregular*Size of areas:* 20 to 200 acres*Slope:* Gently sloping to moderately sloping**Typical Profile***Surface layer:*

0 to 4 inches—grayish brown fine sandy loam

Subsurface layer:

4 to 15 inches—light yellowish brown fine sandy loam

Subsoil layer:

15 to 43 inches—yellowish red sandy clay loam

43 to 50 inches—strong brown fine sandy loam

Substratum:

50 to 60 inches—brownish yellow fine sandy loam

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Well drained*Water table:* At more than 6 feet*Flooding:* None*Runoff:* Medium*Permeability class:* Moderate*Available water capacity:* Moderate or high*Natural soil fertility:* Low*Shrink-swell potential:* Low**Composition**

Cahaba and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Bienville and Guyton soils. Bienville soils are in slightly lower positions on the landscape than the Cahaba soil and are sandy throughout. Guyton soils are in lower positions on the landscape than the Cahaba soil, are on stream terraces and flood plains, and are poorly drained and grayish throughout.

Land Use**Major land use:** Woodland**Other land uses:** Pastureland, cropland, and residential areas**Cropland***Land capability subclass:* IIe*Suitability:* Well suited*Adapted crops:* Soybeans, corn, cotton, grain sorghum, and vegetable crops*Management concerns:*

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- Seedbed preparation should be on the contour or across the slope to reduce erosion
- Crop residue management, stripcropping, contour farming, and terraces reduce soil loss by erosion
- Most crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of aluminum in the rooting zone

Pasture and hayland*Suitability:* Well suited*Adapted plants:* Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage*Management concerns:*

- Low fertility
- Erosion hazard

Management measures:

- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking, pasture rotation, and restricted grazing during wet seasons help to keep the pasture in good condition
- Pasture plants respond well to lime and fertilizer

Woodland*Woodland suitability group:* 2o7*Site index/ordinating species:* 87—loblolly pine*Adapted trees:* Loblolly pine, shortleaf pine, sweetgum, southern red oak, water oak, and hickory*Suitability:* Well suited*Management concerns:*

- Moderate plant competition

Management measures:

- After harvesting, reforestation can be carefully managed to reduce competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses**Septic tank absorption fields***Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- A standard septic tank and drain field design generally are adequate to dispose of wastewater properly

Dwellings without basements*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses**Camp and picnic areas***Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds*Limitation rating:* Moderate*Limitations:*

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

DaC—Darden loamy fine sand, 1 to 5 percent slopes

Setting

Major landform: Uplands and low terraces

Landform position: Broad flats and ridgetops

Distinctive landform features: Slopes are moderately long and complex

Shape of areas: Irregular

Size of areas: 40 to 200 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 9 inches—dark grayish brown loamy fine sand

Subsoil layer:

9 to 22 inches—brown loamy fine sand

22 to 32 inches—light yellowish brown loamy fine sand

32 to 68 inches—very pale brown loamy fine sand

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Excessively drained

Water table: At more than 6 feet

Flooding: None

Runoff: Very slow

Permeability class: Rapid

Available water capacity: Low

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Darden and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Betis, McLaurin, and Sacul soils. Betis and McLaurin soils are on higher convex ridgetops and side slopes than the Darden soil. Betis soils have a more strongly developed subsoil than the Darden soil. McLaurin soils are loamy throughout. Sacul soils are at a lower elevation than the Darden soil and have a loamy and clayey subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIs

Suitability: Moderately well suited

Adapted crops: Peanuts, watermelons, and some soybeans and cotton

Management concerns:

- Droughtiness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a moderate range of moisture content
- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to improve fertility, reduce erosion, and maintain tilth
- Most crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Droughtiness
- Low fertility

Management measures:

- Terraces can be constructed to reduce erosion and conserve moisture
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth

Woodland

Woodland suitability group: 3s2

Site index/ordinating species: 80—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, and hickory

Suitability: Moderately well suited

Management concerns:

- Moderate equipment use limitation
- Severe seedling mortality

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the surface layer may become loose and untrafficable if it is dry and heavy equipment is used
- Logging roads may require suitable surfacing for year-round use
- Planting and harvesting while the soil is moist help to overcome most equipment use limitations

- Replanting can be done in early spring to reduce seedling mortality, which can occur during the drier part of the year

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Poor filter

Corrective measures:

- An oversize drain field design can help to prevent ground-water pollution from seepage

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:

- Too sandy

Corrective measures:

- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Moderate

Limitations:

- Too sandy
- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

DrC—Darley gravelly fine sandy loam, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Narrow convex ridgetops

Distinctive landform features: Slopes are moderately long and complex

Shape of areas: Irregular to elongated

Size of areas: 10 to 350 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 2 inches—brown gravelly fine sandy loam

Subsoil layer:

2 to 24 inches—red sandy clay

24 to 54 inches—alternating layers of red sandy clay and fractured ironstone ledges

54 to 72 inches—red sandy loam

Soil Properties and Qualities

Depth class: Moderately deep

Drainage class: Well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Medium

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Darley and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Briley, Mahan, and Sacul soils. Briley soils are at a lower elevation than the Darley soil and have thick sandy surface and subsurface layers. Mahan soils are in positions similar to those of the Darley soil and do not have fractured ironstone layers in the subsoil. Sacul soils are at a slightly lower elevation than the

Darley soil, have gray mottles in the upper part of the subsoil, and do not have ironstone layers in the profile.

Land Use

Major land use: Woodland

Other land uses: Pastureland

Cropland

Land capability subclass: IIIe

Suitability: Moderately well suited

Adapted crops: Corn, cotton, and wheat

Management concerns:

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- Where coarse fragments on the surface are concentrated, seedbed preparation is difficult and seed germination is reduced
- Terraces reduce runoff, lower the risk of erosion, and help to conserve moisture
- Seedbed preparation should be on the contour or across the slope to reduce erosion
- Most crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope to reduce erosion
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Rotation grazing helps to maintain the quality of forage
- Applications of lime and a complete fertilizer can overcome the low fertility and promote good growth of forage plants

Woodland

Woodland suitability group: 3f1

Site index/ordinating species: 85—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, hickory, southern red oak, white oak, sweetgum, and blackjack oak

Suitability: Well suited

Management concerns:

- Moderate plant competition

Management measures:

- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Cemented pan
- Percs slowly

Corrective measures:

- An oversize drain field or an onsite sewage treatment plant generally is needed to prevent the system from malfunctioning during rainy periods
- Fractured ironstone layers need to be removed from below the drain field and backfilled with suitable soil materials to prevent seepage

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Small stones

Corrective measures:

- Topsoil may need to be added to the surface to reduce the number of small stones and increase the water holding capacity of the surface layer

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:

- Small stones

Corrective measures:

- Topsoil needs to be added to reduce the number of small stones in the surface layer

Playgrounds

Limitation rating: Severe

Limitations:

- Small stones

Corrective measures:

- Topsoil needs to be added to reduce the number of small stones in the surface layer

DRE—Darley gravelly fine sandy loam, 5 to 12 percent slopes

Setting

Major landform: Uplands

Landform position: Upper side slopes

Distinctive landform features: Slopes are short and complex

Shape of areas: Irregular

Size of areas: 20 to 200 acres

Slope: Sloping to strongly sloping

Typical Profile

Surface layer:

0 to 4 inches—dark grayish brown gravelly fine sandy loam

4 to 8 inches—dark brown gravelly fine sandy loam

Subsoil layer:

8 to 60 inches—dark red sandy clay loam in the upper part, red sandy clay loam in the next layer, alternating layers of red sandy clay loam and ledges of fractured ironstone in the next layer, and red sandy loam in the lower part

Soil Properties and Qualities

Depth class: Moderately deep

Drainage class: Well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Medium

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Darley and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Mahan soils, Sacul soils, and areas of soils with slopes that are less than 5 percent. Mahan soils are in positions similar to those of the Darley soil. Sacul soils are at a slightly lower elevation than the Darley soil. Mahan and Sacul soils do not have layers of ironstone in the profile.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: V1e

Suitability: Not suited

Adapted crops: None

Management concerns:

- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- None recommended

Pasture and hayland

Suitability: Poorly suited

Adapted plants: Common and improved

bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope to reduce erosion
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Rotation grazing helps to maintain the quality of forage
- Applications of lime and a complete fertilizer can overcome the low fertility and promote good growth of forage plants

Woodland

Woodland suitability group: 3f1

Site index/ordinating species: 85—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, hickory, southern red oak, white oak, sweetgum, and blackjack oak

Suitability: Well suited

Management concerns:

- Moderate plant competition

Management measures:

- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate undesirable weeds, brush, or trees

Urban Uses**Septic tank absorption fields**

Limitation rating: Severe

Limitations:

- Cemented pan
- Percs slowly

Corrective measures:

- An oversize drain field or an onsite sewage treatment plant generally is needed to prevent the system from malfunctioning during rainy periods
- Fractured ironstone layers need to be removed from below the drain field and backfilled with suitable soil materials to prevent seepage

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Constructing buildings on the less sloping areas, preserving plant cover during construction, and proper landscaping can help to reduce soil erosion and runoff problems

Local roads and streets

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Small stones

Corrective measures:

- Topsoil may need to be added to the surface to reduce the number of small stones and increase the water holding capacity of the surface layer

Recreational Uses**Camp and picnic areas**

Limitation rating: Moderate

Limitations:

- Small stones

Corrective measures:

- Topsoil needs to be added to reduce the number of small stones in the surface layer

Playgrounds

Limitation rating: Severe

Limitations:

- Slope
- Small stones

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Topsoil needs to be added to reduce the number of small stones in the surface layer

DuC—Dubach fine sandy loam, 1 to 5 percent slopes**Setting**

Major landform: Stream terraces

Landform position: Narrow to broad convex ridges

Distinctive landform features: Slopes are moderately long and complex

Shape of areas: Irregular

Size of areas: 20 to 350 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 6 inches—brown fine sandy loam

Subsurface layer:

6 to 14 inches—yellowish brown fine sandy loam

Subsoil layer:

14 to 22 inches—strong brown loam

22 to 31 inches—strong brown sandy clay loam

31 to 39 inches—yellowish brown sandy clay loam

39 to 56 inches—brownish yellow sandy clay loam

56 to 72 inches—brownish yellow sandy clay loam with about 3 percent plinthite nodules

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Water table: Perched at 3.5 to 5 feet

Flooding: None

Runoff: Medium

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Dubach and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Cahaba and Gurdon soils. Cahaba soils are in positions similar to those of the Dubach soil and have a reddish subsoil. Gurdon soils are in lower positions than the Dubach soil and have gray iron depletions in the subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and cropland

Cropland

Land capability subclass: IIIe

Suitability: Moderately well suited

Adapted crops: Corn, grain sorghum, and soybeans

Management concerns:

- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Managing crop residue, stripcropping, farming on the contour, and terracing help to reduce soil loss by erosion
- Most crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 94—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, southern red oak, white oak, sweetgum, blackjack oak, and hickory

Suitability: Well suited

Management concerns:

- No significant concerns

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if the soil is wet and heavy equipment is used; this can be overcome by logging during the drier seasons

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating:

- Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating:

- Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating:

- Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating:

- Slight

Limitations:

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

EcC—Eastwood fine sandy loam, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Narrow to broad convex ridgetops

Distinctive landform features: Slopes generally are moderately long and smooth

Shape of areas: Irregular

Size of areas: 20 to 2,000 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 2 inches—dark yellowish brown fine sandy loam

Subsurface layer:

2 to 8 inches—strong brown fine sandy loam

Subsoil layer:

8 to 22 inches—red clay

22 to 30 inches—variegated red, light brownish gray, and light olive brown clay

30 to 45 inches—variegated light brownish gray, red, and yellowish brown silty clay

45 to 50 inches—light brownish gray silty clay loam

Substratum:

50 to 65 inches—variegated light gray and brown silty clay loam

Soil Properties and Qualities

Depth class: Deep

Drainage class: Moderately well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Medium

Permeability class: Very slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: High

Composition

Eastwood and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Bowie, Briley, and Sawyer soils. Bowie and Sawyer soils are at a lower elevation than the Eastwood soil. Bowie soils are loamy throughout. Sawyer soils have a subsoil that is loamy in the upper part. Briley soils are at a higher elevation on the landscape than the Eastwood soil and have sandy surface and subsurface layers.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IVe

Suitability: Poorly suited

Adapted crops: Cotton, corn, wheat, and some garden crops

Management concerns:

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- The surface layer erodes easily if this soil is clean tilled; early fall seeding, conservation tillage, terraces, diversions, and grassed waterways help to control erosion
- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain

fertility, reduce erosion, and maintain and improve tilth

- Most cultivated crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Where practical, seedbed preparation should be on the contour or across the slope to reduce erosion
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Pasture plants respond well to a complete fertilizer

Woodland

Woodland suitability group: 3c2

Site index/ordinating species: 93—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, southern red oak, hickory, white oak, and blackjack oak

Suitability: Moderately well suited

Management concerns:

- Moderate equipment use limitation

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if it is wet and heavy equipment is used
- When the soil surface is wet or moist, roads and skid trails are slippery and may be impassable; this can be overcome by using specialized equipment during wet seasons or logging during dry seasons
- Logging roads may require suitable surfacing for year-round use

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe

Limitations:

- Shrink-swell
- Low strength

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

ECE—Eastwood fine sandy loam, 5 to 12 percent slopes

Setting

Major landform: Uplands

Landform position: Side slopes

Distinctive landform features: Slopes are short to moderately long and complex

Shape of areas: Irregular

Size of areas: 60 to 500 acres

Slope: Sloping to strongly sloping

Typical Profile

Surface layer:

0 to 4 inches—dark grayish brown fine sandy loam

Subsurface layer:

4 to 7 inches—brown fine sandy loam

Subsoil layer:

7 to 59 inches—variegated red and gray clay in the upper part; variegated red and gray silty clay in the middle part; and variegated red and gray silty clay loam in the lower part

Substratum:

59 to 65 inches—light brownish gray silty clay loam

Soil Properties and Qualities

Depth class: Deep

Drainage class: Moderately well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Rapid

Permeability class: Very slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: High

Composition

Eastwood and similar soils: 85 to 95 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Bowie soils, Guyton soils, Sawyer soils, areas of soils in which the surface layer has been lost to erosion, and areas of soils with slopes that are less than 5 percent. Bowie and Sawyer soils are at a lower elevation than the Eastwood soil. Bowie soils are loamy throughout. Sawyer soils have a subsoil that is loamy in the upper part. Guyton soils are in

drainageways and are poorly drained and loamy throughout.

Land Use

Major land use: Woodland

Other land uses: Pastureland

Cropland

Land capability subclass: VIe

Suitability: Not suited

Adapted crops: None

Management concerns:

- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- None recommended

Pasture and hayland

Suitability: Poorly suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Erosion hazard
- Low fertility

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- In places, the use of equipment is limited by the steepness of slope
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition

Woodland

Woodland suitability group: 3c2

Site index/ordinating species: 86—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, southern red oak, hickory, white oak, and blackjack oak

Suitability: Moderately well suited

Management concerns:

- Moderate erosion hazard
- Moderate equipment use limitation

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become

compacted if it is moist or wet and heavy equipment is used

- Steep skid trails and firebreaks are subject to rilling and gullying unless adequate water bars, plant cover, or both, are provided
- Planting trees on the contour helps to control erosion

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe

Limitations:

- Shrink-swell
- Low strength

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe

Limitations:

- Slope
- Percs slowly

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove rain water quickly

ECF—Eastwood fine sandy loam, 12 to 20 percent slopes

Setting

Major landform: Uplands

Landform position: Side slopes

Distinctive landform features: Slopes are short to moderately long and complex

Shape of areas: Irregular

Size of areas: 20 to 300 acres

Slope: Moderately steep

Typical Profile

Surface layer:

0 to 3 inches—grayish brown fine sandy loam

3 to 7 inches—pale brown fine sandy loam

Subsoil layer:

7 to 58 inches—red clay in the upper part and variegated red, light brownish gray, pale brown, and yellowish brown sandy clay loam in the lower part

Substratum:

58 to 65 inches—light gray sandy clay loam

Soil Properties and Qualities

Depth class: Deep

Drainage class: Moderately well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Rapid

Permeability class: Very slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: High

Composition

Eastwood and similar soils: 85 to 95 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Bowie soils, Guyton soils, small areas of soils in which the surface or subsurface layers have been lost to erosion or contain ironstone gravel, and areas of soils with slopes that are less than 12 percent. Bowie soils are at a lower elevation on the landscape than the Eastwood soil and are loamy throughout. Guyton soils are in drainageways and are loamy throughout.

Land Use

Major land use: Woodland

Other land uses: Pastureland

Cropland

Land capability subclass: VIe

Suitability: Not suited

Adapted crops: None

Management concerns:

- Erosion hazard
- Slope
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- None recommended

Pasture and hayland

Suitability: Poorly suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Erosion hazard
- Low fertility

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- The use of equipment is limited by moderately steep, complex slopes
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition

Woodland

Woodland suitability group: 3c2

Site index/ordinating species: 86—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, southern red oak, hickory, white oak, and blackjack oak

Suitability: Moderately well suited

Management concerns:

- Moderate erosion hazard
- Moderate equipment use limitation

Management measures:

- Conventional methods of harvesting timber generally are suitable; however, management that minimizes the risk of erosion is essential
- Steep skid trails and firebreaks are subject to rilling and gullying unless adequate water bars, plant cover, or both, are provided
- Planting trees on the contour helps to control erosion

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Percs slowly
- Slope

Corrective measures:

- An oversize drain field installed on the contour or an onsite sewage treatment plant generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell
- Slope

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell
- Preserving the existing plant cover during construction and proper landscaping can help to reduce erosion and runoff problems

Local roads and streets

Limitation rating: Severe

Limitations:

- Shrink-swell
- Low strength
- Slope

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil
- Cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways*Limitation rating:* Severe*Limitations:*

- Slope

Corrective measures:

- Sodding or hydroseeding to quickly establish a lawn and fertilizing to maintain a healthy turf are necessary to prevent loss of the topsoil due to erosion

Recreational Uses**Camp and picnic areas***Limitation rating:* Severe*Limitations:*

- Slope
- Percs slowly

Corrective measures:

- Campsites and picnic areas should be constructed on the more level areas
- A ground cover that is tolerant of heavy foot traffic needs to be established and maintained to prevent erosion
- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds*Limitation rating:* Severe*Limitations:*

- Slope
- Percs slowly

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove rain water quickly

FoC—Forbing silt loam, 1 to 5 percent slopes**Setting***Major landform:* Stream terraces*Landform position:* Narrow to broad ridgetops*Distinctive landform features:* Slopes are short to moderately long and complex*Shape of areas:* Irregular*Size of areas:* 20 to 125 acres*Slope:* Gently sloping to moderately sloping**Typical Profile***Surface layer:*

0 to 4 inches—very dark brown silt loam

Subsurface layer:

4 to 7 inches—brown silt loam

Subsoil layer:

7 to 80 inches—yellowish red clay in the upper part; red clay in the middle part; and dark red clay in the lower part

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Moderately well drained*Water table:* At more than 6 feet*Flooding:* None*Runoff:* Medium*Permeability class:* Very slow*Available water capacity:* Moderate or high*Natural soil fertility:* Low*Shrink-swell potential:* Very high**Composition**

Forbing and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Guyton soils, Kolin soils, and small areas of soils with slopes that are more than 5 percent. Guyton soils are in drainageways and are grayish and loamy throughout. Kolin soils are at a higher elevation than the Forbing soil and have a subsoil that is loamy in the upper part and clayey in the lower part.

Land Use**Major land use:** Woodland**Other land uses:** Pastureland**Cropland***Land capability subclass:* IVe*Suitability:* Poorly suited*Adapted crops:* Grain sorghum and soybeans*Management concerns:*

- Low fertility
- Erosion hazard

Management measures:

- Where the subsoil has been mixed with the plow layer, the soil is difficult to keep in good tilth; crop residue left on or near the surface helps to maintain tilth and control erosion

- Crops respond moderately well to fertilizer and lime, which help to overcome the low fertility

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, ball clover, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and puddling of the soil; drainage is needed in low places
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition

Woodland

Woodland suitability group: 3c2

Site index/ordinating species: 70—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, white oak, southern red oak, sweetgum, and blackjack oak

Suitability: Moderately well suited

Management concerns:

- Moderate equipment use limitation
- Moderate seedling mortality
- Moderate windthrow hazard
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become rutted if it is wet and heavy equipment is use
- Logging roads require suitable surfacing for year-round use
- Reforestation can be started soon after harvesting to reduce erosion and competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe

Limitations:

- Shrink-swell
- Low strength

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

FOE—Forbing silt loam, 5 to 12 percent slopes

Setting

Major landform: Stream terraces

Landform position: Side slopes

Distinctive landform features: Slopes are moderately long and complex

Shape of areas: Irregular

Size of areas: 20 to 200 acres

Slope: Sloping to strongly sloping

Typical Profile

Surface layer:

0 to 3 inches—brown silt loam

Subsurface layer:

3 to 5 inches—yellowish brown silt loam

Subsoil layer:

5 to 27 inches—yellowish red clay

27 to 35 inches—reddish brown clay

35 to 44 inches—dark red clay

44 to 58 inches—red clay

58 to 70 inches—dark red clay

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Rapid

Permeability class: Very slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Very high

Composition

Forbing and similar soils: 91 to 99 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 1 to 9 percent

Contrasting Inclusions

Kolin soils, Shatta soils, and small areas of soils in which the surface layer has been lost to erosion. Kolin and Shatta soils are at a higher elevation than the Forbing soil. Kolin soils have a subsoil that is loamy in the upper part and clayey in the lower part.

Shatta soils are loamy throughout and have a fragipan in the lower part of the subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: VIe

Suitability: Very poorly suited

Adapted crops: Garden crops in some areas

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- All tillage should be on the contour or across the slope to control erosion
- Where the subsoil has been mixed into the plow layer, the soil is difficult to keep in good tilth; crop residue left on or near the surface helps to conserve moisture, improve tilth, and control erosion
- Limiting tillage for seedbed preparation and weed control reduces runoff and erosion
- Most crops respond moderately well to fertilizer

Pasture and hayland

Suitability: Poorly suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Limiting tillage for seedbed preparation helps to reduce runoff and erosion
- Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff; drainage is needed in low places
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Fertilizer and lime are needed for optimum growth of grasses and legumes

Woodland

Woodland suitability group: 3c2

Site index/ordinating species: 70—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, white oak, sweetgum, southern red oak, and black locust

Suitability: Moderately well suited

Management concerns:

- Moderate erosion hazard
- Moderate windthrow hazard
- Moderate equipment use limitation
- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become rutted if it is wet and heavy equipment is used
- Logging roads require suitable surfacing for year-round use
- Reforestation can be started soon after harvesting to reduce erosion and competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe

Limitations:

- Shrink-swell
- Low strength

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent

damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness
- Slope

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe

Limitations:

- Slope
- Percs slowly

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove rain water quickly

GrB—Gurdon silt loam, 1 to 3 percent slopes

Setting

Major landform: High stream terraces

Landform position: Broad flats

Distinctive landform features: Slopes are long and smooth

Shape of areas: Irregular

Size of areas: 20 to 200 acres

Slope: Gently sloping

Typical Profile

Surface layer:

0 to 4 inches—grayish brown silt loam

Subsoil layer:

4 to 9 inches—brown silt loam

9 to 28 inches—yellowish brown silt loam

28 to 38 inches—yellowish brown silty clay loam

38 to 45 inches—variegated yellowish brown, light brownish gray, and strong brown silty clay loam

45 to 65 inches—yellowish brown silty clay loam

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Somewhat poorly drained*Water table:* Perched at 1 to 2 feet*Flooding:* None*Runoff:* Slow or medium*Permeability class:* Moderate*Available water capacity:* Moderate or high*Natural soil fertility:* Low*Shrink-swell potential:* Low**Composition**

Gurdon and similar soils: 85 to 95 percent

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Dubach, Guyton, and Malbis soils. Dubach and Malbis soils are at a slightly higher elevation than the Gurdon soil and contain more sand and clay in the subsoil. Guyton soils are gray throughout the profile and are in low positions on stream terraces and in drainageways.

Land Use**Major land use:** Woodland**Other land uses:** Pastureland and cropland**Cropland***Land capability subclass:* IIe*Suitability:* Well suited*Adapted crops:* Corn, grain sorghum, wheat, cotton, and soybeans*Management concerns:*

- Erosion hazard
- Wetness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable and easy to keep in good tilth; however, excessive cultivation can result in the formation of a tillage pan; this pan can be broken by subsoiling when the soil is dry

- Unless the soil is drained, wetness can delay planting in low areas
- Crop residue left on or near the surface helps to maintain tilth and control erosion
- Runoff and erosion can be reduced by seeding a cover crop in the fall
- Tillage should be on the contour or across the slope
- Most crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland*Suitability:* Well suited*Adapted plants:* Common and improved bermudagrass, bahiagrass, wild winter peas, and white clover; ryegrass and wheat are suitable for winter forage*Management concerns:*

- Erosion hazard
- Wetness
- Low fertility

Management measures:

- Grazing when the soil is wet results in puddling of the surface layer; drainage is needed in low places
- Applications of lime and fertilizer can overcome the low fertility and promote good growth of forage plants
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition

Woodland*Woodland suitability group:* 2o7*Site index/ordinating species:* 95—loblolly pine*Adapted trees:* Loblolly pine, sweetgum, shortleaf pine, willow oak, water oak, and hickory*Suitability:* Moderately well suited*Management concerns:*

- Moderate equipment use limitation
- Moderate windthrow hazard
- Severe plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the surface layer may become boggy if logging is done during wet seasons and heavy equipment is used
- Logging roads require suitable surfacing for year-round use

- If site preparation is not adequate, competition from undesirable understory plants can prevent or prolong natural or artificial reestablishment of trees
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe

Limitations:

- Wetness

Corrective measures:

- Surface and subsurface drainage is needed around the foundations of buildings

Local roads and streets

Limitation rating: Moderate

Limitations:

- Low strength
- Wetness

Corrective measures:

- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed
- Roadside ditches generally are needed to remove excess water more quickly

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Wetness

Corrective measures:

- Lawn and landscaping plants that are tolerant of occasional wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly

Recreational Uses

Camp and picnic areas

Limitation rating: Severe

Limitations:

- Wetness

Corrective measures:

- None feasible unless areas are drained and filled

Playgrounds

Limitation rating: Severe

Limitations:

- Wetness

Corrective measures:

- None feasible unless areas are drained and filled

GyA—Guyton silt loam

Setting

Major landform: Low stream terraces

Landform position: Broad flats

Distinctive landform features: Slopes are moderately long and smooth

Shape of areas: Irregular

Size of areas: 30 to 300 acres

Slope: Level to nearly level

Typical Profile

Surface layer:

0 to 4 inches—dark brown silt loam

Subsurface layer:

4 to 16 inches—grayish brown silt loam

16 to 20 inches—light brownish gray silt loam

Subsoil layer:

20 to 34 inches—gray silty clay loam with vertical seams of light brownish gray silt loam

34 to 45 inches—grayish brown silty clay loam

45 to 55 inches—gray silty clay loam

55 to 65 inches—grayish brown clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Poorly drained

Water table: Perched at 0 to 1.5 feet

Flooding: Rarely flooded

Runoff: Slow

Permeability class: Slow

Available water capacity: High or very high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Guyton and similar soils: 85 to 95 percent

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Bienville, Cahaba, and Gurdon soils. All of these soils are at a higher elevation than the Guyton soil. Bienville soils are somewhat excessively drained and are sandy throughout. Cahaba soils are well drained and have a reddish loamy subsoil. Gurdon soils are somewhat poorly drained and do not have wide vertical seams of material from the subsurface layer in the subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and cropland

Cropland

Land capability subclass: IIIw

Suitability: Moderately well suited

Adapted crops: Grain sorghum, corn, rice, and soybeans

Management concerns:

- Low fertility
- Wetness
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- A drainage system is needed for most cultivated crops
- A surface crust forms easily after tillage; returning crop residue to the soil or regularly adding other organic matter improves fertility, reduces crusting, and increases the water intake rate
- Most crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, vetch, wild winter peas, and white clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Wetness

Management measures:

- Wetness limits the choice of plants and the period of grazing; proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Pasture plants respond well to lime and fertilizer

- Surface drainage can remove excess surface water from low areas

Woodland

Woodland suitability group: 2w9

Site index/ordinating species: 85—loblolly pine

Adapted trees: Loblolly pine, sweetgum, green ash, cherrybark oak, water oak, willow oak, and blackgum

Suitability: Moderately well suited

Management concerns:

- Severe equipment use limitation
- Severe windthrow hazard
- Severe plant competition
- Moderate seedling mortality

Management measures:

- Conventional methods of harvesting timber generally can be used, but equipment use may be limited during rainy periods, generally from December to May
- Trees should be water-tolerant
- Trees should be harvested and planted in the drier seasons to prevent excessive rutting and compaction of the soil surface layer
- Logging roads require suitable surfacing for year-round use
- After harvesting, reforestation can be carefully managed to reduce competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe

Limitations:

- Flooding
- Wetness

Corrective measures:

- Buildings should be constructed on elevated pilings or mounds to elevate the foundation above the level of flooding

Local roads and streets

Limitation rating: Severe

Limitations:

- Low strength
- Wetness

Corrective measures:

- Special road base design and construction techniques generally are needed to compensate for low strength in the subsoil
- Roadside ditches are needed to remove excess water quickly

Lawns, landscaping, and golf fairways

Limitation rating: Severe

Limitations:

- Wetness

Corrective measures:

- Lawn and landscaping plants that are tolerant of wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly
- Traffic should be restricted during periods when the topsoil is saturated

Recreational Uses**Camp and picnic areas**

Limitation rating: Severe

Limitations:

- Flooding
- Wetness

Corrective measures:

- None feasible unless areas are drained, filled, and protected from flooding

Playgrounds

Limitation rating: Severe

Limitations:

- Wetness

Corrective measures:

- None feasible unless areas are drained and filled

GYO—Guyton-Ouachita silt loams, frequently flooded**Setting**

Major landform: Flood plains

Landform position: Guyton—alluvial flats and depressions; Ouachita—low ridges or natural levees

Distinctive landform features: Ridges and depressions are 25 to 150 feet apart

Shape of areas: Irregular to elongated

Size of areas: 40 to 2,000 acres

Slope: Level to nearly level

Typical Profile**Guyton**

Surface layer:

0 to 3 inches—grayish brown silt loam

Subsurface layer:

3 to 24 inches—light gray silt loam

Subsoil layer:

24 to 65 inches—grayish brown silty clay loam with vertical intrusions of grayish brown silt loam in the upper part, grayish brown silty clay loam in the middle part, and gray silt loam in the lower part

Ouachita

Surface layer:

0 to 5 inches—brown silt loam

Subsoil layer:

5 to 13 inches—dark yellowish brown silt loam
13 to 48 inches—yellowish brown silt loam

Substratum:

48 to 62 inches—yellowish brown very fine sandy loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Guyton—poorly drained;

Ouachita—well drained

Water table: Guyton—perched at 0 to 1.5 feet;

Ouachita—at more than 6 feet

Flooding: Frequently flooded

Runoff: Slow

Permeability class: Guyton—slow;

Ouachita—moderately slow

Available water capacity: High or very high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Guyton and similar soils: 37 to 48 percent

Ouachita and similar soils: 32 to 43 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to wetness and flooding limitations)

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Bienville soils, Cahaba soils, Dubach soils, and areas of soils that are subject to only rare or

occasional flooding. Bienville, Cahaba, and Dubach soils are on stream terraces. Bienville soils are somewhat excessively drained and contain more sand throughout the profile than the Guyton and Ouachita soils. Cahaba soils are well drained and have a reddish subsoil. Dubach soils are well drained and have a brownish loamy subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and cropland

Cropland

Land capability subclass: Guyton—Vw;
Ouachita—IVw

Suitability: Very poorly suited

Adapted crops: Soybeans and grain sorghum in drier years

Management concerns:

- Wetness
- Flooding
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- Planting dates are delayed and crops are damaged by floods in some years
- Major structures, such as levees, are needed to adequately control flooding

Pasture and hayland

Suitability: Poorly suited

Adapted plants: Common bermudagrass, singletary peas, vetch, or native grasses

Management concerns:

- Flooding
- Wetness
- Low fertility

Management measures:

- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- During periods of flooding, livestock can be moved to pastures at a higher elevation or to pastures protected from flooding

Woodland

Woodland suitability group: Guyton—2w9;
Ouachita—1o7

Site index/ordinating species: 95—green ash

Adapted trees: Green ash, sweetgum, black willow, Nuttall oak, eastern cottonwood, sugarberry, and loblolly pine

Suitability: Moderately well suited

Management concerns:

- Severe equipment use limitation
- Moderate or severe seedling mortality
- Severe windthrow hazard
- Severe plant competition

Management measures:

- Conventional methods of harvesting timber generally can be used, but equipment use may be limited during rainy periods, generally from December to May
- Trees should be water-tolerant and planted or harvested during dry periods
- Logging can be done in the drier seasons to prevent excessive rutting and compaction of the soils
- Logging roads require suitable surfacing for year-round use
- After harvesting, reforestation can be carefully managed to reduce competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Flooding
- Wetness—Guyton
- Percs slowly

Corrective measures:

- None feasible unless areas are drained and protected from flooding
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe

Limitations:

- Flooding
- Wetness—Guyton

Corrective measures:

- Buildings should be constructed on elevated pilings or mounds to elevate the foundation above the level of flooding

Local roads and streets

Limitation rating: Severe

Limitations:

- Low strength—Guyton
- Wetness—Guyton
- Flooding

Corrective measures:

- Filling with suitable soil materials to build an elevated road base above the level of flooding and installing culverts of adequate size and spacing are needed to keep roads from being inundated and damaged during flood episodes

Lawns, landscaping, and golf fairways*Limitation rating:* Severe*Limitations:*

- Wetness—Guyton
- Flooding

Corrective measures:

- Lawn and landscaping plants that are tolerant of wetness and flooding should be used
- Traffic should be restricted during periods when the topsoil is saturated

Recreational Uses**Camp and picnic areas***Limitation rating:* Severe*Limitations:*

- Flooding
- Wetness

Corrective measures:

- None feasible unless areas are drained, filled, and protected from flooding

Playgrounds*Limitation rating:* Severe*Limitations:*

- Wetness
- Flooding

Corrective measures:

- None feasible unless areas are drained, filled, and protected from flooding

KoC—Kolin silt loam, 1 to 5 percent slopes**Setting***Major landform:* Stream terraces*Landform position:* Broad flats*Distinctive landform features:* Slopes are moderately long and smooth*Shape of areas:* Irregular*Size of areas:* 30 to 400 acres*Slope:* Gently sloping to moderately sloping**Typical Profile***Surface layer:*

0 to 3 inches—dark grayish brown silt loam

Subsurface layer:

3 to 9 inches—pale brown silt loam

Subsoil layer:

9 to 17 inches—yellowish brown silt loam

17 to 29 inches—yellowish brown silty clay loam

29 to 39 inches—yellowish brown silty clay loam with light gray coatings of silt surrounding peds

39 to 54 inches—yellowish brown silty clay

54 to 62 inches—red clay

Substratum:

62 to 78 inches—red clay

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Moderately well drained*Water table:* Perched at 1.5 to 3 feet*Flooding:* None*Runoff:* Medium*Permeability class:* Very slow*Available water capacity:* High*Natural soil fertility:* Low*Shrink-swell potential:* High**Composition**

Kolin and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Forbing soils, Shatta soils, and small areas of soils in which the surface layer has been removed by erosion. Forbing soils have a clayey subsoil and are on side slopes at a lower elevation than the Kolin soil. Shatta soils are loamy throughout, have a fragipan in the lower part of the subsoil, and are at a higher elevation than the Kolin soil.

Land Use*Major land use:* Woodland*Other land uses:* Pastureland, cropland, and residential areas**Cropland***Land capability subclass:* IIIe*Suitability:* Moderately well suited*Adapted crops:* Corn, grain sorghum, soybeans, and sweet potatoes*Management concerns:*

- Low fertility

- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a moderate range of moisture content
- Wetness can delay planting in some years
- Proper arrangement of rows and the use of surface ditches and grassed waterways for outlets help to remove excess surface water
- Crop residue left on or near the surface helps to maintain tilth and control erosion
- Crops respond well to fertilizer and lime, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, ball clover, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff; drainage is needed in low places
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition

Woodland

Woodland suitability group: 3w8

Site index/ordinating species: 80—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, southern red oak, white oak, hickory, and water oak

Suitability: Moderately well suited

Management concerns:

- Moderate windthrow hazard
- Severe plant competition

Management measures:

- Using low-pressure ground equipment or harvesting during the drier periods reduces compaction and helps to maintain productivity

- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe

Limitations:

- Low strength
- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Wetness

Corrective measures:

- Lawn and landscaping plants that are tolerant of occasional wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly

Recreational Uses

Camp and picnic areas

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds*Limitation rating:* Severe*Limitations:*

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

MaC—Mahan fine sandy loam, 1 to 5 percent slopes***Setting****Major landform:* Uplands*Landform position:* Narrow convex ridgetops*Distinctive landform features:* Slopes are short and complex*Shape of areas:* Irregular*Size of areas:* 10 to 350 acres*Slope:* Gently sloping to moderately sloping***Typical Profile****Surface layer:*

0 to 4 inches—dark brown fine sandy loam

Subsurface layer:

4 to 10 inches—brown fine sandy loam

Subsoil layer:

10 to 58 inches—red clay in the upper part and red sandy clay loam in the lower part

Substratum:

58 to 65 inches—red sandy clay loam

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Well drained*Water table:* At more than 6 feet*Flooding:* None*Runoff:* Medium*Permeability class:* Moderate*Available water capacity:* Moderate or high*Natural soil fertility:* Low*Shrink-swell potential:* Low***Composition***

Mahan and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Bowie soils, Briley soils, Sacul soils, areas of soils in which the surface layer has been lost to erosion, and areas of soils in which the surface layer has up to 40 percent ironstone gravel. Bowie and Sacul soils are at a lower elevation than the Mahan soil. Bowie soils are loamy throughout. Sacul soils have gray mottles in the upper part of the subsoil. Briley soils are in positions similar to those of the Mahan soil and have thick sandy surface and subsurface layers.

Land Use*Major land use:* Woodland*Other land uses:* Pastureland and residential areas***Cropland****Land capability subclass:* IIIe*Suitability:* Moderately well suited*Adapted crops:* Cotton, corn, and wheat*Management concerns:*

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- The soil is friable, easy to keep in good tilth, and can be worked over a moderate range of moisture content
- Seedbed preparation should be on the contour or across the slope to reduce erosion
- Maintaining crop residue on or near the surface reduces runoff and helps to maintain soil tilth and organic matter content
- Using minimum tillage and constructing terraces, diversions, and grassed waterways help to control erosion
- Most crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland*Suitability:* Well suited*Adapted plants:* Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage*Management concerns:*

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope to reduce erosion

- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Rotation grazing helps to maintain the quality of forage
- Applications of lime and a complete fertilizer can overcome the low fertility and promote good growth of forage plants

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 90—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, hickory, southern red oak, sweetgum, white oak, post oak, and blackjack oak

Suitability: Well suited

Management concerns:

No significant concerns

Management measures:

- Conventional planting and harvesting methods generally are adequate

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Moderate

Limitations:

- Low strength

Corrective measures:

- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Moderate

Limitations:

- Slope
- Small stones

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Topsoil may need to be added to reduce the number of small stones in the surface layer

MAE—Mahan fine sandy loam, 5 to 12 percent slopes

Setting

Major landform: Uplands

Landform position: Side slopes

Distinctive landform features: Slopes are short and complex

Shape of areas: Irregular

Size of areas: 20 to 200 acres

Slope: Sloping to strongly sloping

Typical Profile

Surface layer:

0 to 5 inches—dark brown fine sandy loam

Subsurface layer:

5 to 11 inches—brown fine sandy loam

Subsoil layer:

11 to 18 inches—red clay

18 to 26 inches—red clay loam

26 to 63 inches—red sandy clay loam

Substratum:

63 to 70 inches—stratified red sandy clay loam and light brownish gray, yellowish brown, and red layers of sandy loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Rapid

Permeability class: Moderate

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Mahan and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Bowie soils, Sacul soils, small areas of soils that have up to 40 percent ironstone gravel in the surface layer, areas of soils in which the surface layer has been lost to erosion, and areas of soils with slopes that are less than 5 percent. Bowie and Sacul soils are at a lower elevation than the Mahan soil. Bowie soils are loamy throughout. Sacul soils have gray iron depletions in the upper part of the subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: VIe

Suitability: Very poorly suited

Adapted crops: Small grains

Management concerns:

- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Erosion can be reduced by early fall seeding, minimum tillage, terraces, diversions, and grassed waterways
- Most crops respond well to fertilizer and lime, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Poorly suited

Adapted plants: Common and improved

bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Erosion hazard
- Low fertility

Management measures:

- Seedbed preparation should be on the contour or across the slope to reduce erosion
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Rotation grazing helps to maintain the quality of forage
- Pasture plants respond well to lime and fertilizer

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 90—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, hickory, southern red oak, sweetgum, white oak, post oak, and blackjack oak

Suitability: Well suited

Management concerns:

- No significant concerns

Management measures:

- Conventional planting and harvesting methods generally are adequate

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Constructing buildings on the less sloping areas, preserving plant cover during construction, and proper landscaping can help to reduce soil erosion and runoff problems

Local roads and streets

Limitation rating: Moderate

Limitations:

- Low strength
- Slope

Corrective measures:

- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed
- Some cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses**Camp and picnic areas**

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Campsites and picnic areas should be constructed on the more level areas
- A ground cover that is tolerant of heavy foot traffic needs to be established and maintained to prevent erosion

Playgrounds

Limitation rating: Severe

Limitations:

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

MgB—Malbis fine sandy loam, 1 to 3 percent slopes**Setting**

Major landform: Uplands

Landform position: Convex ridgetops

Distinctive landform features: Slopes generally are long and smooth

Shape of areas: Irregular

Size of areas: 20 to 200 acres

Slope: Gently sloping

Typical Profile

Surface layer:

0 to 4 inches—dark grayish brown fine sandy loam

Subsurface layer:

4 to 14 inches—yellowish brown fine sandy loam

Subsoil layer:

14 to 43 inches—yellowish brown sandy clay loam

43 to 60 inches—yellowish brown sandy clay loam with about 6 percent plinthite nodules

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Water table: Perched at 2.5 to 4 feet

Flooding: None

Runoff: Medium

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Malbis and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Beauregard, Eastwood, and Ruston soils. Beauregard and Eastwood soils are at a lower elevation than the Malbis soil. Beauregard soils have gray iron depletions in the upper part of the subsoil. Eastwood soils have a clayey subsoil. Ruston soils are at a higher elevation than the Malbis soil and do not have plinthite in the subsoil.

Land Use

Major land use: Woodland or pastureland

Other land uses: Cropland and residential areas

Cropland

Land capability subclass: IIe

Suitability: Well suited

Adapted crops: Corn, soybeans, wheat, grain sorghum, and some garden crops (fig. 4)

Management concerns:

- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good till, and can be worked over a wide range of moisture content



Figure 4.—Peaches, a specialty crop, growing in an area of Malbis fine sandy loam, 1 to 3 percent slopes.

- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility and tilth
- All tillage should be on the contour or across the slope
- Sheet and rill erosion can be reduced by constructing gradient terraces and farming on the contour
- Most crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical

- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Fertilizer and lime are needed for optimum growth of grasses and legumes

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 90—loblolly pine

Adapted trees: Loblolly pine, longleaf pine, sweetgum, and southern red oak

Suitability: Well suited

Management concerns:

- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if the soil is wet and heavy equipment is used; this can be overcome by logging during the drier seasons
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

MgD—Malbis fine sandy loam, 3 to 8 percent slopes

Setting

Major landform: Uplands

Landform position: Side slopes

Distinctive landform features: Slopes are short to moderately long and complex

Shape of areas: Irregular

Size of areas: 20 to 200 acres

Slope: Gently sloping to sloping

Typical Profile

Surface layer:

0 to 4 inches—dark brown fine sandy loam

Subsurface layer:

4 to 10 inches—pale brown fine sandy loam

Subsoil layer:

10 to 65 inches—strong brown sandy clay loam in the upper part and yellowish brown sandy clay loam with more than 5 percent plinthite nodules in the lower part

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Water table: Perched at 2.5 to 4 feet

Flooding: None

Runoff: Medium

Permeability class: Moderately slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Malbis and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Beauregard, Eastwood, Ruston, and Sacul soils. Beauregard, Eastwood, and Sacul soils are at a lower elevation than the Malbis soil. Beauregard soils have gray iron depletions within 30 inches of the surface. Eastwood and Sacul soils have a clayey and loamy subsoil. Ruston soils are at a higher elevation than the Malbis soil and have a reddish subsoil that does not contain plinthite.

Land Use

Major land use: Woodland

Other land uses: Pastureland, cropland, and residential areas

Cropland

Land capability subclass: IIIe

Suitability: Moderately well suited

Adapted crops: Corn, soybeans, wheat, grain sorghum, cotton, and some garden crops

Management concerns:

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility and tilth
- All tillage should be on the contour or across the slope
- Sheet and rill erosion can be reduced by gradient terraces and farming on the contour
- Most crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Fertilizer and lime are needed for optimum growth of grasses and legumes

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 90—loblolly pine

Adapted trees: Loblolly pine, longleaf pine, sweetgum, and southern red oak

Suitability: Well suited

Management concerns:

- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if the soil is wet and heavy equipment is used; this can be overcome by logging during the drier seasons
- Logging roads require suitable surfacing for year-round use
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses**Camp and picnic areas***Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds*Limitation rating:* Moderate*Limitations:*

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

MnB—McLaurin fine sandy loam, 1 to 3 percent slopes**Setting***Major landform:* Uplands*Landform position:* Convex ridgetops*Distinctive landform features:* Slopes generally are long and smooth*Shape of areas:* Irregular*Size of areas:* 20 to 500 acres*Slope:* Gently sloping**Typical Profile***Surface layer:*

0 to 4 inches—brown fine sandy loam

Subsurface layer:

4 to 13 inches—yellowish brown fine sandy loam

Subsoil layer:

13 to 30 inches—red fine sandy loam

30 to 53 inches—red sandy loam

53 to 60 inches—red sandy loam with pockets and streaks of very pale brown uncoated sand grains

60 to 71 inches—red sandy loam

Soil Properties and Qualities*Depth class:* Deep*Drainage class:* Well drained*Water table:* At more than 6 feet*Flooding:* None*Runoff:* Slow*Permeability class:* Moderate*Available water capacity:* Low or moderate*Natural soil fertility:* Low*Shrink-swell potential:* Low**Composition**

McLaurin and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Betis and Darden soils. Both of these soils are sandy throughout. Betis soils are in similar landscape positions as the McLaurin soil. Darden soils are at a lower elevation than the McLaurin soil.

Land Use*Major land use:* Woodland*Other land uses:* Pastureland, cropland, and residential areas**Cropland***Land capability subclass:* IIe*Suitability:* Moderately well suited*Adapted crops:* Corn, cotton, watermelons, sweet potatoes, grain sorghum, and wheat*Management concerns:*

- Low fertility
- Droughtiness
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is very friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- In areas where water of suitable quality is available, supplemental irrigation can prevent damage to crops during dry periods of most years
- Excessive cultivation can result in the formation of a tillage pan; this pan can be broken by subsoiling when the soil is dry
- The organic matter content can be maintained by using all crop residue, plowing under cover crops, and using a suitable cropping system
- The risk of sheet and rill erosion can be reduced by gradient terraces and contour farming
- Crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland*Suitability:* Moderately well suited*Adapted plants:* Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage*Management concerns:*

- Low fertility
- Droughtiness

Management measures:

- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking and pasture rotation help to keep the pasture in good condition
- Most grasses and legumes respond well to lime and fertilizer

Woodland*Woodland suitability group:* 2o1*Site index/ordinating species:* 83—loblolly pine*Adapted trees:* Loblolly pine, shortleaf pine, southern red oak, blackjack oak, sweetgum, and hickory*Suitability:* Well suited*Management concerns:*

- Moderate equipment use limitation

Management measures:

- Conventional planting and harvesting methods generally are adequate

Urban Uses**Septic tank absorption fields***Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- A standard septic tank and drain field design generally are adequate to dispose of wastewater properly

Dwellings without basements*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses**Camp and picnic areas***Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds*Limitation rating:* Moderate*Limitations:*

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

MND—McLaurin fine sandy loam, 3 to 8 percent slopes

Setting

Major landform: Uplands
Landform position: Side slopes
Distinctive landform features: None
Shape of areas: Irregular
Size of areas: 20 to 250 acres
Slope: Gently sloping to sloping

Typical Profile

Surface layer:
 0 to 7 inches—brown fine sandy loam

Subsurface layer:
 7 to 12 inches—dark yellowish brown fine sandy loam

Subsoil layer:
 12 to 81 inches—red sandy loam in the upper part; yellowish red sandy loam with pockets of very pale brown sand grains in the middle part; and red sandy loam in the lower part

Soil Properties and Qualities

Depth class: Deep
Drainage class: Well drained
Water table: At more than 6 feet
Flooding: None
Runoff: Medium
Permeability class: Moderate
Available water capacity: Low or moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

McLaurin and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)
 Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Betis and Sailes soils. Betis soils are in positions similar to those of the McLaurin soil and are sandy throughout. Sailes soils are at a higher elevation than the McLaurin soil and contain more clay in the subsoil.

Land Use

Major land use: Woodland

Other land uses: Cropland and pastureland

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Cotton, corn, peanuts, watermelons, grain sorghum, and wheat

Management concerns:

- Low fertility
- Droughtiness
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is very friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- Erosion can be reduced if fall grain or winter pasture grasses are seeded early, conservation tillage is used, and tillage and seeding are on the contour or across the slope
- Excessive cultivation can result in the formation of a tillage pan; this pan can be broken by subsoiling when the soil is dry
- Waterways can be shaped and seeded to perennial grass
- The organic matter content can be maintained by using all crop residue, plowing under cover crops, and using a suitable cropping system
- Crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Droughtiness
- Erosion hazard

Management measures:

- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper grazing practices, weed control, and fertilizer are needed for maximum quality of forage

Woodland

Woodland suitability group: 2o1
Site index/ordinating species: 83—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, southern red oak, blackjack oak, sweetgum, and hickory

Suitability: Well suited

Management concerns:

- Moderate equipment use limitation

Management measures:

- Conventional planting and harvesting operations generally are adequate

Urban Uses

Septic tank absorption fields

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A standard septic tank and drain field design generally are adequate to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

MtB—Metcalf silt loam, 0 to 2 percent slopes

Setting

Major landform: Uplands

Landform position: Broad ridgetops

Distinctive landform features: Slopes are moderately long and simple

Shape of areas: Irregular

Size of areas: 25 to 400 acres

Slope: Nearly level to very gently sloping

Typical Profile

Surface layer:

0 to 3 inches—dark grayish brown silt loam

Subsurface layer:

3 to 7 inches—light yellowish brown silt loam

Subsoil layer:

7 to 33 inches—yellowish brown loam

33 to 40 inches—yellowish brown loam with about 20 percent gray, vertical intrusions of silt

40 to 57 inches—gray silty clay

57 to 75 inches—light brownish gray silty clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Somewhat poorly drained

Water table: Perched at 1.5 to 2.5 feet

Flooding: None

Runoff: Slow

Permeability class: Very slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: High

Composition

Metcalf and similar soils: 85 to 95 percent

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Bellwood, Gurdon, and Sawyer soils. Bellwood soils are at a higher elevation than the Metcalf soil and are clayey throughout. Gurdon soils are at a slightly

lower elevation than the Metcalf soil and are loamy throughout. Sawyer soils are at a slightly higher elevation than the Metcalf soil and do not have tongues of silt in the lower part of the subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland, cropland, and residential areas

Cropland

Land capability subclass: IIw

Suitability: Moderately well suited

Adapted crops: Cotton, corn, grain sorghum, soybeans, wheat, and some garden crops

Management concerns:

- Low fertility
- Wetness
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- Traffic pans develop easily but can be broken by deep plowing or chiseling
- Minimum tillage and returning all crop residue to the soil or regularly adding other organic matter help to improve fertility, maintain soil tilth and content of organic matter, and control erosion
- Most crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Wetness

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff; drainage is needed in low places
- Proper stocking, pasture rotation, and restricted grazing during wet periods, help to keep the pasture and soil in good condition

- Surface drainage may be needed to remove water from low areas
- Applications of lime and fertilizer can overcome the low fertility and promote good growth of forage plants

Woodland

Woodland suitability group: 2w8

Site index/ordinating species: 92—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, southern red oak, white oak, and blackjack oak

Suitability: Moderately well suited

Management concerns:

- Moderate equipment use limitation
- Moderate windthrow hazard
- Severe plant competition

Management measures:

- Standard wheeled and tracked equipment can cause rutting and soil compaction when the soil is wet; using low-pressure ground equipment and planting and harvesting during the drier periods reduce damage to the soil and help to maintain productivity
- Logging roads require suitable surfacing for year-round use
- Reforestation should be started soon after harvesting to reduce competition from understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Wetness

Corrective measures:

- Drainage may be needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe

Limitations:

- Low strength

Corrective measures:

- Special road base design and construction techniques generally are needed to compensate for low strength in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Wetness

Corrective measures:

- Lawn and landscaping plants that are tolerant of occasional wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly

Recreational Uses**Camp and picnic areas**

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

NaC—Natchitoches fine sandy loam, 1 to 5 percent slopes**Setting**

Major landform: Uplands

Landform position: Broad ridgetops

Distinctive landform features: Slopes generally are long and smooth

Shape of areas: Irregular

Size of areas: 25 to 400 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 5 inches—dark brown fine sandy loam

Subsoil layer:

5 to 34 inches—red clay

34 to 45 inches—variegated olive and red clay

Substratum:

45 to 50 inches—variegated olive and red clay

50 to 55 inches—yellowish red sandy clay

55 to 65 inches—variegated strong brown, olive, and light brownish gray sandy clay

Soil Properties and Qualities

Depth class: Deep

Drainage class: Well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Medium

Permeability class: Very slow

Available water capacity: Low or moderate

Natural soil fertility: Low

Shrink-swell potential: High

Composition

Natchitoches and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Bellwood, Metcalf, and Sacul soils. Bellwood and Sacul soils are at a slightly higher elevation than the Natchitoches soil. Metcalf soils are at a slightly lower elevation than the Natchitoches soil. None of these soils has large amounts of glauconite in the subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IVe

Suitability: Poorly suited

Adapted crops: Small grains, soybeans, and grain sorghum

Management concerns:

- Erosion hazard
- Low fertility
- Poor tilth

Management measures:

- Crop residue left on or near the surface helps to conserve moisture, maintain tilth, and control erosion
- All tillage should be on the contour or across the slope

- Early fall seeding, conservation tillage, terraces, diversions, and grassed waterways help to control erosion
- Most crops respond well to fertilizer

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Erosion can be controlled by maintaining a good plant cover
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Grazing when the soil is wet results in puddling of the surface layer; drainage is needed in low places
- Seedbed preparation should be on the contour or across the slope where practical
- Proper stocking and pasture rotation help to keep the pasture and soil in good condition
- Pasture plants respond well to a complete fertilizer

Woodland

Woodland suitability group: 3c8

Site index/ordinating species: 80—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, hickory, blackjack oak, southern red oak, and white oak

Suitability: Moderately well suited

Management concerns:

- Moderate equipment use limitation
- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally can be used, but equipment use is usually limited during rainy periods, generally from December to April
- Standard wheeled and tracked equipment can cause soil compaction and rutting if logging is done during the wet seasons; using low-pressure ground equipment and planting and harvesting during the drier periods reduce the damage to the soil and help to maintain productivity
- Roads and landings require suitable surfacing for year-round use

- Reforestation can be started soon after harvesting to reduce competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees
- Inadequate moisture in the soil can cause a moderate seedling mortality rate in the summer; seedling survival can be improved if planting is done in early spring when soil moisture supplies are high and temperatures are cool

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe

Limitations:

- Shrink-swell
- Low strength

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses**Camp and picnic areas***Limitation rating:* Severe*Limitations:*

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds*Limitation rating:* Severe*Limitations:*

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

NAE—Natchitoches fine sandy loam, 5 to 12 percent slopes**Setting***Major landform:* Uplands*Landform position:* Side slopes*Distinctive landform features:* Slopes are short to moderately long and complex*Shape of areas:* Irregular*Size of areas:* 25 to 300 acres*Slope:* Sloping to strongly sloping**Typical Profile***Surface layer:*

0 to 3 inches—very dark grayish brown fine sandy loam

Subsoil layer:

3 to 37 inches—red clay in the upper part and variegated red and light brownish gray silty clay in the lower part

Substratum:

37 to 63 inches—light brownish gray sandy clay in the upper part and variegated light brownish gray and strong brown sandy clay in the lower part

Soil Properties and Qualities*Depth class:* Deep*Drainage class:* Well drained*Water table:* At more than 6 feet*Flooding:* None*Runoff:* Rapid*Permeability class:* Very slow*Available water capacity:* Low or moderate*Natural soil fertility:* Low*Shrink-swell potential:* High**Composition**

Natchitoches and similar soils: 85 to 95 percent

(areas of included soils generally are larger in this unit than in most other map units, but they

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Bellwood, Guyton, and Sacul soils. Bellwood and Sacul soils are at a slightly higher elevation than the Natchitoches soil. Guyton soils are on flood plains of narrow drainageways. None of these soils has large amounts of glauconite in the subsoil.

Land Use*Major land use:* Woodland*Other land uses:* Pastureland and residential areas**Cropland***Land capability subclass:* VIe*Suitability:* Very poorly suited*Adapted crops:* Small grains and grain sorghum*Management concerns:*

- Erosion hazard
- Low fertility
- Poor tilth

Management measures:

- Crop residue left on or near the surface helps to conserve moisture, maintain tilth, and control erosion
- All tillage should be on the contour or across the slope where practical
- Early fall seeding, conservation tillage, terraces, diversions, and grassed waterways help to control erosion
- Most crops respond well to lime and fertilizer

Pasture and hayland*Suitability:* Poorly suited*Adapted plants:* Common and improved

bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Erosion can be controlled by maintaining a good plant cover
- Seedbed preparation should be on the contour or across the slope where practical
- Proper stocking and pasture rotation help to keep the pasture and soil in good condition
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Fertilizer is needed for optimum growth of grasses and legumes

Woodland*Woodland suitability group:* 3c8*Site index/ordinating species:* 80—loblolly pine*Adapted trees:* Loblolly pine, shortleaf pine, sweetgum, hickory, blackjack oak, southern red oak, and white oak*Suitability:* Moderately well suited*Management concerns:*

- Moderate equipment use limitation
- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally can be used, but equipment use is usually limited during rainy periods, generally from December to April
- Standard wheeled and tracked vehicles can cause soil compaction and rutting if logging is done during the wet seasons; using low-pressure ground equipment and planting and harvesting during the drier seasons reduce the damage to the soil and help to maintain productivity
- Roads and landings require suitable surfacing for year-round use
- Reforestation can be started soon after harvesting to reduce erosion and competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees
- Inadequate moisture in the soil can cause a moderate seedling mortality rate in the summer; seedling survival can be improved if planting is done in early spring when soil moisture supplies are high and temperatures are cool

Urban Uses**Septic tank absorption fields***Limitation rating:* Severe*Limitations:*

- Percs slowly

Corrective measures:

- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements*Limitation rating:* Severe*Limitations:*

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets*Limitation rating:* Severe*Limitations:*

- Shrink-swell
- Low strength

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways*Limitation rating:* Moderate*Limitations:*

- Droughtiness
- Slope

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses**Camp and picnic areas***Limitation rating:* Severe*Limitations:*

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe

Limitations:

- Slope
- Percs slowly

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove rain water quickly

OkC—Oktibbeha silt loam, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Ridgetops

Distinctive landform features: Slopes are moderately long and smooth

Shape of areas: Irregular

Size of areas: 20 to 150 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 2 inches—grayish brown silt loam

Subsoil layer:

2 to 18 inches—strong brown clay

18 to 22 inches—variegated strong brown, yellowish brown, and red clay

22 to 31 inches—variegated strong brown, yellowish brown, and light brownish gray clay

31 to 34 inches—yellowish brown clay

Substratum:

34 to 45 inches—yellowish brown clay with carbonate nodules and soft pockets of lime

45 to 65 inches—light yellowish brown clay with carbonate nodules and soft pockets of lime

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Medium

Permeability class: Very slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Very high

Composition

Oktibbeha and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Bellwood and Sacul soils. Bellwood soils are in positions similar to those of the Oktibbeha soil. Sacul soils are at a higher elevation than the Oktibbeha soil. Neither the Bellwood soil nor the Sacul soil contains concretions of calcium carbonate in the profile.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIe

Suitability: Moderately well suited

Adapted crops: Soybeans, grain sorghum, and small grains

Management concerns:

- Low fertility
- Erosion hazard
- Poor tilth

Management measures:

- The surface layer erodes easily if the soil is clean tilled
- The plow layer is difficult to keep in good tilth and can be worked only within a narrow range of moisture content
- Crop residue left on or near the surface helps to conserve moisture, maintain tilth, and control erosion
- Other practices that can be used to control erosion include early fall seeding, minimum tillage, terraces, diversions, and grassed waterways
- All tillage should be on the contour or across the slope

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard
- Droughtiness

Management measures:

- Grazing when the soil is wet causes puddling of the soil and compaction of the surface layer, which can reduce forage production; drainage is needed in low places

- Where practical, seedbed preparation should be on the contour or across the slope to reduce erosion
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Applications of lime and fertilizer can overcome the low fertility
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition

Woodland

Woodland suitability group: 3c8

Site index/ordinating species: 76—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, southern red oak, blackjack oak, and hickory

Suitability: Moderately well suited

Management concerns:

- Moderate equipment use limitation
- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if it is wet and heavy equipment is used
- When the soil surface is wet or moist, roads and skid trails are slippery and may be impassable; this can be overcome by using specialized equipment during wet seasons or logging during dry seasons
- Logging roads require suitable surfacing for year-round use
- Reforestation can be started soon after harvesting to reduce competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe

Limitations:

- Shrink-swell
- Low strength

Corrective measures:

- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe

Limitations:

- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove rain water quickly

RuC—Ruston fine sandy loam, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Convex ridgetops

Distinctive landform features: Slopes are moderately long and simple

Shape of areas: Irregular

Size of areas: 50 to 250 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 11 inches—grayish brown fine sandy loam

Subsurface layer:

11 to 19 inches—brown fine sandy loam

Subsoil layer:

19 to 38 inches—yellowish red sandy clay loam

38 to 50 inches—yellowish red fine sandy loam with about 33 percent pale brown and brownish yellow pockets and streaks

50 to 80 inches—red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Medium

Permeability class: Moderate

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Ruston and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Boykin soils, Malbis soils, areas of soils with slopes that are more than 5 percent. Boykin soils are in positions similar to those of the Ruston soil and have thick sandy surface and subsurface layers. Malbis soils are at a lower elevation than the Ruston soil and have a yellowish brown subsoil that contains nodules of plinthite.

Land Use

Major land use: Woodland

Other land uses: Pastureland, cropland, and residential areas

Cropland

Land capability subclass: IIIe

Suitability: Moderately well suited

Adapted crops: Cotton, corn, soybeans, wheat, grain sorghum, and some garden crops

Management concerns:

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility, improve tilth, and reduce soil loss by erosion
- All tillage should be on the contour or across the slope
- Most crops respond well to lime and fertilizer, which help to overcome the low soil fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Proper stocking and pasture rotation help to keep the pasture and soil in good condition
- Most grasses and legumes respond well to lime and fertilizer, which help to improve fertility

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 84—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, southern red oak, post oak, sweetgum, hickory, and white oak

Suitability: Well suited

Management concerns:

- No significant concerns

Management measures:

- Conventional planting and harvesting methods generally are adequate

Urban Uses**Septic tank absorption fields***Limitation rating:* Moderate*Limitations:*

- Percs slowly

Corrective measures:

- An oversize drain field should be installed to prevent the system from malfunctioning during rainy periods

Dwellings without basements*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses**Camp and picnic areas***Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds*Limitation rating:* Moderate*Limitations:*

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

RuD—Ruston fine sandy loam, 5 to 8 percent slopes**Setting***Major landform:* Uplands*Landform position:* Side slopes*Distinctive landform features:* Slopes are moderately long and complex*Shape of areas:* Irregular*Size of areas:* 50 to 250 acres*Slope:* Sloping**Typical Profile***Surface layer:*

0 to 5 inches—grayish brown fine sandy loam

Subsurface layer:

5 to 14 inches—pale brown fine sandy loam

Subsoil layer:

14 to 80 inches—yellowish red fine sandy loam in the upper part, red sandy clay loam in the next layer, red sandy loam with streaks and spots of light yellowish brown loamy sand in the next layer, and red sandy clay loam in the lower part

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Well drained*Water table:* At more than 6 feet*Flooding:* None*Runoff:* Medium*Permeability class:* Moderate*Available water capacity:* Moderate or high*Natural soil fertility:* Low*Shrink-swell potential:* Low**Composition**

Ruston and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Boykin soils, Malbis soils, and areas of soils with slopes that are less than 5 percent. Boykin soils are in positions similar to those of the Ruston soil and have thick sandy surface and subsurface layers. Malbis soils are at a lower elevation than the Ruston soil and have a yellowish brown subsoil that contains nodules of plinthite.

Land Use

Major land use: Woodland

Other land uses: Pastureland, cropland, and residential areas

Cropland

Land capability subclass: IIIe

Suitability: Moderately well suited

Adapted crops: Corn, cotton, soybeans, wheat, grain sorghum, watermelons, and peas

Management concerns:

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable and easy to keep in good tilth
- Seedbed preparation should be on the contour or across the slope
- Irregular slopes hinder tillage operations in some areas
- Conservation tillage, terraces, and grassed waterways help to control erosion and conserve moisture
- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility, improve tilth, and reduce soil loss by erosion
- Most crops respond well to lime and fertilizer, which help to improve soil fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Terraces can be constructed to reduce erosion and conserve water
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking and pasture rotation help to keep the pasture and soil in good condition

- Most grasses and legumes respond well to lime and a complete fertilizer, which help to improve fertility

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 84—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, southern red oak, post oak, sweetgum, hickory, and white oak

Suitability: Well suited

Management concerns:

- No significant concerns

Management measures:

- Conventional planting and harvesting methods generally are adequate

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate

Limitations:

- Percs slowly

Corrective measures:

- An oversize drain field should be installed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Severe

Limitations:

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

ScC—Sacul fine sandy loam, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Slightly convex ridgetops

Distinctive landform features: Slopes generally are moderately long and smooth

Shape of areas: Irregular

Size of areas: 20 to 200 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 2 inches—dark grayish brown fine sandy loam

Subsurface layer:

2 to 6 inches—brown fine sandy loam

Subsoil layer:

6 to 46 inches—red clay in the upper part, variegated red and light brownish gray clay in the middle part, and light brownish gray silty clay loam in the lower part

Substratum:

46 to 65 inches—variegated light brownish gray and strong brown silty clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Water table: Perched at 2 to 4 feet

Flooding: None

Runoff: Medium

Permeability class: Slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: High

Composition

Sacul and similar soils: 85 to 95 percent

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Briley, Mahan, and Trep soils. Briley and Mahan soils are at a higher elevation on the landscape than the Sacul soil. Briley and Trep soils have thick sandy surface and subsurface layers. Mahan soils do not have gray iron depletions in the upper part of the subsoil. Trep soils are in positions similar to those of the Sacul soil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: IVe

Suitability: Poorly suited

Adapted crops: Cotton, soybeans, grain sorghum, wheat, corn, and some garden crops

Management concerns:

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a moderate range of moisture content
- The surface layer erodes easily if this soil is clean tilled
- Early fall seeding, conservation tillage, terraces, diversions, and grassed waterways help to control erosion
- All tillage should be on the contour or across the slope where practical
- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility, reduce erosion, and maintain and improve tilth
- Most cultivated crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Where practical, seedbed preparation should be on the contour or across the slope to reduce erosion
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Pasture plants respond well to lime and fertilizer, which help to improve fertility

Woodland

Woodland suitability group: 3c2

Site index/ordinating species: 84—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, southern red oak, and white oak

Suitability: Moderately well suited

Management concerns:

- Moderate equipment use limitation
- Moderate windthrow hazard
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if it is wet and heavy equipment is used
- When the soil surface is wet or moist, roads and skid trails are slippery and may be impassable; this can be overcome by using specialized equipment during wet seasons or logging during dry seasons
- Logging roads require suitable surfacing for year-round use
- Reforestation can be started soon after harvesting to reduce competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe

Limitations:

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe

Limitations:

- Shrink-swell
- Low strength

Corrective measures:

- Backfilling with suitable soil materials and using special road base design construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove excess water quickly; addition of some fill material may be necessary

Playgrounds

Limitation rating: Moderate

Limitations:

- Slope
- Small stones
- Wetness

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Topsoil may need to be added to reduce the number of small stones in the surface layer
- Surface drains and landscaping are needed to remove excess water quickly

SCE—Sacul fine sandy loam, 5 to 12 percent slopes**Setting**

Major landform: Uplands

Landform position: Side slopes

Distinctive landform features: Slopes are short to moderately long and complex

Shape of areas: Irregular

Size of areas: 60 to 500 acres

Slope: Sloping to strongly sloping

Typical Profile

Surface layer:

0 to 2 inches—very dark grayish brown fine sandy loam

Subsurface layer:

2 to 6 inches—yellowish brown fine sandy loam

Subsoil layer:

6 to 28 inches—red clay

28 to 42 inches—variegated red and gray clay

42 to 65 inches—gray clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Water table: Perched at 2 to 4 feet

Flooding: None

Runoff: Rapid

Permeability class: Slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: High

Composition

Sacul and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit

than in most other map units, but they were considered similar due to slope limitations)
Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Bowie soils, Guyton soils, Mahan soils, and small areas of soils with slopes that are less than 5 percent. Bowie soils are in similar landscape positions as the Sacul soil and are loamy throughout. Guyton soils are on flood plains of narrow drainageways and are poorly drained and loamy throughout. Mahan soils are at a higher elevation than the Sacul soil and do not have gray iron depletions in the upper part of the subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland

Cropland

Land capability subclass: VIe

Suitability: Very poorly suited

Adapted crops: Small grains

Management concerns:

- Low fertility
- Erosion hazard
- Short, complex slopes
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- Practices that can be used to reduce erosion include early fall seeding, minimum tillage, terraces, diversions, and grassed waterways
- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to improve fertility, reduce erosion, and maintain tilth
- Most crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Poorly suited

Adapted plants: Common and improved

bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard
- Short, complex slopes
- In places, the use of equipment is limited by steep, complex slopes

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Pasture plants respond well to lime and fertilizer, which help to improve fertility

Woodland*Woodland suitability group:* 3c2*Site index/ordinating species:* 84—loblolly pine*Adapted trees:* Loblolly pine, shortleaf pine, southern red oak, and white oak*Suitability:* Moderately well suited*Management concerns:*

- Moderate equipment use limitation
- Moderate windthrow hazard
- Moderate plant competition

Management measures:

- Conventional methods of harvesting timber generally are suitable; however, rutting and soil compaction can be problems when the soil is moist or wet and heavy equipment is used
- When the soil surface is moist or wet, roads and skid trails are slippery and may be impassable; this can be overcome by using specialized equipment during wet seasons or logging during dry seasons
- Reforestation can be started soon after harvesting to reduce competition from undesirable understory plants
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses**Septic tank absorption fields***Limitation rating:* Severe*Limitations:*

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements*Limitation rating:* Severe*Limitations:*

- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets*Limitation rating:* Severe*Limitations:*

- Shrink-swell
- Low strength

Corrective measures:

- Backfilling with suitable soil materials and special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways*Limitation rating:* Moderate*Limitations:*

- Slope

Corrective measures:

- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses**Camp and picnic areas***Limitation rating:* Moderate*Limitations:*

- Slope
- Wetness
- Percs slowly

Corrective measures:

- Campsites and picnic areas should be constructed on the more level areas
- A ground cover that is tolerant of heavy foot traffic needs to be established and maintained to prevent erosion
- Surface drains and landscaping are needed to remove excess water quickly

Playgrounds*Limitation rating:* Severe*Limitations:*

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

SIC—Sailes loamy fine sand, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Convex ridgetops

Distinctive landform features: Slopes are moderately long and simple

Shape of areas: Irregular

Size of areas: 50 to 250 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 7 inches—grayish brown loamy fine sand

Subsurface layer:

7 to 13 inches—brown loamy fine sand

13 to 18 inches—pale brown fine sandy loam

Subsoil layer:

18 to 46 inches—red sandy clay loam

46 to 78 inches—dark red sandy clay loam

78 to 90 inches—red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Slow or medium

Permeability class: Moderate

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Sailes and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Betis soils, Briley soils, McLaurin soils, and small areas of soils with slopes that are more than 5 percent. Betis and McLaurin soils are at a slightly higher elevation than the Sailes soil. Betis soils are sandy throughout. Briley soils are in positions similar to those of the Sailes soil and have sandy surface and subsurface layers that, together, are more than 20 inches thick. McLaurin soils are loamy throughout.

Land Use

Major land use: Woodland

Other land uses: Pastureland, cropland, and residential areas

Cropland

Land capability subclass: IIIe

Suitability: Moderately well suited

Adapted crops: Cotton, corn, soybeans, wheat, grain sorghum, and some garden crops (fig. 5)

Management concerns:

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility, improve tilth, and reduce soil loss by erosion
- All tillage should be on the contour or across the slope
- Most crops respond well to lime and fertilizer, which help to improve soil fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard
- Loose sandy surface

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Proper stocking and pasture rotation help to keep the pasture in good condition
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Most grasses and legumes respond well to lime and fertilizer, which help to improve fertility

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 95—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, southern red oak, and white oak

Suitability: Well suited



Figure 5.—Corn is grown for local use on small, gently sloping tracts, such as areas of Sailes loamy fine sand, 1 to 5 percent slopes.

Management concerns:

- Moderate seedling mortality

Management measures:

- Replanting can be done in early spring to reduce seedling mortality that can occur during the drier part of the year

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate

Limitations:

- Percs slowly

Corrective measures:

- An oversize drain field should be installed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways*Limitation rating:* Moderate*Limitations:*

- Droughtiness

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses**Camp and picnic areas***Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds*Limitation rating:* Moderate*Limitations:*

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

SLE—Sailes loamy fine sand, 5 to 12 percent slopes**Setting**

Major landform: Uplands

Landform position: Side slopes

Distinctive landform features: Slopes are short to moderately long and complex

Shape of areas: Irregular

Size of areas: 50 to 250 acres

Slope: Sloping to strongly sloping

Typical Profile*Surface layer:*

0 to 4 inches—dark brown loamy fine sand

Subsurface layer:

4 to 15 inches—yellowish brown loamy fine sand

Subsoil layer:

15 to 75 inches—red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Water table: At more than 6 feet

Flooding: None

Runoff: Medium

Permeability class: Moderate

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Sailes and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Betis soils, Briley soils, and Sacul soils. Betis soils are at a slightly higher elevation than the Sailes soil and are sandy throughout. Briley soils are in positions similar to those of the Sailes soil and have thick sandy surface and subsurface layers. Sacul soils are at a lower elevation and have a clayey and loamy subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland and residential areas

Cropland

Land capability subclass: VIe

Suitability: Very poorly suited

Adapted crops: Peas, peanuts, and watermelons

Management concerns:

- Low fertility
- Erosion hazard
- Loose sandy surface
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- Conservation tillage, terraces, and grassed waterways help to control erosion and conserve moisture
- Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility, improve tilth, and reduce soil loss by erosion
- Most crops respond well to lime and fertilizer, which help to improve soil fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved

bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard
- Loose sandy surface

Management measures:

- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Mowing, clipping, or spraying while the soil is moist will overcome most equipment use limitations caused by the sandy surface layer
- Seedbed preparation should be on the contour or across the slope where practical
- Terraces may be constructed to control erosion and conserve moisture
- Proper stocking and pasture rotation help to keep the pasture in good condition
- Applications of lime and fertilizer can overcome the low fertility and promote good growth of pasture plants

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 95—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, southern red oak, and white oak

Suitability: Well suited

Management concerns:

- Moderate seedling mortality

Management measures:

- Replanting can be done in early spring to reduce seedling mortality that can occur during the drier part of the year

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate

Limitations:

- Percs slowly
- Slope

Corrective measures:

- An oversize drain field should be installed on the contour to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Constructing buildings on the less sloping areas, preserving plant cover during construction, and proper landscaping can help to reduce soil erosion and runoff problems

Local roads and streets

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Droughtiness
- Slope

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Campsites and picnic areas should be constructed on the more level areas
- A ground cover that is tolerant of heavy foot traffic needs to be established and maintained to prevent erosion

Playgrounds

Limitation rating: Severe

Limitations:

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

SnC—Sawyer very fine sandy loam, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Convex ridgetops

Distinctive landform features: Slopes are moderately long and complex

Shape of areas: Irregular

Size of areas: 25 to 400 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 3 inches—brown very fine sandy loam

Subsurface layer:

3 to 9 inches—light yellowish brown very fine sandy loam

Subsoil layer:

9 to 20 inches—strong brown loam

20 to 28 inches—strong brown silty clay loam

28 to 32 inches—yellowish brown silty clay loam

32 to 45 inches—variegated brownish yellow, red, and light brownish gray silty clay

45 to 65 inches—gray silty clay

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Water table: Perched at 2 to 3 feet

Flooding: None

Runoff: Medium

Permeability class: Slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Moderate

Composition

Sawyer and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Bowie soils, Metcalf soils, Sacul soils, and small areas of soils with slopes that are more than 5 percent. Bowie soils are at a higher elevation than the Sawyer soil and contain more than 5 percent plinthite in the subsoil. Metcalf and Sacul soils are at a slightly lower elevation and contain gray iron depletions in the upper part of the subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland, cropland, and residential areas

Cropland

Land capability subclass: IIIe

Suitability: Moderately well suited

Adapted crops: Cotton, corn, grain sorghum, soybeans, wheat, and some garden crops

Management concerns:

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a moderate range of moisture content
- Traffic pans develop easily but can be broken by deep plowing or chiseling
- Minimum tillage and returning all crop residue to the soil or regularly adding other organic matter help to improve fertility, maintain soil tilth and content of organic matter, and control erosion
- Most crops respond well to lime and fertilizer, which help to improve fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical
- Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff; drainage is needed in low places
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Applications of lime and fertilizer can overcome the low fertility and promote good growth of forage plants

Woodland

Woodland suitability group: 2w8

Site index/ordinating species: 85—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, white oak, southern red oak, blackjack oak, and hickory

Suitability: Well suited

Management concerns:

- Moderate plant competition

Management measures:

- Standard wheeled and tracked equipment can cause rutting and soil compaction when the soil is wet; using low-pressure ground equipment and planting and harvesting during the drier periods reduce the damage to the soil and help to maintain productivity
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees

Urban Uses**Septic tank absorption fields**

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Wetness
- Shrink-swell

Corrective measures:

- Backfilling with suitable soil materials and using a reinforced foundation design can help to minimize the hazard of foundation cracking due to shrink-swell
- Drainage may be needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe

Limitations:

- Low strength

Corrective measures:

- Special road base design and construction techniques generally are needed to compensate for low strength in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight

Limitations:

- No significant limitations

Corrective measures:

- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses**Camp and picnic areas**

Limitation rating: Moderate

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove excess water quickly; addition of some fill material may be necessary

Playgrounds

Limitation rating: Moderate

Limitations:

- Slope
- Wetness
- Percs slowly

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Topsoil may need to be added to reduce the number of small stones in the surface layer
- Surface drains and landscaping are needed to remove excess water quickly

StC—Shatta silt loam, 1 to 5 percent slopes**Setting**

Major landform: Uplands

Landform position: Broad ridgetops and side slopes

Distinctive landform features: Slopes are long and smooth

Shape of areas: Irregular

Size of areas: 30 to 400 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 5 inches—grayish brown silt loam

Subsurface layer:

5 to 11 inches—brown silt loam

Subsoil layer:

11 to 14 inches—yellowish brown silt loam

14 to 24 inches—strong brown silty clay loam

24 to 33 inches—yellowish brown silty clay loam

33 to 61 inches—yellowish brown silty clay loam that is firm and brittle in about 70 percent of the matrix

61 to 70 inches—variegated brownish yellow, light brownish gray, and red sandy clay loam

Soil Properties and Qualities

Depth class: Deep

Drainage class: Moderately well drained

Water table: Perched at 1.5 to 3 feet

Flooding: None

Runoff: Medium

Permeability class: Slow

Available water capacity: Moderate or high

Natural soil fertility: Low

Shrink-swell potential: Low

Composition

Shatta and similar soils: 79 to 91 percent

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Beauregard soils, Malbis soils, Ruston soils, and areas of soils in which the surface layer is less than 3 inches thick because of erosion. None of these soils have a fragipan in the subsoil. Beauregard soils are at a lower elevation than the Shatta soil. Malbis soils are in positions similar to those of the Shatta soil. Ruston soils are at a higher elevation than the Shatta soil.

Land Use

Major land use: Woodland

Other land uses: Cropland and residential areas

Cropland

Land capability subclass: IIIe

Suitability: Moderately well suited

Adapted crops: Soybeans, corn, cotton, grain sorghum, and truck crops (fig. 6)

Management concerns:

- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable, easy to keep in good tilth, and can be worked over a wide range of moisture content
- Excessive cultivation can result in the formation of a tillage pan; this pan can be broken by subsoiling when the soil is dry
- Seedbed preparation should be on the contour or across the slope to reduce erosion
- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to improve fertility, reduce erosion, and maintain tilth
- Crops respond well to lime and fertilizer, which help to improve soil fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Erosion hazard

Management measures:

- Seedbed preparation should be across the slope to reduce erosion
- Terraces help to reduce erosion
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Applications of lime and fertilizer can overcome the low fertility and promote good growth of forage plants
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition

Woodland

Woodland suitability group: 2o7

Site index/ordinating species: 83—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, and southern red oak

Suitability: Well suited

Management concerns:

- Moderate plant competition

Management measures:

- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees



Figure 6.—Cotton growing in an area of Shatta silt loam, 1 to 5 percent slopes.

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Percs slowly
- Wetness

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Wetness

Corrective measures:

- Drainage may be needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe

Limitations:

- Low strength

Corrective measures:

- Special road base design and construction techniques generally are needed to compensate for low strength in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Wetness

Corrective measures:

- Lawn and landscaping plants that are tolerant of occasional wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- Surface drains and landscaping are needed to remove excess water quickly; addition of some fill material may be necessary

Playgrounds*Limitation rating:* Moderate*Limitations:*

- Slope
- Wetness
- Percs slowly

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Topsoil may need to be added to reduce the number of small stones in the surface layer
- Surface drains and landscaping are needed to remove excess water quickly

SVF—Smithdale fine sandy loam, 8 to 20 percent slopes***Setting****Major landform:* Uplands*Landform position:* Side slopes*Distinctive landform features:* Slopes are short and complex*Shape of areas:* Irregular*Size of areas:* 20 to 150 acres*Slope:* Strongly sloping to moderately steep***Typical Profile****Surface layer:*

0 to 4 inches—dark grayish brown fine sandy loam

Subsurface layer:

4 to 8 inches—brown fine sandy loam

Subsoil layer:

8 to 38 inches—red sandy clay loam

38 to 68 inches—yellowish red sandy loam

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Well drained*Water table:* At more than 6 feet*Flooding:* None*Runoff:* Rapid*Permeability class:* Moderate*Available water capacity:* Moderate or high*Natural soil fertility:* Low*Shrink-swell potential:* Low***Composition***

Smithdale and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)

Dissimilar soils: 9 to 21 percent

Contrasting Inclusions

Boykin and Ruston soils. Both of these soils are at a higher elevation than the Smithdale soil. Boykin soils have thick sandy surface and subsurface layers.

Ruston soils have a bisequum in the profile.

Land Use***Major land use:*** Woodland***Other land uses:*** Residential areas***Cropland****Land capability subclass:* VIe*Suitability:* Very poorly suited*Adapted crops:* Small grains*Management concerns:*

- Erosion hazard
- Low fertility
- Slope
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- Managing crop residue, farming on the contour, and constructing terraces help to reduce soil loss by erosion
- All tillage should be on the contour or across the slope
- Most crops respond well to lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland*Suitability:* Poorly suited*Adapted plants:* Common and improved

bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Erosion hazard
- Slope

Management measures:

- Seedbed preparation should be on the contour or across the slope where practical

- Applications of lime and fertilizer can overcome the low fertility and promote good growth of forage plants
- Proper stocking and pasture rotation help to keep the pasture and soil in good condition

Woodland

Woodland suitability group: 2o1

Site index/ordinating species: 80—loblolly pine

Adapted trees: Loblolly pine, shortleaf pine, sweetgum, and southern red oak

Suitability: Moderately well suited

Management concerns:

- Moderate erosion hazard
- Moderate equipment use limitation

Management measures:

- Conventional methods of harvesting timber generally are suitable, but management that minimizes the risk of erosion is essential
- Roads and landings should be protected from erosion by constructing diversions and by seeding cuts and fills
- Skid trails and firebreaks are subject to rilling and gullying unless provided with adequate water bars or protected by plant cover

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- The drain field lines should be installed on the contour

Dwellings without basements

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Constructing buildings on the less sloping areas, preserving plant cover during construction, and proper landscaping can help to reduce soil erosion and runoff problems

Local roads and streets

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:

- Slope

Corrective measures:

- Campsites and picnic areas should be constructed on the more level areas
- A ground cover that is tolerant of heavy foot traffic needs to be established and maintained to prevent erosion

Playgrounds

Limitation rating: Severe

Limitations:

- Slope

Corrective measures:

- Playgrounds should be constructed on the more level areas

TrC—Trep loamy fine sand, 1 to 5 percent slopes

Setting

Major landform: Uplands

Landform position: Narrow convex ridgetops

Distinctive landform features: Slopes generally are moderately long and smooth

Shape of areas: Irregular

Size of areas: 10 to 250 acres

Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:

0 to 9 inches—brown loamy fine sand

Subsurface layer:

9 to 23 inches—light yellowish brown loamy fine sand

Subsoil layer:

23 to 42 inches—yellowish brown sandy clay loam

42 to 57 inches—brownish yellow sandy clay loam

57 to 75 inches—variegated brownish yellow, light gray, and yellowish red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Water table: Perched at 3.5 to 5 feet

Flooding: None

Runoff: Moderately slow

Permeability class: Moderately slow

Available water capacity: Low or moderate

Natural soil fertility: Low

Shrink-swell potential: Moderate

Composition

Trep and similar soils: 85 to 95 percent

Dissimilar soils: 5 to 15 percent

Contrasting Inclusions

Bowie soils, Briley soils, Sacul soils, small areas of soils in which the surface layer has been lost to erosion, and areas of soils in which the subsoil is reddish in the matrix. Bowie soils are at a slightly lower elevation than the Trep soil and are loamy throughout. Briley soils are at a higher elevation than the Trep soil and have a reddish subsoil. Sacul soils are at a lower elevation than the Trep soil and have a loamy and clayey subsoil.

Land Use

Major land use: Woodland

Other land uses: Pastureland

Cropland

Land capability subclass: IIIs

Suitability: Moderately well suited

Adapted crops: Cotton, corn, soybeans, watermelons, and other vegetable crops

Management concerns:

- Low fertility
- Droughtiness
- Erosion hazard
- Loose sandy surface
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:

- This soil is friable and easy to keep in good tilth
- Where practical, seedbed preparation should be on the contour or across the slope to reduce erosion
- Planting, cultivating, and harvesting while the soil is moist or wet help to overcome most equipment use limitations
- Returning crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to improve fertility, reduce erosion, and maintain tilth

- Most crops respond well to lime and fertilizer, which help to improve soil fertility and reduce the level of exchangeable aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited

Adapted plants: Common and improved bermudagrass, bahiagrass, and crimson clover; ryegrass, wheat, and oats are suitable for winter forage

Management concerns:

- Low fertility
- Droughtiness
- Erosion hazard

Management measures:

- Seedbed preparation should be across the slope to reduce the hazard of erosion
- Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth
- Mowing, clipping, or spraying while the soil is moist will overcome most equipment use limitations
- Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition
- Pasture plants respond well to lime and fertilizer, which help to improve fertility and promote good growth of forage plants

Woodland

Woodland suitability group: 2s2

Site index/ordinating species: 90—loblolly pine

Adapted trees: Loblolly pine and shortleaf pine

Suitability: Moderately well suited

Management concerns:

- Moderate seedling mortality
- Moderate plant competition

Management measures:

- Conventional methods of producing and harvesting timber generally are suitable, but the soil surface may become loose and untrafficable if it is dry and heavy equipment is used
- Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling to eliminate unwanted weeds, brush, or trees
- Seedling survival can be improved by replanting in early spring when soil moisture supplies are most favorable

Urban Uses

Septic tank absorption fields

Limitation rating: Severe

Limitations:

- Wetness
- Percs slowly

Corrective measures:

- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements*Limitation rating:* Slight*Limitations:*

- No significant limitations

Corrective measures:

- Standard construction and landscaping techniques generally are adequate

Local roads and streets*Limitation rating:* Moderate*Limitations:*

- Low strength

Corrective measures:

- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed

Lawns, landscaping, and golf fairways*Limitation rating:* Moderate*Limitations:*

- Droughtiness

Corrective measures:

- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses**Camp and picnic areas***Limitation rating:* Moderate*Limitations:*

- Too sandy

Corrective measures:

- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds*Limitation rating:* Moderate*Limitations:*

- Slope
- Too sandy

Corrective measures:

- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

Prime Farmland

In this section, prime farmland is defined, and the soils in Bienville Parish that are considered prime farmland are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. The moisture supply must be adequate, and the growing season must be sufficiently long. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They are used for food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are

not frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent.

The following map units are considered prime farmland in Bienville Parish. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Some soils that have a high water table and all soils that are frequently flooded during the growing season qualify as prime farmland only in areas where these limitations have been overcome by drainage measures or flood control. Only the soils that have few limitations and do not need any additional improvements to qualify as prime farmland are included in the list.

The soils identified as prime farmland in Bienville Parish are:

BaB	Beauregard silt loam, 1 to 3 percent slopes
BoC	Bowie very fine sandy loam, 1 to 5 percent slopes
ChC	Cahaba fine sandy loam, 1 to 5 percent slopes
DrC	Darley gravelly fine sandy loam, 1 to 5 percent slopes
DuC	Dubach fine sandy loam, 1 to 5 percent slopes
GrB	Gurdon silt loam, 1 to 3 percent slopes
GyA	Guyton silt loam
KoC	Kolin silt loam, 1 to 5 percent slopes
MaC	Mahan fine sandy loam, 1 to 5 percent slopes
MgB	Malbis fine sandy loam, 1 to 3 percent slopes
MgD	Malbis fine sandy loam, 3 to 8 percent slopes
MnB	McLaurin fine sandy loam, 1 to 3 percent slopes
MtB	Metcalf silt loam, 0 to 2 percent slopes
NaC	Natchitoches fine sandy loam, 1 to 5 percent slopes
RuC	Ruston fine sandy loam, 1 to 5 percent slopes
ScC	Sacul fine sandy loam, 1 to 5 percent slopes
SIC	Sailes loamy fine sand, 1 to 5 percent slopes
SnC	Sawyer very fine sandy loam, 1 to 5 percent slopes
StC	Shatta silt loam, 1 to 5 percent slopes

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where cemented ironstone, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Charles M. Guillory, conservation agronomist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and

pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Natural Resources Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

About 60,651 acres in Bienville Parish was in farms in 1987, according to the United States Census of Agriculture. Approximately 7,930 acres was used for crops, mainly annual forage and hay crops, cotton, corn, sweet potatoes, watermelons, and vegetable crops.

Differences in crop suitability and management needs result from differences in soil characteristics, such as fertility levels, erodibility, organic matter content, availability of water for plants, drainage, and the hazard of flooding. Cropping systems and soil tillage are additional important parts of management. Each farm has a unique soil pattern; therefore, each has unique management problems. Some principles of farm management, however, apply to specific soils and certain crops. This section presents the general principles of management that can be widely applied to the soils of Bienville Parish.

Perennial grasses or legumes. Grasses, legumes, or mixtures of these are grown for pasture and hay. In 1987, about 17,700 acres in Bienville Parish was used for pasture. The mixtures generally consist of either a summer or a winter perennial grass and a suitable legume. In addition, many farmers seed small grains or ryegrass in the fall for winter and spring forage. Excess grass in summer is harvested as hay for the winter.

Common and improved bermudagrass and Pensacola bahiagrass are the summer perennials most commonly grown. Most of these grasses produce good

quality forage. Tall fescue, the main winter perennial grass, grows well on soils that have a favorable moisture content. All of these grasses respond well to fertilizers, particularly nitrogen.

White clover, crimson clover, vetch, and winter peas are the most commonly grown legumes. All of these legumes respond well to lime, particularly on acid soils.

Proper grazing is essential for high quality forage, stand survival, and erosion control. Brush and weed control, application of fertilizer and lime, and renovation of the pasture are also important. Proper grazing also includes withholding livestock until the plants have a good start in spring, controlling grazing height, rotation grazing, grazing at the proper time, and periodic resting. Clipping helps to distribute grazing and stimulate even regrowth.

Forage production can be increased by grazing the understory native plants in woodland. About 4,800 acres of woodland is grazed in Bienville Parish. Forage volume varies with the woodland site, condition of the native forage, and the density of the timber stand. Although most woodland is managed mainly for timber, substantial volumes of forage can be obtained if these areas are properly managed. Stocking rates and grazing periods need to be carefully managed for optimum forage production and to maintain an adequate cover of understory plants to control erosion.

Fertilizer and lime. The soils in Bienville Parish are highly leached and weathered. They range from extremely acid to mildly alkaline in the surface and subsurface layers. In the more acid soils, calcium content is very low or low. Most of the acid soils contain sufficient quantities of exchangeable aluminum and manganese to be toxic to some plants. Additions of lime can help to reduce the levels of aluminum and manganese in soils. The amount of fertilizer needed depends upon the kind of crop to be grown, on past cropping history, on the level of yield desired, and on the kind of soil. It should be determined on the basis of soil test results. Agricultural agencies in the parish can supply detailed information and instructions on collecting and testing soil samples.

Organic matter content. Organic matter is an important source of nitrogen for crop growth. It also increases the rate of water intake, reduces surface crusting and soil loss by erosion, and improves tilth. Most of the cultivated soils in Bienville Parish are low or moderate in organic matter content. To a limited extent, organic matter can be maintained or improved by leaving plant residue on the surface, by growing crops that produce an abundance of foliage and root systems, by adding barnyard manure, and by growing

perennial grasses and legumes in rotation with other crops.

Soil tillage. Soils should be tilled only enough to prepare a seedbed and to control weeds. Excessive tillage damages soil structure and should be avoided. Some of the clayey soils in the parish become cloddy if they are plowed, and a compacted layer, generally known as a traffic pan or plow pan, can develop just below the plow layer in loamy soils. This condition can be avoided by not plowing when the soil is wet, by varying the depth of plowing, or by breaking the compacted layer by subsoiling or chiseling. Tillage implements that stir the surface and leave crop residue in place protect the soil from beating rains, thereby helping to control erosion, reduce runoff, increase infiltration, and reduce surface crusting.

Drainage and flood control. A few of the soils in Bienville Parish need surface drainage to make them more suitable for crops and pasture. A properly designed system of field ditches can remove excess water from seasonally wet soils, such as the Guyton soils; however, major flood-control structures are needed to protect the Buxin, Guyton, Moreland, and Ouachita soils from stream overflow.

Water for plant growth. The available water capacity of the soils in the parish range from low to high, but in many years sufficient water is not available at the critical time for optimum plant growth unless irrigation is used. Rainfall is heavy in winter and spring. Sufficient rain generally falls in the summer and autumn of most years; however, during the dry periods in summer and autumn, most of the soils do not supply sufficient water for most plants. This rainfall pattern favors the growth of early maturing crops.

Cropping system. A good cropping system includes a legume for nitrogen, a cultivated crop to aid in weed control, a deep-rooted crop to utilize the fertility and maintain the permeability in the subsoil, and a close-growing crop to help maintain the organic matter content. The sequence of crops should keep the soil covered as much of the year as possible.

A suitable cropping system varies according to the needs of the farmer and the characteristics of the soil. Livestock producers, for example, generally use cropping systems that have higher percentages of pasture and annual forage than the cropping system used on cash-crop farms. Very little cash-crop farming is done in Bienville Parish. Grass or legume cover crops can be grown during the fall and winter.

Additional information on cropping systems can be obtained from the Natural Resources Conservation Service, the Cooperative Extension Service, or the Louisiana Agricultural Experiment Station.

Control of erosion. Erosion is a hazard on the uplands in Bienville Parish. It is not a serious problem on soils of the flood plains, mainly because the topography is level or nearly level. If the surface layer is lost through erosion, most of the available plant nutrients and most of the organic matter are also lost.

Sheet erosion is moderately severe in all fallow-plowed fields in the parish. Some gully erosion occurs mainly in areas of the more sloping soils. Sheet, rill, and gully erosion can be reduced by maintaining a cover of vegetation or plant residue; farming on the contour and using terraces, stripcropping, no-till farming or minimum tillage; and controlling weeds using methods other than fallow plowing. Disturbed areas around construction sites should be seeded and mulched immediately after construction. Water-control structures to control gully erosion should be placed in drainageways and ditches.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative

Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable or very poorly suited for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, or *s*, to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless a close-growing plant cover is

maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); and *s* shows that the soil is limited mainly because it is droughty.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w*.

Woodland Management and Productivity

Donald Lawrence, forester, Natural Resources Conservation Service, helped prepare this section.

This section provides information on the relation between trees and their environment, particularly trees and the soils in which they grow. It includes information on the kind, amount, and condition of woodland resources in Bienville Parish. This section also includes soils interpretations in planning.

Soils vary in their ability to produce trees. Available water capacity and depth of the root zone have major effects on tree growth. Fertility and texture also influence tree growth. Elevation, aspect, and climate determine the kinds of trees that can grow on a site. Available water capacity and thickness of the root zone are major influences of tree growth.

Woodland Resources

Bienville Parish was once totally wooded. Beginning in the early 1900's, wooded areas were cleared to make way for agricultural crops and pastures. During the 1950's and 1960's, the major land use changed back to southern pine woodlands. Today, the uplands are, again, almost totally wooded, and only a few scattered areas are devoted to crops, pastures, small villages, and homesites. The woodland in Bienville Parish is managed primarily for pine, although some stream bottoms produce limited quantities of hardwood. The demand for hunting leases has increased in the last few years and much of the industry-owned land has been leased to hunting clubs.

A portion of the Jackson-Bienville Wildlife Management Area, a 30,845-acre tract, is in the northeast corner of Bienville Parish. This area is predominantly hilly pine land. Sparse stands of hardwoods are in most stream bottoms.

Bienville Parish has about 437,000 acres of commercial woodland (Thomas and Bylin, 1980). This acreage represents 83 percent of the total land area

in the parish. Commercial woodland is defined as that capable of producing crops of industrial wood and not withdrawn from timber use. About 60 percent of the commercial woodland is owned by the forest industry, 32 percent by individuals, and 8 percent by private farms.

The parish is entirely within the Western Coastal Plain Major Land Resource Area (MLRA). Dominant trees in this MLRA are loblolly and shortleaf pines and associated sweetgum, red oak, white oak, and hickory.

Commercial woodland may be further divided into forest types. Types can be based on tree species, site quality, or age. As used in this survey, forest types are stands of trees of similar character, composed of the same species, and growing under the same ecological and biological conditions. The forest types are named for the dominant trees.

The *loblolly-shortleaf pine* forest type makes up about 202,200 acres of the forest land in Bienville Parish. Loblolly pine generally is dominant except on drier sites. Scattered hardwoods, such as sweetgum, blackgum, southern red oak, post oak, white oak, mockernut hickory, and pignut hickory, can be mixed with pines on most sites. American beech and ash are associated with this forest type along stream bottoms.

The *longleaf-slash pine* forest type makes up about 5,500 acres of the forest land in the parish. This forest type is one in which 50 percent or more of the stand is longleaf or slash pine, singly or in combination. Common associates include other southern pines, upland oaks, and hickories.

The *oak-pine* forest type makes up about 98,300 acres of the forest land in the parish. The species that make up this forest type are primarily the result of soil, slope, and aspect. On the higher, drier sites, the hardwood components tend to be the upland oaks, such as blackjack oak, southern red oak, and post oak. Blackgum, winged elm, red maple, and various hickories are also associated with this forest type.

The *oak-hickory* forest type makes up about 109,300 acres of the forest land in the parish. Upland oaks or hickory, singly or in combination, make up a plurality of the stocking. Common associates are elm and maple.

The *oak-gum-cypress* forest type makes up about 21,900 acres of the forest land in the parish. This forest type is on the bottomlands of major streams. Dominant trees are blackgum, sweetgum, bottomland oaks, and baldcypress. Associated trees are black willow, ash, hackberry, maple, and elm.

The marketable timber volume is about 75 percent pine and 25 percent hardwood. About 46 percent of the forest acreage is sawtimber, 25 percent is pole timber, and 28 percent is saplings and seedlings. The

remaining 1 percent is classified as “non-stocked areas.”

The productivity of forest land is the amount of wood produced per acre per year measured in cubic feet. In Bienville Parish, about 21,900 acres produces 165 cubic feet or more of wood per acre, 163,900 acres produces 120 to 165 cubic feet per acre, 207,600 acres produces 85 to 120 cubic feet per acre, and 43,700 acres produces 50 to 80 cubic feet per acre.

The importance of timber production to the economy of the parish is significant. Most of the upland pine sites are owned by forest industry and are generally well managed. However, the small, privately-owned tracts are producing well below potential and would benefit if stands were improved by thinning out mature trees and undesirable species. Protection from overgrazing, fire, insects, and diseases; tree planting; and timber stand improvement are needed to improve stands.

Environmental Impact

Woodland is valuable for wildlife habitat, recreation, natural beauty, and conservation of soil and water. The commercial forest land of Bienville Parish provides food and shelter for wildlife and offers opportunity for sport and recreation to many users annually. Forest land provides watershed protection, helps to arrest soil erosion and reduce sedimentation, and enhances the quality and value of water resources.

Trees can be used to screen distracting views of dumps and other unsightly areas, muffle the sounds of traffic, reduce the velocity of winds, and lend beauty to the landscape. Trees and forests help filter out airborne dust and other impurities, convert carbon dioxide into life-giving oxygen, release moisture to the atmosphere, and provide shade from the sun's hot rays.

Production of Forage in Woodland

The kind and amount of understory vegetation that can be produced in an area is related to the soils, climate, and amount of tree overstory. In many pine woodlands, cattle grazing can be a compatible secondary use. Grazing is not recommended on hardwood woodland. Grasses, legumes, forbs, and many woody browse species in the understory are grazable and, if properly managed, can supplement a woodland enterprise without damaging the wood crop. In fact, on most pine woodland, grazing is beneficial to the woodland program because it reduces the accumulation of heavy “rough”, thus reducing the hazard of wildfires. Grazing also helps to suppress undesirable woody plants.

The success of a combined woodland and livestock program depends primarily on the degree and time of

grazing of the forage plants. Intensity of grazing should maintain adequate cover for soil protection and maintain or improve the quantity and quality of trees and forage vegetation.

Forage production varies according to the type of woodland and the amount of sunlight that reaches the understory vegetation during the growing season. Soils that have about the same potential to produce trees also have similar potential for producing about the same kind and amount of understory vegetation. The vegetative community on these soils will reproduce itself as long as the environment does not change.

One of the main objectives in good woodland grazing management is to keep the woodland forage in excellent or good condition. If this is done, water is conserved, yields are improved, and the soils are protected.

Table 6 can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section “Detailed Soil Map Units,” the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 6 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

The table lists the *woodland suitability group* for each soil. The first part of the woodland suitability symbol, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low.

The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: *x*, *w*, *t*, *d*, *c*, *s*, *f*, and *r*.

The third part of the symbol, a numeral, indicates the kind of trees for which the soils are best suited and the severity of the hazard or limitation. The numerals 1, 2, and 3 indicate slight, moderate, and severe limitations, respectively, and suitability for

needleleaf trees. The numerals 4, 5, and 6 indicate slight, moderate, and severe limitations, respectively, and suitability for broadleaf trees. The numerals 7, 8, and 9 indicate slight, moderate, and severe limitations, respectively, and suitability for both needleleaf and broadleaf trees.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion-control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, and the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, and susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment is needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment use for more than 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the periods when the water table is high, rock fragments in the surface

layer, rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *windthrow hazard* indicate the likelihood that trees will be uprooted by the wind. A restricted rooting depth is the main reason for windthrow. The rooting depth can be restricted by a high water table or cemented ironstone or by a combination of such factors as wetness, texture, structure, and depth. The risk is *slight* if strong winds cause trees to break but do not uproot them; *moderate* if strong winds cause an occasional tree to be blown over and many trees to break; and *severe* if moderate or strong winds commonly blow trees over. Ratings of moderate or severe indicate that care is needed in thinning or that the stand should not be thinned at all. Special equipment may be needed to prevent damage to shallow root systems in partial cutting operations. A plan for the periodic removal of windthrown trees and the maintenance of a road and trail systems may be needed.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. Plant competition is more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants hinders adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants hinders natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. A moderate or severe rating indicates the need for site preparation to ensure the development of an adequately stocked stand. Managers must plan site preparation measures to ensure reforestation without delays.

The *potential productivity of common trees* on a soil is expressed as a *site index* and a *volume*

number. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate. The first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands. The estimates of the productivity of the soils in this survey are based on the site index that was determined at age 30 years for eastern cottonwood, 35 years for American sycamore, and 50 years for all other species.

The *productivity class* represents an expected volume produced by the most important trees, expressed in cubic meters per hectare per year calculated at the age of culmination of mean annual increment.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Recreation

In table 7, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable

and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 10 and interpretations for dwellings without basements and for local roads and streets in table 9.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes, stones, or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over cemented ironstone or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or

boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Rick Simmering, biologist, Natural Resources Conservation Service, helped prepare this section.

Wildlife is an important natural resource in Bienville Parish. The parish consists of very gently sloping to moderately steeply sloping uplands dissected by numerous stream bottoms. Uplands are dominated by pine and mixed pine/hardwood forest land with small areas of pasture. The flood plains of Saline Bayou, Black Lake Bayou, and smaller stream bottoms support bottomland hardwood forests.

Habitat for a varied population of wildlife is provided by a mixture of land uses and a diversity of vegetative types. The major game animals in Bienville Parish are white-tailed deer and eastern wild turkey. Other important game species include fox and gray squirrels, bobwhite quail, and American woodcock. Cottontail and swamp rabbits are also plentiful and provide sport hunting. Wood ducks use the streams and wooded swamps for nesting and wintering habitat. Furbearers in the area include raccoon, gray and red fox, mink, nutria, and beaver. Coyotes are also numerous in the parish.

The American alligator, a threatened species, resides in Lake Bistineau and Kepler Lake. A limited number of red cockaded woodpeckers, an endangered species, are in some mature pine stands that have an open understory.

Deer are relatively evenly distributed throughout the parish, and populations exceed the carrying capacity in some locations. There are moderate to high numbers of turkeys in the parish. Presently, the turkey population is static, but it can increase if proper habitat management is applied and illegal hunting is eliminated.

Much of the forest land is owned by timber companies and is leased for hunting. A portion of the Jackson-Bienville Wildlife Management Area (WMA), managed by the Louisiana Department of Wildlife and Fisheries, is located in the eastern part of the parish. This WMA is open to the public for hunting, camping, and other activities. It has high populations of deer, turkeys, squirrels, and other wildlife.

Intensive wildlife habitat management is needed to increase and retain wildlife game populations. The availability of food and cover is limited on some land by current management practices. Critical stress periods for deer are late summer and winter. Deer habitat can be improved by implementing prescribed

burning and retaining mast-bearing shrubs and hardwoods. Food plots can be planted to further enhance habitat. Cooperative efforts of landowners to improve habitat and properly harvest deer can improve the size, quality, and number of animals in the herd.

Turkeys prefer a mixture of open mature stands of pine/hardwoods, a plentiful supply of water, and open grassy fields. Forestry management practices, which create these conditions, can produce a potentially high sustainable turkey population.

The bobwhite quail population has declined significantly since the 1950's. The conversion of large acreages of openland to woodland has reduced the quality and quantity of habitat. The potential to improve habitat for quail is good. Quail populations can be increased by prescribed burning in pine woodland and disking or otherwise stirring the soil surface to promote the growth of native grasses and legumes. Food plots can also be planted to improve quail habitat.

Squirrels are concentrated along stream bottoms where oaks, hickories, beech, and other mast-producing species are dominant. Retention of these trees during timber harvest operations will insure high squirrel populations.

Conservation practices can be adapted to maintain or enhance wildlife habitat on most farms. Pasture and hayland management programs that use plants beneficial to both livestock and wildlife can be implemented. Pastures overseeded with annuals, such as ryegrass, oats, rye, and clovers, will provide a winter food source for deer, turkey, and rabbits.

Lake Bistineau, Kepler Lake, and Mill Creek Lake support viable fisheries populations. Saline Bayou and Black Lake Bayou have perennial flow and also provide limited fisheries resources. Lake Bistineau and Kepler Lake are 17,200 acres and 2,000 acres in size, respectively. Both lakes are managed by the Louisiana Department of Wildlife and Fisheries (LDWF) and provide excellent fishing opportunities for the public. Saline Bayou and Black Lake Bayou are designated as natural and scenic streams by the LDWF. Both streams possess unique aesthetic and biologic values, which should be preserved.

Common fish species in the lakes and streams in the parish include largemouth bass; bluegill; redear sunfish; white and black crappie; channel, blue, and flathead catfish; freshwater drum; and buffalo. Spotted bass are also common in the perennial streams.

Many of the farm ponds scattered throughout the parish have been stocked with bass, bluegill, and catfish. Many of these ponds provide excellent fishing opportunities.

Soils affect the kind and amount of vegetation that

is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 8, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, and grain sorghum.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bahiagrass, bermudagrass, clover, and vetch.

Wild herbaceous plants are native or naturally

established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, paspalum, and uniola.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, sugarberry, sweetgum, persimmon, hawthorn, dogwood, hickory, blackberry, and huckleberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are autumn-olive and blueberry.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, cedar, and baldcypress.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are American beautyberry, waxmyrtle, American elder, and sumac.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are oxbow lakes, artificially flooded cropland, and green tree reservoirs.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these

areas include bobwhite quail, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and coyotes.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, nutria, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to cemented ironstone, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential,

available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 9 shows the degree and kind of soil limitations that affect shallow excavations, dwellings without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to cemented ironstone or a very firm, dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving

is affected by soil texture and depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and shrinking and swelling can cause the movement of footings. Depth to a high water table, depth to cemented ironstone, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to cemented ironstone, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to layer of cemented ironstone, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 10 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction

costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to a layer of cemented ironstone, and flooding affect absorption of the effluent. Large stones and layer of cemented ironstone interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured ironstone is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to layer

of cemented ironstone, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope and cemented ironstone can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a layer of cemented ironstone, depth to a water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, and soil reaction affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over layers of cemented ironstone or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential

for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 11 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good*, *fair*, or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 20 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, or many stones. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They

are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, and cemented ironstone.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant nutrients as it decomposes.

Water Management

Table 12 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured ironstone or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment

ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table and permeability of the aquifer. Depth to layers of cemented ironstone and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to a layer of cemented ironstone or to other layers that affect the rate of water movement, permeability, depth to a high water table or depth of standing water if the soil is subject to ponding, slope, and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by depth to layers of cemented ironstone, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for

drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to layers of cemented ironstone. The performance of a system is affected by the depth of the root zone and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to layers of cemented ironstone affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to layers of cemented ironstone affect the construction of grassed waterways. A restricted rooting depth, low available water capacity, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 13 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less

than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1986).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction between 3 and 10 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments from 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than

3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 14 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $\frac{1}{3}$ -bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk

density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, greater than 9 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 15 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water

or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to two hydrologic groups in the table, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The

estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are the depth to the seasonal high water table, the kind of water table—that is, perched or apparent, and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Soil Fertility Levels

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This section contains information on both the environmental factors and the physical and chemical properties of the soils that affect their potential for crop production. It also lists the analytical methods that were used to determine the chemical properties of the sampled soils.

Factors Affecting Crop Production

Crop composition and yield are a function of many environmental, plant, and soil factors.

Environmental factors:

- Light—intensity and duration
- Temperature—air and soil
- Precipitation—distribution and amount
- Atmospheric carbon dioxide concentration

Plant factors (species and hybrid specific):

- Rate of nutrient and water uptake
- Rate of growth and related plant functions

Soil factors—physical properties:

- Distribution—texture
- Structure
- Surface area
- Bulk density
- Water retention and flow
- Aeration

Soil factors—chemical properties and soil fertility:

- Quantity factor. This describes the concentration of a nutrient ion absorbed or held in exchangeable form on the solid phase of the soil. This form of nutrient ion also is available for plant intake.
- Intensity factor. This describes the concentration of a nutrient ion in soil solution. Since plant roots absorb nutrients directly from soil solution, this factor quantifies the amount of a nutrient element immediately available for uptake.
- Quantity/Intensity Relationship Factor. This describes the relationship between the quantity and intensity factors and is sometimes called the buffer power. As the plant root absorbs nutrients from soil solution, the concentration in solution is replenished by ions from the solid phase. If two soils have identical intensity factors, the soil with the greater quantity factor will provide more nutrients during the growing season, since it will be able to maintain the intensity factor level for a longer period.

- **Replenishment factor.** This describes the rate of replenishment of the available supply of nutrients in the solid and solution phases by weathering reactions, fertilizer additions, and transport by mass flow and diffusion.

These factors are interdependent. The magnitude of the factors and the interactions among them control crop response. The relative importance of each factor changes from soil to soil, crop to crop, and environment to environment. The soil factors are only part of the overall system.

The goal of soil testing is to provide information for a soil and crop management program that establishes and maintains optimum levels and balance of the essential elements in soil for crop and animal nutrition and that protects the environment against the buildup of potentially toxic levels of essential and nonessential elements. Current soil tests attempt to measure the available supply of one or more nutrients in the plow layer. The available supply consists of nutrients characterized by both the intensity and quantity factors. Where crop production is clearly limited by available supply of one or more nutrients, existing soil tests can generally diagnose the problem and reliable recommendations to correct the problem can be made. Soil management systems generally are based on physical and chemical alteration of the plow layer. Characteristics of this layer can vary from one location to another, depending upon management practices and soil use.

Subsurface horizons are less subject to change or change very slowly as a result of alteration of the plow layer. These horizons reflect the soil's inherent ability to supply nutrients to plant roots and to provide a favorable environment for root growth. If soil fertility recommendations based on current soil tests are followed, major fertility problems in the plow layer are normally corrected. Crop production is then limited by crop and environmental factors, physical properties of the plow layer, and physical and chemical properties of the subsoil.

Chemical Analysis Methods

Information on the available nutrient supply in the subsoil allows evaluation of the natural fertility levels of the soil. Soil profiles were sampled during the soil survey and analyzed for soil reaction; organic matter content; extractable phosphorus; exchangeable cations of calcium, magnesium, potassium, sodium, aluminum, and hydrogen; total acidity; and cation-exchange capacity. The results are summarized in Table 16. More detailed information on chemical analysis of soils is available (Adams, 1984;

Black, 1968; Bray and Kuntz, 1945; Brupbacker and others, 1970; Khasawneh, 1980; Kilmer, Younts, and Brady, 1968; Mehlich, 1953; Munson, 1985; Olsen, Cole, Watanake, and Dean, 1954; Stevenson, 1982a and 1982b; USDA, 1984; Walsh and Beaton, 1973). The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (USDA, 1984).

Reaction (pH)—1:1 soil/water solution (8C1a).

Organic matter—acid-dichromate oxidation (6A1a).

Extractable phosphorus—Bray 2 extractant (0.03 molar ammonium fluoride-0.1 molar hydrochloric acid).

Exchangeable cations—pH 7, 1 molar ammonium acetate-calcium (6N2), magnesium (6O2), potassium (6Q2), sodium (6P2).

Exchangeable aluminum and hydrogen—1 molar potassium chloride (6G2).

Total acidity—pH 8.2, barium chloride-triethanolamine (6H1a).

Effective cation-exchange capacity—sum of bases plus exchangeable aluminum and hydrogen (5A3b).

Sum cation-exchange capacity—sum of bases plus total acidity (5A3a).

Base saturation—sum of cations/sum cation-exchange capacity (5C3).

Exchangeable sodium percentage—exchangeable sodium/sum cation-exchange capacity.

Aluminum saturation—exchangeable aluminum/effective cation-exchange capacity.

Characteristics of Soil Fertility

In general, four major types of nutrient distribution in soils of Louisiana can be identified. The first type includes soils that have relatively high levels of available nutrients throughout the profile. This type reflects the relatively high fertility status of the parent material from which soils developed and a relatively young age or a less intense degree of weathering of the soil profile. The Buxin and Moreland soils in Bienville Parish are in this group.

The second type includes soils that have relatively low levels of available nutrients in the surface layer, but generally have increasing levels with depth through the soil profile. These soils have relatively fertile parent material but are older soils that have been subjected either to weathering over a longer period of time or to more intense weathering. If the levels of available nutrients in the surface layer are low, crops may exhibit deficiency symptoms early in the growing season. Deficiency symptoms often disappear if crop roots are able to penetrate to the more fertile subsoil as the growing season progresses. The majority of the soils in Bienville Parish are in this group.

The third type includes soils that have adequate or relatively high levels of available nutrients in the surface layer but have relatively low levels in the subsoil. Such soils developed from low fertility parent material, or they are older soils that have been subjected to more intense weathering over a longer period of time. The higher nutrient levels in the surface layer generally a result of fertilization in agricultural soils or biocycling in undisturbed soils. Soils such as the Boykin, Briley, and McLaurin soils are in this group.

The fourth type includes soils that have relatively low levels of available nutrients throughout the soil profile. These soils developed from low fertility parent material, or they are older soils that have been subjected to intense weathering over a long period of time. Neither fertilization nor biocycling has contributed to nutrient levels in the surface layer of these soils. Betis soils are in this group.

Soil reaction and acidity, organic matter content, sodium content, and cation-exchange capacity also can provide evidence of the general nutrient distribution patterns in soils. Distribution patterns are the result of the interactions of parent material, weathering (climate), time, and to a lesser extent organisms and topography.

Nitrogen. Generally, over 90 percent of the nitrogen in the surface layer is in the form of organic nitrogen. Most of the nitrogen in the subsoil is in the form of fixed ammonium nitrogen. These forms of nitrogen are unavailable for plant uptake, but they can be converted to readily available ammonium and nitrate species.

Nitrogen generally is the most limiting nutrient element in crop production, because of high plant demand. In most cases, nitrogen fertilizer recommendations are based on the nitrogen requirement of the crop, rather than nitrogen soil test levels, because no reliable nitrogen soil tests have been developed for Louisiana soils.

Information on the nitrogen fertility status of a soil can be obtained by measuring several soil nitrogen parameters. These include the amount of readily available ammonium and nitrate nitrogen in the soil, the amount of organic nitrogen, the rate of mineralization of organic nitrogen to available forms of inorganic nitrogen, and the rate of conversion of fixed ammonium nitrogen to available forms of nitrogen. Unfortunately, since the amounts and rates of transformation of the various forms of nitrogen in the soils of Bienville Parish have not been determined, no assessment of the nitrogen fertility status for these soils can be given. However, fertilizer nitrogen recommendations obtained from the Louisiana Cooperative Extension Service may be used to determine application rates.

Phosphorus. Phosphorus exists in soils as inorganic phosphorus in soil solution; as discrete minerals, such as hydroxyapatite, variscite, and strengite; as occluded or coprecipitated phosphorus in other minerals; as phosphorus retained on the surfaces of minerals, such as carbonates, metal oxides, and layer silicates; and in organic compounds. Soil solution concentrations of phosphorus are generally low. Since plant roots obtain almost all phosphorus from the soil solution, phosphorus uptake depends on the ability of the soil solid phase phosphorus to maintain phosphorus concentration in soil solution. Soil test procedures generally attempt to measure soil solution phosphorus, plus the readily available solid phase phosphorus that buffers the solution phase concentration.

The Bray 2 (Bray and Kuntz, 1945) extractant tends to extract more phosphorus than the commonly used Bray 1 (Bray and Kuntz, 1945), Mehlich 1 (Mehlich, 1953), and Olsen (Olsen, Cole, Watanake, and Dean, 1954) extractants. The Bray 2 extractant provides an estimate of both the readily available and slowly available supply of phosphorus in soils. The Bray 2 extractable phosphorus content of most of the soils in Bienville Parish is uniformly low throughout the soil profile except where addition of fertilizer phosphorus has raised the level of extractable phosphorus in the surface layer. Exceptions are the Buxin and Moreland soils, which are medium or high in extractable phosphorus content throughout the profile. Low levels of available phosphorus are a limiting factor in crop production. Continual addition of fertilizer phosphorus to such soils is needed to build up and maintain adequate levels of available phosphorus for sustained crop production.

Potassium. Potassium exists in four major forms in soils. These are soil solution potassium, exchangeable potassium associated with negatively charged sites on clay mineral surfaces, nonexchangeable potassium trapped between clay mineral interlayers, and structural potassium within the crystal lattice of minerals. Exchangeable potassium in soils can be replaced by other cations and is generally readily available for plant uptake. To become available to plants, nonexchangeable potassium and structural potassium must be converted to exchangeable potassium through weathering reactions.

The content of exchangeable potassium in soils is an estimate of the supply available to plants. The available supply of potassium in the soils in Bienville Parish is very low or low throughout the soil profile. Low exchangeable potassium levels indicate a general lack

of micaceous minerals, which are a source of exchangeable potassium during weathering.

Crops respond to fertilizer potassium if exchangeable potassium levels are very low or low. Low levels gradually can be built up adding fertilizer potassium to soils that contain a sufficient amount of clay to hold the potassium. Exchangeable potassium levels can be maintained by adding enough fertilizer potassium to account for crop removal, fixation of exchangeable potassium to nonexchangeable potassium, and leaching losses. The soils in Bienville Parish that have a sandier texture, such as Betis, Boykin, and Briley soils, do not have a sufficient amount of clay to hold the potassium; therefore, they do not have a sufficiently high cation-exchange capacity to maintain adequate quantities of available potassium for sustained crop production. More frequent additions of potassium are needed to balance losses of potassium by leaching in these soils.

Magnesium. Magnesium exists in soil solution, as exchangeable magnesium associated with negatively charged sites on clay mineral surfaces, and as structural magnesium in mineral crystal lattices. Solution and exchangeable magnesium generally are readily available for plant uptake, whereas structural magnesium must be converted to exchangeable magnesium during mineral weathering reactions.

According to soil test interpretation guidelines, the exchangeable magnesium content of the soils in Bienville Parish is low, medium, or high, depending upon soil texture. Low exchangeable magnesium levels are found throughout most of the soil profile in such soils as Betis, Boykin, and Briley soils. The Forbing, Mahan, and Sawyer soils have low levels in the upper part of the profile and medium or high levels in the lower part. Variable levels throughout the profile are evident in the Beauregard soils. Higher levels of exchangeable magnesium in certain soil horizons are generally associated with higher clay content in those horizons.

The levels of exchangeable magnesium in most of the soils in Bienville Parish are more than adequate for crop production, especially where the plant roots can exploit the high levels found in the subsoil. Because magnesium deficiencies in plants are normally rare, fertilizer sources of magnesium are generally not needed for crop production.

Calcium. Calcium exists in soil solution, as exchangeable calcium associated with negatively charged sites on clay mineral surfaces, and as structural calcium in mineral crystal lattices. Exchangeable calcium generally is available for plant intake while structural calcium is not.

Calcium deficiencies in plants are extremely rare.

Calcium is normally added to soils from liming materials used to correct problems associated with soil acidity.

Some soils in Bienville Parish, such as Forbing and Oktibbeha soils, have low levels in the upper part of the profile and medium or high levels in the lower part. Still other soils, such as Bellwood and Sawyer soils, have variable levels throughout the soil profile. The higher levels of exchangeable calcium in the surface layer are normally associated with a higher soil reaction than in the subsoil and are probably the result of applications of lime to control soil acidity. Higher exchangeable calcium levels in the subsoil than in the surface layer generally are associated with a higher clay content in the subsoil.

Calcium is normally the most abundant exchangeable cation in soils; however, the exchangeable magnesium levels in the subsoil of the Beauregard, Bellwood, Bowie, Briley, Darley, Dubach, Mahan, Sacul, and Shatta soils are greater than the exchangeable calcium levels. In the other soils in the parish, exchangeable calcium levels are greater than, or about the same as, the exchangeable magnesium levels.

Organic matter. The organic matter content of a soil greatly influences other soil properties. High organic matter content in mineral soils is desirable, while low organic matter content can lead to many problems. Increasing the organic matter content can greatly improve the soil's structure, drainage, and other physical properties. It can also increase the moisture-holding capacity, cation-exchange capacity, and nitrogen content.

Increasing the organic matter content is very difficult, because organic matter is continually subject to microbial degradation. This is especially true in Louisiana where higher soil temperatures and water content increase microbial activity. The rate of organic matter degradation in native plant communities is balanced by the rate of input of fresh material. Disruption of this natural process can lead to a decline in the organic matter content of the soil. Unsound management practices lead to a further decrease in organic matter content.

If no degradation of organic matter occurs, 10 tons of organic matter addition will raise the organic matter content in the upper 6 inches of soil by just 1 percent. Since breakdown of organic matter does occur in the soil, addition of large amounts of organic matter to the soil are needed over a period of several decades to produce a small increase in the organic matter content. Conservation tillage and use of cover crops slowly increase the organic matter content over time, or at least prevent further declines.

The organic matter content of most of the soils of Bienville Parish is low. It decreases sharply with depth because fresh inputs of organic matter are confined to the surface layer. These low levels reflect the high rate of organic matter degradation, erosion, and use of cultural practices that make maintenance of organic matter at higher levels difficult.

Sodium. Sodium exists in soil solution, as exchangeable sodium associated with negatively charged sites on clay mineral surfaces, and as structural sodium in mineral crystal lattices. Because sodium is readily soluble and is generally not strongly retained by soils, well drained soils subjected to moderate or high rainfall do not normally have significant amounts of sodium. Soils in low rainfall environments, soils that have restricted drainage in the subsoil, and soils of the coastal marsh may have significant amounts of sodium. High levels of exchangeable sodium in soils are associated with undesirable physical properties, such as poor structure, slow permeability, and restricted drainage.

Levels of exchangeable sodium that make up more than 6 percent of the sum of the effective cation-exchange capacity in the rooting depth of summer annuals can create undesirable physical properties in soils, such as crusting of the surface, dispersion of soil particles, low water infiltration rates, and low hydraulic conductivity. None of the soils in Bienville Parish has higher than normal levels of exchangeable sodium.

Exchangeable aluminum and hydrogen, pH, and exchangeable and total acidity. The pH of the soil solution in contact with the soil affects other soil properties. Soil pH is an intensity factor rather than a quantity factor. The lower the pH, the more acidic the soil. Soil pH controls the availability of essential and nonessential elements by controlling mineral solubility, ion exchange, and absorption-desorption reactions at the surfaces of the soil minerals and organic matter. The pH also affects microbial activity.

Aluminum exists in soils as exchangeable polymeric hydrolysis species, aluminum oxides, and aluminosilicate minerals. Exchangeable aluminum in soils is determined by extraction with neutral salts, such as potassium chloride or barium chloride. The exchangeable aluminum in soils is directly related to pH. If the pH is less than 5.5, the soils have significant amounts of exchangeable aluminum that has a charge of plus 3. The species of aluminum is toxic to plants. The toxic effects of aluminum on plant growth can be alleviated by adding lime to the soil to convert exchangeable aluminum to nonexchangeable polymeric hydrolysis species. High levels of organic matter can also alleviate aluminum toxicity.

Sources of exchangeable hydrogen in soils include hydrolysis of exchangeable and nonexchangeable aluminum and pH-dependent exchange sites on metal oxides, certain layer silicates, and organic matter. Exchangeable hydrogen, as determined by extraction with such neutral salts as potassium chloride, is normally not a major component of soil acidity. Exchangeable hydrogen is not readily replaced by other cations unless accompanied by a neutralization reaction. Most of the neutral salt exchangeable hydrogen in soils apparently comes from aluminum hydrolysis.

Acidity from hydrolysis of neutral salt exchangeable aluminum plus neutral salt exchangeable hydrogen from pH-dependent exchange sites makes up the exchangeable acidity in soils. Exchangeable acidity is determined by the pH of the soil. Titratable acidity is the amount of acidity neutralized to a selected pH, generally pH 7 or 8.2, and constitutes the total potential acidity of a soil. All sources of soil acidity, including hydrolysis of monomeric and polymeric aluminum species and hydrogen from pH-dependent exchange sites on metal oxides, layer silicates, and organic matter, contribute to the total potential acidity. Total potential acidity in soils is determined by titration with base or incubation with lime; extraction with a buffered extractant followed by titration of the buffered extractant (pH 8.2, barium chloride-triethanolamine method); or equilibration with buffers followed by estimation of acidity from changes in buffer pH.

Most soils of Bienville Parish have a low pH, contain significant quantities of exchangeable aluminum, and have high levels of total acidity in many of the soil horizons. Examples are Beauregard, Bellwood, Bowie, Briley, Darley, Dubach, Kolin, Mahan, Malbis, Sacul, Shatta, and Sawyer soils. The high levels of exchangeable aluminum are a major limiting factor in crop production. High levels of exchangeable aluminum in the surface layer of the soils can be reduced by adding lime. No economical methods are presently available to neutralize soil acidity at depth. Some reduction of exchangeable aluminum levels at depth can be achieved by applying gypsum so that the calcium leaches through the soil and replaces the exchangeable aluminum.

Cation-exchange capacity. The cation-exchange capacity is a measure of the amount of nutrient and non-nutrient cations a soil can hold in an exchangeable form. The cation-exchange capacity depends on the number of negatively charged sites, both permanent and pH-dependent, present in the soil. Permanent charge cation-exchange sites occur because a net negative charge develops on mineral surface from substitution of ions within the crystal lattice. A negative

charge developed from ionization of surface hydroxyl groups on minerals and organic matter produces pH-dependent cation-exchange sites.

Methods for determining cation-exchange capacity are available and can be classified as one of two types. These include methods that use unbuffered salts to measure the cation-exchange capacity at the pH of the soil and methods that use buffered salts to measure the cation-exchange capacity at a specific pH. These methods produce different results since buffered salt methods include only a part of the pH-dependent cation-exchange capacity up to the pH of the buffer, pH 7 and 8.2. Errors in the saturation, washing, and replacement steps can also cause different results.

The effective cation-exchange capacity is the sum of exchangeable bases, which includes calcium, magnesium, potassium, and sodium. Effective cation-exchange capacity is determined by extraction with 1 molar ammonium acetate at pH 7, plus the sum of neutral salt-exchangeable aluminum and hydrogen (exchangeable acidity). The sum cation-exchange capacity is the sum exchangeable bases, plus the total acidity determined by extraction with pH 8.2, barium chloride-triethanolamine. The effective-cation exchange capacity is generally less than the sum cation-exchange capacity and includes only that part of the pH-dependent cation-exchange capacity that is determined by exchange of hydrogen with a neutral salt. The sum cation-exchange capacity includes all of the pH-dependent cation-exchange capacity up to pH 8.2. If a soil contains no pH-dependent exchange sites, or the pH of the soil is about 8.2, the effective and sum cation-exchange capacity will be about the same. The larger the cation-exchange capacity, the larger the capacity to store nutrient cation.

The pH-dependent charge is a significant source of the cation-exchange capacity in most of the soils in Bienville Parish. Since the pH-exchange cation-exchange capacity increases with pH, cation-exchange capacity of many of the soils can be increased by adding lime. This would result in a greater storage capacity for nutrient cations, such as potassium, magnesium, and calcium.

Physical and Chemical Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are given in table 17 and the

results of chemical analysis in table 18. The data are for soils sampled at carefully selected sites. Unless otherwise indicated, the pedons are typical of the series. They are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Soil Characterization Laboratory, Louisiana Agricultural Experiment Station.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an oven-dry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (USDA 1996).

Sand—(0.05-2.0 mm fraction) weight percentages of material less than 2 mm (3A1).

Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).

Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).

Water retained—pressure extraction, percentage of oven-dry weight of less than 2 mm material; $\frac{1}{3}$ or $\frac{1}{10}$ bar (4B1), 15 bars (4B2).

Water-retention difference—between $\frac{1}{3}$ bar and 15 bars for whole soil (4C1).

Field moist bulk density—of less than 75 mm material, saran-coated clods (4A3a), $\frac{1}{3}$ bar (4A1d), and oven-dry (4A1h).

Organic carbon—wet combustion. Walkley-Black modified acid-dichromate, ferric sulfate titration (6A1c).

Extractable cations—ammonium acetate pH 7.0, atomic absorption; calcium (6N2e), magnesium (6O2d), sodium (6P2b), potassium (6Q2b).

Extractable acidity—barium chloride-triethanolamine IV (6H5a).

Cation-exchange capacity—ammonium acetate, pH 7.0, steam distillation (5A8b).

Base saturation—ammonium acetate, pH 7.0 (5C1).

Reaction (pH)—1:1 water dilution (8C1f).

Reaction (pH)—potassium chloride (8C1g).

Reaction (pH)—calcium chloride (8C1f).

Aluminum—potassium chloride extraction (6G9).

Aluminum—acid oxalate extraction (6G12).

Iron—acid oxalate extraction (6C9a).

Extractable phosphorus—Bray P-1 (6S3).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (USDA, 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisols.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizonation, plus *udult*, the suborder of the Ultisols that has an udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is clayey, kaolinitic, thermic, Typic Hapludults.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series. An example is the Darley series, which is a member of the clayey, kaolinitic, thermic Typic Hapludults.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (USDA, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (USDA, 1999) and in "Keys to Soil Taxonomy" (USDA, 1996a). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Beauregard Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Pleistocene age loamy marine deposits

Slope range: 1 to 3 percent

Taxonomic classification: Fine-silty, siliceous, thermic Plinthaquic Paleudults

Commonly associated soils: Kolin, Malbis, and Shatta

- Kolin soils are in similar landscape positions as the Beauregard soil and have a subsoil that is clayey in the lower part

- Malbis and Shatta soils are at a higher elevation than the Beauregard soil; Malbis soils are fine-loamy; and Shatta soils have a fragipan in the lower part of the subsoil

Typical Pedon

Beauregard silt loam, 1 to 3 percent slopes, in woodland; about 1.8 miles north of the community of Lucky on Louisiana State Highway 9; 0.3 mile east on a woodland road, then 50 feet north of the road; NW¹/₄SW¹/₄ sec. 15, T. 15 N., R. 6 W.; latitude 32 degrees 17 minutes, 03 seconds N.; longitude 92 degrees 58 minutes 48 seconds W.; Bienville Quadrangle, Louisiana:

A—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine subangular blocky structure; very friable; many very fine and fine roots; moderately acid; clear smooth boundary.

E—4 to 10 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; common fine and few medium roots; strongly acid; clear wavy boundary.

BE—10 to 14 inches; yellowish brown (10YR 5/4) silt loam; common medium faint dark yellowish brown (10YR 4/4) masses of iron accumulation; weak medium subangular blocky structure; friable; common fine and medium roots; strongly acid; gradual wavy boundary.

Bt—14 to 21 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct brown (7.5YR 5/4) and pale brown (10YR 6/3) iron depletions; weak medium subangular blocky structure; friable; common fine and few medium roots; few faint clay films on faces of peds; few fine and medium iron-manganese concretions; strongly acid; clear wavy boundary.

Btv1—21 to 32 inches; yellowish brown (10YR 5/6) silty clay loam; common medium prominent

yellowish red (5YR 5/6) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) and pale brown (10YR 6/3) iron depletions; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; common fine iron-manganese concretions; about 6 percent nonindurated plinthite that is yellowish brown (10YR 5/6) with pink (5YR 7/4) and red (2.5YR 5/6) centers; strongly acid; clear wavy boundary.

Btv2—32 to 43 inches; yellowish brown (10YR 5/6) silty clay loam; common fine prominent red (2.5YR 5/8) and common medium prominent yellowish red (5YR 5/6) masses of iron accumulation; common coarse distinct light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; about 7 percent plinthite nodules; common fine brittle masses; strongly acid; clear wavy boundary.

Btg—43 to 62 inches; light brownish gray (10YR 6/2) silty clay loam; common coarse distinct yellowish brown (10YR 5/6) and common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; about 5 percent plinthite; very strongly acid.

Range in Characteristics

Solum thickness: 50 to more than 80 inches

Clay content in the control section: 18 to 32 percent

Redoximorphic features: Iron depletions with chroma of 1 or 2 beginning at 12 to 30 inches from the surface; iron accumulations beginning at 2 to 18 inches from the surface

Other distinctive soil features: Layers that contain 5 to 30 percent plinthite at 20 to 40 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Strongly acid to slightly acid (A and E); very strongly acid or moderately acid (underlying horizons)

A or Ap horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 1 to 3

Redoximorphic features—none

Texture—silt loam

Other features—none

Thickness—2 to 5 inches

E and BE horizons:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 4
 Redoximorphic features—none to common iron accumulations in shades of brown
 Texture—very fine sandy loam or silt loam
 Other features—none
 Thickness—0 to 12 inches

Bt horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 3, 4, or 6
 Redoximorphic features—iron accumulations in shades of red and brown; iron depletions in shades of gray
 Texture—silt loam or silty clay loam
 Other features—none

Btv horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 3, 4, or 6
 Redoximorphic features—iron accumulations in shades of red and brown; iron depletions in shades of gray
 Texture—silt loam or silty clay loam
 Other features—5 to 30 percent plinthite

Btgv horizon:

Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2
 Redoximorphic features—iron accumulations in shades of red and brown; iron depletions in shades of gray
 Texture—silt loam or silty clay loam
 Other features—5 to 30 percent plinthite

Cg horizon (where present):

Color—variegated in shades of gray, red, and brown
 Redoximorphic features—iron accumulations in shades of red and brown; iron depletions in shades of gray
 Texture—silt loam, silty clay loam, or silty clay
 Other features—none

Bellwood Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Tertiary age loamy and clayey marine deposits

Slope range: 1 to 15 percent

Taxonomic classification: Very-fine, montmorillonitic, thermic Aquentic Chromuderts

Commonly associated soils: Bowie, Guyton, Metcalf, Natchitoches, Oktibbeha, Sacul, and Sawyer

- Bowie and Sacul soils are at a higher elevation than the Bellwood soil; Bowie soils are fine-loamy; and Sacul soils contain less clay in the upper part of the subsoil
- Guyton soils are on narrow flood plains and are loamy throughout
- Metcalf, Natchitoches, and Sawyer soils are at a slightly lower elevation than the Bellwood soil; Metcalf and Sawyer soils are fine-silty and have a subsoil that is clayey in the lower part; and Natchitoches soils contain more than 5 percent glauconitic sand
- Oktibbeha soils are at a slightly higher elevation than the Bellwood soil and have an alkaline substratum

Typical Pedon

Bellwood silt loam, 1 to 5 percent slopes, in woodland; about 1.3 miles west of the town of Mount Olive on Highway 155; 0.8 mile south on Parish Road 789, then 150 feet east of the road; SW¹/₄NE¹/₄ sec. 1, T. 15 N., R. 5 W.; latitude 32 degrees 17 minutes 03 seconds N.; longitude 92 degrees 49 minutes 48 seconds W.; Mount Olive Quadrangle, Louisiana:

A—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; weak fine subangular blocky structure; friable; common fine and few medium roots; very strongly acid; clear wavy boundary.

Bw1—3 to 11 inches; yellowish red (5YR 5/8) clay; common fine and medium prominent light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; firm; common fine and medium roots; shiny pressure faces on surfaces of peds; very strongly acid; gradual wavy boundary.

Bw2—11 to 17 inches; red (2.5YR 5/8) clay; common medium distinct yellowish red (5YR 5/8) masses of iron accumulation; common medium prominent light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; firm; plastic; common fine and medium roots; common distinct shiny pressure faces on surfaces of peds; extremely acid; gradual wavy boundary.

Bss1—17 to 26 inches; variegated red (2.5YR 5/8) and light gray (10YR 7/2) clay; moderate medium subangular blocky structure; firm; plastic; common fine and medium roots; common distinct pressure faces on surfaces of peds and common

intersecting slickensides; extremely acid; gradual wavy boundary.

Bss2—26 to 34 inches; variegated light gray (10YR 7/2) and red (2.5YR 5/8) clay; moderate medium subangular blocky structure; firm; plastic; common fine roots; common distinct pressure faces on surfaces of peds and common intersecting slickensides; extremely acid; gradual wavy boundary.

BCcsg1—34 to 44 inches; light gray (10YR 7/2) clay; common medium distinct dark brown (7.5YR 4/2) masses of organic accumulation; yellowish brown (10YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; plastic; few fine roots; common distinct pressure faces on surfaces of peds and common intersecting slickensides; extremely acid; gradual wavy boundary.

BCcsg2—44 to 51 inches; light gray (10YR 7/2) clay; common medium prominent strong brown (7.5YR 5/8) and yellowish red (5YR 5/8) masses of iron accumulation; common medium distinct dark brown (7.5YR 4/2) masses of organic accumulation; moderate medium subangular blocky structure; firm; plastic; common distinct pressure faces on surfaces of peds and few intersecting slickensides; extremely acid; gradual wavy boundary.

BCg—51 to 65 inches; light brownish gray (2.5Y 6/2) clay; common medium prominent reddish yellow (7.5YR 6/8) masses of iron accumulation; dark brown (7.5YR 4/2) masses of organic accumulation; moderate medium subangular blocky structure; firm; plastic; common distinct pressure faces on surfaces of peds; extremely acid.

Range in Characteristics

Solum thickness: 50 to more than 80 inches

Clay content in the control section: 60 to 75 percent

Redoximorphic features: Reduced matrix with iron accumulations beginning at 15 to 40 inches from the surface

Other distinctive soil features: None

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Extremely acid to strongly acid throughout

A or Ap horizon:

Color—hue of 10YR to 5YR, value of 3 or 4, and chroma of 1 to 4

Redoximorphic features—none

Texture—silt loam

Other features—none

Thickness—1 to 3 inches

Bw horizon:

Color—hue of 5YR to 10R, value of 4 or 5, and chroma of 4, 6, or 8

Redoximorphic features—iron accumulations in shades of brown or red; iron depletions in shades of gray

Texture—clay or silty clay

Other features—base saturation of 10 to 30 percent

Thickness—4 to 15 inches

Bss horizon:

Color—hue of 5YR to 10R, value of 4 or 5, and chroma of 4, 6, or 8

Redoximorphic features—few to many iron accumulations in shades of red and brown are within a depth of 20 inches; iron depletions in shades of gray

Texture—clay or silty clay

Other features—intersecting slickensides throughout the horizon

Thickness—10 to 25 inches

BCcsg horizon and Bcsg horizon (where present):

Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 to 3

Redoximorphic features—iron accumulations in shades of red or brown; iron depletions in shades of gray

Texture—clay or silty clay

Other features—intersecting slickensides throughout the horizon

Thickness—10 to 25 inches

BC or BCg horizon:

Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 to 3

Redoximorphic features—iron accumulations in shades of red or brown; iron depletions in shades of gray

Texture—clay or silty clay

Other features—none

Thickness—10 to 22 inches

Betis Series

Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Rapid

Landscape: Coastal plain

Landform: Broad interstream divides

Parent material: Coastal plain sediments from Tertiary age sandy marine deposits

Slope range: 1 to 12 percent

Taxonomic classification: Sandy, siliceous, thermic Psammentic Paleudults

Commonly associated soils: Briley, Darden, and McLaurin

- Briley and Darden soils are at a slightly lower elevation than the Betis soil; Darden soils are on terraces along major streams and do not have a well developed subsoil; and Briley soils have a loamy subsoil
- McLaurin soils are in similar landscape positions as the Betis soil and are loamy throughout

Typical Pedon

Betis loamy fine sand (fig. 7), 1 to 5 percent slopes, in woodland; about 4.8 miles northwest of Brown on Parish Road 630; 0.1 mile south on a logging road, then 100 feet east of the road; SE¹/₄SE¹/₄ sec. 22, T. 14 N., R. 7 W.; latitude 32 degrees 10 minutes 53 seconds N.; longitude 93 degrees 04 minutes 09 seconds W.; Ashland Quadrangle, Louisiana:

- A—0 to 9 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.
- E1—9 to 23 inches; brown (10YR 5/3) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.
- E2—23 to 31 inches; yellowish brown (10YR 5/4) loamy fine sand; weak fine granular structure; very friable; common fine and medium roots; strongly acid; gradual wavy boundary.
- Bw—31 to 52 inches; strong brown (7.5YR 5/6) loamy fine sand; few fine distinct yellowish red (5YR 5/6) masses of iron accumulation; weak fine and medium granular structure; very friable; common fine and medium roots; strongly acid; gradual wavy boundary.
- E/Bt—52 to 70 inches; pale brown (10YR 6/3) loamy fine sand (E) that contains spots, streaks, and lamellae of yellowish red (5YR 5/6) fine sandy loam (Bt) ¹/₈ to ³/₈ inch thick; weak fine and medium subangular blocky structure; very friable; few fine and medium roots; lamellae and streaks contain coated sand grains with some clay bridging between sand grains; strongly acid.

Range in Characteristics

Solum thickness: More than 80 inches
 Clay content in the control section: 2 to 10 percent
 Redoximorphic features: None within 80 inches
 Other distinctive soil features: None
 Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Very strongly acid to moderately acid throughout, except where the surface has been limed

A or Ap horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4
 Redoximorphic features—none
 Texture—loamy fine sand
 Other features—none
 Thickness—4 to 12 inches

E horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4
 Redoximorphic features—none
 Texture—fine sand or loamy fine sand
 Other features—none
 Thickness—0 to 25 inches

Bw horizon:

Color—hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8
 Redoximorphic features—none
 Texture—fine sand or loamy fine sand
 Other features—few to many pockets of clean sand grains
 Thickness—12 to 40 inches

E/Bt horizon:

Color—hue of 10YR, value of 5 to 7, and chroma of 3 or 4 (E); hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8 (Bt); or hue of 5YR, value of 4 or 5, and chroma of 6 or 8 (Bt)
 Redoximorphic features—none
 Texture—fine sand or loamy fine sand (E); loamy fine sand or fine sandy loam (Bt)
 Other features—series of lamellae with a combined thickness of more than 6 inches within a depth of 80 inches (Bt)
 Thickness—12 to 40 inches

Bt horizon (where present):

Color—hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8
 Redoximorphic features—none
 Texture—loamy fine sand
 Other features—none

Bienville Series

Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Landscape: Coastal plain

Landform: Stream terraces

Parent material: Sandy alluvium from rivers and streams

Slope range: 1 to 5 percent

Taxonomic classification: Sandy, siliceous, thermic Psammentic Paleudalfs

Commonly associated soils: Cahaba, Darden, Gurdon, and Guyton

- Cahaba and Gurdon soils are at a slightly higher elevation than the Bienville soil; Cahaba soils are fine-loamy; and Gurdon soils are coarse-silty
- Darden soils are in positions similar to those of the Bienville soil and do not have a well developed subsoil
- Guyton soils are fine-silty and are on flood plains and in low positions on low terraces

Typical Pedon

Bienville loamy fine sand, 1 to 5 percent slopes, in an open field; 7 miles south of Friendship on Louisiana State Highway 501; 0.6 mile east on a farm access road; 175 yards east of house in the southeast corner of an open field; NE¹/₄SE¹/₄ sec. 36, T. 14 N., R. 5 W.; latitude 32 degrees 09 minutes 15 seconds N.; longitude 92 degrees 50 minutes 05 seconds W.; Danville Quadrangle, Louisiana:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; slightly acid; abrupt smooth boundary.

E—7 to 20 inches; brown (7.5YR 5/4) loamy fine sand; massive; very friable; moderately acid; clear wavy boundary.

Bt/E—20 to 48 inches; strong brown (7.5YR 5/6) loamy fine sand (Bt); common streaks and spots of very pale brown (10YR 7/3) uncoated sand grains (E); weak medium subangular blocky structure; very friable; moderately acid; clear wavy boundary.

Bt—48 to 72 inches; brown (7.5YR 5/4) loamy fine sand; common medium and coarse dark yellowish brown (10YR 4/4) spots of finer material; common medium pale brown (10YR 6/3) spots of uncoated sand grains; weak medium blocky structure; very friable; few sand grains coated and bridged with clay; moderately acid.

Range in Characteristics

Solum thickness: 60 to 80 inches

Clay content in the control section: 2 to 15 percent

Redoximorphic features: Clay depletions in shades of brown or gray at 40 to 60 inches from the surface

Other distinctive soil features: None

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Very strongly acid to slightly acid (A or Ap, E, and Bt/E); very strongly acid to moderately acid (Bt)

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4

Redoximorphic features—none

Texture—loamy fine sand

Other features—none

Thickness—4 to 12 inches

E horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 3 or 4

Redoximorphic features—none

Texture—fine sand or loamy fine sand

Other features—none

Thickness—8 to 30 inches

Bt/E horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 3 or 4 (E); hue of 7.5YR or 5YR, value of 4 to 6, and chroma of 4 or 6 (Bt)

Redoximorphic features—none

Texture—fine sand or loamy fine sand

Other features—plotches and pockets of finer textured material and lamellae in some pedons (Bt)

Thickness—15 to 30 inches

Bt horizon:

Color—hue of 7.5YR or 5YR, value of 4 to 6, and chroma of 4 or 6; some pedons have subhorizons with hue of 10YR

Redoximorphic features—clay depletions in shades of brown or gray

Texture—fine sand or loamy fine sand (upper part); fine sandy loam (lower part)

Other features—few or common clay depletions in shades of brown or gray

Bowie Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderately slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Tertiary age loamy and clayey deposits

Slope range: 1 to 8 percent

Taxonomic classification: Fine-loamy, siliceous, thermic Plinthic Paleudults

Commonly associated soils: Briley, Mahan, Sacul, and Trep

- Briley and Mahan soils are at a higher elevation than the Bowie soil; Briley soils have thick sandy surface and subsurface layers; and Mahan soils have a clayey and loamy subsoil
- Sacul soils are in similar landscape positions as the Bowie soil and have a clayey and loamy subsoil
- Trep soils have thick sandy surface and subsurface layers and are at a slightly higher elevation than the Bowie soil

Typical Pedon

Bowie very fine sandy loam, 5 to 8 percent slopes, in woodland; about 1.6 miles west of the intersection of State Highway 154 and Parish Road 793; 0.3 mile north of Parish Road 793 on Parish Road 795; then 200 feet west of the road; NW¹/₄NW¹/₄ sec. 9, T. 17 N., R. 7 W.; latitude 32 degrees 28 minutes 53 seconds N.; longitude 93 degrees 06 minutes 07 seconds W.; Sailes Quadrangle, Louisiana:

- Ap—0 to 5 inches; brown (10YR 5/3) very fine sandy loam; weak fine granular structure; friable; many fine and common medium roots; about 2 to 3 percent, by volume, ironstone pebbles ¹/₈ to ¹/₄ inch in diameter; moderately acid; clear smooth boundary.
- E—5 to 10 inches; light yellowish brown (10YR 6/4) very fine sandy loam; weak fine granular structure; friable; common fine and medium roots; about 2 to 3 percent ironstone pebbles ¹/₈ to ¹/₄ inch in diameter; moderately acid; clear wavy boundary.
- Bt1—10 to 18 inches; yellowish brown (10YR 5/6) sandy clay loam; few fine prominent yellowish red (5YR 5/6) masses of iron accumulation in the lower part of horizon; moderate medium subangular blocky structure; friable to firm; common fine and medium roots; common distinct clay films on faces of peds; about 2 to 3 percent, by volume, ironstone pebbles ¹/₈ to ¹/₄ inch in diameter; strongly acid; clear wavy boundary.
- Bt2—18 to 22 inches; yellowish brown (10YR 5/8) sandy clay loam; few fine prominent red (2.5YR 4/6) masses of iron accumulation; moderate medium subangular blocky structure; friable to firm; common fine and few medium roots; common distinct clay films on faces of peds; about 2 to 3 percent, by volume, ironstone pebbles ¹/₈ to ¹/₄ inch in diameter; few fine nodular plinthite bodies; strongly acid; clear wavy boundary.
- Btv—22 to 31 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/6) masses of iron accumulation; moderate medium subangular blocky structure;

friable to firm; common fine roots; common distinct clay films on faces of peds; about 2 to 3 percent, by volume, ironstone pebbles ¹/₈ to ¹/₄ inch in diameter; about 4 percent, by volume, yellowish brown and red plinthite bodies; strongly acid; clear wavy boundary.

- Btv/E—31 to 44 inches; brownish yellow (10YR 6/8) loam (Bt); common medium faint yellowish brown (10YR 5/8) and prominent red (2.5YR 4/6) masses of iron accumulation; moderate medium subangular blocky structure; friable to firm; few fine roots; common distinct clay films on faces of peds; about 6 percent, by volume, yellowish brown and red nodular plinthite bodies; about 5 percent, by volume, interfingers of very pale brown (10YR 7/4) E material on faces of peds and between peds; about 2 to 3 percent, by volume, ironstone pebbles ¹/₈ to ¹/₄ inch in diameter; strongly acid; clear wavy boundary.
- B't—44 to 62 inches; variegated red (2.5YR 4/6), yellowish brown (10YR 5/6), and light brownish gray (10YR 6/2) sandy clay loam; moderate medium subangular blocky structure; firm, some peds are slightly brittle; common distinct clay films on faces of peds; about 2 to 3 percent, by volume, ironstone pebbles with a few yellowish brown and red plinthite nodules ¹/₈ to ¹/₄ inch in diameter; very strongly acid.

Range in Characteristics

- Solum thickness: 60 to more than 80 inches
 Clay content in the control section: 18 to 35 percent
 Redoximorphic features: Iron depletions in shades of gray at 30 to 60 inches from the surface
 Other distinctive soil features: Layers with more than 5 percent plinthite and brittle peds at 25 to 60 inches from the surface
 Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface
 Reaction: Very strongly acid to slightly acid (A and E); very strongly acid or strongly acid (subsoil)

A or Ap horizon:

- Color—hue of 10YR, value of 3 to 5, and chroma of 2 to 4; where value is 3, thickness is less than 7 inches
 Redoximorphic features—none
 Texture—very fine sandy loam
 Other features—none
 Thickness—2 to 8 inches

E horizon and EB or BE horizon (where present):

- Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 or 4; also chroma of 6 (EB or BE)

Redoximorphic features—none
 Texture—very fine sandy loam, fine sandy loam,
 or loamy fine sand
 Other features—none
 Thickness—0 to 12 inches

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6,
 and chroma of 4, 6, or 8
 Redoximorphic features—none to many iron
 accumulations in shades of brown, yellow, or
 red
 Texture—loam, clay loam, or sandy clay loam
 Other features—up to 4 percent nodular plinthite;
 none to few pockets and lenses of uncoated
 sand grains that have hue of 10YR, value of 6,
 and chroma of 3 or 4
 Thickness—5 to 45 inches

Btv horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6,
 and chroma of 4, 6, or 8
 Redoximorphic features—none to many iron
 accumulations in shades of brown or red
 Texture—loam, clay loam, or sandy clay loam
 Other features—5 to 15 percent nodular plinthite;
 none to few pockets, lenses, and intrusions of
 uncoated sand grains that have hue of 10YR,
 value of 6 or 7, and chroma of 2 to 4
 Thickness—0 to 20 inches

Btv/E horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6,
 and chroma of 4, 6, or 8
 Redoximorphic features—few to many iron
 accumulations in shades of red or yellow; iron
 depletions or clay depletions in shades of gray
 Texture—loam, clay loam, or sandy clay loam
 Other features—5 to 15 percent nodular plinthite;
 5 to 20 percent lenses and intrusions of
 uncoated sand or silt grains that have hue of
 10YR, value of 6 or 7, and chroma of 2 to 4
 Thickness—6 to 22 inches

B't horizon and BC horizon (where present):

Color—variegated in shades of brown and gray
 Redoximorphic features—few to many iron
 accumulations in shades of red or yellow and
 iron or clay depletions in shades of gray
 Texture—sandy clay loam, clay loam, or sandy
 clay
 Other features—0 to 4 percent nodular plinthite; 0
 to 4 percent lenses and pockets of uncoated
 sand or silt grains that have hue of 10YR,
 value of 6 or 7, and chroma of 2 to 4

Boykin Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Coastal plain
Landform: Uplands

Parent material: Coastal plain sediments from
 Pleistocene age sandy and loamy marine
 sediments

Slope range: 1 to 12 percent

Taxonomic classification: Loamy, siliceous, thermic
 Arenic Paleudults

Commonly associated soils: Malbis, McLaurin, and
 Ruston

- All of these soils are loamy throughout the profile
- Malbis and McLaurin soils are at a lower elevation
 than the Boykin soil
- Ruston soils are in positions similar to those of the
 Boykin soil

Typical Pedon

Boykin loamy fine sand, 1 to 5 percent slopes, in
 woodland; 0.4 mile northeast of Fryeburg; 2.2 miles
 west of the intersection of Louisiana State Highways
 516 and 154; 1.9 miles north on Parish Road 499;
 0.3 mile east on access road; NW¹/₄SW¹/₄ sec. 26,
 T. 17 N., R. 8 W.; latitude 32 degrees 25 minutes
 48 seconds N.; longitude 93 degrees 09 minutes
 56 seconds W.; Fryeburg Quadrangle, Louisiana:

A—0 to 6 inches; brown (10YR 4/3) loamy fine sand;
 weak fine granular structure; very friable; many
 medium roots; very strongly acid; gradual smooth
 boundary.

E1—6 to 15 inches; pale brown (10YR 6/3) loamy fine
 sand; weak fine granular structure; very friable;
 few medium roots; moderately acid; clear smooth
 boundary.

E2—15 to 27 inches; light yellowish brown (10YR
 6/4) loamy fine sand; massive; very friable; few
 fine roots; strongly acid; gradual wavy boundary.

Bt1—27 to 52 inches; red (2.5YR 4/6) sandy clay
 loam; moderate medium subangular blocky
 structure; friable; few fine roots; common distinct
 clay films on faces of peds; strongly acid; gradual
 smooth boundary.

Bt2—52 to 67 inches; red (2.5YR 5/6) sandy clay
 loam; moderate medium subangular blocky
 structure; friable; few fine roots; common distinct
 clay films on faces of peds; sand grains coated
 and bridged with clay; strongly acid; gradual
 smooth boundary.

Bt3—67 to 81 inches; red (2.5YR 5/8) sandy clay
 loam; few medium prominent strong brown

(7.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
 Clay content in the control section: 18 to 30 percent
 Redoximorphic features: None within 80 inches
 Other distinctive soil features: Thickness of the epipedon is 20 to 40 inches
 Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface
 Reaction: Very strongly acid to slightly acid (A and E); very strongly acid or moderately acid (Bt)

A or Ap horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4
 Redoximorphic features—none
 Texture—loamy fine sand
 Other features—none
 Thickness—4 to 12 inches

E horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4
 Redoximorphic features—none
 Texture—loamy fine sand
 Other features—none
 Thickness—9 to 30 inches

Bt horizon:

Color—hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 6 or 8
 Redoximorphic features—none
 Texture—fine sandy loam or sandy clay loam
 Other features—0 to 4 percent plinthite nodules; none to common skeletans with chroma of 2 or 3 (lower part)
 Thickness—30 to 70 inches

Briley Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Tertiary age sandy and loamy marine deposits

Slope range: 1 to 12 percent

Taxonomic classification: Loamy, siliceous, thermic Arenic Paleudults

Commonly associated soils: Betis, Bowie, Sacul, and Trep

- Betis soils are at a slightly higher elevation than the Briley soil and are sandy throughout
- Bowie and Sacul soils are at a lower elevation than the Briley soil; Bowie soils are loamy throughout; and Sacul soils have a clayey and loamy subsoil
- Trep soils are in positions similar to those of the Briley soil and have a brownish or yellowish subsoil

Typical Pedon

Briley loamy fine sand, 1 to 5 percent slopes, in woodland; about 3.5 miles west of Lucky; 5.2 miles west of the intersection of Louisiana State Highways 4 and 9; 1 mile south on Parish Road 659; 1.3 miles east on access road, then 100 feet east of the road; SW¹/₄NE¹/₄ sec. 26, T. 15 N., R. 7 W.; latitude 32 degrees 15 minutes 32 seconds N.; longitude 93 degrees 15 minutes 32 seconds W.; Sparta Quadrangle, Louisiana:

- A—0 to 5 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; gradual smooth boundary.
- E1—5 to 21 inches; light yellowish brown (10YR 6/4) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; moderately acid; clear wavy boundary.
- E2—21 to 28 inches; brown (7.5YR 5/4) loamy fine sand; massive; very friable; many fine and few medium and coarse roots; strongly acid; gradual wavy boundary.
- Bt1—28 to 34 inches; yellowish red (5YR 5/8) sandy clay loam; few medium distinct red (2.5YR 4/6) masses of iron accumulation; weak medium subangular blocky structure; friable; common distinct clay films on faces of peds; many fine roots; strongly acid; gradual wavy boundary.
- Bt2—34 to 60 inches; red (2.5YR 4/6) sandy clay loam; few medium distinct light yellowish brown (10YR 6/4) lithochromic mottles; moderate medium subangular blocky structure; few fine roots; common distinct clay films on faces of peds; sand grains coated and bridged with clay; strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
 Clay content in the control section: 15 to 35 percent
 Redoximorphic features: None within 80 inches
 Other distinctive soil features: None

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Very strongly acid to slightly acid (A and E); very strongly acid to moderately acid (Bt)

A or Ap horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4

Redoximorphic features—none

Texture—loamy fine sand

Other features—none

Thickness—4 to 10 inches

E horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 2 to 4

Redoximorphic features—none

Texture—loamy fine sand

Other features—none

Thickness—10 to 36 inches

BE horizon (where present):

Color—shades of red or brown

Redoximorphic features—none

Texture—loamy fine sand

Other features—none

Thickness—0 to 5 inches

Bt horizon:

Color—hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8; some pedons also have hue of 7.5YR in the lower part

Redoximorphic features—none

Texture—fine sandy loam or sandy clay loam

Other features—up to 4 percent plinthite in some pedons

Thickness—40 to 60 inches

Buxin Series

Depth class: Very deep

Drainage class: Poorly drained

Permeability: Very slow

Landscape: Alluvial valley

Landform: Flood plain

Parent material: Clayey alluvium from the Red River

Slope range: 0 to 1 percent

Taxonomic classification: Fine, mixed, thermic Vertic Hapludolls

Commonly associated soils: Moreland

• Moreland soils are in slightly higher positions on the landscape than the Buxin soil and do not have a buried surface horizon within the solum

Typical Pedon

Buxin clay, in an area of Buxin-Moreland clays,

frequently flooded, in cropland; about 1.6 miles south of Hall Summit Lookout Tower on Highway 4; 1.1 miles west on a logging road to Loggy Bayou flood plain; 0.5 mile west on old turnrow, 0.3 mile south on turnrow, then 50 feet west of turnrow; SE¹/₄NW¹/₄ sec. 28, T. 15 N., R. 10 W.; latitude 32 degrees 15 minutes 15 seconds N.; longitude 93 degrees 23 minutes 28 seconds W.; Bossier Point Quadrangle, Louisiana:

Ap—0 to 7 inches; dark reddish brown (5YR 3/3) clay; moderate fine subangular blocky structure; firm; very plastic; common fine roots; strongly acid; clear smooth boundary.

Bw—7 to 25 inches; dark reddish brown (5YR 3/3) clay; common medium distinct dark gray (7.5YR 4/1) iron depletions; moderate medium subangular blocky structure; firm; common fine and few medium roots; neutral; abrupt smooth boundary.

Ab—25 to 37 inches; dark gray (5YR 4/1) clay; common medium distinct dark reddish brown (5YR 3/3) masses of iron accumulation; moderate medium subangular blocky structure; firm; common fine roots; moderately alkaline; clear wavy boundary.

Bssgb—37 to 50 inches; dark gray (5YR 4/1) clay; common medium distinct dark reddish brown (2.5YR 3/4) and common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; few fine roots; common medium slickensides; moderately alkaline; gradual wavy boundary.

C—50 to 65 inches; dark reddish brown (5YR 3/3) clay; common medium faint dark reddish brown (5YR 4/3) masses of iron accumulation; common medium distinct dark gray (5YR 4/1) iron depletions; massive; firm; plastic; slightly alkaline.

Range in Characteristics

Solum thickness: 30 to 60 inches

Clay content in the control section: 40 to 55 percent

Redoximorphic features: Iron accumulations in shades of brown and iron depletions in shades of gray below 4 inches from the surface

Other distinctive soil features: Buried A horizon at 20 to 36 inches from the surface

Aluminum saturation: Less than 10 percent within 30 inches from the surface

Reaction: Strongly acid to slightly alkaline (Ap); slightly acid to slightly alkaline (Bw); slightly acid to moderately alkaline (underlying horizons)

Ap horizon:

Color—hue of 7.5YR or 2.5YR, value of 2 or 3, and chroma of 2 to 4
 Redoximorphic features—none
 Texture—clay
 Other features—none
 Thickness—4 to 10 inches

Bw horizon:

Color—hue of 7.5YR or 2.5YR, value of 2 or 3, and chroma of 2 to 4 above 10 inches; hue of 5YR or 2.5YR, value of 3 or 4, and chroma of 2 to 4 below 10 inches
 Redoximorphic features—iron accumulations in shades of red or brown; iron depletions in shades of gray
 Texture—clay or silty clay
 Other features—none
 Thickness—10 to 30 inches

Ab and Bssgb horizons:

Color—hue of 10YR or 5YR, value of 3 or 4, and chroma of 1 or 2; or the horizon is neutral with value of 3 or 4
 Redoximorphic features—iron accumulations in shades of red or brown
 Texture—clay or silty clay
 Other features—Slickensides and pressure faces
 Thickness—5 to 35 inches

C or Cg horizon:

Color—variegated in shades of red, brown, or gray
 Redoximorphic features—iron accumulations in shades of red or brown; iron depletions in shades of gray
 Texture—clay, silty clay, or silty clay loam
 Other features—none

Cahaba Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landscape: Coastal plain

Landform: Stream terraces

Parent material: Loamy and sandy alluvium from rivers and streams

Slope range: 1 to 5 percent

Taxonomic classification: Fine-loamy, siliceous, thermic Typic Hapludults

Commonly associated soils: Bienville, Dubach, and Guyton

- Bienville soils are at a slightly lower position on the landscape than the Cahaba soil and are sandy throughout
- Dubach soils are in positions similar to those of the Cahaba soil and have a brownish or yellowish subsoil
- Guyton soils are on low terraces and on flood plains and are fine-silty and poorly drained

Typical Pedon

Cahaba fine sandy loam, 1 to 5 percent slopes, in woodland; about 7 miles south of Friendship on Louisiana State Highway 501; 0.6 mile east of Louisiana State Highway 501 on a farm road, 180 feet southeast of the road along a fence line, then 80 feet east of the fence line; NE¹/₄SE¹/₄ sec. 36, T. 14 N., R. 5 W.; latitude 32 degrees 09 minutes 11 seconds N.; longitude 92 degrees 50 minutes 19 seconds W.; Danville Quadrangle, Louisiana:

- Ap—0 to 4 inches; grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; very friable; many fine and common medium roots; strongly acid; clear smooth boundary.
- E—4 to 15 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak fine granular structure; very friable; many fine and common medium roots; very strongly acid; clear smooth boundary.
- Bt1—15 to 26 inches; yellowish red (5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine and few medium roots; common distinct clay films on surfaces of peds; very strongly acid; gradual wavy boundary.
- Bt2—26 to 43 inches; yellowish red (5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; common distinct clay films on surfaces of peds; few fine and medium pockets of clean sand grains; very strongly acid; gradual wavy boundary.
- BC—43 to 50 inches; strong brown (7.5YR 5/6) fine sandy loam; common medium distinct reddish yellow (7.5YR 6/8) masses of iron accumulation; weak medium subangular blocky structure; friable; few fine pockets of clean sand grains; very strongly acid; gradual wavy boundary.
- C—50 to 60 inches; brownish yellow (10YR 6/8) fine sandy loam; massive; friable; few fine pockets of uncoated sand grains; few fine roots; very strongly acid.

Range in Characteristics

Solum thickness: 36 to 60 inches

Clay content in the control section: 18 to 35 percent

Redoximorphic features: None

Other distinctive soil features: None

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface
 Reaction: Very strongly acid to moderately acid throughout, except where the surface has been limed

A or Ap horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 2 to 4
 Redoximorphic features—none
 Texture—fine sandy loam
 Other features—none
 Thickness—4 to 8 inches

E horizon:

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4; or hue of 7.5YR, value of 5, and chroma of 6 or 8
 Redoximorphic features—none
 Texture—fine sandy loam or loam
 Other features—none
 Thickness—0 to 12 inches

Bt horizon:

Color—hue of 5YR to 10R, value of 4 or 5, and chroma of 6 or 8
 Redoximorphic features—none
 Texture—sandy clay loam, loam, or clay loam
 Other features—silt content is 20 to 50 percent
 Thickness—24 to 56 inches

BC horizon:

Color—strong brown, yellowish red, or red
 Redoximorphic features—none
 Texture—sandy loam or fine sandy loam
 Other features—none
 Thickness—0 to 20 inches

C horizon:

Color—variegated in shades of yellowish brown to red
 Redoximorphic features—none
 Texture—stratified layers of sand, loamy sand, and fine sandy loam
 Other features—none
 Thickness—More than 20 inches

Darden Series

Depth class: Very deep

Drainage class: Excessively drained

Permeability: Rapid

Landscape: Coastal plain

Landform: Uplands and low terraces

Parent material: Coastal plain sediments and alluvium from Tertiary age sandy marine sediments

Slope range: 1 to 5 percent

Taxonomic classification: Thermic, coated Typic Quartzipsamments

Commonly associated soils: Betis, Cahaba, Dubach, McLaurin, and Sacul

- Betis and McLaurin soils are at a higher elevation on uplands than the Darden soil; Betis soils have an argillic horizon within their solum; and McLaurin soils are coarse-loamy
- Cahaba soils are on low terraces and are fine-loamy
- Dubach soils are on high terraces and are coarse-silty
- Sacul soils are at a lower elevation on uplands than the Darden soil and have a clayey and loamy subsoil

Typical Pedon

Darden loamy fine sand (fig. 8), 1 to 5 percent slopes, in planted pines; about 2.3 miles east of Lucky on Louisiana State Highway 4; 0.1 mile south on Parish Road 685, then 100 feet west of the road; NE¹/₄SE¹/₄ sec. 24, T. 15 N., R. 7 W.; latitude 32 degrees 16 minutes 16 seconds N.; longitude 93 degrees 03 minutes 10 seconds W.; Sparta Quadrangle, Louisiana:

- A—0 to 9 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; gradual wavy boundary.
- Bw1—9 to 22 inches; brown (10YR 5/3) loamy fine sand; common medium distinct dark gray (10YR 4/1) organic accumulations; weak fine granular structure; very friable; few fine pockets of clean sand grains; common fine and medium roots; strongly acid; gradual irregular boundary.
- Bw2—22 to 32 inches; light yellowish brown (10YR 6/4) loamy fine sand; common fine faint yellowish brown (10YR 5/6) masses of iron accumulation; weak fine granular structure; very friable; few fine pockets of clean sand grains; common fine and few medium roots; strongly acid; gradual wavy boundary.
- Bw3—32 to 52 inches; very pale brown (10YR 7/4) loamy fine sand; few fine faint light yellowish brown (10YR 5/6) masses of iron accumulation; weak fine granular structure; very friable; few fine pockets of clean sand grains; few fine roots; strongly acid; gradual wavy boundary.
- Bw4—52 to 68 inches; very pale brown (10YR 8/3) loamy fine sand; few fine faint yellowish brown masses of iron accumulation; weak fine granular structure; very friable; few fine pockets of clean sand grains; few fine roots; strongly acid; gradual wavy boundary.



Figure 7.—Profile of Betis loamy fine sand.

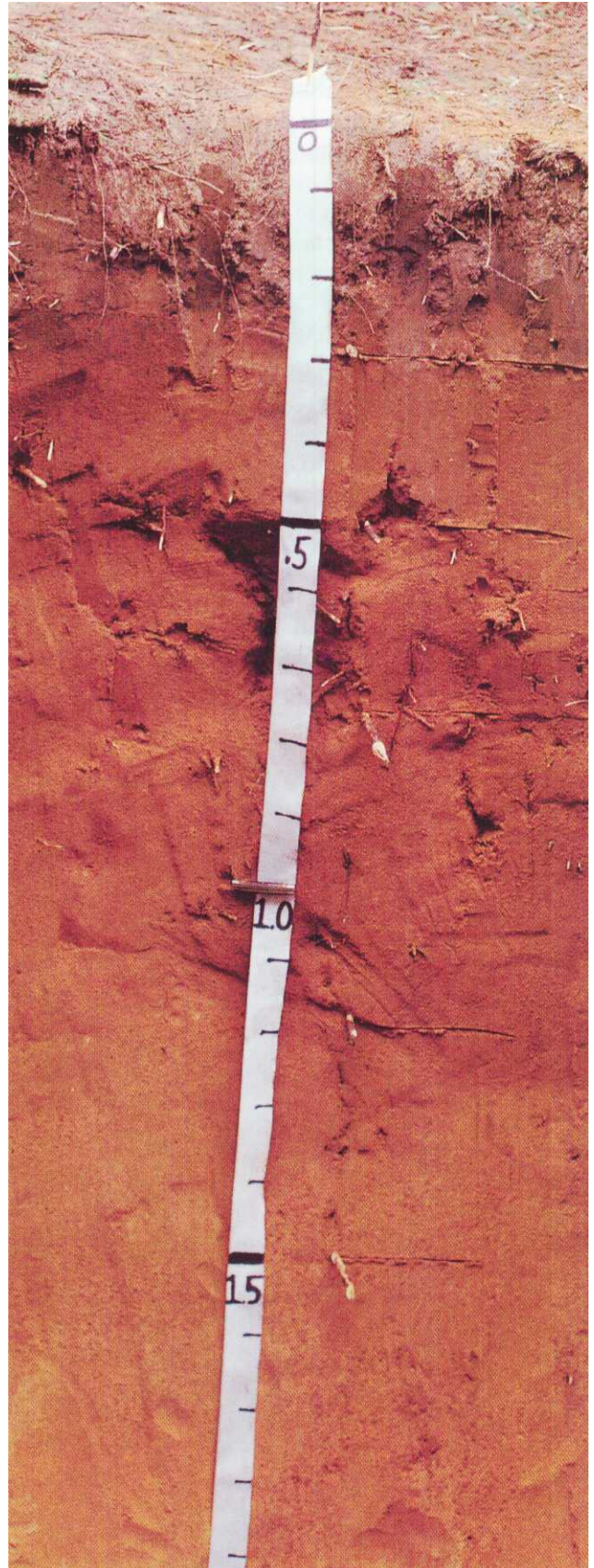


Figure 8.—Profile of Darden loamy fine sand.

Range in Characteristics

Solum thickness: More than 80 inches
 Clay content in the control section: 2 to 10 percent
 Redoximorphic features: None within 80 inches
 Other distinctive soil features: 10 to 25 percent silt plus clay at 10 to 40 inches from the surface
 Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface
 Reaction: Very strongly acid to slightly acid (A and upper part of the Bw horizon); very strongly acid to neutral (lower part of the Bw horizon)

A or Ap horizon:

Color—hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 2, 3, 4, or 6
 Redoximorphic features—none
 Texture—loamy fine sand
 Other features—none
 Thickness—2 to 10 inches

Bw horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 3, 4, 6, or 8
 Redoximorphic features—none
 Texture—loamy fine sand with thin strata of fine sand; loamy sand or sand in some pedons
 Other features—none to few thin lamellae and pockets of clean sand grains with chroma of 1 or 2 are below a depth of 40 inches
 Thickness—70 or more inches

Darley Series

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderately slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Tertiary age, iron-rich clayey marine deposits

Slope range: 1 to 12 percent

Taxonomic classification: Clayey, kaolinitic, thermic Typic Hapludults

Commonly associated soils: Briley, Mahan, and Sacul

- Briley soils are at a lower elevation than the Darley soil and have thick sandy surface and subsurface layers
- Mahan soils are in positions similar to those of the Darley soil and do not have ironstone layers in the subsoil
- Sacul soils are at a slightly lower elevation than the Darley soil and have gray iron depletions in the upper part of the subsoil

Typical Pedon

Darley gravelly fine sandy loam, 1 to 5 percent slopes, in woodland; about 2.7 miles west of Mount Lebanon on Parish Road 250, then 350 feet east of the road; SW¹/₄NE¹/₄ sec. 32, T. 18 N., R. 6 W.; latitude 32 degrees 30 minutes 18 seconds N.; longitude 93 degrees 00 minutes 14 seconds W.; Gibsland Quadrangle, Louisiana:

Ap—0 to 2 inches; brown (7.5YR 4/4) gravelly fine sandy loam; weak fine granular structure; very friable; many fine roots; about 20 percent, by volume, rounded and angular fragments of ironstone that range from ¹/₄ to 1 inch in diameter; strongly acid; clear wavy boundary.

Bt1—2 to 18 inches; red (2.5YR 4/8) sandy clay; moderate medium subangular blocky structure; friable; common fine and medium roots; about 5 percent, by volume, rounded and angular fragments of ironstone that range from ¹/₄ inch to 2 inches in diameter; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—18 to 24 inches; red (2.5YR 5/8) sandy clay; moderate medium subangular blocky structure; friable; common fine and medium roots; common fine pockets of gray (10YR 6/1) clay (kaolin) less than ¹/₈ inch in diameter; about 5 percent, by volume, angular fragments of ironstone that range from ¹/₄ inch to 2 inches in diameter; common prominent clay films on faces of peds and around fragments of ironstone; very strongly acid; abrupt wavy boundary.

Bt/Bsm—24 to 54 inches; alternating layers of red (2.5YR 5/6) sandy clay with few fine prominent strong brown (7.5YR 5/8) masses (Bt) and nearly continuous ironstone ledges ¹/₂ inch to 6 inches thick (Bsm); weak medium subangular blocky structure (Bt); friable (Bt); four ironstone layers separated by sandy clay material (Bsm); average lateral distance between fractures ranges from 4 to 8 inches; few fine pores (Bt); common distinct clay films on faces of peds; many small pockets of gray (10YR 6/1) clay (kaolin) are embedded within the Bt material; very strongly acid; abrupt smooth boundary.

BC—54 to 72 inches; red (2.5YR 4/8) sandy loam; few medium prominent white (10YR 8/1) bodies of clay (kaolin); weak medium subangular blocky structure; friable; few fine pores; strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
 Clay content in the control section: 35 to 60 percent

Redoximorphic features: None within 80 inches
 Other distinctive soil features: Fractured ironstone layers at 10 to 40 inches from the surface
 Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface
 Reaction: Very strongly acid to slightly acid (A and E); very strongly acid or strongly acid (subsoil layers)

A or Ap horizon:

Color—hue of 10YR to 5YR, value of 4 or 5, and chroma of 3, 4, 6, or 8
 Redoximorphic features—none
 Texture—gravelly fine sandy loam
 Other features—15 to 35 percent gravel size ironstone fragments
 Thickness—2 to 8 inches

Bt horizon:

Color—hue of 5YR or 2.5YR, value of 3 to 5, and chroma of 3, 4, 6, or 8
 Redoximorphic features—none
 Texture—sandy clay, clay loam, clay, and their gravelly analogues
 Other features—1 to 20 percent gravel size ironstone fragments
 Thickness—12 to 36 inches

Bt/Bsm horizon:

Color—hue of 7.5YR to 2.5YR, value of 3 to 5, and chroma of 4, 6, or 8
 Redoximorphic features—none
 Texture—sandy clay, clay loam, clay, and their gravelly analogues (Bt)
 Other features—fractured ironstone layers that are 1/2 inch to 12 inches thick and 2 to 20 inches apart (Bsm); in some pedons, these layers are spheroidally configured rather than horizontal; few to many pockets and strata of kaolinite in shades of white or gray are in most pedons; pockets and lenses of sandy materials are few or common in some pedons
 Thickness—12 to 30 inches

BC horizon:

Color—hue of 10YR to 2.5YR, value of 4 to 6, and chroma of 4, 6, or 8
 Redoximorphic features—none
 Texture—fine sandy loam, sandy loam, sandy clay loam, and their gravelly analogues
 Other features—brittle peds are few or common and make up as much as 20 percent of the matrix in some pedons

Dubach Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderately slow

Landscape: Coastal plain

Landform: Stream terraces

Parent material: Loamy alluvium from streams

Slope range: 1 to 5 percent

Taxonomic classification: Fine-loamy, siliceous, thermic Typic Paleudults

Commonly associated soils: Cahaba and Gurdon

- Cahaba soils are in positions similar to those of the Dubach soil and have a reddish subsoil
- Gurdon soils are in lower positions than the Dubach soil, are somewhat poorly drained, and have gray iron depletions within 30 inches of the soil surface

Typical Pedon

Dubach fine sandy loam, 1 to 5 percent slopes, in woodland; about 0.3 mile west of the intersection of Parish Roads 793 and 794, then 100 feet south of the roads; SE 1/4 NW 1/4 sec. 7, T. 17 N., R. 7 S.; latitude 32 degrees 28 minutes 47 seconds N.; longitude 93 degrees 06 minutes 25 seconds W.; Sailes Quadrangle, Louisiana:

Ap—0 to 6 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; very friable; many fine roots; few fine pores; moderately acid; abrupt smooth boundary.

E—6 to 14 inches; yellowish brown (10YR 5/4) fine sandy loam; common fine faint yellowish brown masses of iron accumulation; weak fine subangular blocky structure; very friable; common fine roots; common fine pores; strongly acid; clear smooth boundary.

Bt1—14 to 22 inches; strong brown (7.5YR 5/6) loam; common medium distinct light yellowish brown (10YR 6/4) iron depletions; moderate medium subangular blocky structure; friable; common fine and medium roots; many medium pores; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—22 to 31 inches; strong brown (7.5YR 5/6) sandy clay loam; common medium distinct light yellowish brown (10YR 6/4) iron depletions; moderate medium subangular blocky structure; firm; common fine and medium roots; common fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—31 to 39 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular

blocky structure; firm; few fine and medium roots; few fine pores; common distinct clay films on faces of pedis; very strongly acid; gradual wavy boundary.

Bt4—39 to 56 inches; brownish yellow (10YR 6/6) sandy clay loam; few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; firm; common distinct clay films on faces of pedis; common medium pockets of brown (10YR 5/3) clean sand grains; very strongly acid; gradual wavy boundary.

Btv1—56 to 64 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium prominent red (2.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm, slightly brittle; few fine roots; few fine pores; common distinct clay films on faces of pedis; 3 percent nodules of plinthite; common medium pockets of brown (10YR 5/3) clean sand grains; very strongly acid; gradual wavy boundary.

Btv2—64 to 72 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium prominent light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; firm, slightly brittle; few fine roots; few fine pores; common distinct clay films on faces of pedis; about 3 percent yellowish brown nodules of plinthite with red centers; very strongly acid; clear wavy boundary.

Range in Characteristics

Solum thickness: More than 80 inches

Clay content in the control section: 18 to 33 percent

Redoximorphic features: Iron accumulations at 25 to 70 inches from the surface; iron depletions in shades of gray below 40 inches from the surface

Other distinctive soil features: Layers with up to 5 percent plinthite at 25 to 70 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Very strongly acid to moderately acid (A and E); very strongly acid or strongly acid (subsoil layers)

A or Ap horizon:

Color—hue of 7.5YR, value of 4 or 5, and chroma of 2 to 4; or hue of 10YR, value of 3 to 5, and chroma of 2 to 4

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—3 to 8 inches

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 3, 4, or 6

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—0 to 10 inches

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4, 6, or 8

Redoximorphic features—none to common iron accumulations in shades of brown or red

Texture—loam, sandy clay loam, or clay loam

Other features—none

Thickness—15 to 65 inches

Btv horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4, 6, or 8

Redoximorphic features—iron accumulations in shades of brown or red; iron depletions in shades of gray

Texture—loam, sandy clay loam, or clay loam

Other features—up to 5 percent plinthite nodules

Thickness—10 to 48 inches

B't horizon (where present):

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4, 6, or 8

Redoximorphic features—iron accumulations in shades of brown or red; iron depletions in shades of gray

Texture—sandy clay loam or clay loam

Other features—none

Thickness—0 to 25 inches

Eastwood Series

Depth class: Deep

Drainage class: Moderately well drained

Permeability: Very slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Tertiary age loamy and shaley deposits

Slope range: 1 to 20 percent

Taxonomic classification: Fine, montmorillonitic, thermic Vertic Hapludalfs

Commonly associated soils: Bowie, Briley, Guyton, and Sawyer

• Bowie and Sawyer soils are at a lower elevation than the Eastwood soil; Bowie soils are fine-loamy; and Sawyer soils are fine-silty

- Briley soils have thick sandy surface and subsurface layers and are at a higher elevation than the Eastwood soil
- Guyton soils are on narrow flood plains of drainageways and are fine-silty

Typical Pedon

Eastwood fine sandy loam, 1 to 5 percent slopes, in woodland; about 4.2 miles southwest of Ringgold on Louisiana State Highway 4; 0.1 mile west of the intersection of Highway 4 and Parish Road 519, 120 feet south of the highway, then 100 feet west of a fire station; SE¹/₄NW¹/₄ sec. 23, T. 15 N., R. 9 W.; latitude 32 degrees 16 minutes 35 seconds N.; longitude 93 degrees 21 minutes 42 seconds W.; Ringgold Quadrangle, Louisiana:

- A—0 to 2 inches; dark yellowish brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; common fine roots; very strongly acid; clear smooth boundary.
- E—2 to 8 inches; strong brown (7.5YR 5/6) fine sandy loam; common medium distinct light yellowish brown (10YR 6/4) iron depletions; weak fine granular structure; friable; common fine and few medium roots; very strongly acid; clear wavy boundary.
- Bt1—8 to 16 inches; red (2.5YR 4/6) clay; few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; very firm; common fine and medium roots; very strongly acid; gradual wavy boundary.
- Bt2—16 to 22 inches; red (2.5YR 4/6) clay; few medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; common medium prominent light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; very firm; common fine and few medium roots; very strongly acid; gradual wavy boundary.
- Bt3—22 to 30 inches; variegated red (2.5YR 4/6), light brownish gray (10YR 6/2), and light olive brown (2.5Y 5/4) clay; moderate medium subangular blocky structure; very firm; few fine roots; few fine pressure faces; very strongly acid; gradual wavy boundary.
- Bt4—30 to 45 inches; variegated light brownish gray (10YR 6/2), red (2.5YR 4/8), and yellowish brown (10YR 5/8) silty clay; moderate medium subangular blocky structure; firm; few fine pressure faces; common fine roots; very strongly acid; gradual wavy boundary.
- BCg—45 to 50 inches; light brownish gray (10YR 6/2) silty clay loam; few coarse prominent yellowish

brown (10YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; friable; few fine roots; few distinct clay films on faces of some peds; very strongly acid; gradual wavy boundary.

Cg—50 to 65 inches; variegated light gray (2.5Y 7/2) and brown (7.5YR 4/2) silty clay loam; massive; friable; few fine roots in upper part; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches

Clay content in the control section: 40 to 60 percent

Redoximorphic features: Few or common iron depletions in shades of gray and masses of iron accumulation in shades of red or brown beginning at 10 to 20 inches from the surface

Other distinctive soil features: Cracks open 1/2 inch or more wide when dry at 20 or more inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Very strongly acid to moderately acid (A and E); extremely acid to moderately acid (Bt); extremely acid to slightly acid (BC); extremely acid to neutral (C)

A or Ap horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 2 to 4

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—2 to 6 inches

E horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3, 4, or 6

Redoximorphic features—none

Texture—fine sandy loam, very fine sandy loam, silt loam, or loam

Other features—combined thickness of the A and E horizons is 3 to 10 inches

Thickness—0 to 8 inches

Bt1 and Bt2 horizons:

Color—hue of 5YR or 2.5YR, value of 3 to 5, and chroma of 6 or 8

Redoximorphic features—none to common iron accumulations in shades of brown; few or common iron depletions in shades of gray are within the upper 10 inches

Texture—clay or silty clay

Other features—pressure faces and slickensides are none to common (Bt2)

Thickness—10 to 30 inches

Bt layers below Bt2 horizon:

Color—variegated in shades of red, brown, and gray
 Redoximorphic features— none to many iron accumulations in shades of red, brown, and yellow and iron depletions in shades of gray
 Texture—clay, silty clay, silty clay loam, or clay loam
 Other features—pressure faces and slickensides
 Thickness—combined Bt is 36 to 50 inches

BC or BCg horizon:

Color—variegated in shades of brown and gray
 Redoximorphic features— none to many iron accumulations in shades of red, brown, and yellow and iron depletions in shades of gray
 Texture—loam, clay loam, sandy clay loam, or silty clay loam
 Other features—Pressure faces and slickensides
 Thickness—4 to 10 inches

C or Cg horizon:

Color—variegated in shades of brown and gray
 Redoximorphic features— none to many iron accumulations in shades of red, brown, and yellow and iron depletions in shades of gray
 Texture—fine sandy loam to silty clay loam; some pedons are stratified with these textures
 Other features—clay content is 15 to 35 percent and is 20 percent or more lower in clay than the upper Bt horizons
 Thickness—more than 20 inches

Forbing Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Very slow

Landscape: Coastal plain

Landform: Stream terraces

Parent material: Clayey alluvium from Pleistocene age stream deposits

Slope range: 1 to 12 percent

Taxonomic classification: Very-fine, montmorillonitic, thermic Vertic Paleudalfs

Commonly associated soils: Guyton, Kolin, and Shatta

- Kolin and Shatta soils are at a higher elevation than the Forbing soil and are fine-silty; and Shatta soils have a fragipan in the lower part of the subsoil
- Guyton soils are on narrow flood plains of drainageways and are fine-silty

Typical Pedon

Forbing silt loam, 5 to 12 percent slopes, in woodland; about 1.2 miles east of Lake Bistineau Dam on Louisiana State Highway 154; 0.8 mile south on Parish Road 513; 0.5 mile southeast on a field road, then 350 feet west of the road; NE¹/₄NE¹/₄ sec. 17; T. 15 N., R. 10 W.; latitude 32 degrees 17 minutes 33 seconds N.; longitude 93 degrees 24 minutes 18 seconds W.; Bossier Point Quadrangle, Louisiana:

Ap—0 to 3 inches; brown (10YR 5/3) silt loam; weak fine granular structure; friable; common fine roots; very strongly acid; clear wavy boundary.

E—3 to 5 inches; yellowish brown (10YR 5/8) silt loam; weak fine subangular blocky structure; friable; common fine roots; strongly acid; clear wavy boundary.

Bt1—5 to 14 inches; yellowish red (5YR 4/6) clay; common medium distinct red (2.5YR 4/8) masses of iron accumulation; moderate medium subangular blocky structure; friable; common fine roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—14 to 27 inches; yellowish red (5YR 4/6) clay; common medium distinct red (2.5YR 4/8) masses of iron accumulation; moderate medium subangular blocky structure; firm; common fine and few medium roots; common distinct clay films on faces of peds; common dark organic stains; very strongly acid; gradual wavy boundary.

Btss1—27 to 35 inches; reddish brown (5YR 4/4) clay; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; common fine roots; common dark organic stains; common intersecting slickensides; moderately acid; gradual smooth boundary.

Btss2—35 to 44 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; firm; few fine roots; common dark organic stains; common intersecting slickensides; neutral; gradual wavy boundary.

BCkss1—44 to 58 inches; red (2.5YR 4/6) clay; common fine prominent pinkish gray (5YR 6/2) iron depletions; massive; very firm; common fine and few medium calcium carbonate concretions; few medium pockets of powdery secondary carbonates; common dark organic stains; common intersecting slickensides; slightly alkaline; gradual wavy boundary.

BCkss2—58 to 70 inches; dark red (2.5YR 3/6) clay; common fine prominent pinkish gray (7.5YR 6/2)

iron depletions; weak coarse subangular blocky structure; very firm; common fine and few medium calcium carbonate concretions; few medium pockets of powdery secondary carbonates; common dark organic stains; common intersecting slickensides; slightly alkaline.

Range in Characteristics

Solum thickness: More than 80 inches

Clay content in the control section: 60 to 85 percent

Redoximorphic features: Iron depletions in shades of gray at more than 40 inches from the surface

Other distinctive soil features: Intersecting slickensides at 20 to 40 inches from the surface

Aluminum saturation: Less than 20 percent within 30 inches from the surface

Reaction: Very strongly acid to slightly acid (Ap and E); very strongly acid to neutral (Bt); moderately acid to moderately alkaline (Btss); mildly alkaline to moderately alkaline (BCKss)

A or Ap horizon:

Color—hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 1 to 4

Redoximorphic features—none

Texture—silt loam

Other features—none

Thickness—2 to 6 inches

E horizon and EB horizon (where present):

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3, 4, 6, or 8

Redoximorphic features—none

Texture—silt loam

Other features—none

Thickness—0 to 6 inches

Bt horizon:

Color—hue of 5YR or 2.5YR, value of 3 to 5, and chroma of 4 or 6

Redoximorphic features—few or common iron accumulations in shades of brown

Texture—clay

Other features—none

Thickness—10 to 36 inches

Btss horizon:

Color—hue of 5YR or 2.5YR, value of 3 to 5, and chroma of 4 or 6

Redoximorphic features—few or common iron accumulations in shades of brown

Texture—clay

Other features—intersecting slickensides

Thickness—18 to 60 inches (combined Bt and Btss)

BCKss horizon:

Color—hue of 5YR or 2.5YR, value of 3 or 4, and chroma of 4 or 6

Redoximorphic features—few or common iron accumulations in shades of brown and iron depletions in shades of gray

Texture—clay or silty clay

Other features—intersecting slickensides and 1 to 5 percent calcium carbonate concretions

Gurdon Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Moderate

Landscape: Coastal plain

Landform: High stream terraces

Parent material: Silty alluvium from Pleistocene age streams

Slope range: 1 to 3 percent

Taxonomic classification: Coarse-silty, siliceous, thermic Aquic Paleudults

Commonly associated soils: Dubach, Guyton, and Malbis

- Dubach and Malbis soils are at a slightly higher elevation than the Gurdon soil and are fine-loamy
- Guyton soils are on low terraces and on narrow flood plains of drainageways and are fine-silty and poorly drained

Typical Pedon

Gurdon silt loam, 1 to 3 percent slopes, in woodland; about 4.3 miles east of Friendship on Louisiana State Highway 4; 2.6 miles north of the intersection of Louisiana State Highway 4 and Parish Road 747, then 120 feet east of the road; SW¹/₄ NW¹/₄ sec. 32, T. 15 N., R. 7 W.; latitude 32 degrees 15 minutes 09 seconds N.; longitude 92 degrees 47 minutes 56 seconds W.; Mount Olive Quadrangle, Louisiana:

Ap—0 to 4 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; very friable; common fine roots; strongly acid; clear smooth boundary.

Bw—4 to 9 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bt1—9 to 28 inches; yellowish brown (10YR 5/6) silt loam; common fine distinct light brownish gray (10YR 6/2) iron depletions; strong brown (7.5YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; friable; common fine

and medium roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—28 to 38 inches; yellowish brown (10YR 5/6) silty clay loam; common coarse distinct light brownish gray (10YR 6/2) iron depletions; strong brown (7.5YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; friable; common fine and few medium roots; few distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt3—38 to 45 inches; variegated yellowish brown (10YR 5/6), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few distinct clay films on surfaces of peds; very strongly acid; clear wavy boundary.

Bt4—45 to 65 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct light gray (10YR 7/2) iron depletions; strong brown (7.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches

Clay content in the control section: 10 to 18 percent

Redoximorphic features: Iron accumulations in shades of brown and iron depletions in shades of gray beginning at 6 to 20 inches from the surface

Other distinctive soil features: Up to 5 percent plinthite in the subsoil at 6 or more inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Extremely acid to moderately acid throughout, except where the surface has been limed

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

Redoximorphic features—none to common iron accumulations in shades of brown or yellow

Texture—silt loam

Other features—none

Thickness—2 to 6 inches

E horizon (where present):

Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4

Redoximorphic features—none to common iron accumulations in shades of brown or yellow

Texture—silt loam

Other features—none

Thickness—0 to 8 inches

Bw horizon:

Color—hue of 10YR, value of 5, and chroma of 3, 4, or 6

Redoximorphic features—none to many iron accumulations in shades of brown or yellow

Texture—silt loam

Other features—none

Thickness—4 to 8 inches

Bt1 horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 4, 6, or 8

Redoximorphic features—iron accumulations in shades of brown or yellow; iron depletions in shades of gray

Texture—silt loam, very fine sandy loam, or loam

Other features—up to 5 percent plinthite nodules

Thickness—16 to 30 inches

Bt layers below Bt1 horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 4 or 6

Redoximorphic features—iron accumulations in shades of brown or yellow; iron depletions in shades of gray

Texture—silt loam, loam, or silty clay loam

Other features—up to 5 percent plinthite nodules

Guyton Series

Depth class: Very deep

Drainage class: Poorly drained

Permeability: Slow

Landscape: Coastal plain

Landform: Low stream terraces and narrow flood plains

Parent material: Silty alluvium from Pleistocene age streams

Slope range: 0 to 1 percent

Taxonomic classification: Fine-silty, siliceous, thermic Typic Glossaqualfs

Commonly associated soils: Bienville, Cahaba, Dubach, Gurdon, Ouachita

- Bienville, Cahaba, Dubach, and Gurdon soils are at a higher elevation on stream terraces than the Guyton soil; Bienville soils are sandy throughout; Cahaba and Dubach soils are well drained and fine-loamy; and Gurdon soils are coarse-silty
- Ouachita soils are in higher positions on flood plains than the Guyton soil and are well drained and do not have an argillic horizon

Typical Pedon

Guyton silt loam, in woodland; about 1.8 miles east of Jamestown on Louisiana State Highway 154; 0.6 mile north on an oil well road to electrical highline, 0.6 mile west of highline; then 140 feet south of highline; SE¹/₄NW¹/₄ sec. 15, T. 16 N., R. 8 W.; latitude 32 degrees 22 minutes 31 seconds N.; longitude 93 degrees 10 minutes 32 seconds W.; Fryeburg Quadrangle, Louisiana:

- A—0 to 4 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; clear smooth boundary.
- Eg1—4 to 16 inches; grayish brown (10YR 5/2) silt loam; common medium distinct dark yellowish brown (10YR 4/6) masses of iron accumulation; weak medium subangular blocky structure; friable; common medium roots; common fine pores; few spots of organic stains; very strongly acid; clear wavy boundary.
- Eg2—16 to 20 inches; light brownish gray (10YR 6/2) silt loam; few medium distinct dark yellowish brown (10YR 3/4 and 4/4) masses of iron accumulation; weak medium subangular blocky structure; friable; common medium roots; common medium pores; few spots of organic stains; very strongly acid; abrupt irregular boundary.
- Bt/Eg—20 to 34 inches; gray (10YR 5/1) silty clay loam; common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation; the E material is mainly in wide, vertical seams of light brownish gray (10YR 6/2) silt loam and makes up about 40 percent of the horizon; weak medium and coarse subangular blocky structure; the silty clay loam is firm, and the silt loam is friable; common fine roots; common medium pores; common distinct clay films on surfaces of some peds; common fine organic stains; very strongly acid; clear irregular boundary.
- Btg1—34 to 45 inches; grayish brown (10YR 5/2) silty clay loam; few vertical seams 1 to 3 inches wide of light brownish gray (10YR 6/2) silt loam; common coarse prominent strong brown (7.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; few fine pores; common distinct clay films on surfaces of some peds; very strongly acid; clear wavy boundary.
- Btg2—45 to 55 inches; gray (10YR 6/1) silty clay loam; many medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure;

firm; few fine pores; common distinct clay films on surfaces of peds; very strongly acid; clear wavy boundary.

- BCg—55 to 65 inches; grayish brown (10YR 5/2) clay loam; common medium prominent strong brown (7.5YR 5/6) and light olive brown (2.5Y 5/6) masses of iron accumulation; massive; firm; few fine roots; very strongly acid.

Range in Characteristics

- Solum thickness: 55 to 80 inches
Clay content in the control section: 20 to 35 percent
Redoximorphic features: Depleted matrix with iron accumulations beginning at 0 to 6 inches from the surface
Other distinctive soil features: Glossic horizon at 20 to 34 inches from the surface
Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface
Reaction: Extremely acid to moderately acid throughout

A or Ap horizon:

- Color—hue of 10YR, value of 3 to 6, and chroma of 2 or 3; where value is 3, thickness is less than 6 inches
Redoximorphic features—none to few iron accumulations in shades of brown
Texture—silt loam
Other features—none
Thickness—2 to 8 inches

Eg horizon:

- Color—hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2
Redoximorphic features—few to many iron accumulations in shades of brown
Texture—silt loam
Other features—none
Thickness—11 to 27 inches

E/Btg horizon (where present):

- Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2 (Bt); hue of 10YR or 2.5YR, value of 5 to 8, and chroma of 1 or 2 (E)
Redoximorphic features—few to many iron accumulations in shades of brown and iron depletions in shades of gray
Texture—silt loam or very fine sandy loam (E); silt loam, silty clay loam, or clay loam (Bt)
Other features—none
Thickness—0 to 15 inches

Bt/Eg horizon:

- Color—hue of 10YR or 2.5Y, value of 5 or 6, and

chroma of 1 or 2 (Bt); hue of 10YR or 2.5YR, value of 5 to 8, and chroma of 1 or 2 (E)
 Redoximorphic features—few to many iron accumulations in shades of brown and iron depletions in shades of gray
 Texture—silt loam, silty clay loam, or clay loam (Bt); silt loam or very fine sandy loam (E)
 Other features—none
 Thickness—8 to 24 inches

Btg horizon:

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2
 Redoximorphic features—few to many iron accumulations in shades of brown and iron depletions in shades of gray
 Texture—silt loam, silty clay loam, or clay loam
 Other features—none
 Thickness—15 to 45 inches

BCg horizon and Cg horizon (where present):

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2
 Redoximorphic features—few to many iron accumulations in shades of brown and iron depletions in shades of gray
 Texture—silt loam, silty clay loam, clay loam, or sandy clay loam
 Other features—none

Kolin Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Very slow

Landscape: Coastal plain

Landform: Stream terraces

Parent material: Alluvium from loamy over clayey stream deposits

Slope range: 1 to 5 percent

Taxonomic classification: Fine-silty, siliceous, thermic Haplic Glossudalfs

Commonly associated soils: Forbing and Shatta

- Forbing soils are at a lower elevation than the Kolin soil and have a clayey subsoil
- Shatta soils are at a higher elevation than the Kolin soil and are loamy throughout and have a fragipan

Typical Pedon

Kolin silt loam, 1 to 5 percent slopes, in woodland; 1.6 miles west of Louisiana State Highway 7 on Parish Road 446; 300 feet west of the intersection of Parish Roads 446 and 447; 450 feet south of Parish Road 446 on a woodland road, then 150 feet west of the road; SW¹/₄NE¹/₄ sec. 8, T. 16 N., R. 99 W.;

latitude 32 degrees 23 minutes 25 seconds N.; longitude 93 degrees 18 minutes 26 seconds W.; Heflin Quadrangle, Louisiana:

Ap—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.

E—3 to 9 inches; pale brown (10YR 6/3) silt loam; weak medium subangular blocky structure; friable; many fine and common medium roots; strongly acid; clear wavy boundary.

Bt1—9 to 17 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; common fine and medium roots; common distinct clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—17 to 29 inches; yellowish brown (10YR 5/8) silty clay loam; common medium prominent yellowish red (5YR 5/6) masses of iron accumulation; common fine prominent pale brown (10YR 6/3) iron depletions; moderate medium subangular blocky structure; friable; common fine and medium roots; common distinct clay films on faces of peds; few fine brown concretions; thin pale brown coatings of silt on faces of peds, around roots, and in pores of the lower part of the horizon; very strongly acid; clear wavy boundary.

Bt/E—29 to 39 inches; yellowish brown (10YR 5/6) silty clay loam (Bt); common medium prominent pale brown (10YR 6/3) iron depletions; light gray (10YR 6/2) coatings of silt about 1/8 to 1/2 inch thick surround peds (E); weak medium subangular blocky structure; friable; few fine roots; light gray coatings of silt make up about 18 percent of horizon; common faint clay films on faces of peds; few fine brown concretions; strongly acid; clear irregular boundary.

2B¹t1—39 to 54 inches; yellowish brown (10YR 5/6) silty clay; red (2.5YR 4/6) masses of iron accumulation; common medium prominent light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; thin light brownish gray coatings of silt on faces of some peds; strongly acid; gradual wavy boundary.

2B¹t2—54 to 62 inches; red (2.5YR 4/8) clay; common medium distinct yellowish red (5YR 5/6) masses of iron accumulation; common medium prominent light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; very firm; common faint clay films on faces of peds; few thin light brownish gray

coatings of silt on faces of some peds; very strongly acid; gradual wavy boundary.

2C—62 to 78 inches; red (2.5YR 4/8) clay; common medium prominent light brownish gray (10YR 6/2) iron depletions; massive; firm; strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches

Clay content in the control section: 20 to 35 percent

Redoximorphic features: Iron accumulations, clay depletions, and iron depletions beginning at 12 to 30 inches from the surface

Other distinctive soil features: Clayey lithologic discontinuity at 20 to 40 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Strongly acid to slightly acid (A and E), very strongly acid to moderately acid (Bt and Bt/E); very strongly acid to moderately alkaline (2B't and 2C)

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 1 or 2

Redoximorphic features—none

Texture—silt loam

Other features—none

Thickness—3 to 7 inches

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 1 to 3

Redoximorphic features—none

Texture—silt loam or loam

Other features—none

Thickness—0 to 6 inches

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4, 6, or 8

Redoximorphic features—none to common iron accumulations in shades of red or brown

Texture—silt loam or silty clay loam

Other features—total sand content is less than 25 percent

Thickness—10 to 20 inches

Bt/E horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4, 6, or 8 (Bt); hue of 10YR, value of 6 or 7, and chroma of 1 or 2 (E)

Redoximorphic features—none to common iron accumulations in shades of red or brown; common or many iron depletions or clay depletions in shades of gray

Texture—silt loam or silty clay loam

Other features—silt coatings and interfingering of albic materials between peds (E)

Thickness—5 to 15 inches

2B't horizon:

Color—hue of 10YR to 2.5YR, value of 4 or 5, and chroma of 6 or 8

Redoximorphic features—few to many iron accumulations in shades of red or brown; common or many iron depletions in shades of gray

Texture—clay or silty clay

Other features—clay content ranges from 40 to 55 percent

2C horizon (where present):

Color—variegated in shades of red, brown, or gray

Redoximorphic features—few to many iron accumulations in shades of red or brown; common or many iron depletions in shades of gray

Texture—clay or silty clay

Other features—clay content ranges from 40 to 55 percent

Mahan Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from

Tertiary age, iron-rich clayey marine deposits

Slope range: 1 to 12 percent

Taxonomic classification: Clayey, kaolinitic, thermic Typic Hapludults

Commonly associated soils: Bowie, Briley, and Sacul

- Bowie and Sacul soils are at a lower elevation than the Mahan soil; Bowie soils are fine-loamy; and Sacul soils have gray iron depletions within 30 inches of the soil surface

- Briley soils are in positions similar to those of the Mahan soil and have thick sandy surface and subsurface layers

Typical Pedon

Mahan fine sandy loam, 5 to 12 percent slopes, in woodland; 0.9 mile east of Mount Lebanon on Parish Road 250, then 80 feet north of the road; SE¹/₄NE¹/₄ sec. 36, T. 18 N., R. 7 W.; latitude 32 degrees 30 minutes 19 seconds N.; longitude 93 degrees 02 minutes 02 seconds W.; Gibsland Quadrangle, Louisiana:

A—0 to 5 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; common fine roots; about 10 percent, by volume, ironstone gravel; strongly acid; clear wavy boundary.

E—5 to 11 inches; brown (7.5YR 5/4) fine sandy loam; weak fine subangular blocky structure; very friable; many fine and common medium roots; about 8 percent, by volume, ironstone gravel; strongly acid; gradual wavy boundary.

Bt1—11 to 18 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; firm; many fine and common medium roots; about 10 percent, by volume, ironstone gravel; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—18 to 26 inches; red (2.5YR 4/8) clay loam; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; common fine and medium roots; about 5 percent, by volume, ironstone gravel; common fine and few medium dusky red (2.5YR 3/2) soft masses; common prominent clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—26 to 41 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; common fine and few medium roots; common fine concretions; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

BC—41 to 63 inches; red (2.5YR 4/6) sandy clay loam; common fine prominent light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/6) lithochromic mottles; common thin prominent light brownish gray (10YR 6/2) coatings around roots and in old root channels; moderate medium subangular blocky structure; firm; few fine roots; few fine dark brown concretions; very strongly acid; clear wavy boundary.

C—63 to 70 inches; stratified red (2.5YR 4/8) sandy clay loam and light brownish gray (10YR 6/2), yellowish brown (10YR 5/6), and red (2.5YR 4/6) sandy loam pockets and layers; massive; friable; few fine dark brown concretions; very strongly acid.

Range in Characteristics

Solum thickness: 40 to more than 80 inches

Clay content in the control section: 35 to 60 percent

Redoximorphic features: None

Other distinctive soil features: Gravel to cobble size ironstone fragments at 0 to 6 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Strongly acid or moderately acid (A and E); very strongly acid to moderately acid (Bt, BC, and C)

A or Ap horizon:

Color—hue of 10YR to 5YR, value of 3 to 5, and chroma of 3, 4, or 6

Redoximorphic features—none

Texture—fine sandy loam

Other features—1 to 15 percent gravel size ironstone fragments; 0 to 2 percent cobble size ironstone fragments

Thickness—3 to 8 inches

E horizon:

Color—hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 or 6

Redoximorphic features—none

Texture—fine sandy loam

Other features—1 to 15 percent gravel size ironstone fragments; 0 to 2 percent cobble size ironstone fragments

Thickness—0 to 10 inches

Bt horizon:

Color—hue of 5YR to 10R, value of 4 or 5, and chroma of 6 or 8

Redoximorphic features—none

Texture—sandy clay loam, sandy clay, clay, and clay loam

Other features—1 to 15 percent gravel size ironstone fragments; 0 to 2 percent cobble size ironstone fragments; lithochromic mottles in shades of brown, yellow, and gray

Thickness—20 to 50 inches

BC horizon:

Color—hue of 5YR to 10R, value of 4 or 5, and chroma of 6 or 8

Redoximorphic features—none

Texture—sandy loam, fine sandy loam, or sandy clay loam

Other features—0 to 15 percent gravel size ironstone fragments; 0 to 2 percent cobble size ironstone fragments; lithochromic mottles in shades of brown, yellow, and gray

Thickness—12 or more inches

C horizon:

Color—variegated in shades of red and brown

Redoximorphic features—none

Texture—stratified sandy clay loam to sandy loam

Other features—none to many small pockets and horizontal seams of whitish clay (kaolin); 0 to 15 percent gravel size ironstone fragments; lithochromic mottles in shades of brown, yellow, and gray

Malbis Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderately slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Pleistocene age loamy marine deposits

Slope range: 1 to 8 percent

Taxonomic classification: Fine-loamy, siliceous, thermic Plinthic Paleudults

Commonly associated soils: Beauregard, Eastwood, and Ruston

- Beauregard and Eastwood soils are at a lower elevation than the Malbis soil; Beauregard soils are fine-silty and have gray iron depletions within 30 inches of the surface; and Eastwood soils have a clayey and loamy subsoil
- Ruston soils are at a higher elevation than the Malbis soil, are well drained, and do not have plinthite in the subsoil

Typical Pedon

Malbis fine sandy loam, 1 to 3 percent slopes, in woodland; about 2 miles north of Fryeburg; 1.8 miles north of the intersection of Louisiana State Highways 792 and 516; 1 mile east on Parish Road 494; south on Parish Road 489, then 300 feet west of the road; SW¹/₄NE¹/₄ sec. 30, T. 17 N., R. 8 W.; latitude 32 degrees 25 minutes 58 seconds N.; longitude 94 degrees 13 minutes 25 seconds W.; Fryeburg Quadrangle, Louisiana:

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many fine roots; few worm casts; strongly acid; clear smooth boundary.

E—4 to 14 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; very friable; many fine roots; common fine pores; few worm casts; very strongly acid; clear wavy boundary.

Bt1—14 to 27 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; common fine and medium pores; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—27 to 43 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/6) and yellowish red (5YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; very hard; friable; few fine and medium roots; common fine pores; common distinct clay films on faces of peds; about 3 percent nodular plinthite; few small pebbles of chert; strongly acid; diffuse wavy boundary.

Btv—43 to 60 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/8) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) iron depletions; weak medium subangular blocky structure; hard; friable; few fine roots; common distinct clay films on faces of peds; about 10 percent, by volume, chert gravel; about 6 percent, by volume, nodular plinthite; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches

Clay content in the control section: 18 to 33 percent

Redoximorphic features: Iron accumulations in shades of brown, yellow, or red and iron depletions in shades of gray beginning at 30 to 50 inches from the surface

Other distinctive soil features: 5 percent or more plinthite nodules at 24 to 56 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Very strongly acid to moderately acid (Ap and E); very strongly acid or strongly acid (Bt and Btv)

A or Ap horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 2 or 3

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—4 to 8 inches

E horizon:

Color—hue of 10YR, value of 5 to 7, and chroma of 2 to 4

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—0 to 11 inches

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4, 6, or 8

Redoximorphic features—none to common iron accumulations in shades of red
 Texture—loam, sandy clay loam, or clay loam
 Other features—none
 Thickness—8 to 32 inches

Btv horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4, 6, or 8
 Redoximorphic features—iron accumulations in shades of brown, yellow, or red; iron depletions with chroma of 2 are below a depth of 30 inches
 Texture—loam, sandy clay loam, or clay loam
 Other features—5 to 25 percent plinthite nodules
 Thickness—30 or more inches

McLaurin Series

Depth class: Deep

Drainage class: Well drained

Permeability: Moderate

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Tertiary age loamy marine deposits

Slope range: 1 to 8 percent

Taxonomic classification: Coarse-loamy, siliceous, thermic Typic Paleudults

Commonly associated soils: Betis, Darden, and Sailes

- Betis soils are in similar landscape positions as the McLaurin soil and are sandy throughout
- Darden soils are at a lower elevation than the McLaurin soil and are sandy throughout
- Sailes soils are at a higher elevation than the McLaurin soil and are fine-loamy

Typical Pedon

McLaurin fine sandy loam (fig. 9), 1 to 3 percent slopes, in woodland; about 4.4 miles east of Castor on Louisiana State Highway 4; 1.8 miles northeast on Parish Road 667, then 120 feet south of the road; SW¹/₄NE¹/₄ sec. 16, T. 15 N., R. 7 W.; latitude 32 degrees 17 minutes 22 seconds N.; longitude 93 degrees 05 minutes 42 seconds W.; Sparta Quadrangle, Louisiana:

A—0 to 4 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; gradual wavy boundary.

E—4 to 13 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; very

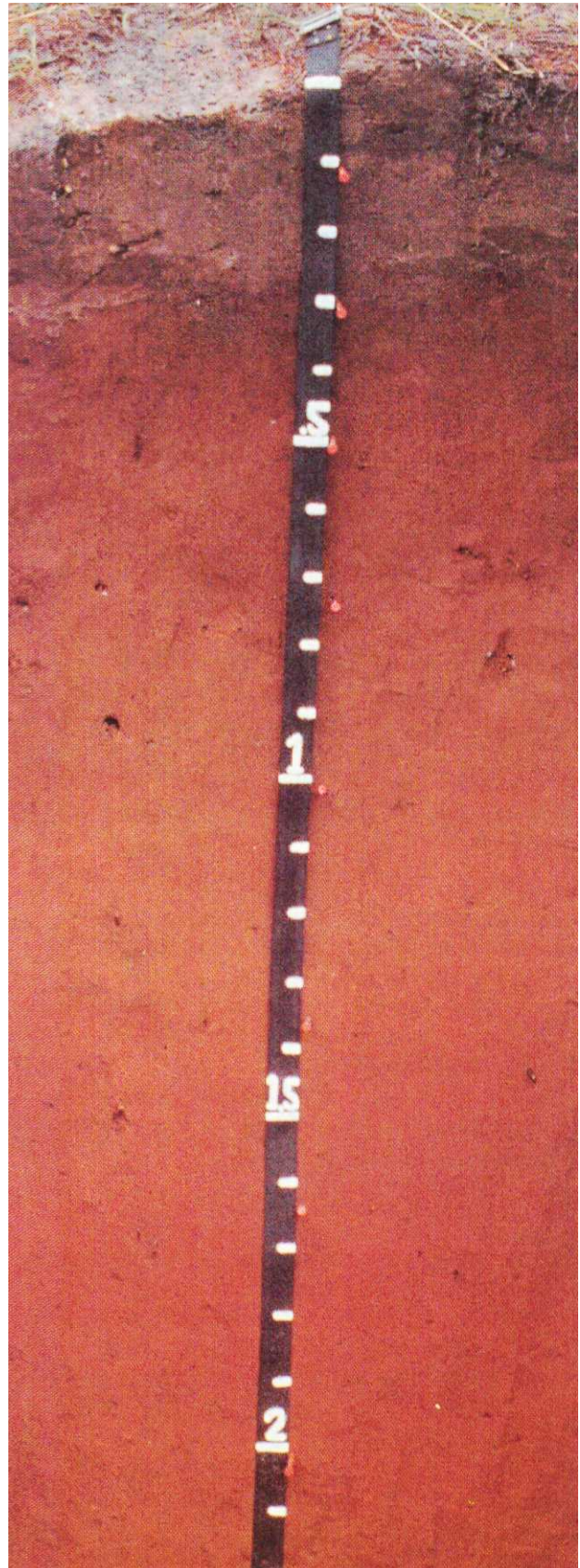


Figure 9.—Profile of McLaurin fine sandy loam.

friable; many fine and medium roots; strongly acid; gradual wavy boundary.

Bt1—13 to 24 inches; red (2.5YR 4/8) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; common distinct clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—24 to 30 inches; red (2.5YR 4/6) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; common faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt3—30 to 53 inches; red (2.5YR 5/8) sandy loam; weak fine and medium subangular blocky structure; very friable; common fine roots, common distinct clay films on faces of peds; strongly acid; clear wavy boundary.

Bt/E—53 to 60 inches; red (2.5YR 5/8) sandy loam (Bt); weak fine and medium subangular blocky structure parting to weak fine granular; very friable; few fine roots; common faint clay films on faces of some peds; common medium pockets and streaks of very pale brown (10YR 7/3) uncoated sand grains (E); strongly acid; gradual wavy boundary.

B't—60 to 71 inches; red (2.5YR 4/8) sandy loam; weak medium subangular blocky structure; friable; few fine roots; common distinct clay films on faces of some peds; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches

Clay content in the control section: 10 to 18 percent

Redoximorphic features: None within 80 inches

Other distinctive soil features: Up to 10 percent ironstone or chert gravel at 0 to 80 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Very strongly acid or strongly acid throughout, except where the surface has been limed

A or Ap horizon:

Color—hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 4; where value is 3, the thickness is less than 6 inches

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—3 to 9 inches

E horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2, 3, 4, or 6

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—0 to 10 inches

EB horizon (where present):

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4, 6, or 8

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—0 to 10 inches

Bt horizon:

Color—hue of 5YR to 10R, value of 4 or 5, and chroma of 4, 6, or 8

Redoximorphic features—none

Texture—loam, sandy loam, or fine sandy loam

Other features—none

Thickness—18 to 40 inches

Bt/E horizon:

Color—hue of 5YR to 10R, value of 4 or 5, and chroma of 4, 6, or 8 (Bt); hue of 7.5YR or 10YR, value of 6 to 8, and chroma of 3, 4, 6, or 8 (E)

Redoximorphic features—none

Texture—loamy fine sand, loamy sand, or sandy loam

Other features—almost entirely stripped of clay and makes up 10 to 25 percent of the horizon in a discontinuous pattern (E)

Thickness—6 to 12 inches

B't horizon:

Color—hue of 5YR to 10R, value of 4 or 5, and chroma of 4, 6, or 8

Redoximorphic features—none

Texture—sandy loam, loam, or sandy clay loam

Other features—none

Thickness—4 or more inches

Metcalf Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Very slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from loamy and clayey marine deposits

Slope range: 0 to 2 percent

Taxonomic classification: Fine-silty, siliceous, thermic Aquic Glossudalfs

Commonly associated soils: Bellwood, Gurdon, Oktibbeha, and Sawyer

- Bellwood soils are at a higher elevation than the Metcalf soil and are clayey throughout
- Gurdon soils are at a slightly lower elevation than the Metcalf soil and are coarse-silty
- Oktibbeha soils are in positions similar to those of the Metcalf soil and have a subsoil that is clayey throughout
- Sawyer soils are at a slightly higher elevation than the Metcalf soil and do not have albic material in the subsoil

Typical Pedon

Metcalf silt loam, 0 to 2 percent slopes, in woodland; about 3.5 miles north of Mount Olive on Louisiana State Highway 147; 2.8 miles east on Parish Road 122; 0.6 mile north on timber company road, then 80 feet east of the road; NE¹/₄NE¹/₄ sec. 4, T. 16 N., R. 4 W.; latitude 32 degrees 24 minutes 25 seconds N.; longitude 92 degrees 46 minutes 35 seconds W.; Wilson Creek Quadrangle, Louisiana:

- A—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; common fine roots; moderately acid; clear smooth boundary.
- E—3 to 7 inches; light yellowish brown (10YR 6/4) silt loam; few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; weak fine granular structure; friable; common fine and few medium roots; few fine black concretions; strongly acid; clear wavy boundary.
- Bt1—7 to 15 inches; yellowish brown (10YR 5/6) loam; few fine distinct strong brown (7.5YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; friable; common fine and medium roots; common distinct clay films on faces of peds; few fine black concretions; strongly acid; clear wavy boundary.
- Bt2—15 to 25 inches; yellowish brown (10YR 5/8) loam; few fine distinct strong brown (7.5YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; friable; common fine and medium roots; common distinct clay films on faces of peds; few fine black concretions; strongly acid; clear wavy boundary.
- Bt3—25 to 33 inches; yellowish brown (10YR 5/4) loam; common medium distinct light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; friable; common fine roots; common distinct clay films on surfaces of peds; few fine black concretions; very strongly acid; clear wavy boundary.
- Bt/E—33 to 40 inches; yellowish brown (10YR 5/4) loam (Bt); few fine distinct yellowish brown (10YR 5/6) and prominent strong brown (7.5YR 5/8)

masses of iron accumulation; weak coarse prismatic structure parting to moderate medium subangular blocky structure; friable; common fine roots; gray (10YR 6/1) silt tongues ¹/₈ to 1 inch wide make up about 20 percent of horizon (E); few fine black concretions; common distinct clay films on faces of peds; strongly acid; clear wavy boundary.

2Btg1—40 to 57 inches; gray (10YR 6/1) silty clay; many medium prominent strong brown (7.5YR 5/8) and few fine prominent red (2.5YR 4/6) masses of iron accumulation; moderate coarse subangular blocky structure; firm; few fine roots; few thin coatings of silt on some vertical ped faces; common distinct clay films on faces of some peds; very strongly acid; clear wavy boundary.

2Btg2—57 to 75 inches; light brownish gray (10YR 6/2) silty clay loam; common medium prominent strong brown (7.5YR 5/8) and few fine prominent red (2.5YR 4/6) masses of iron accumulation; weak medium subangular blocky structure; firm; common distinct clay films and shiny faces on some peds; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches

Clay content in the control section: 18 to 27 percent

Redoximorphic features: Iron accumulations and depletions beginning at 8 to 30 inches from the surface

Other distinctive soil features: Clayey discontinuity at 27 to 40 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Extremely acid to moderately acid throughout, except where the surface has been limed

A or Ap horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 2 to 4

Redoximorphic features—none

Texture—silt loam

Other features—none

Thickness—3 to 8 inches

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4

Redoximorphic features—none to common iron accumulations in shades of brown

Texture—silt loam

Other features—none

Thickness—0 to 9 inches

Bt horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 4, 6, or 8
 Redoximorphic features—few or common iron depletions with chroma of 2 or less and iron accumulations in shades of brown
 Texture—silt loam, loam, or clay loam
 Other features—none
 Thickness—10 to 34 inches

Bt/E horizon:

Color—hue of 10YR, value of 5 or 6, and variegated chroma of 2 to 4 (Bt); shades of gray (E)
 Redoximorphic features—few or common iron or clay depletions with chroma of 2 or less and iron accumulations in shades of red or brown
 Texture—silt loam, loam, or clay loam (Bt); silt or very fine sand (E)
 Other features—makes up more than 15 percent of the horizon (E)
 Thickness—3 to 12 inches

2Bt or 2Btg horizon:

Color—variegated in shades of gray, red, and brown
 Redoximorphic features—common or many iron depletions with chroma of 2 or less and iron accumulations in shades of red or brown
 Texture—silty clay, clay, silty clay loam, or clay loam
 Other features—clay content is more than 35 percent
 Thickness—20 to more than 40 inches

Moreland Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Very slow

Landscape: Alluvial valley

Landform: Flood plains

Parent material: Clayey alluvium from the Red River

Slope range: 0 to 1 percent

Taxonomic classification: Fine, mixed, thermic Vertic Hapludolls

Commonly associated soils: Buxin

• Buxin soils are at a slightly lower elevation on the same landscape as the Moreland soil and have buried surface and subsoil layers within their sola

Typical Pedon

Moreland clay, in an area of Buxin-Moreland clays, frequently flooded, in cropland; about 1.6 miles south of Hall Summit Lookout Tower on Louisiana State

Highway 4; 1.1 miles west on a logging road to Loggy Bayou flood plain; 0.3 mile west on turnrow; 50 feet north of turnrow; SW¹/₄NW¹/₄ sec. 28, T. 15 N., R. 10 W.; latitude 32 degrees 15 minutes 28 seconds N.; longitude 93 degrees 24 minutes 29 seconds W.; Bossier Point Quadrangle, Louisiana:

Ap—0 to 6 inches; dark reddish brown (5YR 3/3) clay; moderate fine granular structure; firm; common fine roots; slightly acid; clear wavy boundary.

A—6 to 13 inches; dark reddish brown (5YR 3/3) clay; moderate medium subangular blocky structure; firm; common fine and few medium roots; shiny surfaces on vertical ped faces; slightly alkaline; gradual wavy boundary.

Bw—13 to 20 inches; dark reddish brown (5YR 3/4) clay; common fine prominent dark gray (10YR 4/1) iron depletions; moderate medium subangular blocky structure; firm; common fine and few medium roots; few fine soft black bodies; shiny surfaces on vertical ped faces; moderately alkaline; gradual wavy boundary.

Bk—20 to 30 inches; dark reddish brown (5YR 3/4) clay; common fine prominent dark gray (10YR 4/1) iron depletions; moderate medium subangular blocky structure; firm; common fine soft black bodies; shiny surfaces on vertical ped faces; few fine calcium carbonate concretions; moderately alkaline; gradual wavy boundary.

Bkss—30 to 65 inches; dark reddish brown (5YR 3/4) clay; common fine prominent dark gray (10YR 4/1) iron depletions; moderate medium subangular blocky structure; firm; shiny surfaces on vertical ped faces; common medium slickensides; common fine soft black bodies; few fine calcium carbonate concretions; moderately alkaline.

Range in Characteristics

Solum thickness: More than 80 inches

Clay content in the control section: 39 to 60 percent

Redoximorphic features: Few or common iron depletions in shades of gray beginning at 10 to 30 inches from the surface

Other distinctive soil features: Slickensides and calcareous layers at 10 to 40 inches from the surface

Aluminum saturation: Less than 10 percent within 30 inches from the surface

Reaction: Slightly acid to slightly alkaline (A and Ap), neutral to moderately alkaline throughout the subsoil

Ap horizon:

Color—hue of 7.5YR or 5YR, value of 2 or 3, and chroma of 2 or 3
 Redoximorphic features—none
 Texture—clay
 Other features—none
 Thickness—6 to 10 inches

A horizon:

Color—hue of 7.5YR or 5YR, value of 2 or 3, and chroma of 2 or 3
 Redoximorphic features—none
 Texture—clay or silty clay
 Other features—none
 Thickness—0 to 10 inches

Bw and Bk horizons:

Color—hue of 7.5YR or 2.5YR, value of 3 or 4, and chroma of 2 to 4
 Redoximorphic features—none
 Texture—clay or silty clay
 Other features—few or common calcium carbonate concretions 1 to 3 millimeters in diameter (Bk)
 Thickness—6 to 20 inches

Bkss horizon:

Color—hue of 5YR or 2.5YR, value of 3 or 4, and chroma of 3 or 4
 Redoximorphic features—few or common iron depletions in shades of gray
 Texture—clay or silty clay
 Other features—few or common slickensides and calcium carbonate concretions 1 to 3 millimeters in diameter
 Thickness—10 to 40 inches

BCkss horizon (where present):

Color—hue of 5YR or 2.5YR, value of 3 or 4, and chroma of 3 or 4
 Redoximorphic features—few or common iron depletions in shades of gray
 Texture—clay or silty clay
 Other features—few or common slickensides and calcium carbonate concretions 1 to 3 millimeters in diameter; some pedons have thin strata with texture of silt loam or silty clay loam; some pedons have a buried A horizon below 40 inches

Natchitoches Series

Depth class: Deep

Drainage class: Well drained

Permeability: Very slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Tertiary age marine deposits high in glauconitic sand

Slope range: 1 to 12 percent

Taxonomic classification: Very-fine, montmorillonitic, thermic Vertic Hapludalfs

Commonly associated soils: Bellwood, Metcalf, Sacul, and Sawyer

- None of these soils contain large amounts of glauconite in the subsoil
- Bellwood, Sacul, and Sawyer soils are at a slightly higher elevation than the Natchitoches soil
- Metcalf soils are at a slightly lower elevation than the Natchitoches

Typical Pedon

Natchitoches fine sandy loam, 1 to 5 percent slopes, in woodland; about 2.8 miles south of Castor on State Highway 153; 2.1 miles east on Parish Road 630; 2.2 miles north on Parish Road 625; 0.8 mile west on a logging road, then 60 feet north of the road; NE¹/₄NE¹/₄ sec. 8, T. 15 N., R. 7 W.; latitude 32 degrees 12 minutes 46 seconds N.; longitude 93 degrees 05 minutes 27 seconds W.; Ashland Quadrangle, Louisiana:

A—0 to 5 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; common fine roots; strongly acid; clear smooth boundary.

Bt—5 to 14 inches; red (2.5YR 4/6) clay; common medium distinct yellowish red (5YR 5/8) masses of iron accumulation; moderate fine and medium subangular blocky structure; very firm; common fine and few medium roots; common distinct clay films on surfaces of peds; common glauconitic sand; very strongly acid; clear wavy boundary.

Btss1—14 to 25 inches; red (2.5YR 4/6) clay; common medium distinct red (10R 4/6) iron accumulations; common medium prominent olive (5Y 5/4) relict mottles; moderate medium subangular blocky structure; firm; common fine and few medium roots; common distinct clay films on surfaces of peds; common pressure faces and few nonintersecting slickensides on some surfaces of peds; about 10 percent, by volume, greenish glauconitic sand grains; very strongly acid; clear wavy boundary.

Btss2—25 to 34 inches; red (10R 4/8) clay; many medium prominent olive (5Y 5/3) relict mottles; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of some peds; common nonintersecting slickensides; about 15 percent greenish

glaucous sand; very strongly acid; clear wavy boundary.

BCss—34 to 45 inches; variegated olive (5Y 4/4) and red (10R 4/8) clay; moderate medium subangular blocky structure; firm; few fine roots; common distinct pressure faces on surfaces of peds; many nonintersecting slickensides; about 20 percent greenish glauconitic sand; very strongly acid; clear wavy boundary.

C1—45 to 50 inches; olive (5Y 4/3) and red (10R 4/8) clay; massive; very firm; few nonintersecting slickensides; about 25 percent greenish glauconitic sand; strongly acid; clear wavy boundary.

C2—50 to 55 inches; yellowish red (5YR 5/8) sandy clay; red (10R 4/8) masses of iron accumulation; common medium prominent olive (5Y 4/3) relict mottles; massive; firm; few nonintersecting slickensides; about 25 percent greenish glauconitic sand; moderately acid; gradual wavy boundary.

C3—55 to 65 inches; variegated strong brown (7.5YR 5/8), olive (5Y 4/3), and light brownish gray (7.5YR 6/2) sandy clay; massive; firm; about 25 percent greenish glauconitic sand; moderately acid; gradual wavy boundary.

Range in Characteristics

Solum thickness: 30 to 50 inches

Clay content in the control section: 60 to 80 percent

Redoximorphic features: None

Other distinctive soil features: Slickensides and pressure faces at 8 to 30 inches from the surface; olive or brownish iron accumulations or relict mottles at 6 to 40 inches from the surface

Aluminum saturation: Less than 10 percent within 30 inches from the surface

Reaction: Strongly acid to slightly acid (A or Ap); very strongly acid to moderately acid (Bt, Btss and BCss); strongly acid to slightly alkaline (C)

A or Ap horizon:

Color—hue of 10YR to 5YR, value of 2 through 5, and chroma of 2 or 3

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—2 to 6 inches

Bt horizon:

Color—hue of 5YR to 10R, value of 4, and chroma of 3, 4, 6, or 8

Redoximorphic features—none

Texture—clay or sandy clay

Other features—in some subhorizons, common or many iron accumulations in shades of red or brown and relict mottles in shades of olive

Thickness—6 to 25 inches

Btss horizon:

Color—hue of 5YR to 10R, value of 4, and chroma of 3, 4, 6, or 8

Redoximorphic features—none

Texture—clay or sandy clay

Other features—slickensides and pressure faces; in some subhorizons, common or many iron accumulations in shades of red or brown and relict mottles in shades of olive

Thickness—10 to 20 inches

BCss horizon:

Color—hue of 5YR to 10R, value of 4, and chroma of 3, 4, 6, or 8; or the horizon is variegated in shades of brown, olive, gray, or red

Redoximorphic features—none

Texture—clay or sandy clay

Other features—slickensides and pressure faces; glauconitic sand makes up about 20 to 40 percent of the fine earth; common or many iron accumulations in shades of red or brown and relict mottles in shades of olive

Thickness—0 to 20 inches

C horizon:

Color—variegated in shades of brown, olive, gray, or red

Redoximorphic features—none

Texture—clay or sandy clay

Other features—greenish glauconitic sand is prominent throughout; calcium carbonate concretions range from none to common; common or many iron accumulations in shades of red or brown and relict mottles in shades of olive

Thickness—30 or more inches

Oktibbeha Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Very slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Tertiary age clayey marine deposits overlying calcareous clays

Slope range: 1 to 5 percent

Taxonomic classification: Very fine, montmorillonitic, thermic Chromic Dystruderts

Commonly associated soils: Bellwood and Sacul

- Neither of these soils contains concretions of calcium carbonate in the subsoil
- Bellwood soils are in positions similar to those of the Oktibbeha soil
- Sacul soils are at a higher elevation than the Oktibbeha soil

Typical Pedon

Oktibbeha silt loam, 1 to 5 percent slopes, in woodland; about 2.1 miles east of Bienville on Louisiana State Highway 508; 2.6 miles north on Louisiana State Highway 507, 210 feet east of the highway on an oil well road, then 70 feet south of the road; NE¹/₄NW¹/₄ sec. 7, T. 16 N., R. 5 W.; latitude 32 degrees 55 minutes 15 seconds N.; longitude 32 degrees 23 minutes 32 seconds W.; Bryceland Quadrangle, Louisiana:

A—0 to 2 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; friable; common fine roots; strongly acid; clear wavy boundary.

Bt1—2 to 10 inches; strong brown (7.5YR 5/8) clay; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; common medium subangular blocky structure; firm; hard; plastic; common fine and few medium roots; many distinct clay films and pressure faces on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—10 to 18 inches; strong brown (7.5YR 5/8) clay; common medium prominent red (2.5YR 5/6) and common medium distinct yellowish brown (10YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; firm; plastic; common fine and few medium roots; many distinct clay films and pressure faces on faces of peds; very strongly acid; gradual wavy boundary.

Btss1—18 to 22 inches; variegated strong brown (7.5YR 5/6), yellowish brown (10YR 5/8), and red (2.5YR 5/8) clay; moderate medium subangular blocky structure; firm; plastic; common fine and medium roots; common pressure faces and slickensides on faces of some peds; common distinct clay films on faces of some peds; moderately acid; gradual wavy boundary.

Btss2—22 to 31 inches; variegated yellowish brown (10YR 5/8), strong brown (7.5YR 5/8), and light brownish gray (10YR 6/2) clay; moderate medium subangular blocky structure; firm; plastic; common fine and few medium roots; common distinct clay films on some ped faces; common

medium intersecting slickensides; very strongly acid; gradual wavy boundary.

BCss—31 to 34 inches; yellowish brown (10YR 5/6) clay; moderate medium subangular blocky structure; firm; plastic; few fine roots; few faint clay films on some ped faces; common medium pressure faces on some ped faces; few medium intersecting slickensides; very strongly acid; gradual wavy boundary.

Ck1—34 to 45 inches; yellowish brown (10YR 5/6) clay; massive parting to moderate medium angular blocky structure; firm; plastic; common fine and medium pockets of soft powdery lime; few small nodules of secondary carbonates; slightly alkaline; gradual wavy boundary.

Ck2—45 to 65 inches; light yellowish brown (2.5Y 6/4) clay; massive parting to moderate medium angular blocky structure; firm; plastic; common coarse pockets of soft powdery lime; common fine and medium nodules of secondary carbonates; moderately alkaline.

Range in Characteristics

Solum thickness: 30 to 50 inches

Clay content in the control section: 60 to 80 percent

Redoximorphic features: None

Other distinctive soil features: Secondary carbonates at 30 to 50 inches from the surface

Aluminum saturation: Less than 10 percent within 30 inches from the surface

Reaction: Very strongly acid to slightly acid (A and B); neutral to moderately alkaline (Ck)

A or Ap horizon:

Color—hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 4

Redoximorphic features—none

Texture—silt loam

Other features—none

Thickness—2 to 6 inches

Bt horizon:

Color—hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 3, 4, 6, or 8

Redoximorphic features—none

Texture—clay

Other features—few or common iron accumulations in shades of brown or red; none to common relict mottles in shades of gray

Thickness—8 to 25 inches

Btss horizon:

Color—hue of 10YR to 2.5YR, value of 5 or 6, and chroma of 4, 6, or 8; or the horizon is variegated in shades of red, brown, and gray

Redoximorphic features—none

Texture—clay

Other features—slickensides and pressure faces on peds; few to many iron accumulations in shades of brown or red and relict mottles in shades of gray

Thickness—10 to 25 inches

BCss horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 4 or 6; or the horizon is variegated in shades of brown and gray

Redoximorphic features—none

Texture—clay

Other features—slickensides and pressure faces on peds; few to many iron accumulations in shades of brown or red and relict mottles in shades of gray

Thickness—0 to 10 inches

Ck horizon:

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 3, 4, 6, or 8; or the horizon is variegated in shades of olive, brown, and gray

Redoximorphic features—none

Texture—clay

Other features—few to many soft masses of calcium carbonate accumulation and calcium carbonate nodules; few to many iron accumulations in shades of brown and relict mottles in shades of gray

Thickness—30 or more inches

Ouachita Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderately slow

Landscape: Coastal plain

Landform: Flood plains

Parent material: Loamy alluvium from streams

Slope range: 0 to 2 percent

Taxonomic classification: Fine-silty, siliceous, thermic Fluventic Dystrochrepts

Commonly associated soils: Cahaba, Dubach, and Guyton

- Cahaba and Dubach soils are on stream terraces and have an argillic horizon
- Guyton soils are on stream terraces, are in lower positions than the Ouachita soil, and are poorly drained and grayish throughout

Typical Pedon

Ouachita silt loam, in an area of Guyton-Ouachita silt loams, frequently flooded, in woodland; about 1.7 miles south of Bear Creek Cemetery on Parish Road

111 to pipeline; 0.4 mile east of pipeline to a stream bank; 65 feet north of pipeline; SW¹/₄SW¹/₄ sec. 36, T. 17 N., R. 6 W.; latitude 32 degrees 24 minutes 44 seconds N.; longitude 92 degrees 56 minutes 35 seconds W.; Bryceland Quadrangle, Louisiana:

A—0 to 5 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; many fine and few medium roots; strongly acid; clear smooth boundary.

BE—5 to 13 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; many fine and few medium roots; few fine pores; few fine faint yellowish brown oxidation stains along abandoned root channels; very strongly acid; clear wavy boundary.

Bw1—13 to 32 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct pale brown (7.5YR 5/4) masses of iron accumulation; weak medium subangular blocky structure; friable; common fine and medium roots; few fine pores; very strongly acid; clear wavy boundary.

Bw2—32 to 41 inches; yellowish brown (10YR 5/4) silt loam; common medium prominent reddish yellow (7.5YR 6/8) masses of iron accumulation; common medium distinct light gray (10YR 7/2) iron depletions; weak medium subangular blocky structure; friable; common fine and few medium roots; few fine pores; very strongly acid; gradual wavy boundary.

Bw3—41 to 48 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct reddish yellow (7.5YR 6/8) masses of iron accumulation; common coarse distinct light gray (10YR 7/2) iron depletions; weak fine subangular blocky structure; friable; few fine roots; very strongly acid; gradual wavy boundary.

C—48 to 62 inches; yellowish brown (10YR 5/6) very fine sandy loam; common medium distinct light gray (10YR 7/2) iron depletions; massive; friable; very strongly acid.

Range in Characteristics

Solum thickness: 40 to more than 80 inches

Clay content in the control section: 18 to 35 percent

Redoximorphic features: Iron accumulations in shades of brown or yellow and iron depletions in shades of gray at more than 24 inches from the surface

Other distinctive soil features: Irregular organic carbon distribution at 10 to 80 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Very strongly acid to moderately acid (A or Ap); very strongly acid (Bw and C)

A or Ap horizon:

Color—hue of 10YR, value of 4, and chroma of 2 to 4

Redoximorphic features—none

Texture—silt loam

Other features—none

Thickness—3 to 12 inches

BE horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Redoximorphic features—none

Texture—silt loam, loam, or very fine sandy loam

Other features—none

Thickness—0 to 12 inches

Bw horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3, 4, 6, or 8

Redoximorphic features—none to many iron accumulations in shades of brown or yellow; few or common iron depletions in shades of gray are below a depth of 24 inches

Texture—silt loam, loam, or silty clay loam

Other features—none

Thickness—33 to 60 inches

BC horizon (where present):

Color—hue of 10YR, value of 4 or 5, and chroma of 3, 4, 6, or 8

Redoximorphic features—iron accumulations in shades of brown; iron depletions in shades of gray

Texture—silt loam, loam, or fine sandy loam

Other features—none

Thickness—0 to 12 inches

C horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3, 4, 6, or 8

Redoximorphic features—iron accumulations in shades of brown; iron depletions in shades of gray

Texture—silt loam, fine sandy loam, very fine sandy loam, or loamy fine sand

Other features—none

Ruston Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Pleistocene age loamy marine deposits

Slope range: 1 to 8 percent

Taxonomic classification: Fine-loamy, siliceous, thermic Typic Paleudults

Commonly associated soils: Beauregard, Boykin, Kolin, and Malbis

- Beauregard, Kolin, and Malbis soils are at a lower elevation than the Ruston soil; Beauregard soils are fine-silty and have gray iron depletions within 30 inches of the surface; Kolin soils are fine-silty and have a subsoil that is clayey in the lower part; and Malbis soils have more than 5 percent plinthite in the subsoil
- Boykin soils are in positions similar to those of the Ruston soil and have thick sandy surface and subsurface layers

Typical Pedon

Ruston fine sandy loam, 1 to 5 percent slopes, in woodland; 2.5 miles east of Fryeburg on Louisiana State Highway 516; 1.1 miles north of Parish Road 493; 0.2 mile west on Parish Road 490; 150 feet north to a power line, 600 feet west along power line, then 100 feet north of right of way; SW¹/₄SW¹/₄ sec. 28, T. 17 N., R. 8 W.; latitude 32 degrees 25 minutes 34 seconds N.; longitude 93 degrees 11 minutes 58 seconds W.; Fryeburg Quadrangle, Louisiana:

A—0 to 11 inches; grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; very friable; many very fine and fine roots; moderately acid; gradual wavy boundary.

E—11 to 19 inches; brown (10YR 5/3) fine sandy loam; few fine faint grayish brown organic accumulations; weak medium subangular blocky structure; friable; common fine and medium roots; strongly acid; gradual wavy boundary.

Bt1—19 to 25 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; few fine pores; some peds coated with very pale brown very fine sand; common distinct clay films on faces of peds; few small pockets of pale brown (10YR 6/3) loamy sand; very strongly acid; gradual wavy boundary.

Bt2—25 to 38 inches; yellowish red (5YR 5/6) sandy clay loam; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; common distinct clay films on faces of peds; few fine and medium brown concretions; very strongly acid; gradual wavy boundary.

Bt/E—38 to 50 inches; yellowish red (5YR 5/6) fine sandy loam (Bt); moderate coarse subangular blocky structure parting to moderate medium subangular blocky; friable; few fine roots; few fine pores; common 1/2- to 2-inch pockets and streaks of pale brown (10YR 6/3) and brownish yellow (10YR 6/6) fine sandy loam that make up about 1/3 of horizon (E); common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

B't1—50 to 65 inches; red (2.5YR 4/8) sandy clay loam; common medium prominent pale brown (10YR 6/3) lithochromic mottles; common medium distinct red (2.5YR 5/6) masses of iron accumulation; common fine prominent light brownish gray (10YR 6/2) lithochromic mottles; moderate coarse subangular blocky structure parting to moderate fine and medium subangular blocky; firm; few fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

B't2—65 to 80 inches; red (2.5YR 5/6) sandy clay loam; common medium faint red (2.5YR 5/8) masses of iron accumulation; common medium prominent light yellowish brown (10YR 6/4) lithochromic mottles; moderate coarse subangular blocky structure parting to moderate fine and medium subangular blocky; firm; common fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
 Clay content in the control section: 18 to 35 percent
 Redoximorphic features: None
 Other distinctive soil features: Buried B't horizon at 18 to 60 inches from the surface
 Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface
 Reaction: Very strongly acid to slightly acid (A and E); very strongly acid to moderately acid in the subsoil

A horizon and BA horizon (where present):

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4
 Redoximorphic features—none
 Texture—fine sandy loam
 Other features—none
 Thickness—3 to 11 inches

E horizon and BE horizon (where present):

Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—0 to 15 inches

Bt horizon:

Color—hue of 5YR or 2.5YR, value of 4 to 6, and chroma of 4, 6, or 8

Redoximorphic features—none

Texture—sandy clay loam, loam, or clay loam

Other features—none

Thickness—10 to 40 inches

Bt/E horizon:

Color—hue of 5YR or 2.5YR, value of 4 to 6, and chroma of 4, 6, or 8 (Bt); hue of 10YR, value of 5 or 6, and chroma of 3 or 4 (E)

Redoximorphic features—none

Texture—sandy clay loam, loam, or fine sandy loam (Bt); loamy sand, fine sandy loam, or sandy loam (E)

Other features—Bt/E horizon has a clay decrease of 20 percent or more than the clay content of the overlying Bt horizon; total clay content of the Bt/E horizon is 10 to 20 percent; up to 10 percent dark colored, brittle bodies are in the Bt/E horizon; the E parts are streaks and pockets that make up as much as 50 percent of the horizon

Thickness—4 to 20 inches

B't horizon:

Color—variegated in shades of gray, brown, yellow, or red

Redoximorphic features—none

Texture—sandy clay loam, loam, or clay loam

Other features—clay content of the B't horizon increases from that of the Bt/E horizon; few to many iron accumulations in shades of red, brown, or yellow and lithochromic mottles in shades of gray

Sacul Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from

Tertiary age loamy and clayey marine deposits

Slope range: 1 to 12 percent

Taxonomic classification: Clayey, mixed, thermic Aquic Hapludults

Commonly associated soils: Bowie, Briley, Guyton, Mahan, and Trep

- Bowie and Trep soils are in positions similar to those of the Sacul soil; Bowie soils are fine-loamy; and Trep soils have thick sandy surface and subsurface layers
- Briley and Mahan soils are at a higher elevation than the Sacul soil; Briley soils have thick sandy surface and subsurface layers; and Mahan soils do not have gray iron depletions within 30 inches of the soil surface
- Guyton soils are in narrow drainageways and are poorly drained and fine-silty

Typical Pedon

Sacul fine sandy loam, 5 to 12 percent slopes, in woodland; about 2.4 miles east of Mount Lebanon on Parish Road 250, then 100 feet north of the road; NW¹/₄SW¹/₄ sec. 32, T. 18 N., R. 7 W.; latitude 32 degrees 30 minutes 10 seconds N.; longitude 93 degrees 00 minutes 49 seconds W.; Gibsland Quadrangle, Louisiana:

- A—0 to 2 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; friable; common fine and medium roots; common fine brown concretions; moderately acid; clear smooth boundary.
- E—2 to 6 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; friable; common fine and few medium roots; common fine brown concretions; slightly acid; clear wavy boundary.
- Bt1—6 to 17 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; firm; common fine roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.
- Bt2—17 to 28 inches; red (2.5YR 4/6) clay; many medium prominent light brownish gray (10YR 6/2) and common medium prominent light yellowish brown (10YR 6/4) lithochromic mottles; moderate medium subangular blocky structure; firm; common fine roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.
- Bt3—28 to 42 inches; variegated red (2.5YR 4/6) and gray (10YR 6/1) clay; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.
- BCg—42 to 65 inches; gray (10YR 6/1) clay loam; common medium prominent red (2.5YR 4/6) and light red (2.5YR 6/8) lithochromic mottles;

moderate medium subangular blocky structure; firm; very strongly acid.

Range in Characteristics

Solum thickness: 40 to more than 80 inches
 Clay content in the control section: 35 to 60 percent
 Redoximorphic features: None
 Other distinctive soil features: Paralithic contact at more than 60 inches from the surface
 Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface
 Reaction: Very strongly acid to moderately acid (A and E); extremely acid to strongly acid in the subsoil and substratum layers

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 to 4; A horizons with value of 3 are less than 6 inches
 Redoximorphic features—none
 Texture—fine sandy loam
 Other features—0 to 15 percent ironstone nodules
 Thickness—1 to 7 inches

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4
 Redoximorphic features—none
 Texture—very fine sandy loam, fine sandy loam, or loam
 Other features—0 to 15 percent ironstone nodules
 Thickness—3 to 10 inches

Bt horizon (upper part):

Color—hue of 5YR or 2.5YR, value of 3 to 5, and chroma of 6 or 8
 Redoximorphic features—none
 Texture—clay, silty clay, or sandy clay
 Other features—0 to 10 percent ironstone nodules; iron accumulations in shades of brown or red and lithochromic mottles in shades of gray are below 12 inches

Bt horizon (lower part):

Color—variegated in shades of brown, red, and gray
 Redoximorphic features—none
 Texture—clay, silty clay, clay loam, or sandy clay
 Other features—0 to 10 percent ironstone nodules; iron accumulations in shades of brown or red; lithochromic mottles in shades of gray

Btg horizon (where present):

Color—hue of 10YR, value of 5 or 6, and chroma of 1 or 2

Redoximorphic features—none

Texture—silty clay loam, clay loam, sandy clay loam, or sandy clay

Other features—0 to 10 percent ironstone nodules; iron accumulations in shades of brown or red; lithochromic mottles in shades of gray

BC or BCg horizon:

Color—variegated in shades of brown, red, and gray

Redoximorphic features—none

Texture—clay, silty clay, silty clay loam, clay loam, or sandy clay

Other features—0 to 10 percent ironstone nodules; iron accumulations in shades of brown or red; lithochromic mottles in shades of gray

C or Cg horizon (where present):

Color—variegated in shades of brown, yellow, red, and gray

Redoximorphic features—none

Texture—silty clay loam, clay loam, sandy clay loam, or loam

Other features—0 to 10 percent ironstone nodules; iron accumulations in shades of brown or red; lithochromic mottles in shades of gray

Sailes Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Tertiary age sandy and loamy marine deposits

Slope range: 1 to 12 percent

Taxonomic classification: Fine-loamy, siliceous, thermic Typic Paleudults

Commonly associated soils: Betis, Briley, McLaurin, and Sacul

- Betis and McLaurin soils are at a slightly higher elevation than the Sailes soil; Betis soils are sandy throughout; and McLaurin soils are coarse-loamy
- Briley soils are in positions similar to those of the Sailes soil and have sandy surface and subsurface layers that, together, are more than 20 inches thick
- Sacul soils are at a lower elevation than the Sailes soil and have a clayey particle-size control section

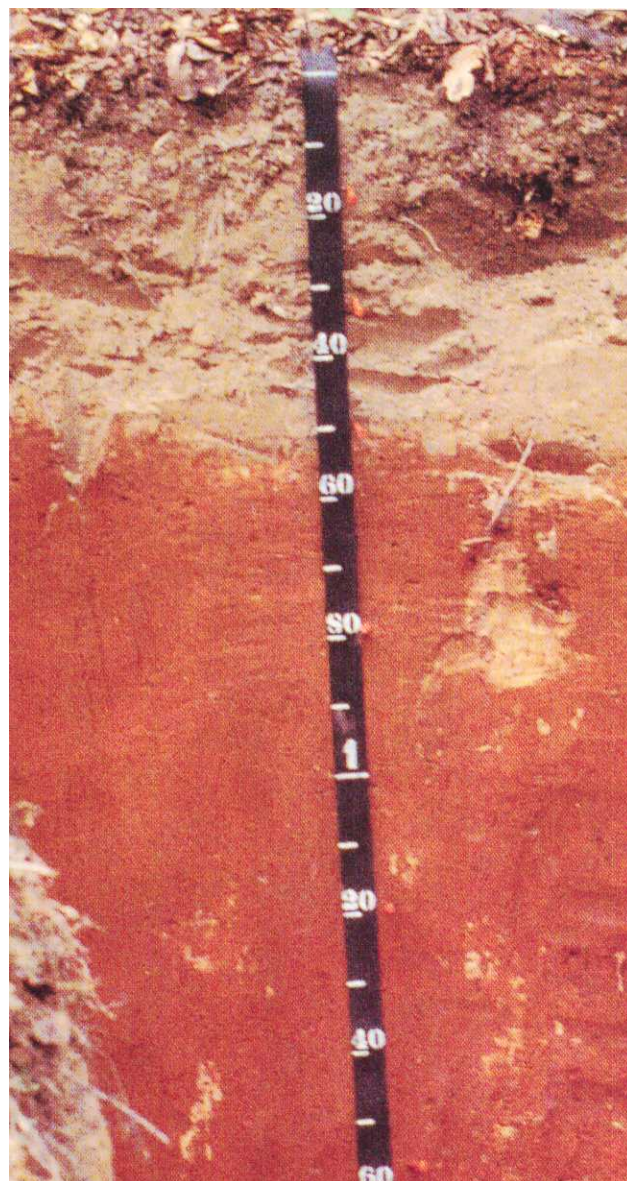


Figure 10.—Profile of Sailes loamy fine sand.

Typical Pedon

Sailes loamy fine sand (fig. 10), 1 to 5 percent slopes, in woodland; about 4.4 miles east of Castor on Louisiana State Highway 4; 0.4 mile north on Parish Road 667, 350 feet west of the road; SW¹/₄SW¹/₄ sec. 16, T. 15 N., R. 7 W.; latitude 32 degrees 16 minutes 52 seconds N.; longitude 93 degrees 05 minutes 56 seconds W.; Sparta Quadrangle, Louisiana:

A—0 to 7 inches; grayish brown (10YR 5/2) loamy fine sand; weak fine granular structure; very friable; many very fine and fine and common

- medium roots; strongly acid; clear smooth boundary.
- E1—7 to 13 inches; brown (10YR 5/3) loamy fine sand; weak fine granular structure; very friable; common fine and medium roots; common fine faint streaks of light brownish gray (10YR 6/2) clean sand; very strongly acid; clear wavy boundary.
- E2—13 to 18 inches; pale brown (10YR 6/3) fine sandy loam; few fine faint streaks of light gray (10YR 7/2) clean sand; weak fine subangular blocky structure parting to weak fine granular; very friable; common fine, medium, and coarse roots; few very fine pores; strongly acid; clear wavy boundary.
- Bt1—18 to 28 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable, slightly brittle; common fine and medium roots; common very fine and fine pores; few streaks of light gray (10YR 7/2) clean sand grains along old root channels and in some pores; common distinct dark red (2.5YR 3/6) clay films on surfaces of peds; very strongly acid; gradual wavy boundary.
- Bt2—28 to 39 inches; red (2.5YR 4/6) sandy clay loam; common medium faint red (2.5YR 4/8) masses of iron accumulation; moderate medium subangular blocky structure; friable, slightly brittle; few fine roots; common very fine and fine pores; few streaks of light gray (10YR 7/2) clean sand grains along old root channels and in some pores; common distinct clay films on surfaces of peds; strongly acid; gradual wavy boundary.
- Btb1—39 to 42 inches; red (10R 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common very fine and fine pores; few streaks of light gray (10YR 7/2) clean sand grains along old root channels and in some pores; common distinct clay films on surfaces of peds; very strongly acid; gradual wavy boundary.
- Btb2—42 to 46 inches; red (10R 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few very fine and fine pores; few fine iron-manganese concretions; few streaks of light gray (10YR 7/2) clean sand grains along old root channels and in some pores; common distinct clay films on surfaces of peds; strongly acid; gradual wavy boundary.
- Btb3—46 to 78 inches; dark red (10R 3/6) sandy clay loam; few medium prominent pink (5YR 7/4) lithochromic mottles; moderate medium subangular blocky structure; friable; few fine roots; common very fine and fine pores; few fine

- and medium iron-manganese concretions; few streaks of light gray (10YR 7/2) clean sand grains along old root channels and in some pores; common distinct clay films on surfaces of peds; very strongly acid; gradual wavy boundary.
- Btb4—78 to 90 inches; red (10R 4/8) sandy clay loam; few medium prominent yellowish red (5YR 4/8) lithochromic mottles; moderate medium subangular blocky structure; firm; few fine roots; common very fine and fine pores; few fine iron-manganese concretions; common distinct clay films on surfaces of peds; strongly acid.

Range in Characteristics

- Solum thickness: More than 80 inches
 Clay content in the control section: 18 to 35 percent
 Redoximorphic features: None
 Other distinctive soil features: Buried argillic horizon at 22 to 60 inches from the surface
 Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface
 Reaction: Very strongly acid or strongly acid throughout, except where the surface has been limed

A or Ap horizon:

- Color—hue of 10YR, value of 3 to 5, and chroma of 1 to 3
 Redoximorphic features—none
 Texture—loamy fine sand
 Other features—0 to 5 percent ironstone nodules
 Thickness—4 to 8 inches

E horizon:

- Color—hue of 10YR, value of 5 or 6, and chroma of 2, 3, 4, or 6; or hue of 7.5YR, value of 5 or 6, and chroma of 2 or 3
 Redoximorphic features—none
 Texture—loamy fine sand or fine sandy loam
 Other features—0 to 5 percent ironstone nodules
 Thickness—4 to 12 inches

Bt horizon:

- Color—hue of 2.5YR, value of 4 or 5, and chroma of 4, 6, or 8; or hue of 10R, value of 4 or 5, and chroma of 3, 4, 6, or 8
 Redoximorphic features—none
 Texture—loam, sandy clay loam, or clay loam
 Other features—0 to 5 percent ironstone nodules; none to common lithochromic mottles in shades of red, brown, or yellow
 Thickness—14 to 40 inches

Btb horizon:

- Color—hue of 2.5YR, value of 3 or 4, and chroma

of 6 or 8; or hue of 10R, value of 3 or 4, and chroma of 2, 3, 4, 6, or 8

Redoximorphic features—none

Texture—loam, sandy clay loam, or clay loam

Other features—0 to 5 percent ironstone nodules; none to common lithochromic mottles in shades of red, brown, pink, or yellow

Sawyer Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Tertiary age loamy and clayey marine deposits

Slope range: 1 to 5 percent

Taxonomic classification: Fine-silty, siliceous, thermic Aquic Paleudults

Commonly associated soils: Bowie, Metcalf, and Sacul

- Bowie soils are at a higher elevation than the Sawyer soil and have more than 5 percent plinthite in the subsoil
- Metcalf and Sacul soils are at a slightly lower elevation than the Sawyer soil; Metcalf soils have albic materials in the subsoil; and Sacul soils have a clayey particle-size control section

Typical Pedon

Sawyer very fine sandy loam, 1 to 5 percent slopes, in woodland; about 1.8 miles south of Fryeburg; 1.7 miles south of the intersection of Louisiana State Highways 516 and 792; 1.4 miles west on Parish Road 468, then 100 feet west of the road; NE¹/₄SE¹/₄ sec. 12, T. 16 N., R. 8 W.; latitude 32 degrees 23 minutes 15 seconds N.; longitude 93 degrees 14 minutes 20 seconds W.; Fryeburg Quadrangle, Louisiana:

A—0 to 3 inches; brown (10YR 4/3) very fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; extremely acid; clear wavy boundary.

E—3 to 9 inches; light yellowish brown (10YR 6/4) very fine sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; common fine pores; common distinct clay films on faces of peds and in pores; strongly acid; clear wavy boundary.

Bt1—9 to 20 inches; strong brown (7.5YR 5/6) loam; moderate medium subangular blocky structure; friable; common fine and medium roots; common

fine pores; common distinct clay films on faces of peds and in pores; strongly acid; clear wavy boundary.

Bt2—20 to 28 inches; strong brown (7.5YR 5/6) silty clay loam; common medium distinct red (2.5YR 4/8) masses of iron accumulation; moderate medium subangular blocky structure; friable; common fine and few medium roots; few fine pores; common distinct clay films on surfaces of peds and in pores; very strongly acid; gradual wavy boundary.

Bt3—28 to 32 inches; yellowish brown (10YR 5/6) silty clay loam; common medium prominent yellowish red (5YR 5/6) masses of iron accumulation; common medium distinct and light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; friable; common fine and few medium roots; few fine pores; common distinct clay films on surfaces of peds and in pores; very strongly acid; gradual wavy boundary.

Bt4—32 to 45 inches; variegated brownish yellow (10YR 6/6), red (2.5YR 5/6), and light brownish gray (10YR 6/2) silty clay; moderate medium subangular blocky structure; friable; few fine roots; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

Btg5—45 to 65 inches; gray (10YR 6/1) silty clay; common medium prominent red (2.5YR 4/6) masses of iron accumulation; moderate medium subangular blocky structure; common distinct clay films on faces of peds; very strongly acid.

Range in Characteristics

Solum thickness: 60 to 80 inches

Clay content in the control section: 20 to 35 percent

Redoximorphic features: Iron accumulations in shades of red or brown and iron depletions in shades of gray beginning at 8 to 30 inches from the surface

Other distinctive soil features: None

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Extremely acid to strongly acid, except where the surface layer has been limed

A or Ap horizon:

Color—A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3; in cultivated areas, the Ap horizon has value of 5, and chroma of 2 or 3

Redoximorphic features—none

Texture—very fine sandy loam

Other features—0 to 5 percent gravel

Thickness—3 to 10 inches

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 4
 Redoximorphic features—none
 Texture—very fine sandy loam
 Other features—0 to 5 percent gravel
 Thickness—0 to 10 inches

Bt1 and Bt2 horizons:

Color—hue of 10YR or 7.5YR, value of 5, and chroma of 4, 6, or 8
 Redoximorphic features—none to common iron accumulations in shades of red and brown and iron depletions in shades of gray
 Texture—silt loam, loam, or silty clay loam
 Other features—0 to 5 percent gravel

Bt3 and Bt4 horizons:

Color—hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8; or the horizon is variegated in shades of brown, red, and gray
 Redoximorphic features—iron accumulations in shades of red and brown; iron depletions in shades of gray
 Texture—silty clay loam, silty clay, or clay
 Other features—0 to 5 percent gravel

Btg horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 1 or 2
 Redoximorphic features—iron accumulations in shades of red and brown; iron depletions in shades of gray
 Texture—silty clay loam, silty clay, or clay
 Other features—0 to 5 percent gravel

Cg horizon (where present):

Color—hue of 10YR, value of 5 or 6, and chroma of 1 or 2; or hue of 2.5Y, value of 5 or 6, and chroma of 2
 Redoximorphic features—iron accumulations in shades of red and brown; iron depletions in shades of gray
 Texture—silty clay loam or silty clay
 Other features—0 to 5 percent gravel

Shatta Series

Depth class: Deep

Drainage class: Moderately well drained

Permeability: Slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Pleistocene age silty marine sediments

Slope range: 1 to 5 percent

Taxonomic classification: Fine-silty, siliceous, thermic Typic Fragiudults

Commonly associated soils: Beauregard, Malbis, Kolin, and Ruston

- None of these soils has a fragipan
- Beauregard and Kolin soils are at a lower elevation than the Shatta soil
- Malbis soils are in positions similar to those of the Shatta soil
- Ruston soils are at a higher elevation than the Shatta soil

Typical Pedon

Shatta silt loam, 1 to 5 percent slopes, in woodland; about 3.7 miles north of Ringgold on Louisiana State Highway 7; 0.5 mile west on Parish Road 446; 0.1 mile north on Parish Road 449, then 100 feet west of the road; NW¹/₄NE¹/₄ sec. 9, T. 16 N., R. 9 W.; latitude 32 degrees 23 minutes 34 seconds N.; longitude 93 degrees 17 minutes 21 seconds W.; Heflin Quadrangle, Louisiana:

A—0 to 5 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; friable; common fine roots; strongly acid; clear wavy boundary.

E—5 to 11 inches; brown (10YR 5/3) silt loam; weak fine granular structure; friable; common fine and few medium roots; strongly acid; clear wavy boundary.

BE—11 to 14 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct light yellowish brown (10YR 6/4) strippings; weak fine granular structure; friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bt1—14 to 24 inches; strong brown (7.5YR 5/6) silty clay loam; common medium distinct brownish yellow (10YR 6/6) masses of iron accumulation; weak medium subangular blocky structure; friable; common distinct clay films on faces of peds; common fine and medium roots; very strongly acid; gradual wavy boundary.

Bt2—24 to 33 inches; yellowish brown (10YR 5/8) silty clay loam; weak medium subangular blocky structure; friable; common distinct clay films on faces of peds; common fine and few medium roots; strongly acid; gradual wavy boundary.

Btx1—33 to 41 inches; yellowish brown (10YR 5/6) silty clay loam; common fine prominent yellowish red (5YR 5/6) and common fine distinct strong brown (7.5YR 5/8) masses of iron accumulation; weak very coarse prismatic structure parting to moderate medium subangular blocky; about 70 percent of horizontal cross section is firm and brittle, and the remaining 30 percent is very friable; few fine roots mainly in cracks between

pedes; few pockets of uncoated sand and silt; light gray (10YR 7/2) silt loam in cracks and along some root channels; common distinct clay films on faces of pedes; strongly acid; gradual wavy boundary.

Btx2—41 to 61 inches; yellowish brown (10YR 5/8) silty clay loam; common medium prominent yellowish red (5YR 5/8) and common fine distinct strong brown (7.5YR 5/8) masses of iron accumulation; weak very coarse prismatic structure parting to moderate medium subangular blocky; about 70 percent of horizontal cross section is firm and brittle, and the remaining 30 percent is very friable; thin light gray (10YR 7/2) silt coatings in cracks between prisms and in cracks along some ped faces; common distinct clay films on faces of pedes; strongly acid; gradual wavy boundary.

BC—61 to 70 inches; variegated brownish yellow (10YR 6/8), light brownish gray (10YR 6/2), and red (2.5YR 5/8) sandy clay loam; massive; firm; strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches

Clay content in the control section: 18 to 30 percent

Redoximorphic features: Iron accumulations at 25 to 45 inches from the surface; iron depletions in shades of gray

Other distinctive soil features: Fragipan at 20 to 36 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Very strongly acid to moderately acid throughout, except where the surface has been limed

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 1 or 2 or value of 4 or 5 and chroma of 2 to 4; where value is 3, the A horizon is less than 6 inches thick

Redoximorphic features—none

Texture—silt loam

Other features—none

Thickness—3 to 8 inches

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 1 to 3

Redoximorphic features—none

Texture—silt loam

Other features—none

Thickness—0 to 10 inches

BE horizon:

Color—hue of 10YR, value of 5, and chroma of 4, 6, or 8

Redoximorphic features—none

Texture—silt loam or loam

Other features—none

Thickness—0 to 10 inches

Bt horizon:

Color—hue of 10YR, value of 5, and chroma of 4, 6, or 8

Redoximorphic features—few or common iron accumulations in shades of red or yellow

Texture—silty clay loam, loam, or silt loam

Other features—sand content in the Bt horizon is more than 25 percent, with less than 15 percent coarser than very fine sand

Thickness—8 to 24 inches

Btx horizon:

Color—hue of 10YR or 7.5YR, value of 5, and chroma of 4, 6, or 8; or hue of 10YR, value of 4, and chroma of 4

Redoximorphic features—none to many iron accumulations in shades of brown, red, or yellow and iron or clay depletions in shades of gray

Texture—silty clay loam, loam, or silt loam

Other features—Brittle pedes make up more than 60 percent of the horizon

Thickness—6 to 40 inches

BC horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4, 6, or 8; or the horizon is variegated in shades of brown, yellow, red, and gray

Redoximorphic features—iron accumulations in shades of red, brown, or yellow; iron depletions in shades of gray

Texture—silt loam, loam, or sandy clay loam

Other features—depth to the BC horizon is more than 60 inches

Smithdale Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from Pleistocene age loamy marine sediments

Slope range: 8 to 20 percent

Taxonomic classification: Fine-loamy, siliceous, thermic Typic Hapludults

Commonly associated soils: Boykin, Guyton, and Ruston

- Boykin and Ruston soils are at a higher elevation than the Smithdale soil; Boykin soils have thick sandy surface and subsurface layers; and Ruston soils have a bisequum in the profile
- Guyton soils are in drainageways, are poorly drained, and are fine-silty

Typical Pedon

Smithdale fine sandy loam, 8 to 20 percent slopes, in woodland; about 3.5 miles west of Ringgold on Parish Road 426; 0.8 mile south on Parish Road 425 to pipeline, 0.4 mile north on pipeline, then 125 feet east of pipeline; NE¹/₄NW¹/₄ sec. 25, T. 16 N., R. 10 W.; latitude 32 degrees 20 minutes 51 seconds N.; longitude 93 degrees 20 minutes 59 seconds W.; Ringgold Quadrangle, Louisiana:

A—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; common fine roots; strongly acid; clear smooth boundary.

E—4 to 8 inches; brown (10YR 5/3) fine sandy loam; weak medium granular structure; very friable; common fine and medium roots; strongly acid; clear smooth boundary.

Bt1—8 to 22 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine and few medium roots; common distinct clay films on faces of ped; very strongly acid; clear smooth boundary.

Bt2—22 to 38 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; common distinct clay films on faces of ped; very strongly acid; clear smooth boundary.

Bt3—38 to 48 inches; yellowish red (5YR 5/6) sandy loam; few medium prominent strong brown (7.5YR 5/8) masses of iron accumulation; weak medium subangular blocky structure; friable; few faint clay films on faces of ped; some sand grains coated and bridged with clay; few fine streaks and pockets of light yellowish brown (10YR 6/4) sand grains; very strongly acid; gradual wavy boundary.

Bt4—48 to 68 inches; yellowish red (5YR 5/6) sandy loam; weak medium subangular blocky structure; friable; few faint clay films on faces of ped; some sand grains coated and bridged with clay; common medium streaks and pockets of pale brown (10YR 6/3) sand grains; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches

Clay content in the control section: 18 to 33 percent

Redoximorphic features: None

Other distinctive soil features: Clay decreases by 20 percent or more in the Bt horizon at less than 60 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Very strongly acid or strongly throughout, except where the surface has been limed

A or Ap horizon:

Color—hue of 10YR or 7.5YR, value of 4, and chroma of 2 or 3

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—2 to 10 inches

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 4

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—0 to 10 inches

BA and BE horizons (where present):

Color—hue of 10YR to 5YR, value of 4 or 5, and chroma of 4, 6, or 8

Redoximorphic features—none

Texture—fine sandy loam

Other features—none

Thickness—0 to 10 inches

Bt horizon (upper part):

Color—hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8

Redoximorphic features—none

Texture—clay loam, sandy clay loam, or loam

Other features—silt content is 15 to 45 percent

Bt horizon (lower part):

Color—hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8

Redoximorphic features—none

Texture—loam or sandy loam

Other features—few to many pockets of pale brown to brownish yellow sand strippings; 0 to 10 percent chert, quartz, or ironstone gravel

Trep Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderately slow

Landscape: Coastal plain

Landform: Uplands

Parent material: Coastal plain sediments from
Tertiary age sandy and loamy marine deposits

Slope range: 1 to 5 percent

Taxonomic classification: Loamy, siliceous, thermic
Arenic Paleudults

Commonly associated soils: Bowie, Briley, and Sacul

- Bowie soils are at a slightly lower elevation than the Trep soil and are loamy throughout
- Briley soils are at a higher elevation than the Trep soil and have a reddish subsoil
- Sacul soils are at a lower elevation than the Trep soil and have a clayey and loamy subsoil

Typical Pedon

Trep loamy fine sand (fig. 11), 1 to 5 percent slopes, in woodland; about 2.7 miles north of Friendship on Louisiana State Highway 155; 1.6 miles west on timber company road; 0.2 mile south on access road; NW¹/₄SW¹/₄ sec. 17, T. 15 N., R. 5 W.; latitude 32 degrees 17 minutes 01 second N.; longitude 92 degrees 54 minutes 08 seconds W.; Bienville Quadrangle, Louisiana:

- A— 0 to 9 inches; brown (10YR 5/3) loamy fine sand; weak fine granular structure; very friable; many fine and common medium roots; strongly acid; clear wavy boundary.
- E—9 to 23 inches; light yellowish brown (10YR 6/4) loamy fine sand; weak fine subangular blocky structure; very friable; common fine and medium and few coarse roots; strongly acid; gradual wavy boundary.
- Bt1—23 to 42 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 5/6) and few fine prominent yellowish red (5YR 5/6) masses of iron accumulation; weak coarse prismatic structure parting to weak medium subangular blocky; friable; common fine and few medium roots; few fine pores; brownish yellow (10YR 6/6) materials around roots and pores; common distinct clay films on faces of some peds; strongly acid; gradual wavy boundary.
- Bt2—42 to 57 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium prominent yellowish red (5YR 5/6) and few fine prominent red (2.5YR 5/6) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) iron depletions; moderate coarse prismatic structure parting to weak medium subangular blocky; friable; common fine roots; few fine pores; common distinct clay films on

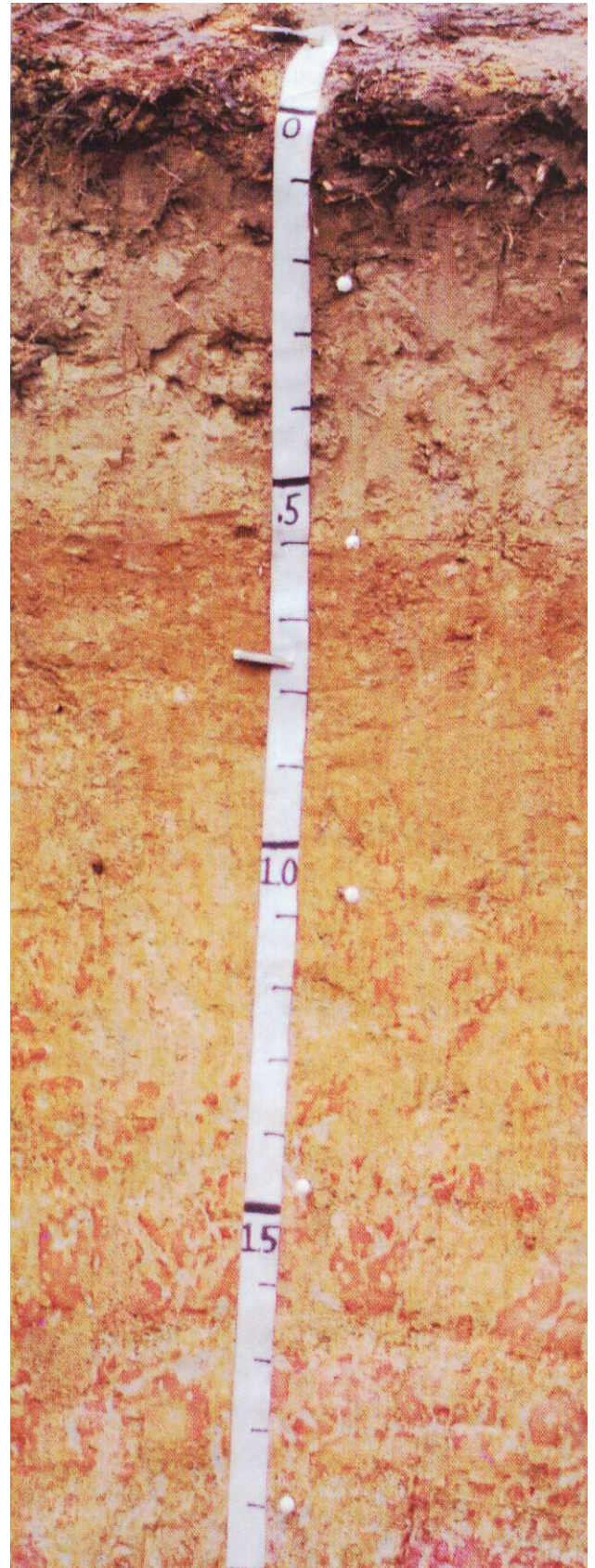


Figure 11.—Profile of Trep loamy fine sand.

faces of pedis; strongly acid; gradual wavy boundary.

Bt3—57 to 75 inches; variegated brownish yellow (10YR 6/6), light gray (10YR 7/1), and yellowish red (5YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/6) masses of iron accumulation; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few fine pores; common distinct clay films on faces of some pedis; light gray material contains more clay than surrounding material; very strongly acid; gradual wavy boundary.

Range in Characteristics

Solum thickness: 60 to more than 80 inches

Clay content in the control section: 18 to 35 percent

Redoximorphic features: Iron depletions in shades of gray and iron accumulations in shades of red or brown at more than 30 inches from the surface

Other distinctive soil features: Sandy epipedon over a loamy subsoil at 20 to 40 inches from the surface

Aluminum saturation: Up to 85 percent in some pedons within 30 inches from the surface

Reaction: Strongly acid to slightly acid (A and E); very strongly acid to moderately acid (Bt)

A or Ap horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4

Redoximorphic features—none

Texture—loamy fine sand

Other features—none

Thickness—4 to 10 inches

E horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 2 to 4

Redoximorphic features—none

Texture—loamy fine sand

Other features—none

Thickness—14 to 30 inches

Bt horizon (upper part):

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4, 6, or 8

Redoximorphic features—few or common iron accumulations in shades of red or brown and iron depletions in shades of gray are below a depth of 30 inches

Texture—sandy clay loam or loam

Other features—none

Thickness—15 to 35 inches

Bt horizon (lower part) and Btg horizon (where present):

Color—Variegated in shades of gray, brown, and red (Bt); matrix colors in shades of gray (Btg)

Redoximorphic features—iron accumulations in shades of red or brown; iron depletions in shades of gray

Texture—sandy clay, clay, or sandy clay loam

Other features—none

Formation of the Soils

In this section, the processes and factors of soil formation are explained and related to the soils in the survey area, and the landforms and surface geology of the parish are described.

Processes of Soil Formation

The processes of soil formation influence the kind and degree of profile development. The factors of soil formation—parent material, climate, living organisms, relief, and time—determine the rate and relative effectiveness of different processes.

Important soil-forming processes are those that result in additions of organic, mineral, and gaseous materials to the soil; losses of these same materials from the soil; translocation of materials from one point to another within the soil; and physical and chemical transformation of mineral and organic materials within the soil (Buol and others, 1980; Simonson, 1959).

Many processes occur simultaneously. Examples are the accumulation of organic matter, the development of soil structure, the formation and translocation of clay, and the leaching of bases from some soil horizons. Some important processes that have contributed to the formation of soils in Bienville Parish are discussed in the following paragraphs.

Organic matter has accumulated in all of the soils, has partly decomposed, and has been incorporated into the soils. Organic matter production is greatest in and above the surface horizon. This results in the formation of soils in which the surface horizon is higher in organic matter content than the deeper horizons. Living organisms decompose, incorporate, and mix organic residue into the soil horizons. Many of the more stable products of decomposition remain as finely divided material that contributes to darken the soil, increases the available water-holding and cation-exchange capacities, contributes to granulation, and serves as a source of plant nutrients. In Bienville Parish, the conversion of woodland and pastureland to cropland has reduced the content of organic matter in many of the soils.

The addition of alluvial sediment at the surface has been important in the formation of some of the soils in the parish by providing new parent material in which

processes of soil formation then occur. In many areas, new material has accumulated faster than the processes of soil formation could appreciably alter it. The evident depositional strata in Ouachita soils are the result of this type of accumulation. The addition of alluvial sediment is also occurring in flooded areas of Guyton soils.

Processes resulting in the development of soil structure have taken place in all of the soils. Plant roots and other organisms are effective agents in the rearrangement of soil material into secondary aggregates. Decomposition products or organic residue, secretions of organisms, clays, and oxides of elements, such as iron, which form during soil development, all serve as cementing agents that help to stabilize structural aggregates.

Alternative periods of wetting and drying and shrinking and swelling contribute to the development of structural aggregates, particularly in soils that have large amounts of clay, such as Eastwood soils.

The poorly drained soils in the survey area have horizons in which the reduction and segregation of iron and manganese compounds are important processes. Reducing conditions prevail for long periods in poorly aerated horizons. Consequently, the relatively soluble reduced forms of iron and manganese are more abundant than the less soluble oxidized forms. Reduced forms of these elements result in the gray colors that are characteristic in the subsoil of Guyton soils. In the more soluble reduced forms, appreciable amounts of iron and manganese can be removed from the soil or translocated from one position to another within the soil by water. The browner mottles in predominantly gray horizons indicate segregation and concentration of oxidized iron compounds that resulted from alternate conditions of oxidizing and reducing.

In most of the soils, water moving through the soil has leached soluble bases and any free carbonates that may have been initially present from some horizons. The effects of leaching are the least pronounced in Buxin, Forbing, Moreland, and Oktibbeha soils. These soils formed in parent material that initially contained large amounts of free calcium carbonate. Forbing, Moreland, and Oktibbeha soils contain free calcium carbonate in the subsoil or

substratum. Most pedons of the Buxin soil are alkaline in the subsoil but contain no visible accumulations of calcium carbonate. Except for Buxin, Forbing, Moreland, and Oktibbeha soils, all of the other soils in the parish are typically acid throughout. Forbing and Oktibbeha soils are in the Tertiary uplands and formed in loamy and clayey sediment. Buxin and Moreland soils formed in clayey alluvium. Because water moves at a very slow rate through the profile; carbonates have not been leached from the soil.

The formation, translocation, and accumulation of clay in the profile have been important processes during the development of all of the soils in the parish, except for Darden and Ouachita soils. Silicon and aluminum, released as a result of weathering of such minerals as pyroxenes, amphiboles, and feldspar, can recombine with the components of water to form secondary clay minerals, such as kaolinite. Layer silicate minerals, such as biotite and montmorillonite, can also weather to form other clay minerals, such as vermiculite or kaolinite. Horizons consisting of secondary accumulations of clay result largely from the translocation of clays from the upper to the lower horizons. As water moves downward, it can carry small amounts of clay in suspension. The clay is deposited and accumulates at the depths of water penetration or in horizons where it becomes flocculated or filtered out by fine pores in the soil. Over long periods of time, these processes can result in distinct horizons of clay accumulation.

Factors of Soil Formation

Soil is produced by soil-forming processes acting on material deposited or accumulated by geologic forces.

The characteristics of the soil at any given point are determined by the physical and mineralogical composition of the parent material, the climate under which the soil has accumulated and existed since accumulation, the plant and animal life on and in the soil, the relief, and the length of time these forces of soil formation have acted on the soil material (Jenny, 1941).

Climate and plant and animal life, chiefly plants, are active factors of soil formation. They act on the parent material that has accumulated through the weathering of rocks and slowly change it to a natural body that has genetically related horizons. The effects of climate and plant and animal life are conditioned by relief. The parent material also affects the kind of soil profile that is formed and, in some cases, determines it almost entirely. Time is needed to change the parent material

into a soil profile. In most cases, a very long time is needed to develop distinct soil horizons.

The factors of soil formation are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effect of any one factor unless conditions are specified for the other four. In the following paragraphs the factors of soil formation are discussed as they relate to soils in the survey area.

Climate

Bienville Parish is in a region characterized by a humid, subtropical climate. Detailed climatological data is given in the section "General Nature of the Survey Area".

The climate is relatively uniform throughout the parish. Local differences among the soils are not the result of great differences in climate. The warm, moist climate promotes rapid soil formation. High rates of precipitation promote rapid weathering of readily weatherable minerals and the downward movement of colloidal material in the soil. Plant remains decompose rapidly in the warm climate. This prevents the formation of soils that have high organic matter content. The organic acids produced by decomposition hasten the development of clay minerals and removal of carbonates. Soil development is increased because the soil is seldom frozen for prolonged periods.

Living Organisms

Plants, animals, insects, bacteria, fungi, other micro-organisms, and humans are important in the formation of soils in Bienville Parish. Plant growth and animal activity physically alter the soil. The activities of humans, such as the clearing of land and the cultivation of crops, also physically alter the surface layer of soils.

The native vegetation on bottomland and on low terraces in the parish was primarily hardwood forests. The native vegetation in the uplands was primarily mixed hardwood and pine forests. Soils that developed under mixed hardwood and pine forests generally have a lower content of organic matter and a more distinct E horizon than soils that developed under hardwood forests.

Bacteria, fungi, and other micro-organisms are primarily responsible for decomposition of organic matter and oxidation-reduction reactions that affect the physical and chemical properties of the soils. Aerobic bacteria, which are more abundant in well drained soils, decompose organic matter rapidly; aerobic bacteria,

which are more abundant in poorly drained soils, decompose organic matter slowly. Therefore, the content of organic matter in well drained soils is lower than that in poorly drained soils.

Parent Material

Parent material is the mass from which soil develops. It affects the color, texture, permeability, mineralogy, and the erosion potential of the soil.

The soils in Bienville Parish formed in alluvium deposited by local streams. They also formed in Pleistocene and Tertiary sediment (Durham, 1964; Howe, 1939).

The characteristics, distribution, and depositional pattern of the different parent material in the parish are discussed in more detail in the section "Landforms and Surface Geology."

Relief

Relief influences soil formation by affecting soil drainage, runoff, erosion, deposition, and soil temperature. The influence of relief on soils in Bienville Parish is especially evident in the rate of surface runoff, in internal soil drainage, and in depth to a seasonal high water table. For example, relief on the Smithdale, Malbis, and Beauregard soils is progressively less in the order in which the soils are listed. Smithdale soils have the most relief and are well drained; runoff is rapid, and a seasonal high water table is at a depth of more than 6 feet. Beauregard soils generally have the least relief and are moderately well drained; runoff is slow to medium, and a seasonal high water table fluctuates from a depth of about 1.5 feet to about 3 feet below the surface.

In some areas in the uplands, relief is great and slopes are steep. Runoff is rapid, and little water enters the soil. Erosion is occurring on soils in these areas at rates nearly equal to those of soil formation. This accounts for the relatively thin sola of the Sacul soils.

Time

In the process of soil formation, many years are required to change the parent material (Jenny, 1941). The age of a soil, however, is generally determined by the degree of profile development. For soils that have the same parent material, the soils that exhibit little profile development are immature, and those that have a well expressed soil profile are mature.

Generally, the longer the parent material has remained in place, the more fully developed the soil profile. In Bienville Parish, parent material ranges in

age from a few hundred years to many millions of years.

The youngest soils in the parish, such as Ouachita soils, formed in recent alluvium that was deposited by overflow from local streams during the last 500 years. These soils have relatively weakly expressed soil horizons.

The oldest soils in the parish are in the uplands. They formed in parent material ranging in age from 20,000 years to about 50 million years (Howe, 1939).

Landforms and Surface Geology

Dr. W. H. Hudnall, Department of Agronomy, Louisiana Agricultural Experiment Station, Louisiana State University Agricultural Center, prepared this section.

Bienville Parish can be separated into three general physiographic areas—the recent flood plains and low stream terraces; the Pleistocene age terraces and uplands; and the Tertiary uplands. Each of these areas can be further subdivided on the basis of differences in parent materials, time of deposition, or physiographic features.

Recent Flood Plains and Terraces

The soils on the flood plains formed in Holocene and late Pleistocene terrace alluvial deposits of the Red River, Saline Bayou, Black Lake Bayou, Dugdemona River, and many small streams that drain the uplands.

The flood plains of the Red River and its tributaries and distributaries make up less than 10 percent of the parish. The width of this flood plain is less than one-half mile and occurs only along the eastern edge of Loggy Bayou below Lake Bisteneau Dam along the southwestern edge of the parish. The Red River flood plain sediments occurring along Loggy Bayou above the Lake Bisteneau Dam are covered by the waters of Lake Bisteneau.

The partial sorting of sediments that occur when a stream overflows results in a depositional pattern that constructs high sandy or loamy natural levees near the stream channel. The natural levees extend down slope and away from the channel to more clayey backswamp areas (USDA, 1990). Of the many different soils found along the Red River alluvial plain, only the clayey Moreland and Buxin soils were identified in Bienville Parish. Moreland-Buxin soils are in low positions on the natural levees and in depressional areas on the flood plain. Unless these soils are protected by levees, they are subject to frequent flooding. They formed as a result of an accumulation of backswamp clayey deposits.

Bienville, Cahaba, Dubach, Gurdon, Guyton, and

Ouachita soils are mapped in association with the present flood plains and low terraces. Their source of sediments is not associated with the Red River. Guyton and Ouachita soils formed in recent alluvial sediments associated with the present upland drainage systems. These drainage systems are narrow, have weakly expressed natural levees, and are subject to flooding by runoff from the uplands. Guyton soils are in drainageways and are fine-silty. Ouachita soils formed on the loamy natural levees of drainageways and are also fine silty. Bienville, Cahaba, Dubach, and Gurdon soils formed on terraces that are slightly higher than the flood plains. These terraces are associated with drainageways that dissect older Pleistocene and Tertiary uplands. Bienville soils are sandy throughout. Cahaba, Dubach, and Gurdon soils have loamy or sandy surface horizons and loamy subsoil horizons. The alluvial source for these terraces are from dissection and erosion of the uplands.

Pleistocene Age Terraces and Uplands

The Pleistocene age was characterized by periods of deposition associated with continental glaciation. Each period produced alluvial coast-trending terraces. The oldest terrace occupies the highest elevation, and each subsequent terrace is at a slightly lower elevation. The sediments were deposited as lobes of a major delta system. The source of these sediments vary. Each terrace associated with each period of deposition is referred to by number—T1 for the youngest, T2 next oldest, and so forth (USDA, 1990). Each terrace has a toposequence of soils that is unique to that terrace.

The Red River was one of the major distributary sources of the Pleistocene sediments. The T2 Red River terrace is discontinuous and is gently to strongly sloping. In Bienville Parish, it lies adjacent to the Loggy Bayou alluvial flood plain and Lake Bisteneau, or their tributaries. The toposequence of the T2 Red River terrace is the Kolin and Forbing soils. This toposequence makes up 1 percent of the parish. Kolin soils are found on gently sloping convex ridgetops with Forbing occupying the sloping or strongly sloping side slopes.

Shatta soils are on terraces that are as dissected as T3 terraces, but the soils are in an intermediate position between the T2 and T3 terraces. As the upper T3 terrace eroded, an erosional surface was formed and loamy T2-aged material was deposited onto the surface. This surface was stable, and Shatta soils formed in a mixture of T2 and T3 sediments on an intermediate position between the two terraces. Sediments from the Red River and mid-continental

glaciation probably are the parent material for the Shatta soils. There may be a loess component also since Shatta is siltier than any surrounding soils (USDA, 1990)

The lower part of the T3 terrace is the most areally extensive of the Pleistocene terrace deposits in Bienville Parish. The toposequence on this terrace is the Ruston, Malbis, and Beauregard soils. This terrace is dissected and is characterized by many low ridges and gently sloping side slopes. Ruston soils are on higher convex ridgetops and side slopes. Malbis soils are on intermediate convex ridgetops and side slopes. Beauregard soils are on broad, very gently sloping ridgetops and side slopes between the Malbis soils and the major drainageways.

The upper part of the T3 terrace is the oldest found in Bienville Parish. The toposequence is generally the Boykin, Ruston, and Smithdale soils. This terrace is characterized by narrow, gently sloping ridgetops and strongly sloping side slopes dissected by numerous small drains. Boykin soils have thick sandy surfaces and are found on high, gently sloping ridgetops and side slopes. Ruston soils are found on intermediate convex ridgetops and gently sloping to sloping upper side slopes. Malbis soils are found on lower broad convex ridgetops and sloping side slopes.

Tertiary Uplands

Although a detailed geological study of Bienville Parish has not been published, an unpublished study for the Louisiana Geological Survey indicates that the Tertiary sediments of Bienville Parish consist of the Wilcox and Claiborne Group. The Hall Summit and Carrizo Formations of the Wilcox Group and the Cane River, Sparta, Cook Mountain, and Cockfield Formations of the Claiborne Group outcrop in Bienville Parish. Bienville Parish has six subsurface salt domes, which influence surface exposures dramatically. Near two of the six domes, sediments with ages ranging from post-Tuscaloosa upper Cretaceous to pre-Wilcox have been identified (Echols, 1970). Many of the Wilcox and Claiborne Group exposures in Bienville Parish are the result of the Sabine Uplift and subsequent erosion. The Sabine Uplift is a flat-topped dome in northwestern Louisiana and northeastern Texas. The uplift is the highest structural point in northwest and north-central Louisiana. (Echols, 1970; Harris, 1907; Harris, 1910; Murray, 1948)

The Wilcox and Claiborne Groups consist of fluvial sediments deposited in brackish and marine environments. The sediments of these groups accumulated as a result of a cyclic series of depositions, which are similar to the present deposition

of the Mississippi River deltaic deposits. Each cycle began with an encroachment of the sea as a result of the cessation of deltaic depositions. Basal beach sands and marls were deposited first. These were overlain with fossiliferous clays as the sea advanced inland. The cycle reached completion with recurrent deltaic sediments and seaward building of the land. Preceding this seaward advance of the land, the raw materials for shales were deposited at the margins of the great deltaic masses. These lignitic shales formed from what are commonly called prodeltaic sediments (Fisk, 1940; USDA, 1990)

Continued deltaic sedimentation resulted in the deposition of thick masses of sand and lignitic shales that were incorporated with fluvial sediments. Tilting of the land coincided with the down-warping of the continental margin of the Gulf Coast geosyncline and up-warping of the Sabine Uplift (Anderson, 1960; USDA, 1990) These events exposed the Wilcox and Claiborne sediments in Bienville Parish.

The Wilcox Group in Bienville Parish is limited to an exposure of the Bisteneau member of the Hall Summit Formation and the Carrizo Formation. The Bisteneau member of the Hall Summit Formation forms a major portion of the exposures lying west of the town of Ringgold southwestward to the Bienville-Red River Parish line. It primarily consists of gray to brown lignitic sands and silty to sandy lignitic clays with numerous seams of lignite. The topography of the formation is one of very narrow ridgetops and strongly sloping to moderately steep side slopes leading to moderately incised drains. Eastwood soils formed in sediments of this formation.

The Carrizo Formation of the Wilcox Group is exposed mainly south of the town of Castor between the community of Roy and the western edge of the flood plain of Topy Creek. The Carrizo Formation consists of fine to coarse-grained, glauconitic, feldspathic, quartz sand, which weathers to a brick red color (Echols, 1970). The topography of the Carrizo Formation is one of broad convex ridgetops, sloping side slopes, and moderately incised drains. Sailes soils formed in sediments of the Carrizo Formation.

The Claiborne Group geologic formations are exposed over much of the eastern two-thirds of Bienville Parish. This group includes the Cane River Formation, which is exposed along the eastern edge of the valley floor of Black Lake Bayou from near Ashland in Natchitoches Parish to approximately 4 miles north of the town of Castor. Small isolated areas of exposures of Cane River are also found along the valley floors of tributary channels, such as Four Mile Bayou and Kepler Creek. The Sparta Formation is exposed over more area in Bienville Parish than any

other geologic formation. It is found primarily east of Black Lake Bayou to the western edge of Dugdemonia River and from the Bienville-Natchitoches-Winn Parish boundary lines to slightly above U.S. Highway 80 between Gidsland and Arcadia. The Cook Mountain Formation is exposed from along the upper side slopes of the Western Dugdemonia River valley in a northwestward direction to the southeastern edge of Black Lake Creek, southwest of the town of Arcadia. It is in this formation that the highest elevation in Louisiana is found. Driskill Mountain rises to an elevation of 535 feet near the intersection of state roads 507 and 797. The Cockfield Formation exposures are mainly limited to areas lying north of U.S. Highway 80 in Bienville Parish, except for a small area lying southwest of the town of Arcadia and a few areas on higher ridgetops south of Arcadia.

The Cane River Formation consists of khaki, brown, or reddish-brown colored, micaceous, calcareous, glauconitic silts and clays. The topography of the Cane River Formation is relatively flat with slightly incised drains. Most slopes are less than 5 percent, but a few are as steep as 12 percent. The main soil formed in Cane River sediments in Bienville Parish is the Natchitoches soil.

The Sparta Formation is characterized by bedded nonmarine deposits of light gray massive sands with interbedded clays. It contains some beds of lignites or lignitic sands (USDA, 1989). The topography of the Sparta Formation is one of narrow convex ridgetops with sloping to moderately steep side slopes. Betis and Darden soils formed on landscapes of the Sparta Formation where the sediments were deep sands; the Briley, Sailes, and Trep soils formed on landscapes where the sediments were sandy and loamy; the Bowie soils formed on landscapes where the sediments were primarily loamy; and the Sacul soils formed on landscapes where the sediments were primarily clayey.

The Cook Mountain Formation consists of bedded marine sediments that are mostly greenish-gray sideritic and glauconitic clays in the upper part and yellowish to brownish clays and a fossiliferous marl in the lower part (USDA, 1998). The topography of the Cook Mountain Formation is one of very narrow ridgetops with strongly to moderately steep side slopes leading to moderately incised drains. Bellwood, Mahan, Oktibbeha, and Sacul soils formed in sediments of the Cook Mountain Formation.

The Cockfield Formation is the youngest formation of the Claiborne Group in Bienville Parish. Two facies of the Cockfield Formation—a Quartz sand (marine) and a non-glauconitic Quartz sand (nonmarine)—are exposed at the surface. Each facies has an associated silt and clay bed (Echols, 1970). The topography of the

Cockfield Formation is one of narrow ridgetops; broad, gently to strongly sloping side slopes; and moderately incised streams. Bowie, Darley, Mahan, and Sacul soils formed in sediments of the Cockfield Formation in Bienville Parish.

Soils of the Tertiary Uplands are related only in a very general way to the particular geologic formation in which they formed. The differences between the soils are associated mostly with differences in the texture and composition of the parent material (USDA, 1989). Geologic strata containing appreciable amounts of clay and small amounts of siderite and glauconite are the parent materials for the Bellwood, Eastwood, and Sacul soils. These strata or similar strata are found in each of the aforementioned Tertiary formations.

Strata consisting mostly of siderite and glauconitic clays, silts, or sands are the parent material of the Darley and Mahan soils. These strata are found only in the lower Cockfield and upper Cook Mountain Formations. The soils that formed in these strata contain large amounts of ironstone, which developed as a result of weathering of the siderite and glauconite in the parent materials.

Strata containing large amounts of Quartz sands are the parent materials for the Briley, Betis, Darden, McLaurin, Sailes, and Trep soils. These types of strata are found in the Carrizo, Sparta, Cook Mountain, and Cockfield Formations.

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Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottomland. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chiseling. Tillage with an implement having one or

more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion

and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured soil. Sandy clay, silty clay, or clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Footslope. The inclined surface at the base of a hill.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is

an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:
O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope

and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay

content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma.

For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch

Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level to nearly level	0 to 1 percent
Very gently sloping	1 to 2 percent
Gently sloping	1 to 3 percent
Moderately sloping	3 to 5 percent
Sloping	5 to 8 percent
Strongly sloping	8 to 12 percent
Moderately steep	12 to 20 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Small stones (in tables). Rock fragments less than 3

inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters).

Frequently designated as the “plow layer,” or the “Ap horizon.”

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The outermost inclined surface at the base of a hill; part of a footslope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1972-86 at Bienville, Louisiana)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have--		Average number of growing days*	2 years in 10 will have--			Average number of days with 0.10 inch or more	Average snow- fall
				Maximum temperature higher than--	Minimum temperature lower than--		Less than--	More than--			
° F	° F	° F	° F	° F	Units	In	In	In	In		
January-----	54.0	32.7	43.4	80	10	82	6.22	2.53	9.33	7	1.0
February-----	60.4	36.9	48.7	83	14	97	4.81	2.65	6.72	6	.0
March-----	69.7	45.5	57.6	87	25	254	6.04	4.03	7.86	7	.0
April-----	76.5	52.0	64.3	88	33	429	4.54	2.41	6.40	6	.0
May-----	83.5	60.0	71.8	94	43	676	6.63	2.44	10.11	7	.0
June-----	90.3	67.0	78.7	98	51	861	4.29	1.50	6.59	6	.0
July-----	94.0	70.7	82.4	101	61	1,004	3.51	.99	5.54	6	.0
August-----	93.2	69.4	81.3	101	56	970	3.59	1.40	5.42	6	.0
September---	86.6	64.0	75.3	96	40	759	4.11	1.76	6.11	5	.0
October-----	77.4	52.5	65.0	93	32	465	5.68	2.65	8.27	6	.0
November-----	66.1	43.6	54.9	84	21	200	5.52	3.27	7.53	7	.0
December	58.0	35.8	46.9	79	14	90	5.62	2.16	8.51	6	.0
Yearly:											
Average----	75.8	52.5	64.2	---	---	---	---	---	---	---	---
Extreme----	---	---	---	102	9	---	---	---	---	---	---
Total-----	---	---	---	---	---	5,887	60.56	50.71	69.93	75	1.0

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall
(Recorded in the period 1972-86 at Bienville, Louisiana)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 6	March 15	April 8
2 years in 10 later than--	February 27	March 10	April 2
5 years in 10 later than--	February 14	February 27	March 21
First freezing temperature in fall			
1 year in 10 earlier than--	November 27	November 9	October 15
2 years in 10 earlier than--	December 1	November 14	October 23
5 years in 10 earlier than--	December 9	November 22	November 6

Table 3.--Growing Season

(Recorded in the period 1972-86 at Bienville, Louisiana)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	<u>Days</u>	<u>Days</u>	<u>Days</u>
9 years in 10	275	247	206
8 years in 10	283	254	214
5 years in 10	299	268	229
2 years in 10	320	283	245
1 year in 10	365	295	258

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
BaB	Beauregard silt loam, 1 to 3 percent slopes-----	10,500	2.0
BdC	Bellwood silt loam, 1 to 5 percent slopes-----	7,000	1.3
BDE	Bellwood silt loam, 5 to 15 percent slopes-----	6,100	1.2
BeC	Betis loamy fine sand, 1 to 5 percent slopes-----	14,500	2.8
BEE	Betis loamy fine sand, 5 to 12 percent slopes-----	15,600	3.0
BlC	Bienville loamy fine sand, 1 to 5 percent slopes-----	4,300	0.8
BoC	Bowie very fine sandy loam, 1 to 5 percent slopes-----	21,100	4.0
BoD	Bowie very fine sandy loam, 5 to 8 percent slopes-----	22,800	4.3
BpC	Boykin loamy fine sand, 1 to 5 percent slopes-----	1,000	0.2
BPE	Boykin loamy fine sand, 5 to 12 percent slopes-----	1,000	0.2
BrC	Briley loamy fine sand, 1 to 5 percent slopes-----	20,100	3.8
BRE	Briley loamy fine sand, 5 to 12 percent slopes-----	20,800	4.0
BXA	Buxin-Moreland clays, frequently flooded-----	700	0.1
ChC	Cahaba fine sandy loam, 1 to 5 percent slopes-----	3,000	0.6
DaC	Darden loamy fine sand, 1 to 5 percent slopes-----	1,200	0.2
DrC	Darley gravelly fine sandy loam, 1 to 5 percent slopes-----	400	0.1
DRE	Darley gravelly fine sandy loam, 5 to 12 percent slopes-----	500	0.1
DuC	Dubach fine sandy loam, 1 to 5 percent slopes-----	8,800	1.7
EcC	Eastwood fine sandy loam, 1 to 5 percent slopes-----	5,400	1.0
ECE	Eastwood fine sandy loam, 5 to 12 percent slopes-----	5,600	1.1
ECF	Eastwood fine sandy loam, 12 to 20 percent slopes-----	4,800	0.9
FoC	Forbing silt loam, 1 to 5 percent slopes-----	100	*
FOE	Forbing silt loam, 5 to 12 percent slopes-----	700	0.1
GrB	Gurdon silt loam, 1 to 3 percent slopes-----	13,200	2.5
GyA	Guyton silt loam-----	4,700	0.9
GYO	Guyton-Ouachita silt loams, frequently flooded-----	109,800	20.9
KoC	Kolin silt loam, 1 to 5 percent slopes-----	3,700	0.7
MaC	Mahan fine sandy loam, 1 to 5 percent slopes-----	6,300	1.2
MAE	Mahan fine sandy loam, 5 to 12 percent slopes-----	2,600	0.5
MgB	Malbis fine sandy loam, 1 to 3 percent slopes-----	17,400	3.3
MgD	Malbis fine sandy loam, 3 to 8 percent slopes-----	11,500	2.2
MnB	McLaurin fine sandy loam, 1 to 3 percent slopes-----	6,000	1.1
MND	McLaurin fine sandy loam, 3 to 8 percent slopes-----	2,500	0.5
MtB	Metcalf silt loam, 0 to 2 percent slopes-----	1,400	0.3
NaC	Natchitoches fine sandy loam, 1 to 5 percent slopes-----	5,000	0.9
NAE	Natchitoches fine sandy loam, 5 to 12 percent slopes-----	2,600	0.5
OkC	Oktibbeha silt loam, 1 to 5 percent slopes-----	100	*
RuC	Ruston fine sandy loam, 1 to 5 percent slopes-----	7,800	1.5
RuD	Ruston fine sandy loam, 5 to 8 percent slopes-----	6,200	1.2
ScC	Sacul fine sandy loam, 1 to 5 percent slopes-----	34,600	6.6
SCE	Sacul fine sandy loam, 5 to 12 percent slopes-----	76,700	14.6
SlC	Sailles loamy fine sand, 1 to 5 percent slopes-----	1,300	0.2
SLE	Sailles loamy fine sand, 5 to 12 percent slopes-----	700	0.1
SnC	Sawyer very fine sandy loam, 1 to 5 percent slopes-----	18,600	3.5
StC	Shatta silt loam, 1 to 5 percent slopes-----	8,200	1.6
SVF	Smithdale fine sandy loam, 8 to 20 percent slopes-----	200	*
TrC	Trep loamy fine sand, 1 to 5 percent slopes-----	4,900	0.9
	Water-----	4,400	0.8
	Total-----	526,400	100.0

* Less than 0.1 percent.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Cotton	Grain sorghum	Bahiagrass	Common bermudagrass	Improved bermudagrass
		Bu	Lbs	Bu	AUM*	AUM*	AUM*
BaB----- Beauregard	IIe	75	450	50	7.0	6.0	11.0
EdC----- Bellwood	IVe	---	---	---	5.5	5.0	7.0
BDE----- Bellwood	VIe	---	---	---	5.5	5.0	6.5
BeC----- Betis	IIIIs	---	---	---	6.5	---	3.0
BEE----- Betis	VIe	---	---	---	6.0	---	2.0
BlC----- Bienville	IIIIs	70	---	---	6.5	5.5	11.0
BoC----- Bowie	IIIe	80	---	55	9.0	5.0	12.0
BoD----- Bowie	IVe	70	---	50	8.0	3.0	10.0
BpC----- Boykin	IIIIs	---	---	---	8.0	6.0	10.0
BPE----- Boykin	IVe	---	---	---	6.0	5.0	8.0
BrC----- Briley	IIIIs	---	---	---	8.0	6.0	9.0
BRE----- Briley	IVe	---	---	---	7.0	5.0	8.0
EXA**----- Buxin and Moreland	Vw	---	---	---	5.5	5.1	---
ChC----- Cahaba	IIe	85	750	55	8.0	6.5	9.5
DaC----- Darden	IIIIs	---	---	---	6.0	---	6.5
DrC----- Darley	IIIe	50	650	---	7.0	6.0	12.0
DRE----- Darley	VIe	40	---	---	5.0	5.5	10.0
DuC----- Dubach	IIIe	80	---	50	8.5	6.0	9.5
EcC----- Eastwood	IVe	---	---	---	6.0	6.0	7.5

See footnotes at end of table.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Cotton	Grain sorghum	Bahiagrass	Common bermudagrass	Improved bermudagrass
		<u>Bu</u>	<u>Lbs</u>	<u>Bu</u>	<u>AUM*</u>	<u>AUM*</u>	<u>AUM*</u>
ECE, ECF----- Eastwood	VIe	---	---	---	5.5	5.5	6.5
FoC----- Forbing	IVe	---	---	---	6.3	4.5	6.0
FOE----- Forbing	VIe	---	---	---	5.5	4.0	5.5
GrB----- Gurdon	IIe	75	450	70	8.0	7.0	8.5
GyA----- Guyton	IIIw	60	---	40	6.5	5.0	5.5
GYO**: Guyton-----	Vw	---	---	---	---	4.6	---
Ouachita-----	IVw	---	---	---	---	4.6	---
KoC----- Kolin	IIIe	70	500	60	8.5	5.5	12.0
MaC----- Mahan	IIIe	---	---	---	7.0	6.0	8.0
MAE----- Mahan	VIe	40	---	---	6.0	5.0	7.0
MgB----- Malbis	IIe	85	750	70	8.5	6.5	9.5
MgD----- Malbis	IIIe	75	650	60	8.0	6.0	9.0
MnB----- McLaurin	IIe	75	600	55	8.0	5.5	10.0
MND----- McLaurin	IIIe	70	550	50	7.0	5.0	8.5
MtB----- Metcalf	IIw	70	500	55	7.0	5.0	11.0
NaC----- Natchitoches	IVe	---	---	---	5.5	5.0	9.5
NAE----- Natchitoches	VIe	---	---	---	5.0	4.5	9.0
OkC----- Oktibbeha	IIIe	55	550	---	5.5	5.0	---
RuC, RuD----- Ruston	IIIe	65	600	75	9.5	5.5	12.0
ScC----- Sacul	IVe	---	---	---	7.5	6.5	7.5
SCE----- Sacul	VIe	---	---	---	6.5	5.5	7.0

See footnotes at end of table.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Cotton	Grain sorghum	Bahiagrass	Common bermudagrass	Improved bermudagrass
		<u>Bu</u>	<u>Lbs</u>	<u>Bu</u>	<u>AUM*</u>	<u>AUM*</u>	<u>AUM*</u>
SlC----- Sailes	IIIe	65	400	45	8.5	6.0	9.0
SLE----- Sailes	VIe	---	---	---	7.5	5.0	8.5
SnC----- Sawyer	IIIe	45	500	50	8.5	7.0	9.0
StC----- Shatta	IIIe	65	550	50	6.0	5.5	9.0
SVF----- Smithdale	VIe	---	---	---	8.0	4.5	9.0
TrC----- Trep	IIIIs	---	---	---	6.0	6.0	9.0

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 6.--Woodland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Wood-land suitability group	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Plant competi-tion	Common trees	Site index	Produc-tivity class*	
BaB----- Beauregard	2w8	Slight	Moderate	Moderate	Moderate	Moderate	Loblolly pine----- Shortleaf pine----- Sweetgum----- Southern red oak----- White oak-----	90 --- --- --- ---	9 --- --- --- ---	Loblolly pine, Shumard oak.
BdC, BDE----- Bellwood	3c8	Slight	Severe	Moderate	Moderate	Moderate	Loblolly pine----- Shortleaf pine----- White oak----- Southern red oak----	78 68 70 75	8 7 4 4	Loblolly pine.
BeC----- Betis	3s2	Slight	Severe	Moderate	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Blackjack oak----- Eastern redcedar----	83 80 --- ---	8 9 --- ---	Loblolly pine.
BEE----- Betis	3s2	Slight	Severe	Moderate	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Blackjack oak----- Post oak----- Southern red oak----- Redcedar-----	70 --- --- --- --- ---	7 --- --- --- --- ---	Loblolly pine.
BlC----- Bienville	2s2	Slight	Severe	Moderate	Slight	Slight	Loblolly pine----- Longleaf pine----- Shortleaf pine----- White oak----- Green ash-----	96 88 75 --- ---	10 8 8 --- ---	Loblolly pine.
BoC, BoD----- Bowie	2o1	Slight	Slight	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- Sweetgum----- Blackjack oak-----	86 80 --- ---	9 9 --- ---	Loblolly pine.
BpC, BPE----- Boykin	2s2	Slight	Slight	Moderate	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Longleaf pine----- Southern red oak----- Blackjack oak-----	90 80 80 --- ---	9 9 7 --- ---	Loblolly pine.
BrC, BRE----- Briley	2s2	Slight	Slight	Moderate	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Longleaf pine----- Southern red oak----- Blackjack oak----- Sweetgum-----	80 70 --- --- --- ---	8 8 --- --- --- ---	Loblolly pine.
BXA**: Buxin-----	3w6	Slight	Severe	Severe	Severe	Moderate	Green ash----- Baldcypress----- Water hickory----- Overcup oak----- Black willow----- Honeylocust-----	70 --- --- --- --- ---	2 --- --- --- --- ---	Green ash, baldcypress.

See footnotes at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Wood-land suitability group	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Plant competi-tion	Common trees	Site index	Produc-tivity class*	
BXA**: Moreland-----	3w6	Slight	Severe	Severe	Severe	Moderate	Green ash----- Baldcypress----- Water hickory----- Black willow----- Sugarberry----- Honeylocust-----	70	2	Green ash, baldcypress.
ChC----- Cahaba	2o7	Slight	Slight	Slight	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Sweetgum----- Southern red oak----- Water oak----- Hickory-----	87	9	Loblolly pine, sweetgum, water oak.
DaC----- Darden	3s2	Slight	Moderate	Severe	Slight	Slight	Loblolly pine----- Shortleaf pine----- Sweetgum----- Hickory-----	80	8	Loblolly pine.
DrC, DRE----- Darley	3f1	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Hickory----- Southern red oak----- White oak----- Sweetgum----- Blackjack oak-----	85	8	Loblolly pine.
DuC----- Dubach	2o1	Slight	Slight	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- Southern red oak----- White oak----- Sweetgum----- Blackjack oak----- Hickory-----	94	10	Loblolly pine.
EcC----- Eastwood	3c2	Slight	Moderate	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- Sweetgum----- Southern red oak----- Hickory----- White oak----- Blackjack oak-----	93	10	Loblolly pine.
ECE, ECF----- Eastwood	3c2	Moderate	Moderate	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- Sweetgum----- Southern red oak----- Hickory----- White oak----- Blackjack oak-----	86	9	Loblolly pine.
FoC----- Forbing	3c2	Slight	Moderate	Moderate	Moderate	Moderate	Loblolly pine----- Shortleaf pine----- White oak----- Southern red oak----- Sweetgum----- Blackjack oak-----	70	6	Loblolly pine.

See footnotes at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Wood-land suitability group	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Plant competi-tion	Common trees	Site index	Produc-tivity class*	
FOE----- Forbing	3c2	Moderate	Moderate	Moderate	Moderate	Moderate	Loblolly pine-----	70	6	Loblolly pine.
							Shortleaf pine-----	---	---	
							White oak-----	---	---	
							Sweetgum-----	---	---	
							Southern red oak----	---	---	
Black locust-----	---	---								
GrB----- Gurdon	2o7	Slight	Moderate	Slight	Moderate	Severe	Loblolly pine-----	95	10	Loblolly pine, cherrybark oak, Shumard oak.
							Sweetgum-----	95	8	
							Shortleaf pine-----	85	10	
							Willow oak-----	---	---	
							Water oak-----	---	---	
Hickory-----	---	---								
GyA----- Guyton	2w9	Slight	Severe	Moderate	Severe	Severe	Loblolly pine-----	85	8	Loblolly pine, water oak, slash pine, green ash.
							Sweetgum-----	---	---	
							Green ash-----	---	---	
							Cherrybark oak-----	---	---	
							Water oak-----	---	---	
Willow oak-----	78	5								
Blackgum-----	---	---								
GYO**: Guyton-----	2w9	Slight	Severe	Severe	Severe	Severe	Green ash-----	95	6	Nuttall oak, green ash.
							Sweetgum-----	---	---	
							Black willow-----	---	---	
							Nuttall oak-----	---	---	
							Eastern cottonwood--	---	---	
Sugarberry-----	---	---								
Loblolly pine-----	95	10								
Ouachita-----	1o7	Slight	Slight	Moderate	Slight	Severe	Loblolly pine-----	100	11	Loblolly pine, cherrybark oak, Nuttall oak.
							Sweetgum-----	100	10	
							Eastern cottonwood--	100	9	
							Cherrybark oak-----	100	10	
KoC----- Kolin	3w8	Slight	Slight	Slight	Moderate	Severe	Loblolly pine-----	80	8	Loblolly pine.
							Shortleaf pine-----	---	---	
							Sweetgum-----	---	---	
							Southern red oak----	---	---	
							White oak-----	---	---	
							Hickory-----	---	---	
Water oak-----	---	---								
MaC, MAE----- Mahan	2o1	Slight	Slight	Slight	Slight	Slight	Loblolly pine-----	90	9	Loblolly pine.
							Shortleaf pine-----	---	---	
							Hickory-----	---	---	
							Southern red oak----	---	---	
							Sweetgum-----	---	---	
							White oak-----	---	---	
Post oak-----	---	---								
Blackjack oak-----	---	---								
MgB, MgD----- Malbis	2o1	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-----	90	9	Loblolly pine.
							Longleaf pine-----	80	7	
							Sweetgum-----	---	---	
							Southern red oak----	---	---	

See footnotes at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordi-nation symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Plant competi-tion	Common trees	Site index	Produc-tivity class*	
MnB, MND----- McLaurin	2o1	Slight	Moderate	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- Southern red oak---- Blackjack oak----- Sweetgum----- Hickory-----	83 70 --- --- --- ---	8 8 --- --- --- ---	Loblolly pine.
MtB----- Metcalf	2w8	Slight	Moderate	Slight	Moderate	Severe	Loblolly pine----- Shortleaf pine----- Sweetgum----- Southern red oak---- White oak----- Blackjack oak-----	92 74 --- --- --- ---	10 8 --- --- --- ---	Loblolly pine, Shumard oak, cherrybark oak.
NaC, NAE----- Natchitoches	3c8	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Sweetgum----- Hickory----- Blackjack oak----- Southern red oak---- White oak-----	80 70 --- --- --- --- ---	8 8 --- --- --- --- ---	Loblolly pine.
OkC----- Oktibbeha	3c8	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Southern red oak---- Blackjack oak----- Hickory-----	76 --- --- --- ---	7 --- --- --- ---	Loblolly pine.
RuC, RuD----- Ruston	2o1	Slight	Slight	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- Southern red oak---- Post oak----- Sweetgum----- Hickory----- White oak-----	84 75 --- --- --- --- ---	8 8 --- --- --- --- ---	Loblolly pine.
ScC, SCE----- Sacul	3c2	Slight	Moderate	Slight	Moderate	Moderate	Loblolly pine----- Shortleaf pine----- Southern red oak---- White oak-----	84 74 --- ---	8 8 --- ---	Loblolly pine,
SlC, SLE----- Sailes	2o1	Slight	Slight	Moderate	Slight	Slight	Loblolly pine----- Shortleaf pine----- Longleaf pine----- Southern red oak---- White oak-----	95 85 90 --- ---	10 10 9 --- ---	Loblolly pine.
SnC----- Sawyer	2w8	Slight	Slight	Slight	Slight	Moderate	Loblolly pine----- Shortleaf pine----- White oak----- Southern red oak---- Blackjack oak----- Hickory-----	85 --- --- --- --- ---	8 --- --- --- --- ---	Loblolly pine.
StC----- Shatta	2o7	Slight	Slight	Slight	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Sweetgum----- Southern red oak----	83 77 --- ---	8 9 --- ---	Loblolly pine.

See footnotes at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Wood- land suita- bility group	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Produc- tivity class*	
SVF----- Smithdale	2o1	Moderate	Moderate	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- Sweetgum----- Southern red oak----	80 69 --- ---	8 8 --- ---	Loblolly pine.
TrC----- Trep	2s2	Slight	Slight	Moderate	Slight	Moderate	Loblolly pine----- Shortleaf pine-----	90 80	9 9	Loblolly pine.

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 7.--Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe.")

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
BaB----- Beauregard	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
BdC----- Bellwood	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Slight.
BDE----- Bellwood	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: slope, percs slowly.
BeC----- Betis	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
EEE----- Betis	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
ElC----- Bienville	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
BoC----- Bowie	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
BoD----- Bowie	Slight-----	Slight-----	Severe: slope.	Slight-----	Slight.
BpC----- Boykin	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
BPE----- Boykin	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
BrC----- Briley	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
BRE----- Briley	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
EXA*: Buxin-----	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey.	Severe: wetness, flooding.
Moreland-----	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: flooding, wetness, too clayey.	Severe: wetness, too clayey.	Severe: flooding, wetness, too clayey.
ChC----- Cahaba	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.

See footnote at end of table.

Table 7.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
DaC----- Darden	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.	Moderate: droughty.
DrC----- Darley	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight-----	Moderate: small stones.
DRE----- Darley	Moderate: small stones.	Moderate: small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones.
DuC----- Dubach	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
EcC----- Eastwood	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Slight.
ECE----- Eastwood	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: slope.
ECF----- Eastwood	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Severe: slope.
FoC----- Forbing	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: droughty.
FOE----- Forbing	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: droughty, slope.
GrB----- Gurdon	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
GyA----- Guyton	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
GYO*: Guyton-----	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Ouachita-----	Severe: flooding.	Moderate: flooding, percs slowly.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
KoC----- Kolin	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
MaC----- Mahan	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
MAE----- Mahan	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
MgB, MgD----- Malbis	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.

See footnote at end of table.

Table 7.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MnB, MND----- McLaurin	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
MtB----- Metcalf	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
NaC----- Natchitoches	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Slight-----	Moderate: droughty.
NAE----- Natchitoches	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Slight-----	Moderate: droughty, slope.
OkC----- Oktibbeha	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Slight.
RuC----- Ruston	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
RuD----- Ruston	Slight-----	Slight-----	Severe: slope.	Slight-----	Slight.
ScC----- Sacul	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Slight-----	Slight.
SCE----- Sacul	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Slight-----	Moderate: slope.
SlC----- Sailes	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: droughty.
SLE----- Sailes	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: droughty, slope.
SnC----- Sawyer	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Slight.
StC----- Shatta	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
SVF----- Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
TrC----- Trep	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 8.--Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor.")

Soil name and map symbol	Potential for habitat elements								Potential as habitat for-		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Shrubs	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life
BaB----- Beauregard	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
EdC----- Bellwood	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
EDE----- Bellwood	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BeC, BEE----- Betis	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
BlC----- Bienville	Fair	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
BoC----- Bowie	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BoD----- Bowie	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BpC, BPE----- Boykin	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BrC----- Briley	Poor	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
ERE----- Briley	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
EXA*: Buxin-----	Poor	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Poor	Fair	Fair.
Moreland-----	Poor	Fair	Fair	Fair	Poor	Poor	Good	Good	Poor	Fair	Good.
ChC----- Cahaba	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
DaC----- Darden	Poor	Fair	Fair	Poor	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.
DrC----- Darley	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
DRE----- Darley	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
DuC----- Dubach	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EcC----- Eastwood	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ECE, ECF----- Eastwood	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

Table 8.--Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for-		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
FoC, FOE----- Forbing	Fair	Good	Good	Fair	Fair	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
GrB----- Gurdon	Fair	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
GyA----- Guyton	Fair	Fair	Fair	Fair	Fair	Good	Good	Good	Fair	Fair	Good.
GYO*: Guyton-----	Poor	Fair	Fair	Fair	Fair	Poor	Good	Good	Poor	Fair	Good.
Ouachita-----	Poor	Fair	Fair	Good	Poor	Fair	Good	Fair	Fair	Good	Fair.
KoC----- Kolin	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MaC----- Mahan	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MAE----- Mahan	Poor	Good	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MgB----- Malbis	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MgD----- Malbis	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MnB----- McLaurin	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MND----- McLaurin	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MtB----- Metcalf	Fair	Good	Good	Good	Good	Good	Fair	Fair	Fair	Good	Fair.
NaC, NAE----- Natchitoches	Fair	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
OkC----- Oktibbeha	Fair	Fair	Fair	Good	Good	Fair	Poor	Very poor.	Fair	Good	Poor.
RuC----- Ruston	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RuD----- Ruston	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ScC----- Sacul	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SCE----- Sacul	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SlC----- Sailes	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

Table 8.--Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for-		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
SLE----- Sailes	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SnC----- Sawyer	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
StC----- Shatta	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SVF----- Smithdale	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TrC----- Trep	Poor	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 9.--Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BaB----- Beauregard	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
BdC----- Bellwood	Severe: cutbanks cave, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
BDE----- Bellwood	Severe: cutbanks cave, wetness.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope, percs slowly.
BeC----- Betis	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: droughty.
BEE----- Betis	Severe: cutbanks cave.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
BlC----- Bienville	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: droughty.
BoC----- Bowie	Moderate: wetness.	Slight-----	Slight-----	Moderate: low strength.	Slight.
BoD----- Bowie	Moderate: wetness.	Slight-----	Moderate: slope.	Moderate: low strength.	Slight.
BpC----- Boykin	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: droughty.
BPE----- Boykin	Severe: cutbanks cave.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
BrC----- Briley	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: droughty.
BRE----- Briley	Severe: cutbanks cave.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
BXA*: Buxin-----	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness, flooding.
Moreland-----	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness, shrink-swell.	Severe: flooding, wetness, too clayey.
ChC----- Cahaba	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.

See footnote at end of table.

Table 9.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
DaC----- Darden	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: droughty.
DrC----- Darley	Moderate: cemented pan, too clayey.	Slight-----	Slight-----	Slight-----	Severe: small stones.
DRE----- Darley	Moderate: cemented pan, too clayey, slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones.
DuC----- Dubach	Moderate: wetness.	Slight-----	Slight-----	Slight-----	Slight.
EcC----- Eastwood	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
ECE----- Eastwood	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
ECF----- Eastwood	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
FoC----- Forbing	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: droughty.
FOE----- Forbing	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: droughty, slope.
GrB----- Gurdon	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
GyA----- Guyton	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
GYO*: Guyton-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Ouachita-----	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
KoC----- Kolin	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
MaC----- Mahan	Moderate: too clayey.	Slight-----	Slight-----	Moderate: low strength.	Slight.

See footnote at end of table.

Table 9.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MAE----- Mahan	Moderate: too clayey, slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
MgB----- Malbis	Moderate: wetness.	Slight-----	Slight-----	Slight-----	Slight.
MgD----- Malbis	Moderate: wetness.	Slight-----	Moderate: slope.	Slight-----	Slight.
MnB----- McLaurin	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.
MND----- McLaurin	Severe: cutbanks cave.	Slight-----	Moderate: slope.	Slight-----	Slight.
MtB----- Metcalf	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
NaC----- Natchitoches	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: droughty.
NAE----- Natchitoches	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: droughty, slope.
OkC----- Oktibbeha	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
RuC----- Ruston	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.
RuD----- Ruston	Severe: cutbanks cave.	Slight-----	Moderate: slope.	Slight-----	Slight.
ScC----- Sacul	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
SCE----- Sacul	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
SlC----- Sailes	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
SLE----- Sailes	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
SnC----- Sawyer	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Slight.
StC----- Shatta	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.

See footnote at end of table.

Table 9.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
SVF----- Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
TrC----- Trep	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: low strength.	Moderate: droughty.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 10.--Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BaB----- Beauregard	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
EdC----- Bellwood	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
EDE----- Bellwood	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
BeC----- Betis	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
EEE----- Betis	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
ElC----- Bienville	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: too sandy.
BoC, BoD----- Bowie	Severe: wetness, percs slowly.	Moderate: seepage, slope, wetness.	Moderate: wetness, too clayey.	Slight-----	Fair: too clayey.
BpC----- Boykin	Moderate: percs slowly.	Severe: seepage.	Slight-----	Severe: seepage.	Good.
BPE----- Boykin	Moderate: percs slowly, slope.	Severe: seepage, slope.	Moderate: slope.	Severe: seepage.	Fair: slope.
BrC----- Briley	Moderate: percs slowly.	Severe: seepage.	Slight-----	Severe: seepage.	Good.
ERE----- Briley	Moderate: percs slowly, slope.	Severe: seepage, slope.	Moderate: slope.	Severe: seepage.	Fair: slope.
EXA*: Buxin-----	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Moreland-----	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
ChC----- Cahaba	Slight-----	Severe: seepage.	Severe: seepage.	Slight-----	Fair: thin layer.

See footnote at end of table.

Table 10.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
DaC----- Darden	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
DrC----- Darley	Severe: cemented pan, percs slowly.	Severe: seepage, cemented pan.	Moderate: cemented pan, too clayey.	Severe: cemented pan.	Poor: cemented pan, small stones.
DRE----- Darley	Severe: cemented pan, percs slowly.	Severe: seepage, cemented pan, slope.	Moderate: cemented pan, slope, too clayey.	Severe: cemented pan.	Poor: cemented pan, small stones.
DuC----- Dubach	Severe: wetness.	Moderate: seepage, slope, wetness.	Moderate: wetness, too clayey.	Slight-----	Fair: too clayey.
EcC----- Eastwood	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
ECE----- Eastwood	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
ECF----- Eastwood	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
FoC----- Forbing	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
FOE----- Forbing	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
GrB----- Gurdon	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
GyA----- Guyton	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
GYO*: Guyton-----	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Ouachita-----	Severe: flooding, percs slowly.	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding.	Fair: too clayey.
KoC----- Kolin	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.

See footnote at end of table.

Table 10.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
MaC----- Mahan	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
MAE----- Mahan	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
MgB, MgD----- Malbis	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
MnB, MND----- McLaurin	Slight-----	Severe: seepage.	Slight-----	Severe: seepage.	Good.
MtB----- Metcalf	Severe: wetness, percs slowly.	Slight-----	Severe: wetness.	Moderate: wetness.	Poor: thin layer.
NaC----- Natchitoches	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
NAE----- Natchitoches	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
OkC----- Oktibbeha	Severe: percs slowly.	Moderate: slope.	Severe: too clayey, too acid.	Slight-----	Poor: too clayey, hard to pack.
RuC, RuD----- Ruston	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too sandy.	Slight-----	Fair: too sandy.
ScC----- Sacul	Severe: wetness, percs slowly.	Moderate: slope.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
SCE----- Sacul	Severe: wetness, percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
SlC----- Sailes	Moderate: percs slowly.	Severe: seepage.	Moderate: too clayey.	Slight-----	Fair: too clayey.
SLE----- Sailes	Moderate: percs slowly, slope.	Severe: seepage, slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
SnC----- Sawyer	Severe: wetness, percs slowly.	Moderate: slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Poor: thin layer.
StC----- Shatta	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.

See footnote at end of table.

Table 10.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SVF----- Smithdale	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
TrC----- Trep	Severe: wetness, percs slowly.	Severe: seepage.	Moderate: wetness.	Severe: seepage.	Poor: thin layer.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 11.--Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
EaB----- Beauregard	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
EdC, EDE----- Bellwood	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
BeC, BEE----- Betis	Good-----	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
BlC----- Bienville	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
BoC, BoD----- Bowie	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
BpC----- Boykin	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
BPE----- Boykin	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, slope.
BrC----- Briley	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
BRE----- Briley	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, slope.
EXA*: Buxin-----	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Moreland-----	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
ChC----- Cahaba	Good-----	Probable-----	Improbable: too sandy.	Fair: too clayey.
DaC----- Darden	Good-----	Probable-----	Improbable: too sandy.	Fair: too sandy.
DrC, DRE----- Darley	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
DuC----- Dubach	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

Table 11.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
EcC, ECE----- Eastwood	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
ECF----- Eastwood	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
FoC, FOE----- Forbing	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
GrB----- Gurdon	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
GyA----- Guyton	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
GYO*: Guyton-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ouachita-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
KoC----- Kolin	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, too clayey.
MaC, MAE----- Mahan	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
MgB, MgD----- Malbis	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
MnB, MND----- McLaurin	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
MtB----- Metcalf	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, too clayey.
NaC, NAE----- Natchitoches	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
OkC----- Oktibbeha	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, too acid.
RuC, RuD----- Ruston	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
ScC, SCE----- Sacul	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

See footnote at end of table.

Table 11.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SlC----- Sailes	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
SLE----- Sailes	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
SnC----- Sawyer	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer.
StC----- Shatta	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.
SVF----- Smithdale	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
TrC----- Trep	Fair: low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 12.--Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
BaB----- Beauregard	Slight-----	Severe: piping, wetness.	Severe: slow refill.	Favorable-----	Wetness-----	Erodes easily, wetness.	Erodes easily.
BdC----- Bellwood	Moderate: slope.	Severe: hard to pack.	Severe: slow refill.	Percs slowly, slope.	Slope, wetness.	Erodes easily, wetness.	Erodes easily, percs slowly.
BDE----- Bellwood	Severe: slope.	Severe: hard to pack.	Severe: slow refill.	Percs slowly, slope.	Slope, wetness.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
BeC----- Betis	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
BEE----- Betis	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
BlC----- Bienville	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
BoC, BoD----- Bowie	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Slope-----	Favorable-----	Favorable.
BpC----- Boykin	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Soil blowing---	Droughty.
BPE----- Boykin	Severe: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, soil blowing.	Slope, droughty.
BrC----- Briley	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Soil blowing---	Droughty.
BRE----- Briley	Severe: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, soil blowing.	Slope, droughty.
EXA*: Buxin-----	Slight-----	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, droughty, slow intake.	Wetness, percs slowly.	Wetness, droughty, percs slowly.
Moreland-----	Slight-----	Severe: hard to pack, wetness.	Severe: no water.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
ChC----- Cahaba	Severe: seepage.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope-----	Favorable-----	Favorable.
DaC----- Darden	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Soil blowing---	Droughty.

See footnote at end of table.

Table 12.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
DrC----- Darley	Moderate: seepage, cemented pan, slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, droughty.	Cemented pan, soil blowing.	Droughty, cemented pan.
DRE----- Darley	Severe: slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, droughty.	Slope, cemented pan, soil blowing.	Slope, droughty, cemented pan.
DuC----- Dubach	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Soil blowing---	Favorable.
EcC----- Eastwood	Slight-----	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
ECE, ECF----- Eastwood	Slight-----	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
FoC----- Forbing	Moderate: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Percs slowly, slope, erodes easily.	Erodes easily, percs slowly.	Erodes easily, erodes easily.
FOE----- Forbing	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Percs slowly, slope, erodes easily.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
GrB----- Gurdon	Moderate: seepage.	Severe: piping.	Severe: no water.	Favorable-----	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
GyA----- Guyton	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Percs slowly---	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
GYO*: Guyton-----	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Percs slowly, flooding.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ouachita-----	Slight-----	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
KoC----- Kolin	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly, slope.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
MaC----- Mahan	Moderate: seepage, slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, soil blowing.	Soil blowing---	Favorable.
MAE----- Mahan	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.
MgB, MgD----- Malbis	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope-----	Favorable-----	Favorable.
MnB----- McLaurin	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable-----	Favorable-----	Favorable.

See footnote at end of table.

Table 12.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
MND----- McLaurin	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope-----	Favorable-----	Favorable.
MtB----- Metcalf	Slight-----	Moderate: piping, wetness.	Severe: no water.	Percs slowly---	Wetness, percs slowly, erodes easily.	Erodes easily, wetness.	Erodes easily, percs slowly.
NaC----- Natchitoches	Moderate: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Soil blowing, percs slowly.	Droughty, percs slowly.
NAE----- Natchitoches	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, soil blowing, percs slowly.	Slope, droughty, percs slowly.
OkC----- Oktibbeha	Moderate: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Percs slowly, slope.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
RuC, RuD----- Ruston	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.
ScC----- Sacul	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness.	Wetness, soil blowing.	Percs slowly.
SCE----- Sacul	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness.	Slope, wetness, soil blowing.	Slope, percs slowly.
SlC----- Sailes	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Soil blowing---	Droughty.
SLE----- Sailes	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, soil blowing.	Slope, droughty.
SnC----- Sawyer	Moderate: slope.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness.	Erodes easily, wetness.	Erodes easily, percs slowly.
StC----- Shatta	Moderate: slope.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness, rooting depth.	Erodes easily, rooting depth, percs slowly.
SVF----- Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
TrC----- Trep	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Soil blowing---	Droughty.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 13.--Engineering Index Properties

(The symbol < means less than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
BaB----- Beauregard	0-10	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	<23	NP-3
	10-43	Silt loam, silty clay loam, very fine sandy loam.	CL, CL-ML	A-6, A-4	0	100	100	95-100	70-95	25-35	7-15
	43-62	Silty clay loam, silt loam, silty clay.	CL	A-6	0	100	100	85-100	70-95	30-40	12-19
BdC----- Bellwood	0-3	Silt loam-----	ML, CL-ML, SC-SM, SM	A-4	0	100	100	95-100	40-65	<25	NP-7
	3-65	Silty clay, clay	CH, MH	A-7	0	100	100	100	90-95	60-90	35-50
BDE----- Bellwood	0-3	Silt loam-----	ML, CL-ML, SC-SM, SM	A-4	0	100	100	95-100	40-65	<25	NP-7
	3-62	Silty clay, clay	CH, MH	A-7	0	100	100	100	90-95	60-90	35-50
BeC----- Betis	0-9	Loamy fine sand	SM, SP-SM	A-2	0	100	97-100	90-100	10-35	---	NP
	9-23	Fine sand, loamy fine sand.	SM, SP-SM	A-2	0	100	97-100	90-100	10-35	---	NP
	23-70	Fine sand, loamy fine sand.	SM	A-2, A-4	0	100	97-100	90-100	25-50	---	NP
BEE----- Betis	0-12	Loamy fine sand	SM, SP-SM	A-2	0	100	97-100	90-100	10-35	---	NP
	12-36	Fine sand, loamy fine sand.	SM, SP-SM	A-2	0	100	97-100	90-100	10-35	---	NP
	36-66	Fine sand, loamy fine sand.	SM	A-2, A-4	0	100	97-100	90-100	25-50	---	NP
BlC----- Bienville	0-7	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	100	100	90-100	15-50	<25	NP-5
	7-48	Loamy fine sand, fine sand.	SM	A-2-4, A-4	0	100	100	90-100	15-50	<25	NP-3
	48-72	Loamy fine sand, fine sandy loam, fine sand.	SM, ML	A-2-4, A-4	0	100	100	90-100	20-55	<25	NP-3
BoC----- Bowie	0-13	Very fine sandy loam.	SM, SC-SM, ML, CL-ML	A-2-4, A-4	0	97-100	94-100	90-100	30-55	<25	NP-6
	13-28	Sandy clay loam, clay loam, loam.	SC, CL	A-4, A-6	0	90-100	87-100	80-100	40-72	20-40	8-25
	28-40	Sandy clay loam, clay loam, loam.	SC, CL	A-4, A-6, A-2	0	80-100	70-100	65-100	34-77	20-40	8-25
	40-65	Sandy clay loam, clay loam, sandy clay.	CL	A-6, A-7	0	95-100	90-100	75-100	51-80	31-49	14-30
BoD----- Bowie	0-10	Very fine sandy loam.	SM, SC-SM, ML, CL-ML	A-2-4, A-4	0	97-100	94-100	90-100	30-55	<25	NP-6
	10-22	Sandy clay loam, clay loam, loam.	SC, CL	A-4, A-6	0	90-100	87-100	80-100	40-72	20-40	8-25
	22-44	Sandy clay loam, clay loam, loam.	SC, CL	A-4, A-6, A-2	0	80-100	70-100	65-100	34-77	20-40	8-25
	44-62	Sandy clay loam, clay loam, sandy clay.	CL	A-6, A-7	0	95-100	90-100	75-100	51-80	31-49	14-30

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
BpC----- Boykin	0-6	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	75-98	17-45	16-25	NP-5
	6-27	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	70-98	17-45	16-25	NP-5
	27-81	Fine sandy loam, sandy clay loam.	SC, CL	A-4, A-6, A-7-6	0	95-100	95-100	80-98	36-55	22-45	8-30
BPE----- Boykin	0-6	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	75-98	17-45	16-25	NP-5
	6-28	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	70-98	17-45	16-25	NP-5
	28-65	Fine sandy loam, sandy clay loam.	SC, CL	A-4, A-6, A-7-6	0	95-100	95-100	80-98	36-55	22-45	8-30
BrC----- Briley	0-5	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	95-100	95-100	80-100	17-45	16-25	NP-7
	5-28	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	80-100	17-45	16-25	NP-7
	28-60	Fine sandy loam, sandy clay loam.	SC, CL	A-4, A-6	0	95-100	95-100	85-100	36-65	22-39	8-22
BRE----- Briley	0-6	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	95-100	95-100	80-100	17-45	16-25	NP-7
	6-30	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	80-100	17-45	16-25	NP-7
	30-60	Fine sandy loam, sandy clay loam.	SC, CL	A-4, A-6	0	95-100	95-100	85-100	36-65	22-39	8-22
BXA*: Buxin-----	0-7	Clay-----	CH, CL	A-7-6	0	100	100	100	95-100	41-75	20-45
	7-50	Clay, silty clay	CH	A-7-6	0	100	100	100	95-100	51-75	30-45
	50-65	Clay, silty clay loam, silty clay.	CH, CL	A-7-6	0	100	100	100	95-100	41-75	20-45
Moreland-----	0-13	Clay-----	CH	A-7-6	0	100	95-100	90-100	90-100	51-74	25-45
	13-30	Silty clay, clay	CH	A-7-6	0	100	95-100	90-100	90-100	51-74	25-45
	30-65	Clay, silty clay	CH, CL	A-7-6,	0	100	100	100	90-100	51-74	25-45
ChC----- Cahaba	0-15	Fine sandy loam	SM	A-4, A-2-4	0	95-100	95-100	65-90	30-45	---	NP
	15-43	Sandy clay loam, loam, clay loam.	SC, CL	A-4, A-6	0	90-100	80-100	75-90	40-75	22-35	8-15
	43-60	Loamy sand, sandy loam, fine sandy loam.	SM, SP-SM	A-2-4	0	95-100	90-100	60-85	10-35	---	NP
DaC----- Darden	0-9	Loamy fine sand	SM, SP-SM	A-2, A-3	0	100	100	90-100	5-35	<20	NP-3
	9-68	Loamy fine sand	SM, SP-SM	A-2	0	100	100	90-100	10-35	<20	NP-3

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
DrC----- Darley	0-2	Gravelly fine sandy loam.	SM, SC-SM, SC, GM	A-1-B, A-2-4, A-4	0-5	55-80	40-70	35-65	20-50	<20	NP-8
	2-24	Sandy clay, gravelly sandy clay, clay.	GC, SC, CL, CH	A-7-6, A-2-7	0-5	65-90	55-85	45-80	30-60	40-60	16-30
	24-54	Clay, gravelly clay, gravelly sandy clay.	GC, SC, CL, CH	A-7-6, A-2-7	3-15	40-70	35-60	30-60	25-55	40-60	16-30
	54-72	Sandy loam, fine sandy loam, gravelly sandy clay loam.	SC-SM, CL-ML, CL, SC	A-2-4, A-4, A-6, A-2-6	0-2	80-95	75-90	70-85	30-55	16-35	5-20
DRE----- Darley	0-8	Gravelly fine sandy loam.	SM, SC-SM, SC, GM	A-1-B, A-2-4, A-4	0-5	55-80	40-70	35-65	20-50	<20	NP-8
	8-22	Sandy clay, gravelly sandy clay, clay.	GC, SC, CL, CH	A-7-6, A-2-7	0-5	65-90	55-85	45-80	30-60	40-60	16-30
	22-45	Clay, gravelly clay, gravelly sandy clay.	GC, SC, CL, CH	A-7-6, A-2-7	3-15	40-70	35-60	30-60	25-55	40-60	16-30
	45-60	Sandy loam, fine sandy loam, gravelly sandy clay loam.	SC-SM, CL-ML, CL, SC	A-2-4, A-4, A-6, A-2-6	0-2	80-95	75-90	70-85	30-55	16-35	5-20
DuC----- Dubach	0-14	Fine sandy loam	SM, ML, CL-ML	A-4, A-6	0	100	97-100	91-97	40-62	10-30	NP-11
	14-56	Loam, sandy clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	99-100	95-100	80-100	55-70	15-40	5-19
	56-72	Sandy clay loam, clay loam, loam.	CL, CL-ML	A-4, A-6	0	98-100	96-100	90-100	56-80	15-40	4-19
EcC----- Eastwood	0-8	Fine sandy loam	SM, SC-SM, CL-ML, ML	A-4, A-6	0	98-100	98-100	90-100	40-75	20-33	3-13
	8-45	Clay, silty clay	CH, CL	A-7-6	0	100	95-100	90-100	70-98	40-75	25-48
	45-50	Clay loam, silty clay loam, loam.	CL, CH	A-6, A-7-6	0	100	95-100	90-100	55-99	35-65	15-45
	50-65	Fine sandy loam to silty clay loam.	CL, SC, CL-ML, SC-SM	A-6, A-4, A-7-6	0	95-100	95-100	90-100	40-98	25-68	5-44
ECE----- Eastwood	0-7	Fine sandy loam	SM, SC-SM, CL-ML, ML	A-4, A-6	0	98-100	98-100	90-100	40-75	20-33	3-13
	7-54	Clay, silty clay	CH, CL	A-7-6	0	100	95-100	90-100	70-98	40-75	25-48
	54-59	Clay loam, silty clay loam, loam.	CL, CH	A-6, A-7-6	0	100	95-100	90-100	55-99	35-65	15-45
	59-65	Fine sandy loam to silty clay loam.	CL, SC, CL-ML, SC-SM	A-6, A-4, A-7-6	0	95-100	95-100	90-100	40-98	25-68	5-44

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	<u>In</u>				<u>Pct</u>					<u>Pct</u>	
ECF----- Eastwood	0-7	Fine sandy loam	SM, SC-SM, CL-ML, ML	A-4, A-6	0	98-100	98-100	90-100	40-75	20-33	3-13
	7-48	Clay, silty clay	CH, CL	A-7-6	0	100	95-100	90-100	70-98	40-75	25-48
	48-58	Clay loam, silty clay loam, loam, sandy clay loam.	CL, CH	A-6, A-7-6	0	100	95-100	90-100	55-99	35-65	15-45
	58-65	Fine sandy loam to silty clay loam.	CL, SC, CL-ML, SC-SM	A-6, A-4, A-7-6	0	95-100	95-100	90-100	40-98	25-68	5-44
FoC----- Forbing	0-7	Silt loam-----	ML, CL-ML, CL	A-4	0	100	100	100	70-90	<30	NP-10
	7-28	Clay-----	CH	A-7-6	0	100	100	95-100	85-100	51-76	26-50
	28-72	Clay-----	CH	A-7-6	0	95-100	95-100	95-100	85-100	51-76	26-50
	72-80	Clay, silty clay	CH, CL	A-7-6	0	95-100	95-100	95-100	85-100	45-76	22-49
FOE----- Forbing	0-5	Silt loam-----	ML, CL-ML, CL	A-4	0	100	100	100	70-90	<30	NP-10
	5-14	Clay-----	CH	A-7-6	0	100	100	95-100	85-100	51-76	26-50
	14-44	Clay-----	CH	A-7-6	0	95-100	95-100	95-100	85-100	51-76	26-50
	44-70	Clay, silty clay	CH, CL	A-7-6	0	95-100	95-100	95-100	85-100	45-76	22-49
GrB----- Gurdon	0-9	Silt loam-----	ML, CL-ML	A-4	0	100	95-100	85-100	50-90	15-20	NP-5
	9-28	Silt loam, very fine sandy loam, loam.	ML, CL-ML	A-4	0	100	95-100	85-100	50-90	15-20	NP-5
	28-45	Silt loam, loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	100	95-100	85-100	60-95	20-40	5-15
	45-65	Silt loam, loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	95-100	85-100	60-95	20-40	5-15
GyA----- Guyton	0-20	Silt loam-----	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	20-55	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
	55-65	Silt loam, silty clay loam, sandy clay loam.	CL, CL-ML, ML	A-6, A-4	0	100	100	95-100	50-95	<40	NP-18
GYO*: Guyton-----	0-24	Silt loam-----	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	24-55	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
	55-65	Silt loam, silty clay loam, sandy clay loam.	CL, CL-ML, ML	A-6, A-4	0	100	100	95-100	50-95	<40	NP-18
Ouachita-----	0-5	Silt loam-----	ML, CL-ML, CL	A-4	0	100	100	85-95	55-85	<30	2-10
	5-13	Silt loam, loam, very fine sandy loam.	ML, CL-ML, CL	A-4	0	100	100	85-95	55-85	<30	2-10
	13-48	Silt loam, loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	100	100	85-95	55-90	25-40	5-15
	48-62	Fine sandy loam, silt loam, loamy fine sand, very fine sandy loam.	SM, ML, CL-ML, SC-SM	A-4, A-2	0	100	100	70-95	30-90	15-25	NP-7

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
KoC----- Kolin	0-9	silt loam-----	ML, CL-ML	A-4	0	100	100	85-100	60-85	<27	NP-7
	9-39	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	85-97	30-46	11-22
	39-78	Clay, silty clay	CH	A-7-6	0	100	100	90-100	75-95	50-63	25-35
MaC----- Mahan	0-10	Fine sandy loam	SM, SC-SM, ML, SC	A-2-4, A-4	0-1	90-100	85-100	65-80	30-55	<25	NP-8
	10-40	Sandy clay loam, sandy clay, clay, clay loam.	CL, MH, ML, CH	A-7-6, A-6, A-7-5	0-2	90-100	85-95	80-90	50-85	36-55	12-22
	40-58	Sandy loam, fine sandy loam, sandy clay loam.	SC, SC-SM, CL, CL-ML	A-4, A-6	0-2	90-100	85-95	65-85	35-55	16-35	4-18
	58-65	Stratified sandy clay loam to sandy loam.	SC, SC-SM, CL, CL-ML	A-4, A-6	0-1	90-100	85-95	65-85	35-55	16-30	4-15
MaE----- Mahan	0-11	Fine sandy loam	SM, SC-SM, ML, SC	A-2-4, A-4	0-1	90-100	85-100	65-80	30-55	<25	NP-8
	11-41	Sandy clay loam, sandy clay, clay, clay loam.	CL, MH, ML, CH	A-7-6, A-6, A-7-5	0-2	90-100	85-95	80-90	50-85	36-55	12-22
	41-63	Sandy loam, fine sandy loam, sandy clay loam.	SC, SC-SM, CL, CL-ML	A-4, A-6	0-2	90-100	85-95	65-85	35-55	16-35	4-18
	63-70	Stratified sandy clay loam to sandy loam.	SC, SC-SM, CL, CL-ML	A-4, A-6	0-1	90-100	85-95	65-85	35-55	16-30	4-15
MgB----- Malbis	0-14	Fine sandy loam	SM, ML	A-4	0	100	97-100	91-97	40-62	<30	NP-5
	14-43	Loam, sandy clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	99-100	95-100	80-100	55-70	21-35	5-11
	43-60	Sandy clay loam, clay loam, loam.	ML, CL	A-4, A-6, A-7	0	98-100	96-100	90-100	56-80	29-49	4-15
MgD----- Malbis	0-10	Fine sandy loam	SM, ML	A-4	0	100	97-100	91-97	40-62	<30	NP-5
	10-20	Loam, sandy clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	99-100	95-100	80-100	55-70	21-35	5-11
	20-65	Sandy clay loam, clay loam, loam.	ML, CL	A-4, A-6, A-7	0	98-100	96-100	90-100	56-80	29-49	4-15
MnB----- McLaurin	0-13	Fine sandy loam	SM	A-4	0	90-100	90-100	70-85	36-45	<30	NP-4
	13-53	Sandy loam, fine sandy loam, loam.	SM, SC, SC-SM	A-4	0	90-100	90-100	85-95	36-45	<30	NP-10
	53-60	Loamy fine sand, loamy sand, sandy loam.	SM	A-2, A-4	0	90-100	90-100	50-85	15-45	<20	NP-4
	60-71	Sandy loam, sandy clay loam, loam.	SC, ML, CL, SM	A-4, A-6	0	90-100	90-100	70-80	36-55	30-40	6-15
MnD----- McLaurin	0-12	Fine sandy loam	SM	A-4	0	90-100	90-100	70-85	36-45	<30	NP-4
	12-41	Sandy loam, fine sandy loam, loam.	SM, SC, SC-SM	A-4	0	90-100	90-100	85-95	36-45	<30	NP-10
	41-55	Loamy fine sand, loamy sand, sandy loam.	SM	A-2, A-4	0	90-100	90-100	50-85	15-45	<20	NP-4
	55-81	Sandy loam, sandy clay loam, loam.	SC, ML, CL, SM	A-4, A-6	0	90-100	90-100	70-80	36-55	30-40	6-15

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
MtB----- Metcalf	0-7	Silt loam-----	ML, CL-ML	A-4	0	100	100	90-100	65-90	<25	NP-6
	7-40	Silt loam, loam, clay loam.	CL	A-6	0	100	100	90-100	65-95	31-40	11-18
	40-75	Silty clay, clay, clay loam, silty clay loam.	CH, CL	A-7-6	0	100	100	95-100	85-100	46-66	20-38
NaC----- Natchitoches	0-5	Fine sandy loam	CL, ML, SM, SC	A-2, A-4, A-6	0	100	100	70-90	30-65	10-40	NP-22
	5-45	Clay, sandy clay	CH, CL	A-7-6	0	100	100	75-100	50-95	41-72	22-45
	45-65	Sandy clay, clay	CL, CH	A-7-6	0	90-100	90-100	75-100	50-95	41-72	22-45
NAE----- Natchitoches	0-3	Fine sandy loam	CL, ML, SM, SC	A-2, A-4, A-6	0	100	100	70-90	30-65	10-40	NP-22
	3-37	Clay, sandy clay	CH, CL	A-7-6	0	100	100	75-100	50-95	41-72	22-45
	37-63	Sandy clay, clay	CL, CH	A-7-6	0	90-100	90-100	75-100	50-95	41-72	22-45
OkC----- Oktibbeha	0-2	Silt loam-----	CL, CL-ML	A-6, A-4	0	100	95-100	85-95	60-90	20-40	4-20
	2-18	Clay-----	CH	A-7	0	100	100	95-100	95-100	55-75	35-50
	18-34	Clay-----	CH	A-7	0	100	100	95-100	95-100	55-75	35-50
	34-65	Clay-----	CL	A-7	0	100	100	90-100	90-100	42-65	30-45
RuC----- Ruston	0-19	Fine sandy loam	SM, ML, CL-ML	A-4, A-2-4	0	100	85-100	65-85	30-55	<20	NP-7
	19-38	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
	38-50	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	0	100	85-100	65-85	30-75	<27	NP-7
	50-80	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
RuD----- Ruston	0-14	Fine sandy loam	SM, ML, CL-ML	A-4, A-2-4	0	100	85-100	65-85	30-55	<20	NP-7
	14-51	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
	51-67	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	0	100	85-100	65-85	30-75	<27	NP-7
	67-80	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
ScC----- Sacul	0-2	Fine sandy loam	SM, SC-SM	A-4, A-2	0	75-100	75-100	45-85	25-50	15-25	NP-7
	2-6	Very fine sandy loam, fine sandy loam, loam.	SM, ML, SC-SM, CL-ML	A-2, A-4, A-1	0	75-100	75-100	40-95	12-75	15-30	NP-10
	6-46	Clay, silty clay, clay loam, sandy clay.	CH, CL, SC	A-7	0	85-100	85-100	70-100	40-95	45-70	20-40
	46-65	Silty clay loam, clay loam, loam, sandy clay loam.	CL, SC	A-6, A-7, A-4, A-2	0	85-100	85-100	65-100	30-95	25-48	8-25

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
SCE----- Sacul	0-2	Fine sandy loam	SM, SC-SM	A-4, A-2	0	75-100	75-100	45-85	25-50	15-25	NP-7
	2-6	Very fine sandy loam, fine sandy loam, loam.	SM, ML, SC-SM, CL-ML	A-2, A-4, A-1	0	75-100	75-100	40-95	12-75	15-30	NP-10
	6-42	Clay, silty clay, clay loam, sandy clay.	CH, CL, SC	A-7	0	85-100	85-100	70-100	40-95	45-70	20-40
	42-65	Silty clay loam, clay loam, loam, sandy clay loam.	CL, SC	A-6, A-7, A-4, A-2	0	85-100	85-100	65-100	30-95	25-48	8-25
SlC----- Sailes	0-18	Loamy fine sand	SM	A-2-4	0	85-100	80-100	50-75	15-35	<20	NP-3
	18-39	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-4	0	85-100	75-100	70-100	45-75	22-35	8-15
	39-90	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-4	0	85-100	75-100	70-100	40-75	22-35	8-15
SLE----- Sailes	0-15	Loamy fine sand	SM	A-2-4	0	85-100	80-100	50-75	15-35	<20	NP-3
	15-42	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-4	0	85-100	75-100	70-100	45-75	22-35	8-15
	42-75	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-4	0	85-100	75-100	70-100	40-75	22-35	8-15
SnC----- Sawyer	0-9	Very fine sandy loam.	ML, CL-ML, CL	A-4	0	100	95-100	85-95	50-90	25-30	3-10
	9-32	Silty clay loam, loam, silt loam.	CL	A-6	0	100	95-100	85-95	60-95	30-40	10-20
	32-65	Silty clay, clay, silty clay loam.	CH, CL	A-7	0	100	95-100	90-100	75-95	45-60	20-35
StC----- Shatta	0-11	Silt loam-----	ML, CL-ML	A-4	0	100	100	90-100	55-90	23-28	3-7
	11-33	Silty clay loam, loam, silt loam.	CL	A-6	0	100	100	90-100	70-90	30-40	11-18
	33-70	Loam, silt loam, silty clay loam, sandy clay loam.	CL	A-6, A-4	0	100	100	90-100	60-90	27-35	8-14
SVF----- Smithdale	0-8	Fine sandy loam	SM, SC-SM	A-4, A-2	0	100	85-100	60-95	28-49	<20	NP-5
	8-38	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-96	45-75	23-38	7-16
	38-68	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-95	36-70	<30	NP-10
TrC----- Trep	0-23	Loamy fine sand	SM	A-2-4	0	100	95-100	90-95	15-30	<25	NP-4
	23-57	Sandy clay loam, loam.	SC, CL	A-6	0	100	95-100	80-90	40-70	25-40	11-20
	57-75	Sandy clay, clay, sandy clay loam.	CL	A-6, A-7	0	100	95-100	85-95	55-75	25-45	11-27

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 14.--Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth		Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Organic matter
	In	Pct							K	T	
BaB----- Beauregard	0-10 10-43 43-62	5-15 18-32 15-45	1.35-1.65 1.35-1.70 1.35-1.70	0.6-2.0 0.2-0.6 0.06-0.2	0.20-0.22 0.20-0.22 0.20-0.22	4.5-6.5 4.5-6.0 4.5-6.0	Low----- Low----- Low-----	0.49 0.37 0.37	5	.5-5	
BdC----- Bellwood	0-3 3-65	10-27 45-75	1.40-1.55 1.05-1.35	0.6-2.0 <0.06	0.15-0.20 0.14-0.18	3.6-6.5 3.6-5.5	Low----- High-----	0.43 0.28	5	.5-5	
BDE----- Bellwood	0-3 3-62	10-27 45-75	1.40-1.55 1.05-1.35	0.6-2.0 <0.06	0.15-0.20 0.14-0.18	3.6-5.5 3.6-5.5	Low----- High-----	0.43 0.28	5	.5-5	
BeC----- Betis	0-9 9-23 23-70	2-10 2-10 5-15	1.20-1.50 1.20-1.50 1.20-1.50	6.0-20 6.0-20 6.0-20	0.05-0.10 0.05-0.10 0.08-0.11	4.5-6.0 4.5-6.0 4.5-6.0	Low----- Low----- Low-----	0.17 0.17 0.17	5	.5-2	
BEE----- Betis	0-12 12-36 36-66	2-10 2-10 5-15	1.20-1.50 1.20-1.50 1.20-1.50	6.0-20 6.0-20 6.0-20	0.05-0.10 0.05-0.10 0.08-0.11	4.5-6.0 4.5-6.0 4.5-6.0	Low----- Low----- Low-----	0.17 0.17 0.17	5	.5-2	
BlC----- Bienville	0-7 7-48 48-72	4-15 2-15 5-20	1.35-1.65 1.35-1.60 1.35-1.70	6.0-20 2.0-6.0 2.0-6.0	0.07-0.11 0.08-0.11 0.08-0.13	4.5-6.5 4.5-6.5 4.5-6.0	Low----- Low----- Low-----	0.20 0.20 0.20	5	<2	
BoC----- Bowie	0-13 13-28 28-40 40-65	3-15 18-35 18-35 25-40	1.40-1.69 1.60-1.69 1.60-1.80 1.65-1.80	2.0-6.0 0.6-2.0 0.2-0.6 0.2-0.6	0.10-0.15 0.10-0.16 0.10-0.16 0.10-0.16	4.5-6.5 4.5-5.5 4.5-5.5 4.5-5.5	Low----- Low----- Low----- Moderate----	0.32 0.32 0.32 0.32	5	.5-1	
BoD----- Bowie	0-10 10-22 22-44 44-62	3-15 18-35 18-35 25-40	1.40-1.69 1.60-1.69 1.60-1.80 1.65-1.80	2.0-6.0 0.6-2.0 0.2-0.6 0.2-0.6	0.10-0.15 0.10-0.16 0.10-0.16 0.10-0.16	4.5-6.5 4.5-5.5 4.5-5.5 4.5-5.5	Low----- Low----- Low----- Moderate----	0.32 0.32 0.32 0.32	5	.5-1	
BpC----- Boykin	0-6 6-27 27-81	3-10 3-10 18-30	1.40-1.60 1.40-1.60 1.45-1.70	6.0-20 6.0-20 0.6-2.0	0.05-0.09 0.05-0.09 0.10-0.16	4.5-6.5 4.5-6.5 4.5-6.0	Low----- Low----- Low-----	0.20 0.20 0.28	5	.5-3	
BPE----- Boykin	0-6 6-28 28-65	3-10 3-10 18-30	1.40-1.60 1.40-1.60 1.45-1.70	6.0-20 6.0-20 0.6-2.0	0.05-0.09 0.05-0.09 0.10-0.16	4.5-6.5 4.5-6.5 4.5-6.0	Low----- Low----- Low-----	0.20 0.20 0.28	5	.5-3	
BrC----- Briley	0-5 5-28 28-60	5-18 5-18 15-35	1.50-1.65 1.50-1.65 1.55-1.69	6.0-20 6.0-20 0.6-2.0	0.05-0.09 0.05-0.09 0.10-0.16	4.5-6.5 4.5-6.5 4.5-6.0	Low----- Low----- Low-----	0.20 0.20 0.24	5	.5-2	
BRE----- Briley	0-6 6-30 30-60	5-18 5-18 15-35	1.50-1.65 1.50-1.65 1.55-1.69	6.0-20 6.0-20 0.6-2.0	0.05-0.09 0.05-0.09 0.10-0.16	4.5-6.5 4.5-6.5 4.5-6.0	Low----- Low----- Low-----	0.20 0.20 0.24	5	.5-2	
EXA*: Buxin-----	0-7 7-50 50-65	40-55 40-55 30-55	1.20-1.45 1.20-1.45 1.20-1.60	<0.06 <0.06 <0.2	0.09-0.19 0.09-0.19 0.09-0.20	6.1-7.8 6.1-8.4 6.6-8.4	High----- High----- High-----	0.28 0.32 0.32	5	1-4	
Moreland-----	0-13 13-30 30-65	39-50 39-60 40-60	1.20-1.50 1.20-1.45 1.20-1.70	<0.06 <0.06 <0.2	0.12-0.18 0.12-0.18 0.12-0.21	6.1-7.8 6.6-8.4 6.6-8.4	Very high---- Very high---- High-----	0.32 0.32 0.32	5	1-4	

See footnote at end of table.

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth		Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Organic matter
	In	Pct							K	T	
			G/cc	In/hr	In/in					Pct	
ChC----- Cahaba	0-15	7-17	1.35-1.60	2.0-6.0	0.10-0.14	4.5-6.0	Low-----	0.24	5	.5-2	
	15-43	18-35	1.35-1.60	0.6-2.0	0.12-0.20	4.5-6.0	Low-----	0.28			
	43-60	4-20	1.40-1.70	2.0-20	0.05-0.10	4.5-6.0	Low-----	0.24			
DaC----- Darden	0-9	2-10	1.20-1.60	6.0-20	0.05-0.09	4.5-6.5	Low-----	0.15	5	<1	
	9-68	2-10	1.20-1.60	6.0-20	0.05-0.09	4.5-7.3	Low-----	0.15			
DrC----- Darley	0-2	5-15	1.35-1.70	2.0-6.0	0.08-0.12	4.5-6.5	Low-----	0.17	3	.5-4	
	2-24	35-60	1.20-1.40	0.6-2.0	0.10-0.20	4.5-5.5	Low-----	0.24			
	24-54	35-60	1.20-1.40	0.2-0.6	0.10-0.20	4.5-5.5	Low-----	0.24			
DRE----- Darley	54-72	15-35	1.35-1.70	0.2-0.6	0.11-0.17	4.5-5.5	Low-----	0.28			
	0-8	5-15	1.35-1.70	2.0-6.0	0.08-0.12	4.5-6.5	Low-----	0.17	3	.5-4	
	8-22	35-60	1.20-1.40	0.6-2.0	0.10-0.20	4.5-5.5	Low-----	0.24			
	22-45	35-60	1.20-1.40	0.2-0.6	0.10-0.20	4.5-5.5	Low-----	0.24			
45-60	15-35	1.35-1.70	0.2-0.6	0.11-0.17	4.5-5.5	Low-----	0.28				
DuC----- Dubach	0-14	3-20	1.30-1.60	0.6-2.0	0.10-0.15	4.5-6.0	Low-----	0.24	5	.5-3	
	14-56	18-33	1.30-1.70	0.6-2.0	0.12-0.20	4.5-5.5	Low-----	0.28			
	56-72	20-35	1.40-1.60	0.6-2.0	0.12-0.17	4.5-5.5	Low-----	0.28			
EcC----- Eastwood	0-8	3-18	1.20-1.60	0.6-2.0	0.11-0.15	4.5-6.0	Low-----	0.49	4	.5-1	
	8-45	40-65	1.20-1.45	<0.06	0.12-0.18	3.6-6.0	High-----	0.32			
	45-50	25-40	1.20-1.50	0.06-0.2	0.12-0.20	3.6-6.5	High-----	0.32			
	50-65	15-35	1.35-1.65	0.06-0.2	0.10-0.15	3.6-7.3	Moderate----	0.37			
ECE----- Eastwood	0-7	3-18	1.20-1.60	0.6-2.0	0.11-0.15	4.5-6.0	Low-----	0.49	4	.5-1	
	7-54	40-65	1.20-1.45	<0.06	0.12-0.18	3.6-6.0	High-----	0.32			
	54-59	25-40	1.20-1.50	0.06-0.2	0.12-0.20	3.6-6.5	High-----	0.32			
	59-65	15-35	1.35-1.65	0.06-0.2	0.10-0.15	3.6-7.3	Moderate----	0.37			
ECF----- Eastwood	0-7	3-18	1.20-1.60	0.6-2.0	0.11-0.15	4.5-6.0	Low-----	0.49	4	.5-1	
	7-48	40-65	1.20-1.45	<0.06	0.12-0.18	3.6-6.0	High-----	0.32			
	48-58	25-40	1.20-1.50	0.06-0.2	0.12-0.20	3.6-6.5	High-----	0.32			
	58-65	15-35	1.35-1.65	0.06-0.2	0.10-0.15	3.6-7.3	Moderate----	0.37			
FoC----- Forbing	0-7	12-27	1.40-1.60	0.6-2.0	0.21-0.23	4.5-6.5	Low-----	0.49	5	.5-2	
	7-28	60-85	1.20-1.55	<0.06	0.08-0.14	4.5-7.3	Very high----	0.32			
	28-72	60-85	1.20-1.55	<0.06	0.08-0.14	4.5-8.4	Very high----	0.32			
	72-80	50-85	1.20-1.55	<0.06	0.08-0.19	7.4-8.4	Very high----	0.32			
FOE----- Forbing	0-5	12-27	1.40-1.60	0.6-2.0	0.21-0.23	4.5-6.5	Low-----	0.49	5	.5-2	
	5-14	60-85	1.20-1.55	<0.06	0.08-0.14	4.5-7.3	Very high----	0.32			
	14-44	60-85	1.20-1.55	<0.06	0.08-0.14	4.5-8.4	Very high----	0.32			
	44-70	50-85	1.20-1.55	<0.06	0.08-0.19	7.4-8.4	Very high----	0.32			
GrB----- Gurdon	0-9	5-15	1.25-1.55	0.6-2.0	0.13-0.20	3.6-6.0	Low-----	0.43	5	1-3	
	9-28	5-15	1.25-1.55	0.6-2.0	0.13-0.20	3.6-6.0	Low-----	0.43			
	28-45	10-35	1.25-1.55	0.6-2.0	0.13-0.20	3.6-6.0	Low-----	0.43			
	45-65	15-35	1.25-1.60	0.6-2.0	0.13-0.20	3.6-6.0	Low-----	0.43			
GyA----- Guyton	0-20	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-6.0	Low-----	0.43	5	.5-4	
	20-55	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low-----	0.37			
	55-65	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low-----	0.37			
GYO*: Guyton	0-24	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-6.0	Low-----	0.43	5	.5-4	
	24-55	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low-----	0.37			
	55-65	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low-----	0.37			

See footnote at end of table.

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Organic matter
	In	Pct	G/cc	In/hr	In/in	pH		K	T	Pct
GYO*:										
Ouachita-----	0-5	8-25	1.35-1.60	0.6-2.0	0.15-0.22	4.5-6.0	Low-----	0.37	5	1-2
	5-13	8-25	1.35-1.60	0.6-2.0	0.15-0.22	4.5-6.0	Low-----	0.37		
	13-48	18-35	1.35-1.60	0.2-0.6	0.15-0.22	4.5-5.5	Low-----	0.32		
	48-62	8-25	1.35-1.65	0.6-6.0	0.07-0.22	4.5-5.5	Low-----	0.24		
KoC-----	0-9	10-27	1.35-1.65	0.6-2.0	0.18-0.22	5.1-6.5	Low-----	0.49	5	.5-4
Kolin	9-39	20-35	1.35-1.65	0.2-0.6	0.18-0.22	4.5-6.0	Moderate----	0.37		
	39-78	40-55	1.20-1.50	<0.06	0.15-0.18	4.5-8.4	High-----	0.32		
MaC-----	0-10	2-15	1.35-1.70	2.0-6.0	0.10-0.15	5.1-6.0	Low-----	0.28	5	.5-4
Mahan	10-40	35-60	1.30-1.70	0.6-2.0	0.12-0.18	4.5-6.0	Low-----	0.32		
	40-58	10-35	1.35-1.70	0.6-2.0	0.10-0.17	4.5-6.0	Low-----	0.28		
	58-65	10-35	1.35-1.70	0.2-0.6	0.10-0.17	4.5-6.0	Low-----	0.28		
MAE-----	0-11	2-15	1.35-1.70	2.0-6.0	0.10-0.15	5.1-6.0	Low-----	0.28	5	.5-4
Mahan	11-41	35-60	1.30-1.70	0.6-2.0	0.12-0.18	4.5-6.0	Low-----	0.32		
	41-63	10-35	1.35-1.70	0.6-2.0	0.10-0.17	4.5-6.0	Low-----	0.28		
	63-70	10-35	1.35-1.70	0.2-0.6	0.10-0.17	4.5-6.0	Low-----	0.28		
MgB-----	0-14	10-25	1.30-1.60	0.6-2.0	0.10-0.15	4.5-6.0	Low-----	0.24	5	.5-2
Malbis	14-43	18-33	1.30-1.70	0.6-2.0	0.12-0.20	4.5-5.5	Low-----	0.28		
	43-60	20-35	1.40-1.60	0.6-2.0	0.12-0.17	4.5-5.5	Low-----	0.28		
MgD-----	0-10	10-25	1.30-1.60	0.6-2.0	0.10-0.15	4.5-6.0	Low-----	0.24	5	.5-2
Malbis	10-20	18-33	1.30-1.70	0.6-2.0	0.12-0.20	4.5-5.5	Low-----	0.28		
	20-65	20-35	1.40-1.60	0.6-2.0	0.12-0.17	4.5-5.5	Low-----	0.28		
MnB-----	0-13	5-10	1.40-1.60	0.6-2.0	0.12-0.15	4.5-5.5	Low-----	0.20	5	.5-2
McLaurin	13-53	10-18	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low-----	0.20		
	53-60	5-15	1.30-1.70	2.0-6.0	0.05-0.10	4.5-5.5	Low-----	0.20		
	60-71	5-27	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low-----	0.20		
MND-----	0-12	5-10	1.40-1.60	0.6-2.0	0.12-0.15	4.5-5.5	Low-----	0.20	5	.5-2
McLaurin	12-41	10-18	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low-----	0.20		
	41-55	5-15	1.30-1.70	2.0-6.0	0.05-0.10	4.5-5.5	Low-----	0.20		
	55-81	5-27	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low-----	0.20		
MtB-----	0-7	7-22	1.35-1.65	0.6-2.0	0.12-0.18	3.6-6.0	Low-----	0.49	5	.5-2
Metcalfe	7-40	18-27	1.35-1.65	0.2-0.6	0.15-0.20	3.6-6.0	Low-----	0.37		
	40-75	40-60	1.20-1.60	<0.06	0.15-0.18	3.6-6.0	High-----	0.32		
NaC-----	0-5	10-20	1.30-1.65	0.2-0.6	0.15-0.20	5.1-6.5	Moderate----	0.32	5	.5-5
Natchitoches	5-45	60-80	1.20-1.60	<0.06	0.04-0.14	4.5-6.0	High-----	0.32		
	45-65	50-86	1.20-1.60	0.2-0.6	0.08-0.14	5.1-7.8	High-----	0.32		
NAE-----	0-3	10-20	1.30-1.65	0.2-0.6	0.15-0.20	5.1-6.5	Moderate----	0.32	5	.5-5
Natchitoches	3-37	60-80	1.20-1.60	<0.06	0.04-0.14	4.5-6.0	High-----	0.32		
	37-63	50-86	1.20-1.60	0.2-0.6	0.08-0.14	5.1-7.8	High-----	0.32		
OkC-----	0-2	15-27	1.20-1.50	0.6-2.0	0.15-0.22	4.5-7.3	Low-----	0.37	5	1-7
Oktibbeha	2-18	60-80	1.00-1.30	0.00-0.06	0.12-0.16	3.5-5.5	Very high----	0.32		
	18-34	60-80	1.00-1.30	<0.06	0.12-0.16	3.5-6.5	Very high----	0.32		
	34-65	50-70	1.10-1.40	<0.06	0.05-0.10	6.6-8.4	Very high----	0.32		
RuC-----	0-19	2-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low-----	0.28	5	.5-3
Ruston	19-38	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low-----	0.28		
	38-50	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low-----	0.28		
	50-80	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low-----	0.28		

See footnote at end of table.

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cc	In/hr	In/in					Pct
RuD----- Ruston	0-14	2-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low-----	0.28	5	.5-3
	14-51	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low-----	0.28		
	51-67	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low-----	0.28		
	67-80	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low-----	0.28		
ScC----- Sacul	0-2	5-20	1.30-1.50	0.6-2.0	0.09-0.12	4.5-6.0	Low-----	0.28	5	1-3
	2-6	2-25	1.40-1.60	0.6-2.0	0.07-0.17	4.5-6.0	Low-----	0.28		
	6-46	35-60	1.25-1.40	0.06-0.2	0.15-0.18	3.6-5.5	High-----	0.32		
	46-65	15-40	1.30-1.45	0.2-0.6	0.14-0.18	3.6-5.5	Low-----	0.28		
SCE----- Sacul	0-2	5-20	1.30-1.50	0.6-2.0	0.09-0.12	4.5-6.0	Low-----	0.28	5	1-3
	2-6	2-25	1.40-1.60	0.6-2.0	0.07-0.17	4.5-6.0	Low-----	0.28		
	6-42	35-60	1.25-1.40	0.06-0.2	0.15-0.18	3.6-5.5	High-----	0.32		
	42-65	15-40	1.30-1.45	0.2-0.6	0.14-0.18	3.6-5.5	Low-----	0.28		
SlC----- Sailes	0-18	5-15	1.40-1.70	2.0-6.0	0.07-0.11	4.5-5.5	Low-----	0.20	5	.5-2
	18-39	18-35	1.40-1.70	0.6-2.0	0.12-0.18	4.5-5.5	Low-----	0.32		
	39-90	18-35	1.40-1.70	0.6-2.0	0.12-0.18	4.5-5.5	Low-----	0.32		
SLE----- Sailes	0-15	5-15	1.40-1.70	2.0-6.0	0.07-0.11	4.5-5.5	Low-----	0.20	5	.5-2
	15-42	18-35	1.40-1.70	0.6-2.0	0.12-0.18	4.5-5.5	Low-----	0.32		
	42-75	18-35	1.40-1.70	0.6-2.0	0.12-0.18	4.5-5.5	Low-----	0.32		
SnC----- Sawyer	0-9	10-20	1.35-1.60	0.6-2.0	0.15-0.20	3.6-5.5	Low-----	0.37	5	1-3
	9-32	20-40	1.35-1.55	0.2-0.6	0.15-0.20	3.6-5.5	Moderate----	0.32		
	32-65	30-60	1.15-1.50	0.06-0.2	0.14-0.20	3.6-5.5	High-----	0.32		
StC----- Shatta	0-11	5-20	1.35-1.60	0.6-2.0	0.18-0.22	4.5-6.0	Low-----	0.37	4	.5-3
	11-33	18-30	1.35-1.65	0.2-0.6	0.18-0.22	4.5-6.0	Low-----	0.37		
	33-70	15-30	1.50-1.85	0.06-0.2	0.08-0.12	4.5-6.0	Low-----	0.37		
SVF----- Smithdale	0-8	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low-----	0.28	5	.5-2
	8-38	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low-----	0.24		
	38-68	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low-----	0.28		
TrC----- Trep	0-23	4-12	1.35-1.55	6.0-20	0.06-0.10	5.1-6.5	Low-----	0.24	5	.5-2
	23-57	18-35	1.50-1.70	0.6-2.0	0.11-0.16	4.5-6.0	Low-----	0.32		
	57-75	30-50	1.60-1.70	0.2-0.6	0.12-0.16	4.5-6.0	Moderate----	0.32		

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 15.--Soil and Water Features

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					<u>Ft</u>				
BaB----- Beauregard	C	None-----	---	---	1.5-3.0	Apparent	Dec-Mar	High-----	High.
BdC, BDE----- Bellwood	D	None-----	---	---	2.0-4.0	Apparent	Dec-Apr	High-----	Moderate.
BeC, BEE----- Betis	A	None-----	---	---	>6.0	---	---	Low-----	Moderate.
BlC----- Bienville	A	None-----	---	---	4.0-6.0	Apparent	Dec-Apr	Low-----	High.
BoC, BoD----- Bowie	B	None-----	---	---	3.5-5.0	Perched	Jan-Apr	Moderate	High.
BpC, BPE----- Boykin	B	None-----	---	---	>6.0	---	---	Moderate	High.
BrC, BRE----- Briley	B	None-----	---	---	>6.0	---	---	Moderate	High.
BXA*: Buxin-----	D	Frequent----	Brief to very long.	Dec-Jul	0-3.0	Apparent	Dec-Apr	High-----	Low.
Moreland-----	D	Frequent----	Brief to very long.	Dec-Jun	0-1.5	Perched	Dec-Apr	High-----	Low.
ChC----- Cahaba	B	None-----	---	---	>6.0	---	---	Moderate	Moderate.
DaC----- Darden	A	None-----	---	---	>6.0	---	---	Low-----	High.
DrC, DRE----- Darley	C	None-----	---	---	>6.0	---	---	High-----	High.
DuC----- Dubach	B	None-----	---	---	3.5-5.0	Perched	Dec-Mar	Moderate	Moderate.
EcC, ECE, ECF----- Eastwood	D	None-----	---	---	>6.0	---	---	High-----	High.
FoC, FOE----- Forbing	D	None-----	---	---	>6.0	---	---	High-----	Low.
GrB----- Gurdon	C	None-----	---	---	1.0-2.0	Perched	Dec-Apr	High-----	High.
GyA----- Guyton	D	Rare-----	---	---	0-1.5	Perched	Dec-May	High-----	High.
GYO*: Guyton-----	D	Frequent----	Very brief to long.	Jan-Dec	0-1.5	Perched	Dec-May	High-----	High.

See footnote at end of table.

Table 15.--Soil and Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					<u>Ft</u>				
GYO*: Ouachita-----	C	Frequent----	Very brief to long.	Dec-May	>6.0	---	---	Moderate	Moderate.
KoC----- Kolin	C	None-----	---	---	1.5-3.0	Perched	Dec-Apr	High-----	Moderate.
MaC, MAE----- Mahan	C	None-----	---	---	>6.0	---	---	High-----	High.
MgB, MgD----- Malbis	B	None-----	---	---	2.5-4.0	Perched	Dec-Mar	Moderate	Moderate.
MnB, MND----- McLaurin	B	None-----	---	---	>6.0	---	---	Low-----	Moderate.
MtB----- Metcalf	D	None-----	---	---	1.5-2.5	Perched	Dec-Apr	High-----	Moderate.
NaC, NAE----- Natchitoches	D	None-----	---	---	>6.0	---	---	High-----	Moderate.
OkC----- Oktibbeha	D	None-----	---	---	>6.0	---	---	High-----	High.
RuC, RuD----- Ruston	B	None-----	---	---	>6.0	---	---	Moderate	Moderate.
ScC, SCE----- Sacul	C	None-----	---	---	2.0-4.0	Perched	Dec-Apr	High-----	High.
SlC, SLE----- Sailes	B	None-----	---	---	>6.0	---	---	Moderate	Moderate.
SnC----- Sawyer	C	None-----	---	---	2.0-3.0	Perched	Dec-Apr	High-----	High.
StC----- Shatta	C	None-----	---	---	1.5-3.0	Perched	Dec-Jun	Moderate	Moderate.
SVF----- Smithdale	B	None-----	---	---	>6.0	---	---	Low-----	Moderate.
TrC----- Trep	B	None-----	---	---	3.5-5.0	Perched	Nov-May	High-----	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 16.--Fertility Test Data for Selected Soils

(Analyses by the Soil Fertility Laboratory, Louisiana Agricultural Experiment Station. Dashes indicate data is not available.)

Soil name and sample number	Horizon	Depth	Organic matter content	pH	Extractable phosphorus	Exchangeable cations						Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation		Ca/Mg
						Ca	Mg	K	Na	Al	H					Sum of cation-exchange capacity	Effective cation-exchange capacity	
		In	Pct		Ppm	-----Milliequivalents/100 grams of soil-----						Pct	Pct	Pct				
Beauregard silt loam: ¹																		
(S89LA-013-5)	A	0-4	3.47	5.7	25	3.6	0.8	0.1	0.0	0.0	0.8	14.4	18.9	5.3	23.8	0.0	0.0	4.5
	E	4-10	0.99	5.3	17	1.0	0.5	0.1	0.0	1.0	1.0	10.2	11.8	3.6	13.6	0.0	27.8	2.0
	BE	10-14	0.33	5.1	12	0.6	0.7	0.1	0.0	2.0	1.0	9.0	10.4	4.4	13.5	0.0	45.5	0.9
	Bt	14-21	0.40	5.1	14	0.6	1.0	0.1	0.0	2.4	1.2	8.9	10.6	5.3	16.0	0.0	45.3	0.6
	Btv1	21-32	0.07	5.2	14	0.9	1.5	0.2	0.0	3.0	1.0	11.4	14.0	6.6	18.6	0.0	45.5	0.6
	Btv2	32-43	0.09	5.1	11	0.3	0.9	0.1	0.0	3.6	1.4	10.8	12.1	6.3	10.7	0.8	57.1	0.3
	Btv3	43-62	0.11	4.9	12	0.2	1.1	0.1	0.1	5.0	0.8	11.4	12.9	7.3	11.6	0.6	68.5	0.2
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	12.7 ²	---	---	---
Bellwood silt loam: ¹																		
(S91LA-013-11)	A	0-3	4.98	4.8	35	5.1	2.7	0.4	0.1	4.0	0.0	14.4	22.7	12.3	36.6	0.4	32.5	1.9
	Bw1	3-11	1.37	4.5	16	2.2	3.2	0.6	0.1	12.8	1.8	20.4	26.5	20.7	23.0	0.4	61.8	0.7
	Bw2	11-17	0.76	4.4	11	1.6	2.6	0.5	0.1	16.8	0.0	21.0	25.8	21.6	18.6	0.4	77.8	0.6
	Bwss1	17-26	0.73	4.4	10	1.3	2.4	0.5	0.1	17.0	1.2	23.4	27.7	22.5	15.5	0.4	75.6	0.5
	Bwss2	26-34	0.64	4.2	14	0.8	3.0	0.6	0.2	25.4	0.0	29.4	34.0	30.0	13.5	0.6	84.7	0.3
	BCss1	34-44	0.42	4.3	13	0.8	3.1	0.6	0.2	21.8	1.4	29.3	34.0	27.9	13.8	0.6	78.1	0.3
	BCss2	44-51	0.24	4.1	10	0.7	2.8	0.6	0.3	20.6	0.0	23.4	27.8	25.0	15.8	1.1	82.4	0.3
	BC	51-65	0.21	4.0	22	0.8	3.0	0.6	0.4	20.8	1.0	22.2	27.0	26.6	17.8	1.5	78.2	0.3
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14.9 ²	---	---	---
Betis loamy fine sand: ³																		
(S88LA-013-1)	A	0-10	0.59	5.5	18	0.7	0.1	0.0	0.1	0.4	0.2	3.2	4.1	1.5	22.5	2.4	26.1	5.4
	E	10-31	0.12	5.7	13	0.4	0.1	0.1	0.1	0.2	0.0	3.0	3.7	0.9	18.9	2.7	22.2	4.0
	Bw	31-52	0.01	5.6	11	0.3	0.1	0.0	0.0	0.2	0.0	1.8	2.2	0.6	18.2	0.0	33.3	3.0
	E/Bt	52-68	0.01	5.8	10	0.2	0.1	0.0	0.0	0.0	0.6	0.6	0.9	0.9	33.3	0.0	0.0	2.0
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14.3 ²	---	---	---
Betis loamy fine sand: ⁴																		
(S88LA-013-2)	A	0-12	0.74	5.2	13	0.3	0.1	0.1	0.0	0.9	0.1	4.8	5.3	1.5	9.4	0.0	60.0	3.0
	E	12-36	0.02	5.7	8	0.3	0.1	0.0	0.0	0.0	1.8	2.4	2.8	2.2	14.3	0.0	0.0	3.0
	Bw	36-49	0.01	5.6	6	0.3	0.1	0.0	0.0	0.0	2.2	1.2	1.6	2.6	25.0	0.0	0.0	3.0
	E/Bt	49-51	0.01	5.7	9	0.4	0.2	0.0	0.0	0.0	0.4	1.2	1.8	1.0	33.3	0.0	0.0	2.0
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23.1 ²	---	---	---

See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH	Extract- able-phos- phorus	Exchangeable cations						Total acid- ity	Cation- exchange capacity (sum)	Cation- exchange capacity (effective)	Base saturation (sum)	Saturation		Ca/Mg
						Ca	Mg	K	Na	Al	H					Sum of cation- exchange capacity	Effective cation- exchange capacity	
		In	Pct		Ppm	-----Milliequivalents/100 grams of soil-----						Pct	Pct	Pct				
Betis loamy fine sand: ¹	A	0-9	0.54	5.1	23	0.5	0.1	0.0	0.0	0.0	0.6	1.7	2.3	1.2	26.1	0.0	0.0	5.0
(S90LA-013-11)	E1	9-23	0.09	5.4	18	0.4	0.1	0.0	0.0	0.0	0.6	1.5	2.0	1.1	25.0	0.0	0.0	4.0
	E2	23-31	0.00	5.4	12	0.3	0.1	0.0	0.0	0.0	0.2	1.0	1.4	0.6	28.6	0.0	0.0	3.0
	Bw	31-52	0.01	5.3	9	0.3	0.1	0.0	0.0	0.0	0.4	1.0	1.4	0.8	28.6	0.0	0.0	3.0
	E/Bt	52-70	0.00	5.1	13	0.4	0.1	0.0	0.0	0.0	0.8	1.8	2.3	1.3	21.7	0.0	0.0	4.0
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	25.9 ²	---	---	---
Bowie very fine sandy loam: ¹	Ap	0-5	0.49	5.6	11	0.7	0.2	0.1	0.0	3.0	1.0	3.0	4.0	5.0	25.0	0.0	60.0	3.5
(S90LA-013-12)	E	5-10	0.33	5.8	7	0.6	0.1	0.0	0.0	0.4	0.4	1.0	1.7	1.5	41.2	0.0	26.7	6.0
	Bt1	10-18	0.21	5.3	9	2.0	1.9	0.2	0.2	1.0	1.4	10.4	14.7	6.7	29.3	1.4	14.9	1.1
	Bt2	18-22	0.00	5.3	9	1.1	2.2	0.1	0.1	1.0	1.6	13.3	16.8	6.1	20.8	0.6	16.4	0.5
	Btv	22-31	0.03	5.3	9	0.3	2.0	0.1	0.1	2.2	0.4	13.0	15.5	5.1	16.1	0.6	43.1	0.2
	Btv/E	31-44	0.00	5.1	8	0.3	1.7	0.2	0.0	3.6	1.2	13.3	15.5	7.0	14.2	0.0	51.4	0.2
	B't	44-62	0.00	4.9	8	0.3	3.1	0.3	0.0	7.2	2.2	18.5	22.2	13.1	16.7	0.0	55.0	0.1
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	18.3 ²	---	---	---
Boykin loamy fine sand: ¹	A	0-6	2.10	4.9	10	1.1	0.3	1.0	0.0	0.5	0.3	7.8	10.2	3.2	23.5	0.0	15.6	3.7
(S88LA-013-3)	E1	6-15	0.03	5.6	6	0.3	0.1	0.0	0.0	0.0	0.4	1.2	1.6	0.8	25.0	0.0	0.0	3.0
	E2	15-27	0.00	5.5	6	0.2	0.1	0.0	0.0	0.4	0.0	1.2	1.5	0.7	20.0	0.0	57.1	2.0
	Bt1	27-52	0.01	5.4	7	2.0	1.2	0.1	0.0	1.3	0.1	4.8	8.1	4.7	40.7	0.0	27.7	1.7
	Bt2	52-67	0.00	5.2	6	1.0	1.0	0.1	0.0	1.4	1.4	7.2	9.3	4.9	22.6	0.0	28.6	1.0
	Bt3	67-81	0.00	5.2	7	0.8	1.2	0.1	0.0	0.7	0.3	6.6	8.7	3.1	24.1	0.0	22.6	0.7
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	28.9 ²	---	---	---
Boykin loamy fine sand: ⁵	A	0-8	0.35	5.3	17	1.0	0.1	0.0	0.0	0.0	0.6	3.0	4.1	1.7	26.8	0.0	0.0	10.0
(S88LA-013-4)	E	8-36	0.00	5.6	14	0.3	0.1	0.0	0.0	0.0	0.2	1.2	1.6	0.6	25.0	0.0	0.0	3.0
	Bt1	36-45	0.00	5.3	32	1.0	0.3	0.1	0.0	0.4	0.4	1.2	2.6	2.2	53.8	0.0	18.2	3.3
	Bt2	45-66	0.00	4.9	18	1.0	1.0	0.0	0.0	1.8	0.2	4.8	6.8	4.0	29.4	0.0	45.0	1.0
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	16.3 ²	---	---	---
Briley loamy fine sand: ¹	A	0-5	0.75	5.0	7	0.3	0.1	0.0	0.0	1.1	0.1	4.8	5.2	1.6	7.7	0.0	68.7	3.0
(S88LA-013-5)	E1	5-21	0.14	5.7	5	0.3	0.1	0.0	0.0	0.2	0.4	2.4	2.8	1.0	14.3	0.0	20.0	3.0
	E2	21-28	0.17	5.1	7	0.3	1.0	0.1	0.0	2.2	0.2	4.2	5.6	3.8	25.0	0.0	57.9	0.3
	Bt1	28-34	0.00	5.1	7	0.2	2.0	0.1	0.0	4.5	0.5	10.8	13.1	7.3	17.6	0.0	61.6	0.1
	Bt2	34-60	0.00	5.2	2	0.1	1.1	0.0	0.0	7.6	0.0	8.4	9.6	8.8	12.5	0.0	86.4	0.1
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See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Hori- zon	Depth	Organic matter content	pH 1:1 H ₂ O	Extract- able- phos- phorus	Exchangeable cations						Total acid- ity	Cation- exchange capacity (sum)	Cation- exchange capacity (effective)	Base satura- tion (sum)	Saturation		Ca/Mg
						Ca	Mg	K	Na	Al	H					Sum of cation- exchange capacity	Effective cation- exchange capacity	
						-----Milliequivalents/100 grams of soil-----						Pct	Pct	Pct				
Buxin clay: ¹																		
(S90LA-013-8)	Ap	0-7	1.70	5.5	131	18.1	12.4	1.0	0.4	0.0	0.4	7.4	39.3	32.3	81.2	1.0	0.0	1.5
	Bw	7-25	0.79	6.9	133	19.0	12.9	0.8	0.6	0.0	0.4	4.4	37.7	33.7	88.3	1.6	0.0	1.5
	Ab	25-37	0.47	8.1	77	21.4	14.8	0.7	3.5	0.0	0.6	4.4	44.8	41.0	90.2	7.8	0.0	1.4
	Bgb	37-50	0.45	7.9	72	17.6	16.9	0.6	6.9	0.0	0.6	1.5	43.5	42.6	96.6	15.9	0.0	1.0
	C	50-65	0.30	7.8	123	16.8	16.3	0.5	8.1	0.0	0.8	1.8	43.5	42.5	95.9	18.6	0.0	1.0
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	96.8 ²	---	---	---
Darley gravelly fine sandy loam: ¹																		
(S91LA-013-5)	Ap	0-2	1.45	5.3	11	2.5	0.5	0.1	0.0	0.0	0.6	6.7	9.8	3.7	31.6	0.0	0.0	5.0
	Bt1	2-18	0.23	4.9	9	4.2	1.1	0.2	0.1	2.2	0.8	9.6	15.2	8.6	36.8	0.7	25.6	3.8
	Bt2	18-24	0.21	4.8	12	0.1	1.1	0.1	0.0	4.4	0.6	10.4	11.7	6.3	11.1	0.0	69.8	0.1
	Bt/Bsm	24-54	0.12	4.7	9	0.1	0.5	0.1	0.1	4.0	0.4	8.1	8.9	5.2	9.0	1.1	76.9	0.2
	BC	54-72	0.26	5.1	7	0.1	0.1	0.0	0.1	3.0	0.6	7.4	7.7	3.9	3.9	1.3	76.9	1.0
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	8.0 ²	---	---	---
Forbing silt loam: ¹																		
(S90LA-013-9)	Ap	0-3	1.35	4.7	19	3.0	1.8	0.2	0.1	0.0	0.4	5.9	11.0	5.5	46.4	0.9	0.0	1.7
	E	3-5	0.33	5.1	11	3.3	2.2	0.2	0.1	0.0	0.4	3.0	8.8	6.2	65.9	1.1	0.0	1.5
	Bt1	5-14	0.09	4.7	20	12.8	9.6	0.6	0.4	4.4	0.4	11.8	35.2	28.2	66.5	1.1	15.6	1.3
	Bt2	14-27	0.09	4.8	20	13.1	12.2	0.5	0.8	3.8	0.6	10.4	37.0	31.0	71.9	2.2	12.3	1.1
	Btss1	27-35	0.01	5.8	26	16.4	15.0	0.5	1.8	0.0	0.4	8.1	41.8	34.1	80.6	4.3	0.0	1.1
	Btss2	35-44	0.01	7.1	44	18.5	15.2	0.5	3.0	0.0	0.6	3.7	40.9	37.8	91.0	7.3	0.0	1.2
	Bckss1	44-58	0.01	7.7	85	33.8	15.2	0.5	4.2	0.0	0.4	3.0	56.7	54.1	94.7	7.4	0.0	2.2
	Bckss2	58-70	0.01	7.8	147	34.9	15.5	0.6	4.8	0.0	0.6	1.5	57.3	56.4	97.4	8.4	0.0	2.3
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	98.2 ²	---	---	---
Dubach fine sandy loam: ⁶																		
(S91LA-013-3)	A	0-7	0.87	4.9	8	0.2	0.1	0.1	0.0	3.4	0.2	5.9	6.3	4.0	6.3	0.0	85.0	2.0
	E	7-21	0.07	4.8	7	0.2	0.1	0.0	0.0	1.6	1.0	4.4	4.7	2.9	6.4	0.0	55.2	2.0
	Bt1	21-28	0.07	4.7	8	0.4	0.5	0.1	0.0	3.2	0.6	4.3	5.3	4.8	18.9	0.0	66.7	0.8
	Bt2	28-38	0.01	4.6	9	0.2	0.7	0.1	0.0	3.2	0.2	6.4	7.4	4.4	13.5	0.0	72.7	0.3
	Bt/E	38-60	0.00	4.7	7	0.2	0.4	0.0	0.0	1.6	0.4	4.4	5.0	2.6	12.0	0.0	61.5	0.5
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See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH	Extractable phosphorus	Exchangeable cations						Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation		Ca/Mg
						Ca	Mg	K	Na	Al	H					cation-exchange capacity	Effective cation-exchange capacity	
						-----Milliequivalents/100 grams of soil-----										Pct	Pct	
			In	Pct	Ppm							Pct	Pct	Pct				
Kolin silt loam: ¹ (S89LA-013-3)	Ap	0-3	1.38	5.2	19	1.0	0.3	0.1	0.0	0.0	0.6	5.4	6.8	2.0	20.6	0.0	0.0	3.3
	E	3-9	0.52	5.3	13	0.6	0.3	0.1	0.0	0.0	0.4	4.8	5.8	1.4	17.2	0.0	0.0	2.0
	Bt1	9-17	0.26	4.9	27	1.4	1.5	0.1	0.1	3.6	0.4	11.4	14.5	7.1	21.4	0.7	50.7	0.9
	Bt2	17-29	0.11	5.0	18	1.6	1.6	0.1	0.1	4.0	0.4	9.0	12.4	7.8	27.4	0.8	51.3	1.0
	Bt/E	29-39	0.08	5.3	12	1.4	1.1	0.1	0.2	3.4	0.8	7.8	10.6	7.0	26.4	1.9	48.6	1.3
	2B't1	39-54	0.03	5.1	25	1.7	3.8	0.2	1.4	6.6	1.0	13.2	20.3	14.7	35.0	6.9	44.9	0.4
	2B't2	54-62	0.02	4.9	29	1.8	6.0	0.3	2.2	5.4	0.6	12.6	22.9	16.3	45.0	9.6	33.1	0.3
	2C	62-78	0.04	5.1	32	2.0	5.9	0.2	2.3	2.6	0.6	9.6	20.0	13.6	52.0	11.5	19.1	0.3
---	---	---	---	---	---	---	---	---	---	---	---	---	---	48.3 ²	---	---	---	
Mahan fine sandy loam: ¹ (S90LA-013-2)	A	0-5	1.07	5.2	14	0.8	0.4	0.1	0.0	0.0	1.2	4.8	6.1	2.5	21.3	0.0	0.0	2.0
	E	5-11	0.36	5.4	11	0.5	0.5	0.0	0.0	0.4	0.6	4.2	5.2	2.0	19.2	0.0	20.0	1.0
	Bt1	11-18	0.46	4.9	18	0.8	3.4	0.3	0.0	8.8	1.2	15.6	20.1	14.5	22.4	0.0	60.7	0.2
	Bt2	18-26	0.18	4.9	14	0.2	2.6	0.3	0.0	8.0	1.2	13.2	16.3	12.3	19.0	0.0	65.0	0.1
	Bt3	26-41	0.11	5.0	14	0.1	1.9	0.2	0.0	7.2	2.8	11.4	13.6	12.2	16.2	0.0	59.0	0.1
	BC	41-63	0.15	4.9	13	0.1	1.9	0.2	0.0	8.6	1.2	10.8	13.0	12.0	16.9	0.0	71.7	0.1
	C	63-70	0.01	5.0	14	0.1	1.6	0.2	0.1	8.2	1.6	12.0	14.0	11.8	14.3	0.7	69.5	0.1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	14.3 ²	---	---	---	
Malbis fine sandy loam: ¹ (S88LA-013-9)	Ap	0-4	1.23	5.1	7	1.0	0.2	0.1	0.0	0.7	0.3	5.4	6.7	2.3	19.4	0.0	30.4	5.0
	E	4-14	0.67	4.9	4	0.1	0.1	0.0	0.0	1.3	0.3	4.8	5.0	1.8	4.0	0.0	72.2	1.0
	Bt1	14-27	0.16	5.2	3	1.4	1.3	0.1	0.0	2.2	0.4	5.4	8.2	5.4	34.1	0.0	40.7	1.1
	Bt2	27-43	0.00	5.3	2	1.0	2.0	0.1	0.0	2.9	1.1	5.4	8.5	7.1	36.5	0.0	40.8	0.5
	Btv	43-60	0.00	5.0	1	0.2	0.4	0.0	0.0	4.1	0.7	6.0	6.6	5.4	9.1	0.0	75.9	0.5
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McLaurin fine sandy loam: ⁷ (S89LA-013-1)	A	0-5	0.61	5.4	13	0.5	0.1	0.0	0.0	0.2	1.4	4.8	5.4	2.2	11.1	0.0	9.1	5.0
	E	5-12	0.24	5.9	15	0.6	0.2	0.0	0.0	0.0	0.4	3.6	4.4	1.2	18.2	0.0	0.0	3.0
	Bt1	12-21	0.07	5.6	21	1.1	0.3	0.1	0.0	0.0	0.6	4.8	6.3	2.1	23.8	0.0	0.0	3.7
	Bt2	21-30	0.07	5.5	18	1.0	0.4	0.1	0.0	0.0	0.6	4.2	5.7	2.1	26.3	0.0	0.0	2.5
	Bt/E1	30-41	0.00	5.4	16	0.8	0.4	0.1	0.0	0.0	0.6	4.2	5.5	1.9	23.6	0.0	0.0	2.0
	Bt/E2	41-56	0.00	5.3	17	0.5	0.4	0.0	0.0	0.0	0.6	3.6	4.5	1.5	20.0	0.0	0.0	1.3
	B't1	56-65	0.01	5.1	19	0.5	0.5	0.1	0.0	0.8	1.0	6.0	7.1	2.9	15.5	0.0	27.6	1.0
	B't2	65-82	0.00	5.0	21	0.3	0.4	0.1	0.0	0.8	0.6	5.9	6.7	2.2	11.9	0.0	36.4	0.8
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See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Hori- zon	Depth	Organic matter content	pH 1:1 H ₂ O	Extract- able- phos- phorus	Exchangeable cations						Total acid- ity	Cation- exchange capacity (sum)	Cation- exchange capacity (effective)	Base satura- tion (sum)	Saturation		Ca/Mg
						Ca	Mg	K	Na	Al	H					Sum of cation- exchange capacity	Effective cation- exchange capacity	
						-----Milliequivalents/100 grams of soil-----						Pct	Pct	Pct				
McLaurin fine sandy loam: ¹ (S89LA-013-4)	A	0-4	1.06	5.3	32	0.7	0.2	0.1	0.0	0.0	1.2	5.4	6.4	2.2	15.6	0.0	0.0	3.5
	E	4-13	0.55	5.4	28	0.6	0.1	0.0	0.0	0.0	0.6	4.8	5.5	1.3	12.7	0.0	0.0	6.0
	Bt1	13-24	0.13	5.5	35	1.0	0.3	0.0	0.0	0.0	1.2	3.6	4.9	2.5	26.5	0.0	0.0	3.3
	Bt2	24-30	0.07	5.4	25	1.5	0.6	0.1	0.0	0.0	2.0	6.0	8.2	4.2	26.8	0.0	0.0	2.5
	Bt3	30-53	0.01	5.1	13	1.5	0.5	0.1	0.0	1.2	1.4	5.4	7.5	4.7	28.0	0.0	25.5	3.0
	Bt/E	53-60	0.07	5.5	14	1.6	0.2	0.0	0.0	0.0	1.0	4.8	6.6	2.8	27.3	0.0	0.0	8.6
	B't	60-71	0.01	5.0	14	1.2	0.2	0.0	0.0	1.4	0.6	6.6	8.0	3.4	17.5	0.0	41.2	6.0
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Moreland clay: ¹ (S90LA-013-10)	Ap	0-6	1.25	6.4	133	21.8	12.7	1.1	0.3	0.0	0.2	3.0	38.9	36.1	92.3	0.8	0.0	1.7
	A2	6-13	0.77	7.5	159	20.3	11.0	0.6	0.5	0.0	0.4	2.9	35.3	32.8	91.8	1.4	0.0	1.8
	Bw1	13-20	0.62	8.0	214	27.5	11.1	0.6	0.9	0.0	0.8	1.0	41.1	40.9	97.6	2.2	0.0	2.5
	Bk	20-30	0.53	8.2	202	28.0	13.1	0.6	2.3	0.0	0.4	1.0	45.0	44.4	97.8	5.1	0.0	2.1
	Bkss	30-65	0.29	8.0	169	19.8	15.6	0.6	4.6	0.0	0.8	0.8	41.4	41.4	98.1	11.1	0.0	1.3
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Oktibbeha silt loam: ¹ (S91LA-013-12)	A	0-2	4.66	5.5	17	11.7	1.7	0.2	0.1	2.0	0.2	10.8	24.5	15.9	55.9	0.4	12.6	6.9
	Bt1	2-10	1.65	4.7	18	32.4	5.9	0.4	0.1	4.2	1.8	13.8	52.6	44.8	73.8	0.2	9.4	5.5
	Bt2	10-18	0.75	4.7	14	33.4	5.8	0.5	0.1	6.8	1.2	16.2	56.0	47.8	71.1	0.2	14.2	5.8
	Btss1	18-22	0.46	6.0	19	39.5	5.2	0.7	0.1	4.0	1.0	10.9	56.4	50.5	80.7	0.2	7.9	7.6
	Btss2	22-31	0.39	4.9	13	37.3	5.3	0.7	0.2	4.2	0.8	10.8	54.3	48.5	80.1	0.4	8.7	7.0
	BCss	31-34	0.46	4.7	13	35.8	5.6	0.6	0.2	6.0	1.0	14.4	56.6	49.2	74.6	0.4	12.2	6.4
	C1	34-45	0.43	7.8	15	39.8	2.4	0.4	0.1	0.6	0.0	1.8	44.5	43.3	96.0	0.2	1.4	16.6
	C2	45-65	0.33	7.9	22	44.8	5.6	0.5	0.1	0.6	0.0	1.0	52.0	51.6	98.1	0.2	1.2	8.0
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Sacul fine sandy loam: ¹ (S90LA-013-3)	A	0-2	1.97	6.0	18	4.5	1.2	0.1	0.0	0.0	1.2	0.6	6.4	7.0	90.6	0.0	0.0	3.7
	E	2-6	1.13	6.4	16	4.1	1.3	0.1	0.0	0.0	1.0	0.6	6.1	6.5	90.2	0.0	0.0	3.2
	Bt1	6-17	0.57	4.8	18	1.6	3.0	0.3	0.0	12.6	0.2	12.6	17.5	17.7	28.0	0.0	71.2	0.5
	Bt2	17-28	0.43	4.8	16	0.5	2.2	0.3	0.1	12.2	1.4	15.0	18.1	16.7	17.1	0.6	73.1	0.2
	Bt3	28-42	0.20	4.6	18	0.2	4.2	0.4	0.1	20.0	0.8	23.4	28.3	25.7	17.3	0.4	77.8	0.0
	BCy	42-65	0.10	4.5	18	0.2	4.3	0.4	0.2	18.6	1.4	24.6	29.7	25.1	17.2	0.7	74.1	0.0
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See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Hori- zon	Depth	Organic matter content	pH 1:1 H ₂ O	Extract- able- phos- phorus	Exchangeable cations						Total acid- ity	Cation- exchange capacity (sum)	Cation- exchange capacity (effective)	Base satura- tion (sum)	Saturation		Ca/Mg	
						Ca	Mg	K	Na	Al	H					Sum of cation- exchange capacity	Effective cation- exchange capacity		
						-----Milliequivalents/100 grams of soil-----										Pct	Pct		Pct
						In	Pct	Ppm											
Shatta silt loam: ¹ (S90LA-013-4)	A	0-5	2.13	5.2	12	1.0	0.4	0.0	0.0	0.4	0.4	7.8	9.2	2.2	15.2	0.0	18.2	2.5	
	E	5-11	0.75	5.3	12	0.5	0.3	0.0	0.0	1.0	0.4	4.8	5.6	2.2	14.3	0.0	45.5	1.7	
	BE	11-14	0.19	5.4	8	1.1	0.4	0.0	0.0	0.2	0.6	6.6	8.1	2.3	18.5	0.0	8.7	2.8	
	Bt1	14-24	0.26	5.0	14	1.2	1.2	0.1	0.0	3.4	0.6	10.8	13.3	6.5	18.8	0.0	52.3	1.0	
	Bt2	24-33	0.13	5.1	14	0.5	1.4	0.1	0.0	3.0	0.6	9.6	11.6	5.6	17.2	0.0	53.6	0.4	
	Btx1	33-41	0.05	5.1	15	0.5	1.3	0.1	0.0	2.0	1.6	7.8	9.7	5.5	19.6	0.0	36.4	0.4	
	Btx2	41-61	0.08	5.2	9	0.1	0.7	0.0	0.0	2.4	1.0	8.4	9.2	4.2	8.7	0.0	57.1	0.1	
	BC	61-70	0.05	5.3	8	0.1	0.7	0.1	0.3	6.0	0.6	12.6	13.8	7.8	8.7	2.2	76.9	0.1	
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	8.8 ²	---	---	---	
Sawyer very fine sandy loam: ¹ (S88LA-13-8)	A	0-3	2.10	4.4	6	1.0	0.2	0.1	0.0	0.9	0.7	6.6	7.9	2.9	16.5	0.0	31.0	5.0	
	E	3-9	0.24	5.4	2	1.0	0.3	0.1	0.0	0.4	0.6	7.8	9.2	2.4	15.2	0.0	16.7	3.3	
	Bt1	9-20	0.17	5.1	7	1.0	1.2	0.1	0.0	2.7	0.9	10.8	13.1	5.9	17.6	0.0	45.8	0.8	
	Bt2	20-28	0.12	5.0	2	1.0	1.3	0.1	0.0	5.4	0.6	12.6	15.0	8.4	16.0	0.0	64.3	0.8	
	Bt3	28-32	0.00	5.0	3	0.4	1.4	0.1	0.0	6.5	0.5	12.6	14.5	8.9	13.1	0.0	73.0	0.3	
	Bt4	32-45	0.00	4.9	2	0.3	2.1	0.2	0.1	7.2	0.8	13.2	15.9	10.7	17.0	0.6	67.3	0.1	
	Bt5	45-65	0.00	4.8	3	0.2	2.0	0.2	0.1	10.8	0.6	11.2	13.7	13.9	18.2	0.7	77.7	0.1	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	15.4 ²	---	---	---		
Sawyer very fine sandy loam: ⁸ (S91LA-013-4)	A	0-3	3.14	4.3	17	1.4	0.1	0.1	0.0	2.4	0.2	9.6	11.2	4.2	14.3	0.0	57.1	14.0	
	E	3-10	1.10	4.3	8	2.9	0.3	0.1	0.0	2.8	0.2	5.2	8.5	6.3	38.8	0.0	44.4	9.7	
	Bt1	10-15	0.37	4.4	11	5.7	1.5	0.2	0.0	3.2	0.8	8.1	15.5	11.4	47.7	0.0	28.1	3.8	
	Bt2	15-21	0.30	4.5	12	6.3	2.3	0.2	0.1	5.6	0.0	11.8	20.7	14.5	43.0	0.5	38.6	2.7	
	Bt3	21-31	0.21	4.3	11	4.0	1.5	0.2	0.1	5.4	0.0	11.1	16.9	11.2	34.3	0.6	48.2	2.7	
	Bt/E	31-38	0.11	4.6	10	2.5	1.6	0.2	0.2	8.0	1.2	14.1	18.6	13.7	24.2	1.1	58.4	1.6	
	2Bt1	38-45	0.09	4.8	10	1.0	2.3	0.3	0.3	11.8	0.0	17.0	20.9	15.7	18.7	1.4	75.2	0.4	
	2Bt2	45-65	0.15	4.5	9	1.4	2.3	0.3	0.3	11.8	0.4	20.7	25.0	16.5	17.2	1.2	71.5	0.6	
	2Bt3	65-83	0.07	4.3	12	3.0	3.7	0.3	0.5	13.4	1.0	22.2	29.7	21.9	25.3	1.7	61.2	0.8	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	22.2 ²	---	---	---		
SND: ⁹ (S89LA-013-6)	A	0-7	0.56	6.2	22	1.3	0.3	0.1	0.0	0.0	1.2	7.2	8.9	2.9	19.1	0.0	0.0	4.3	
	E	7-20	0.07	5.8	18	1.1	0.3	0.1	1.0	0.0	1.0	4.2	6.7	3.5	37.3	14.9	0.0	3.7	
	B/E	20-48	0.01	5.6	22	1.2	0.3	0.1	0.0	0.0	1.0	6.6	8.2	2.6	19.5	0.0	0.0	4.0	
	Bt	48-73	0.01	5.4	22	0.9	0.6	0.1	0.0	0.2	1.2	6.0	7.6	3.0	21.1	0.0	6.7	1.5	
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See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Hori- zon	Depth	Organic matter content	pH 1:1 H ₂ O	Extract- able- phos- phorus	Exchangeable cations						Total acid- ity	Cation- exchange capacity (sum)	Cation- exchange capacity (effective)	Base satura- tion (sum)	Saturation		Ca/Mg
						Ca	Mg	K	Na	Al	H					Sum of cation- exchange capacity	Effective cation- exchange capacity	
		In	Pct		Ppm	-----Milliequivalents/100 grams of soil-----						Pct	Pct	Pct				
SND:10 (S90LA-013-1)	A	0-5	1.30	5.0	12	0.6	0.2	0.1	0.0	0.2	0.4	2.4	3.3	1.5	27.3	0.0	13.3	3.0
	E	5-13	0.43	5.3	9	0.5	0.2	0.0	0.0	0.4	1.0	0.6	1.3	2.1	53.8	0.0	19.0	2.5
	Bt1	13-24	0.30	5.2	15	1.9	1.1	0.2	0.0	1.8	1.2	6.0	9.2	6.2	34.8	0.0	29.0	1.7
	Bt2	24-28	0.18	5.2	12	1.3	1.8	0.1	0.0	2.4	1.0	5.4	8.6	6.6	37.2	0.0	36.4	0.7
	Btv	28-40	0.16	5.2	13	1.3	1.8	0.1	0.0	2.4	0.4	4.8	8.0	6.0	40.0	0.0	40.0	0.7
	Btv/E	40-56	0.07	5.2	13	1.4	2.2	0.1	0.0	2.4	1.2	4.7	8.4	7.3	44.0	0.0	32.9	0.6
	B't	56-71	0.03	5.2	13	1.1	2.0	0.1	0.0	2.0	1.0	3.6	6.8	6.2	47.1	0.0	32.3	0.6
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	41.7 ²	---	---	---
SND:11 (S88LA-013-6)	A	0-6	1.17	5.6	5	3.0	0.3	0.1	0.0	0.0	0.2	4.2	7.6	3.6	44.7	0.0	0.0	10.0
	E1	6-16	0.13	6.1	2	1.0	0.1	0.0	0.0	0.0	1.0	1.2	2.3	0.1	47.8	0.0	0.0	10.0
	E2	16-30	0.07	6.2	3	1.0	0.2	0.0	0.0	0.0	1.0	1.2	2.4	0.2	50.0	0.0	0.0	5.0
	Bt1	30-42	0.00	5.7	3	2.0	0.2	0.1	0.0	0.2	0.2	4.2	7.5	3.7	44.0	0.0	5.4	1.7
	Bt2	42-60	0.02	5.5	1	2.0	1.1	0.1	0.0	0.5	0.5	4.2	7.4	4.2	43.2	0.0	11.9	1.8
SND:12 (S88LA-013-7)	Ap	0-6	0.73	5.4	58	1.3	0.3	0.1	0.0	0.0	0.2	4.2	5.9	1.9	28.8	0.0	0.0	4.3
	E	6-14	0.29	5.2	6	1.0	0.2	0.1	0.0	0.2	0.4	3.6	4.9	1.9	26.5	0.0	10.5	5.0
	Bt1	14-26	0.05	5.7	4	1.0	0.2	0.0	0.0	0.4	0.2	4.2	5.4	1.8	22.2	0.0	22.2	5.0
	Bt2	26-32	0.00	5.7	5	2.2	1.2	0.1	0.0	0.2	0.2	4.2	7.7	3.9	45.5	0.0	5.1	1.8
	BC	32-48	0.00	5.7	3	2.0	1.1	0.1	0.0	0.2	0.2	1.8	5.0	3.6	64.0	0.0	5.6	1.8
	Cl	48-60	0.00	5.9	2	1.0	0.1	0.0	0.0	0.2	0.0	1.8	2.9	1.3	37.9	0.0	15.4	10.0
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SND:13 (S91LA-013-10)	A	0-4	4.31	7.2	183	27.0	1.4	0.4	0.0	0.0	1.0	1.0	29.8	29.8	96.6	0.0	0.0	19.3
	E	4-7	1.65	6.4	30	4.3	5.5	0.3	0.0	0.0	0.6	2.4	12.5	10.7	80.8	0.0	0.0	0.8
	Bt1	7-14	0.86	4.6	14	2.1	4.5	0.5	0.1	9.0	0.4	12.0	19.2	16.6	37.5	0.5	54.2	0.5
	Bt2	14-23	0.39	4.5	11	0.8	3.9	0.4	0.1	12.6	0.0	18.0	23.2	17.8	22.4	0.4	70.8	0.2
	Bt3	23-33	0.19	4.5	8	0.5	3.4	0.3	0.1	13.8	0.0	17.0	21.3	18.1	20.2	0.5	76.2	0.1
	Bt4	33-45	0.18	4.5	7	0.3	3.1	0.3	0.2	13.4	0.0	16.9	20.8	17.3	18.8	1.0	77.5	0.1
	Bt5	45-54	0.14	4.4	7	0.4	3.4	0.3	0.2	11.4	0.2	16.8	21.1	15.9	20.4	0.9	71.7	0.1
	BC	54-62	0.12	4.4	6	0.5	2.8	0.2	0.2	8.8	1.8	12.4	16.1	14.3	23.0	1.2	61.5	0.2
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23.6 ²	---	---	---
SND:14 (S88LA-013-10)	A	0-6	0.54	5.4	200	1.1	0.1	0.1	0.0	0.0	0.2	0.6	1.9	1.5	68.4	0.0	0.0	11.0
	E	6-10	0.17	5.7	112	1.0	0.0	0.0	0.0	0.2	0.0	1.8	2.8	1.2	35.7	0.0	16.7	0.0
	Bt1	10-27	0.00	5.0	4	1.3	0.3	0.2	0.0	2.2	0.0	5.4	7.2	4.0	25.0	0.0	55.0	4.3
	B/E	27-40	0.00	4.9	16	1.2	0.2	0.1	0.0	2.5	0.5	6.0	7.5	4.5	20.0	0.0	55.6	6.0
	B't	40-60	0.00	4.9	2	1.4	1.0	0.2	0.0	2.0	0.3	3.6	6.2	4.9	41.9	0.0	40.8	1.4
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Table 16.--Fertility Test Data for Selected Soils--Continued

- ¹ This is the typical pedon for the series in Bienville Parish. For a description and location of the soil, see the section "Soil Series and Their Morphology."
- ² This base saturation value is for the critical depth required for classifying the soils at the order level.
- ³ This Betis pedon is located about 4.5 miles west of Lucky on Highway 4 to intersection with parish road 659, 300 feet south on parish road 659, 225 feet west of road, 20 feet south of turn row in field; NW1/4NE1/4 sec. 22, T. 15 N., R. 7 W.; USGS Sparta topographic quadrangle; latitude 32 degrees 16 minutes 41 seconds N.; longitude 93 degrees 4 minutes 15 seconds W.
- ⁴ This Betis pedon is located about 4.5 miles west of Lucky on Highway 4 to intersection with parish road 659, 0.2 mile south on parish road 659, 200 feet west of road; NW1/4NE1/4 sec. 22, T. 15 N., R. 7 W.; USGS Sparta topographic quadrangle; latitude 32 degrees 16 minutes 41 seconds N.; longitude 93 degrees 4 minutes 15 seconds W.
- ⁵ This Boykin pedon is located about 3.2 miles east of Fryeburg on Highway 516, 1.3 miles north on parish road 499, 0.4 mile east on woodland road, 400 feet south of woodland road; USGS Fryeburg topographic quadrangle; latitude 32 degrees 25 minutes 44 seconds N.; longitude 93 degrees 9 minutes 47 seconds W.
- ⁶ This Dubach pedon is located about 4.4 miles north of Castor on Highway 154, 140 feet west of road; NW1/4NW1/4SE1/4 sec. 2, T. 15 N., R. 8 W.; USGS Jamestown topographic quadrangle; latitude 32 degrees 18 minutes 33 seconds N.; longitude 93 degrees 8 minutes 52 seconds W.
- ⁷ This McLaurin pedon is located about 4.4 miles east of Castor on Highway 4, 1.6 miles northeast on parish road 667 to pipeline, 300 feet east on pipeline, 120 feet north of pipeline; NW1/4SW1/4 sec. 10, T. 15 N., R. 7 W.; USGS Sparta topographic quadrangle; latitude 32 degrees 18 minutes 3 seconds N.; longitude 93 degrees 4 minutes 55 seconds W.
- ⁸ This Sawyer pedon is located about 2.4 miles south of Bryceland on Highway 9, 1.1 miles east on parish road 698, 1.3 miles south on parish road 111, 0.3 mile west on oil field road, 0.1 mile south on oil field road, 100 feet west of road; NE1/4NW1/4 sec. 2, T. 16 N., R. 6 W.; USGS Bryceland topographic quadrangle; latitude 32 degrees 24 minutes 33 seconds N.; longitude 92 degrees 57 minutes 24 seconds W.
- ⁹ SND- Series not designated. This soil is included in map unit B1C, Bienville loamy fine sand, 1 to 5 percent slopes. The pedon classifies as sandy, siliceous, thermic Psammentic Paleudults. It is located about 7 miles south of Friendship on Highway 501, 0.6 mile on farm access road, 500 feet east of house in southeast corner of open field; NE1/4NE1/4 sec. 36, T. 14 N., R. 5 W.; USGS Danville topographic quadrangle; latitude 32 degrees 9 minutes 15 seconds N.; longitude 92 degrees 50 minutes 5 seconds W.
- ¹⁰ SND- Series not designated. This soil is included in map unit BoC, Bowie very fine sandy loam, 1 to 5 percent slopes. The pedon classifies as fine-loamy, siliceous, thermic Plinthic Paleudalfs. It is located about 2.3 miles southwest of Mount Lebanon on Highway 154 to the intersection with parish road 793, 2.4 miles west on parish road 793 to intersection with parish road 794, 0.7 mile north on parish road 794, 150 feet east of road in woods; NE1/4SW1/4 sec. 5., T. 17 N., R. 7 W.; USGS Sailles topographic quadrangle, latitude 27 degrees 31 minutes 46 seconds N.; longitude 92 degrees 6 minutes 54 seconds W.
- ¹¹ SND- Series not designated. This soil is included in map unit BRE, Briley loamy fine sand, 5 to 12 percent slopes. The pedon classifies as loamy, siliceous, thermic Arenic Paleudalfs. It is located about 4.5 miles west of Lucky on Highway 4, 1 mile south on parish road 659, 1.4 miles east on timber company road to pipeline, 700 feet south on pipeline, 50 feet west of pipeline; SW1/4SE1/4 sec. 26, T. 15 N., R. 7 W.; USGS Sparta topographic quadrangle; latitude 32 degrees 15 minutes 28 seconds N.; longitude 93 degrees 3 minutes 12 seconds W.
- ¹² SND- Series not designated. This soil is included in map unit ChC, Cahaba fine sandy loam, 1 to 5 percent slopes. The pedon classifies as fine-loamy, siliceous, thermic Typic Hapludalfs. It is located about 2.1 miles east of Fryeburg on Highway 516 to intersection with parish road 493, 1 mile north on parish road 493, 0.2 mile east on farm access road, 50 feet north of road; SE1/4SE1/4 sec. 28, T. 17 N., R. 8 W.; USGS Fryeburg topographic quadrangle; latitude 32 degrees 25 minutes 31 seconds N.; longitude 93 degrees 12 minutes 6 seconds W.
- ¹³ SND- Series not designated. This soil is included in map unit EcE, Eastwood fine sandy loam, 5 to 12 percent slopes. The pedon classifies as fine, montmorillonitic, thermic Vertic Hapludults. It is located about 6.7 miles west of Ringgold on Highway 154, 0.5 mile north on timber company road, 350 feet east of road; NW1/4SW1/4 sec. 3, T. 15 N., R. 10 W.; USGS Bossier Point topographic quadrangle; latitude 32 degrees 18 minutes 43 seconds N.; longitude 93 degrees 22 minutes 36 seconds W.
- ¹⁴ SND- Series not designated. This soil is included in map unit RuC, Ruston fine sandy loam, 1 to 5 percent slopes. The pedon classifies as fine-loamy, siliceous, thermic Typic Paleudalfs. It is located about 2.1 miles east of Fryeburg on Highway 516, 1.1 miles north on parish road 493, 0.2 mile west on parish road 490, 50 feet south of road; NW1/4NW1/4 sec. 33, T. 17 N., R. 8 W.; USGS Fryeburg topographic quadrangle; latitude 32 degrees 25 minutes 28 seconds N.; longitude 93 degrees 11 minutes 55 seconds W.

Table 17.--Physical Test Data for Selected Soils

(Dashes indicate that analyses were not made)

Soil name and sample number	Horizon	Depth	Particle-size distribution									Water content			Bulk density		
			Sand					Very fine (0.10-0.05 mm)	Total (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	1/3 bar	15 bar	Water retention	1/3 bar	Oven dry	Field moisture
			Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.10 mm)	(0.10-0.05 mm)										
		In	Pct									Pct (wt)			g/cm ³	g/cm ³	g/cm ³
Bienville loamy fine sand: ^{1,2,3} (S64LA-7-1)	Ap	0-6	---	---	---	---	---	85.4	11.4	3.2	---	6.2	1.4	4.71	---	---	---
	A2	6-10	---	---	---	---	---	80.8	14.6	4.6	---	7.1	1.6	5.49	---	---	---
	E	10-20	---	---	---	---	---	81.6	14.0	4.4	---	5.5	1.4	4.39	---	---	---
	B/E	20-33	---	---	---	---	---	81.6	13.4	5.0	---	5.9	1.5	4.36	---	---	---
	Bt1	33-56	---	---	---	---	---	77.2	15.0	7.8	---	6.9	2.0	4.94	---	---	---
	Bt2	56-66	---	---	---	---	---	81.0	12.0	7.0	---	6.1	2.0	5.08	---	---	---
Cahaba fine sandy loam: ^{2,4} (S64LA-7-2)	Ap	0-8	---	---	---	---	---	75.8	20.2	4.0	---	8.0	1.7	0.09	---	1.44	1.48
	A2	8-15	---	---	---	---	---	61.6	31.2	7.2	---	12.4	2.1	---	---	---	---
	Bt1	15-20	---	---	---	---	---	52.2	32.8	15.0	---	17.0	4.8	---	---	---	---
	Bt2	20-31	---	---	---	---	---	48.2	31.8	20.0	---	19.4	6.6	0.19	---	1.54	1.50
	Bt3	31-60	---	---	---	---	---	56.0	27.2	16.8	---	14.9	5.1	0.16	---	1.66	1.60
	C	60-72	---	---	---	---	---	62.2	19.6	18.2	---	15.3	6.3	---	---	---	---
McLaurin fine sandy loam: ^{2,5} (S88LA-013-17)	A	0-5	0.0	0.7	14.1	70.5	3.9	89.3	5.7	5.0	0.0	---	---	---	---	---	---
	E	5-12	0.1	0.4	14.1	72.0	3.5	90.1	4.9	5.0	0.0	---	---	---	---	1.69	---
	Bt1	12-21	0.1	0.1	11.1	64.6	3.4	79.6	10.3	10.1	4.4	---	---	---	---	1.74	---
	Bt2	21-30	0.1	0.3	14.7	61.3	3.3	79.7	15.3	5.0	2.5	---	---	---	---	1.59	---
	B/E1	30-41	0.1	0.3	20.9	54.0	3.2	78.5	16.4	5.0	0.0	---	---	---	---	1.59	---
	B/E2	41-55	0.1	0.1	15.2	60.7	3.4	79.6	15.3	5.0	0.0	---	---	---	---	1.60	---
	B't1	55-64	0.0	0.3	26.9	48.0	3.0	78.2	11.7	10.1	3.4	---	---	---	---	1.68	---
	B't2	64-81	0.1	0.3	18.2	58.6	3.5	80.7	14.3	5.0	2.5	---	---	---	---	1.69	---
Ruston fine sandy loam: ^{1,6} (S88LA-013-13)	A	0-11	0.1	0.2	3.1	51.5	18.2	73.1	23.3	3.6	1.9	7.9	2.8	0.08	1.49	1.49	---
	E	11-19	---	0.1	3.0	45.6	20.3	69.0	26.2	4.8	2.6	8.2	2.1	0.10	1.65	1.67	---
	Bt1	19-25	---	0.1	2.5	39.0	14.7	56.3	23.4	20.3	15.1	14.0	8.0	0.10	1.62	1.67	---
	Bt2	25-38	---	---	3.2	42.1	13.4	58.7	21.1	20.2	12.5	11.6	7.0	---	---	---	---
	Bt/E'	38-50	---	---	3.2	43.1	14.7	61.0	20.9	18.1	12.6	13.2	6.8	0.08	1.72	1.76	---
	B't	50-65	---	---	3.8	41.3	15.9	61.0	18.2	20.8	15.1	13.4	8.1	0.09	1.79	1.81	---
Sailles loamy fine sand: ^{1,2} (S88LA-013-16)	Oi	1-0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	A	0-7	0.0	1.8	20.4	51.6	5.6	79.4	15.6	5.0	0.0	---	---	---	---	---	---
	E1	7-13	0.0	0.2	15.0	55.9	13.1	76.9	18.1	5.0	0.0	---	---	---	1.60	1.67	---
	E2	13-18	0.1	0.2	16.4	51.4	11.5	73.5	21.5	5.0	0.0	---	---	---	1.63	1.64	---
	Bt1	18-28	0.0	0.0	10.4	39.6	10.6	54.2	20.7	25.1	9.2	---	---	---	1.76	1.84	---
	Bt2	28-39	0.0	0.0	12.5	43.5	4.3	60.2	14.4	25.4	8.3	---	---	---	1.79	1.83	---
	Btb1	39-42	0.0	0.0	14.1	38.3	8.5	55.8	18.7	25.5	0.0	---	---	---	1.82	1.85	---
	Btb2	42-46	0.0	0.0	13.9	38.4	4.3	55.6	14.3	30.1	4.3	---	---	---	1.81	1.85	---
	Btb3	46-78	0.0	0.1	12.5	40.1	8.4	56.4	18.5	25.1	0.0	---	---	---	1.80	1.85	---
	Btb4	78-90	0.0	0.0	14.9	45.9	5.3	64.2	5.3	30.5	4.4	---	---	---	1.80	1.85	---
SND: ⁷ (S88LA-013-14)	A	0-4	0.0	0.5	33.9	40.4	6.0	80.8	14.2	5.0	0.0	---	---	---	---	---	---
	E	4-8	0.0	0.3	31.7	39.0	6.1	77.0	12.8	10.0	0.0	---	---	---	1.57	1.61	---
	EB	8-12	0.1	0.2	28.5	37.5	5.5	71.8	13.1	15.1	0.0	---	---	---	1.65	1.68	---
	Bt1	12-22	0.0	0.2	19.3	23.6	3.3	46.3	7.2	46.5	18.9	---	---	---	1.68	1.78	---
	Bt2	22-36	0.0	0.0	20.4	25.4	2.9	48.7	10.3	41.0	15.9	---	---	---	1.80	1.83	---
	Bt3	36-51	0.0	0.1	24.3	28.8	3.0	56.2	13.1	30.7	4.4	---	---	---	1.82	1.84	---
	Bt4	51-63	0.0	0.1	24.3	29.2	2.8	56.9	12.5	30.6	4.4	---	---	---	1.86	1.88	---
	Bt5	63-77	0.0	0.1	27.0	30.4	3.1	60.5	14.0	25.4	4.2	---	---	---	1.86	1.88	---
	Bt6	77-99	0.1	0.1	28.4	31.9	2.9	63.3	11.4	25.2	4.2	---	---	---	---	---	---

See footnotes at end of table.

Table 17.--Physical Test Data for Selected Soils--Continued

Soil name and sample number	Hori- zon	Depth	Particle-size distribution									Water content			Bulk density		
			Sand						Very fine (0.10- 0.05 mm)	Silt (0.05- 0.002 mm)	Clay (0.002 mm)	1/3 bar	15 bar	Water reten- tion	1/3 bar	Oven dry	Field mois- ture
			Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5- 0.25 mm)	Fine (0.25- 0.10 mm)	Very fine (0.10- 0.05 mm)	Total (2.0- 0.05 mm)									
In			Pct									Pct (wt)			g/cm ³	g/cm ³	g/cm ³
SND: ⁸ (S88LA-013-15)	A1	0-5	0.7	3.1	25.1	41.7	5.4	76.2	21.3	2.5	0.0	---	---	---	---	---	---
	A2	5-8	0.2	0.6	20.4	38.2	5.4	64.9	30.0	5.1	0.0	---	---	---	1.66	1.69	---
	Bt1	8-16	0.0	0.3	16.2	33.6	4.7	54.9	24.8	20.3	8.1	---	---	---	1.61	1.65	---
	Bt2	16-24	0.2	0.1	15.1	34.0	4.2	53.8	20.8	25.4	8.5	---	---	---	1.65	1.70	---
	Bt3	24-32	0.2	0.2	15.6	30.3	4.3	50.6	29.0	20.4	4.1	---	---	---	1.69	1.75	---
	Bt4	32-46	0.0	0.0	16.8	37.9	5.0	59.0	20.7	20.3	8.1	---	---	---	1.74	1.79	---
	Bt5	46-60	0.0	0.1	22.1	42.9	4.9	70.0	14.8	15.2	0.0	---	---	---	1.76	1.80	---
	Bt6	60-71	0.0	0.0	23.9	43.7	3.8	71.6	13.2	15.2	0.0	---	---	---	1.77	1.81	---
Bt7	71-84	0.0	0.0	22.0	45.8	4.2	72.0	12.8	15.2	0.0	---	---	---	1.79	1.82	---	

¹ This is the typical pedon for the series in Bienville Parish. For the description and location of the soil, see the section "Soil Series and Their Morphology."

² Analyses by the Soil Characterization Laboratory, Louisiana Agricultural Experiment Station.

³ The data for this pedon is from the original sample site for the official Bienville series. The pedon was redescribed in 1966.

⁴ This Cahaba pedon is located about 7 miles south of Friendship, 0.6 mile east of Highway 501 on a farm road, 165 feet east and 420 feet south of an old house; NE1/4SW1/4 sec. 36, T. 14 N., R. 5 W.

⁵ This McLaurin pedon is located about 4.4 miles east of Castor on Highway 4, 1.6 miles north on Bienville Parish road 667 to a pipeline crossing; 0.2 mile east on pipeline, 125 feet north of pipeline corridor; SE1/4NW1/4 sec. 16, T. 15 N., R. 7 W.; latitude 32 degrees 17 minutes 12 seconds N.; longitude 93 degrees 5 minutes 40 seconds W.

⁶ Analyses by the National Soil Survey Laboratory, Natural Resources Conservation Service, Lincoln Nebraska.

⁷ SND- Series not designated. The pedon classifies as clayey, kaolinitic, thermic Typic Hapludults. It is mapped as a similar soil in map unit SLE, Sailes loamy fine sand, 5 to 12 percent slopes. This pedon is located about 4.4 miles east of Castor on Highway 4, 0.2 mile north on Bienville Parish road 667, 1,400 feet east along an old fence line, 150 feet north of fence line; NW1/4NW1/4 sec. 21, T. 15 N., R. 7 W.; latitude 32 degrees 16 minutes 34 seconds N.; longitude 93 degrees 6 minutes 8 seconds W.

⁸ SND- Series not designated. The pedon classifies as fine-loamy, siliceous, thermic Typic Hapludalfs. It is mapped as a similar soil in map unit DuC, Dubach fine sandy loam, 1 to 5 percent slopes. The pedon is located about 4.4 miles east of Castor on Highway 4, 1 mile north on Bienville Parish road 667, 600 feet west along an old logging road, 50 feet north of logging road; SW1/4NE1/4 sec. 20, T. 15 N., R. 7 W.; latitude 32 degrees 16 minutes 31 seconds N.; longitude 93 degrees 5 minutes 40 seconds W.

Table 18.--Chemical Test Data for Selected Soils

(The symbol TR means trace. Dashes indicate analyses not made)

Soil name and sample number	Hori- zon	Depth	Extractable cations				Ex- tract- able acid- ity	Cation- exchange capacity NH ₄ OAc	Base satura- tion	Organic carbon	pH			Ex- tract- able iron	Ex- tract- able alumi- num	Ex- tract- able hydro- gen	Ex- tract- able phos- phorus
			Ca	Mg	K	Na					1:1	1:1	1:2				
			---Meq/100g---								Pct	-----Pct-----					
Bienville loamy loam: ^{1,2,3} (S64LA-7-1)	Ap	0-6	0.8	0.5	TR	0.1	---	2.7	54.0	1.00	6.0	---	4.7	---	---	1.2	34.0
	A2	6-10	0.5	0.3	TR	0.1	---	2.2	41.0	0.47	5.6	---	5.4	---	---	1.3	17.0
	E	10-20	0.6	0.3	TR	0.2	---	1.6	64.0	0.17	5.6	---	5.6	---	---	0.6	12.0
	B/E	20-33	0.4	0.3	TR	0.1	---	1.6	44.0	0.10	5.3	---	5.2	---	---	0.9	14.0
	Bt1	33-56	0.6	0.6	TR	0.1	---	2.5	59.0	0.10	5.3	---	5.0	---	---	1.3	27.0
	Bt2	56-66	0.5	0.8	TR	0.1	---	2.6	58.0	0.10	5.2	---	4.9	---	---	1.1	30.0
Cahaba fine sandy loam: ^{2,4} (S64LA-7-2)	Ap	0-8	0.9	0.8	0.1	0.1	---	2.4	78.0	1.49	6.1	---	---	---	---	0.6	10.0
	A2	8-15	0.5	0.4	0.0	0.1	---	2.4	37.0	0.44	5.5	---	---	---	---	1.5	3.8
	Bt1	15-20	0.8	1.4	0.1	0.2	---	5.0	50.0	0.24	5.1	---	---	---	---	2.5	3.0
	Bt2	20-31	0.6	2.7	TR	0.1	---	6.4	54.0	0.20	5.1	---	---	---	---	2.9	2.0
	Bt3	31-60	0.9	1.5	TR	0.1	---	5.7	45.0	0.11	5.0	---	---	---	---	3.2	2.8
	C	60-72	0.1	1.5	0.1	0.2	---	7.6	24.0	0.07	4.8	---	---	---	---	5.8	---
McLaurin fine sandy loam: ^{2,5} (S88LA-013-17)	A	0-5	0.6	0.1	0.0	0.0	1.9	1.9	36.8	0.59	4.7	4.1	4.3	0.30	0.2	0.1	19.0
	E	5-12	0.6	0.1	0.0	0.0	0.6	1.9	36.8	0.00	5.4	4.6	4.8	0.33	0.2	0.0	12.0
	Bt1	12-21	1.2	0.4	0.0	0.1	0.6	2.0	85.0	0.00	5.5	4.4	4.7	0.40	0.2	0.1	17.0
	Bt2	21-30	0.6	0.4	0.0	0.0	0.6	2.3	43.5	0.04	5.4	4.1	4.4	0.40	0.6	0.3	14.0
	B/E1	30-41	0.3	0.3	0.0	0.1	1.3	2.3	30.4	0.12	5.2	4.1	4.2	0.41	0.8	0.2	15.0
	B/E2	41-55	0.3	0.3	0.0	0.0	1.9	2.0	30.0	0.04	5.2	4.1	4.2	0.40	0.9	0.1	17.0
	B't1	55-64	0.3	0.4	0.1	0.0	3.9	2.6	30.8	0.04	5.1	4.0	4.0	0.45	1.6	0.2	18.0
	B't2	64-81	0.2	0.4	0.1	0.0	3.2	2.5	28.0	0.04	5.1	4.9	4.0	0.44	1.2	0.4	23.0
Ruston fine sandy loam: ^{1,6} (S88LA-013-13)	A	0-11	3.0	0.6	TR	---	3.2	5.0	72.0	1.06	5.8	5.1	5.2	0.20	0.1	---	---
	E	11-19	0.3	0.3	---	0.2	1.8	1.9	42.0	0.23	5.2	4.4	4.5	0.40	0.1	---	---
	Bt1	19-25	0.9	0.9	0.1	---	5.7	6.4	30.0	0.25	4.9	3.8	4.1	1.30	0.2	---	---
	Bt2	25-38	0.3	0.7	0.1	TR	5.5	5.7	19.0	0.07	4.8	---	4.0	1.10	0.2	---	---
	Bt/E	38-50	0.2	0.7	TR	---	4.7	4.2	21.0	0.05	4.8	3.8	4.0	1.00	0.1	---	---
	B't	50-65	---	0.9	---	---	5.5	5.4	17.0	0.11	4.8	3.6	3.9	1.20	0.1	---	---
Sailes loamy fine sand: ^{1,2} (S88LA-013-16)	Oi	1-0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	A	0-7	0.2	0.0	0.0	0.0	1.9	1.7	11.7	0.35	4.8	4.3	4.2	0.28	0.4	0.1	12.0
	E1	7-13	0.1	0.0	0.0	0.0	0.6	1.0	10.0	0.31	4.6	4.3	4.1	0.29	0.4	0.1	7.0
	E2	13-18	0.0	0.1	0.1	0.0	0.6	0.6	33.3	0.08	5.1	4.3	4.3	0.31	0.2	0.1	7.0
	Bt1	18-28	2.5	2.0	0.3	0.0	4.5	5.8	82.8	0.08	5.0	4.2	4.4	0.49	0.7	0.2	12.0
	Bt2	28-39	1.4	1.3	0.1	0.0	3.8	4.2	66.6	0.04	5.1	4.1	4.4	0.53	0.8	0.2	11.0
	Btb1	39-42	1.7	1.7	0.1	0.1	4.5	5.1	67.9	0.04	4.9	4.0	4.3	0.53	1.0	0.3	11.0
	Btb2	42-46	1.1	1.1	0.1	0.0	5.1	5.3	43.4	0.04	5.1	3.9	4.2	0.66	1.6	0.4	11.0
	Btb3	46-78	1.3	1.2	0.1	0.0	4.9	5.9	45.8	0.04	5.0	4.0	4.3	0.64	1.1	0.3	12.0
	Btb4	78-90	1.3	1.2	0.1	0.1	3.8	4.3	62.8	0.04	5.3	4.1	4.5	0.64	0.5	0.2	12.0
SND: ⁷ (S88LA-013-14)	A	0-4	0.5	0.1	0.1	0.0	3.2	3.7	17.9	0.27	4.8	4.5	4.6	0.29	0.7	0.1	13.0
	E	4-8	1.0	0.2	0.0	0.0	1.3	2.8	48.0	0.08	4.7	4.1	4.3	0.33	0.3	0.1	9.0
	EB	8-12	2.2	0.5	0.1	0.0	1.3	3.7	68.3	0.07	5.3	4.2	4.5	0.36	0.2	0.1	9.0
	Bt1	12-22	3.1	1.1	0.1	0.0	4.5	7.6	48.9	0.12	5.0	3.9	4.4	0.77	1.4	0.3	13.0
	Bt2	22-36	2.4	1.5	0.1	0.1	5.1	9.1	44.6	0.12	5.1	3.9	4.4	0.77	1.3	0.2	11.0
	Bt3	36-51	1.1	1.0	0.1	0.0	5.1	8.3	30.1	0.12	5.1	3.8	4.2	0.71	1.9	0.4	11.0
	Bt4	51-63	0.5	0.6	0.0	0.0	6.4	5.1	14.7	0.08	4.9	3.7	4.1	0.79	2.5	0.8	11.0
	Bt5	63-77	0.4	0.4	0.0	0.1	5.8	4.2	13.4	0.08	4.9	3.7	4.0	0.65	2.7	0.4	9.0
Bt6	77-99	0.3	0.5	0.0	0.0	5.8	4.9	12.1	0.08	4.9	3.7	3.9	0.67	3.0	0.4	10.0	

See footnotes at end of table.

Table 18.--Chemical Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Extractable cations				Ex-tract-able acidity	Cation-exchange capacity NH ₄ OAc	Base saturation	Organic carbon	pH			Ex-tract-able iron	Ex-tract-able alumi-num	Ex-tract-able hydro-gen	Ex-tract-able phos-phorus
			Ca	Mg	K	Na					1:1	1:1	1:2				
			Meq/100g	Meq/100g	Meq/100g	Meq/100g					Pct	Pct	Pct				
SND: ⁸ (S88LA-013-15)	A1	0-5	1.5	0.3	0.0	0.0	1.9	2.6	69.2	1.25	4.5	4.0	4.2	0.35	0.4	0.2	19.0
	A2	5-8	0.2	0.1	0.0	0.0	1.3	3.6	8.3	0.31	5.2	4.1	4.5	0.40	0.3	0.2	13.0
	Bt1	8-16	0.6	0.2	0.0	0.0	1.9	5.3	15.1	0.20	5.3	4.1	4.6	0.47	0.3	0.1	12.0
	Bt2	16-24	2.9	1.9	0.1	0.0	1.9	6.8	72.1	0.12	5.2	4.1	4.6	0.53	0.4	0.1	13.0
	Bt3	24-32	2.6	2.0	0.1	0.0	3.8	6.3	74.6	0.16	5.2	3.9	4.4	0.53	1.1	0.2	13.0
	Bt4	32-46	1.1	1.3	0.1	0.0	3.8	6.6	37.9	0.08	5.1	3.7	4.2	0.49	1.6	0.3	13.0
	Bt5	46-60	0.6	1.1	0.1	0.0	1.9	3.9	46.1	0.12	5.2	3.8	4.1	0.40	1.2	0.1	13.0
	Bt6	60-71	0.3	0.8	0.1	0.0	2.6	4.4	27.3	0.12	4.9	3.7	4.1	0.35	1.5	0.4	12.0
	Bt7	71-84	0.1	0.6	0.0	0.0	3.2	4.5	15.5	0.12	4.7	3.7	3.9	0.33	2.1	0.2	12.0

1 This is the typical pedon for the series in Bienville Parish. For the description and location of the soil, see the section "Soil Series and Their Morphology."

2 Analyses by the Soil Characterization Laboratory, Louisiana Agricultural Experiment Station.

3 The data for this pedon is from the original sample site for the official Bienville series. The pedon was redescribed in 1966.

4 This Cahaba pedon is located about 7 miles south of Friendship, 0.6 mile east of Highway 501 on a farm road, 165 feet east and 420 feet south of an old house; NE1/4SW1/4 sec. 36, T. 14 N., R. 5 W.

5 This McLaurin pedon is located about 4.4 miles east of Castor on Highway 4; 1.6 miles north on Bienville Parish road 667 to a pipeline crossing, 0.2 mile east on pipeline, 125 feet north of pipeline corridor; SE1/4NW1/4 sec. 16, T. 15 N., R. 7 W.; latitude 32 degrees 17 minutes 12 seconds N.; longitude 93 degrees 5 minutes 40 seconds W.

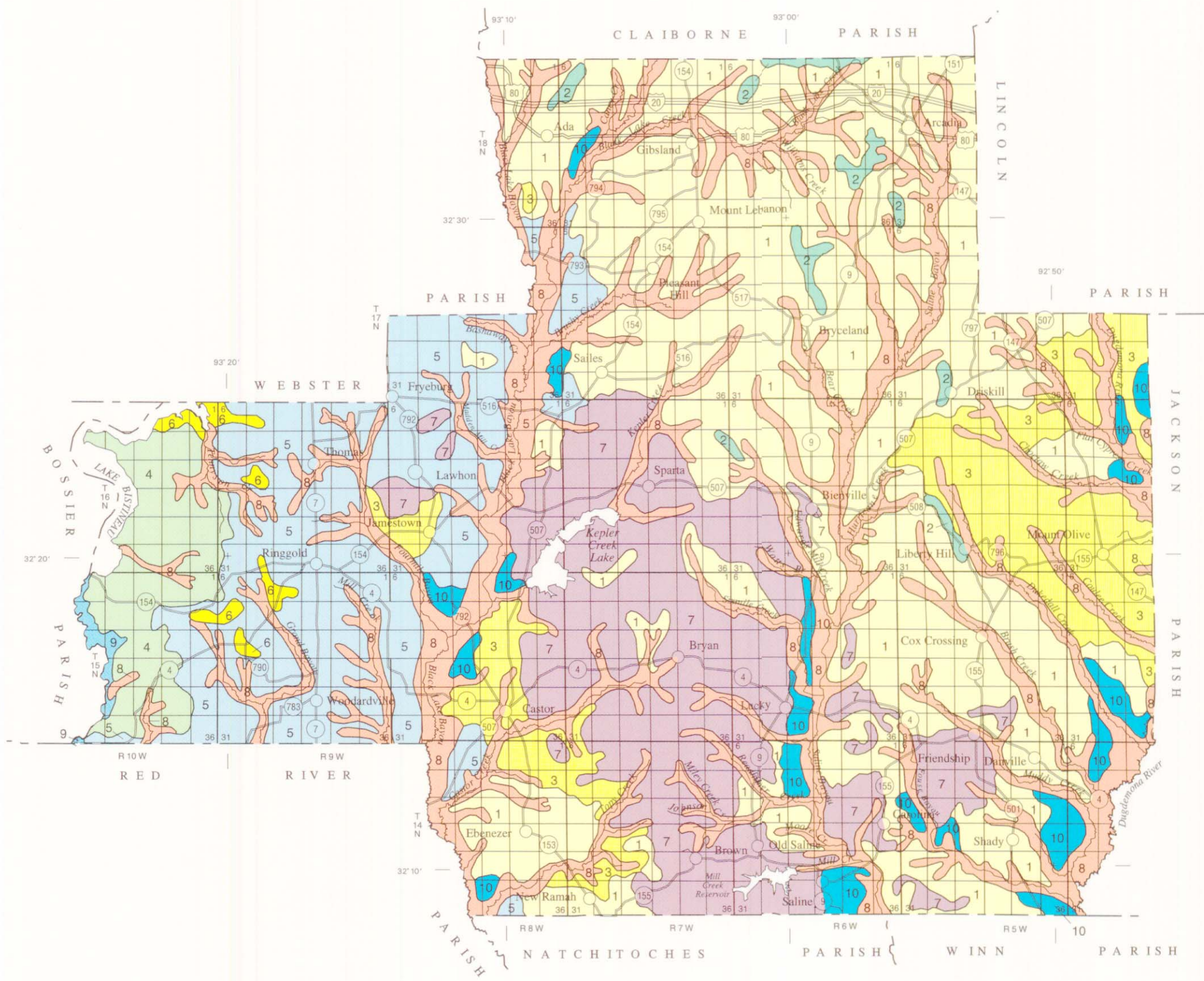
6 Analyses by the National Soil Survey Laboratory, Natural Resources Conservation Service, Lincoln Nebraska.

7 SND- Series not designated. The pedon classifies as clayey, kaolinitic, thermic Typic Hapludults. It is mapped as a similar soil in map unit SLE, Sailes loamy fine sand, 5 to 12 percent slopes. This pedon is located about 4.4 miles east of Castor on Highway 4, 0.2 mile north on Bienville Parish road 667, 1,400 feet east along an old fence line, 150 feet north of fence line; NW1/4NW1/4 sec. 21, T. 15 N., R. 7 W.; latitude 32 degrees 16 minutes 34 seconds N.; longitude 93 degrees 6 minutes 8 seconds W.

8 SND- Series not designated. The pedon classifies as fine-loamy, siliceous, thermic Typic Hapludalfs. It is mapped as a similar soil in map unit DuC, Dubach fine sandy loam, 1 to 5 percent slopes. The pedon is located about 4.4 miles east of Castor on Highway 4, 1 mile north on Bienville Parish road 667, 600 feet west along an old logging road, 50 feet north of logging road; SW1/4NE1/4 sec. 20, T. 15 N., R. 7 W.; latitude 32 degrees 16 minutes 31 seconds N.; longitude 93 degrees 5 minutes 40 seconds W.

Table 19.--Classification of the Soils

Soil name	Family or higher taxonomic class
Beauregard-----	Fine-silty, siliceous, thermic Plinthaquic Paleudults
Bellwood-----	Very-fine, montmorillonitic, thermic Aquentic Chromuderts
Betis-----	Sandy, siliceous, thermic Psammentic Paleudults
Bienville-----	Sandy, siliceous, thermic Psammentic Paleudalfts
Bowie-----	Fine-loamy, siliceous, thermic Plinthic Paleudults
Boykin-----	Loamy, siliceous, thermic Arenic Paleudults
Briley-----	Loamy, siliceous, thermic Arenic Paleudults
Buxin-----	Fine, mixed, thermic Vertic Hapludolls
Cahaba-----	Fine-loamy, siliceous, thermic Typic Hapludults
Darden-----	Thermic, coated Typic Quartzipsamments
Darley-----	Clayey, kaolinitic, thermic Typic Hapludults
Dubach-----	Fine-loamy, siliceous, thermic Typic Paleudults
Eastwood-----	Fine, montmorillonitic, thermic Vertic Hapludalfts
Forbing-----	Very-fine, montmorillonitic, thermic Vertic Paleudalfts
Gurdon-----	Coarse-silty, siliceous, thermic Aquic Paleudults
Guyton-----	Fine-silty, siliceous, thermic Typic Glossaqualfs
Kolin-----	Fine-silty, siliceous, thermic Haplic Glossudalfts
Mahan-----	Clayey, kaolinitic, thermic Typic Hapludults
Malbis-----	Fine-loamy, siliceous, thermic Plinthic Paleudults
McLaurin-----	Coarse-loamy, siliceous, thermic Typic Paleudults
Metcalf-----	Fine-silty, siliceous, thermic Aquic Glossudalfts
Moreland-----	Fine, mixed, thermic Vertic Hapludolls
Natchitoches-----	Very-fine, montmorillonitic, thermic Vertic Hapludalfts
Oktibbeha-----	Very-fine, montmorillonitic, thermic Chromic Dystruderts
Ouchita-----	Fine-silty, siliceous, thermic Fluventic Dystruchrepts
Ruston-----	Fine-loamy, siliceous, thermic Typic Paleudults
Sacul-----	Clayey, mixed, thermic Aquic Hapludults
Sailes-----	Fine-loamy, siliceous, thermic Typic Paleudults
Sawyer-----	Fine-silty, siliceous, thermic Aquic Paleudults
Shatta-----	Fine-silty, siliceous, thermic Typic Fragiudults
Smithdale-----	Fine-loamy, siliceous, thermic Typic Hapludults
Trep-----	Loamy, siliceous, thermic Arenic Paleudults



SOIL LEGEND*

- SOILS ON UPLANDS
- 1 Sacul-Bowie-Sawyer
- 2 Mahan-Darley
- 3 Bellwood-Natchitoches-Sacul
- 4 Eastwood-Bowie
- 5 Malbis-Ruston-Beauregard
- 6 Kolin-Forbing
- 7 Briley-Betis-McLaurin
- SOILS ON FLOOD PLAINS
- 8 Guyton-Ouachita
- 9 Buxin-Moreland
- SOILS ON STREAM TERRACES
- 10 Gurdon-Dubach-Bienville

*The units on this legend are described in the text under the heading "General Soil Map Units."

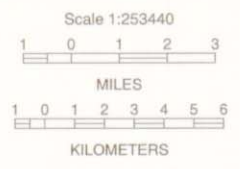
Compiled 1991

SECTIONALIZED TOWNSHIP

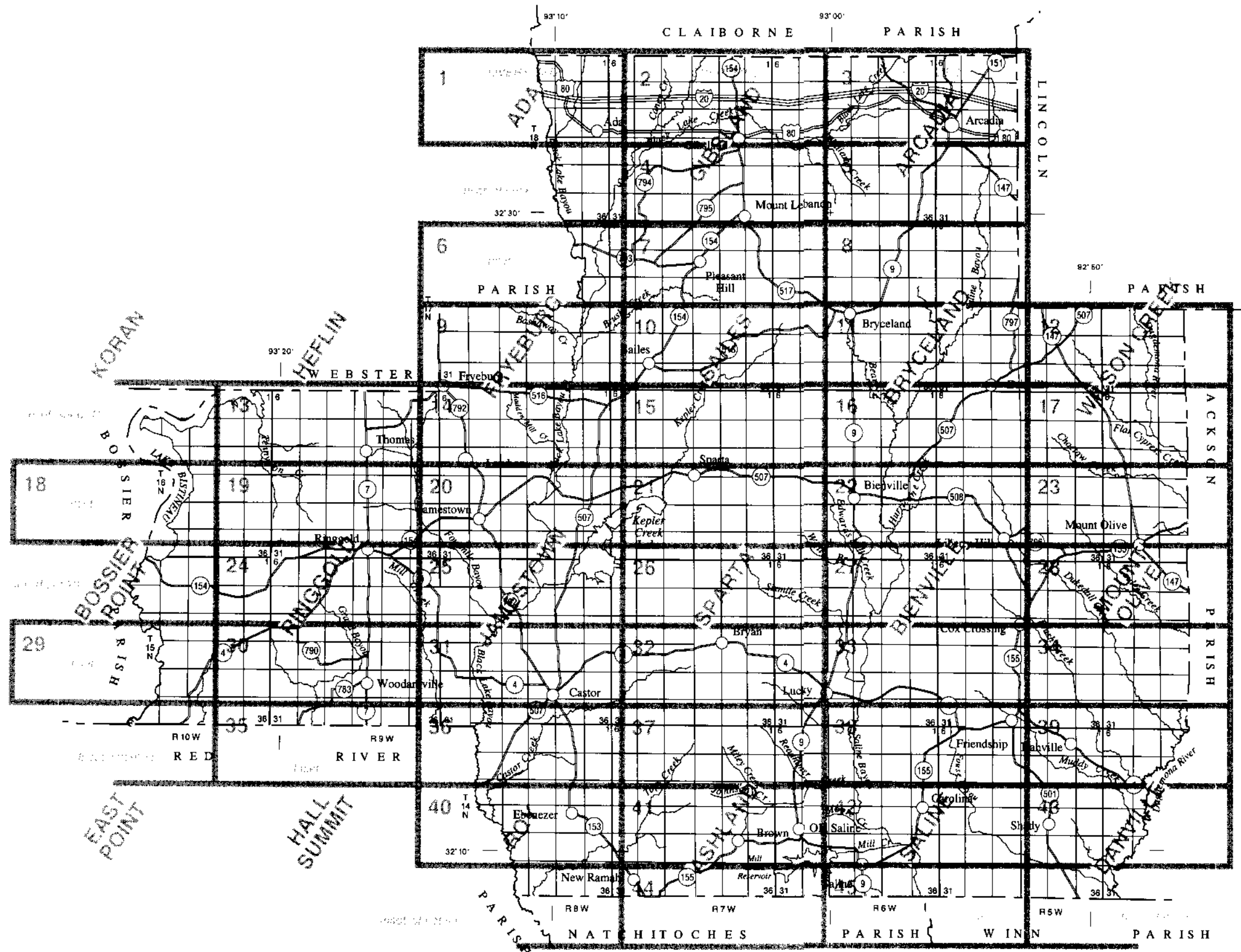
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

UNITED STATES DEPARTMENT OF AGRICULTURE
 NATURAL RESOURCES CONSERVATION SERVICE
 in cooperation with
 LOUISIANA AGRICULTURAL EXPERIMENT STATION
 and the LOUISIANA STATE SOIL and
 WATER CONSERVATION COMMITTEE

**GENERAL SOIL MAP
 BIENVILLE PARISH, LOUISIANA**



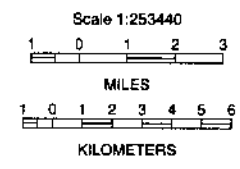
Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

INDEX TO MAP SHEETS
BIENVILLE PARISH, LOUISIANA



SOIL LEGEND

Soil map symbols and map unit names are alphabetical. Map symbols are letters. The first letter, always a capital, is the initial letter of the soil series name. The second letter is a small letter except in order three map units, in which case it is a capital letter. The third letter is a capital letter used to show slope. Order three map units, in addition to having all capital letter symbols, are further indicated by the footnote 1/.

SYMBOL	NAME
BaB	Beauregard silt loam, 1 to 3 percent slopes
BdC	Bellwood silt loam, 1 to 5 percent slopes
BDE	Bellwood silt loam, 5 to 15 percent slopes 1/
BeC	Bellis loamy fine sand, 1 to 5 percent slopes
BEE	Bellis loamy fine sand, 5 to 12 percent slopes 1/
BIC	Bienville loamy fine sand, 1 to 5 percent slopes
BoC	Bowie very fine sandy loam, 1 to 5 percent slopes
BoD	Bowie very fine sandy loam, 5 to 8 percent slopes
BpC	Boykin loamy fine sand, 1 to 5 percent slopes
BPE	Boykin loamy fine sand, 5 to 12 percent slopes 1/
BrC	Briley loamy fine sand, 1 to 5 percent slopes
BRE	Briley loamy fine sand, 5 to 12 percent slopes 1/
BXA	Buxin-Moreland clays, frequently flooded 1/
ChC	Cahaba fine sandy loam, 1 to 5 percent slopes
DaC	Darden loamy fine sand, 1 to 5 percent slopes
DrC	Darkey gravelly fine sandy loam, 1 to 5 percent slopes
DRE	Darkey gravelly fine sandy loam, 5 to 12 percent slopes 1/
DuC	Dubach fine sandy loam, 1 to 5 percent slopes
EcC	Eastwood fine sandy loam, 1 to 5 percent slopes
ECE	Eastwood fine sandy loam, 5 to 12 percent slopes 1/
ECF	Eastwood fine sandy loam, 12 to 20 percent slopes 1/
FoC	Forbing silt loam, 1 to 5 percent slopes
FOE	Forbing silt loam, 5 to 12 percent slopes 1/
GrB	Gurdon silt loam, 1 to 3 percent slopes
GyA	Guyton silt loam
GYO	Guyton-Ouachita silt loams, frequently flooded 1/
KoC	Kolin silt loam, 1 to 5 percent slopes
MaC	Mahan fine sandy loam, 1 to 5 percent slopes
MAE	Mahan fine sandy loam, 5 to 12 percent slopes 1/
MgB	Malbis fine sandy loam, 1 to 3 percent slopes
MgD	Malbis fine sandy loam, 3 to 8 percent slopes
MnB	McLaurin fine sandy loam, 1 to 3 percent slopes
MND	McLaurin fine sandy loam, 3 to 8 percent slopes 1/
MB	Metcalf silt loam, 0 to 2 percent slopes
NaC	Natchitoches fine sandy loam, 1 to 5 percent slopes
NAE	Natchitoches fine sandy loam, 5 to 12 percent slopes 1/
OkC	Oktibbeha silt loam, 1 to 5 percent slopes
RuC	Ruston fine sandy loam, 1 to 5 percent slopes
RuD	Ruston fine sandy loam, 5 to 8 percent slopes
ScC	Sacul fine sandy loam, 1 to 5 percent slopes
SCE	Sacul fine sandy loam, 5 to 12 percent slopes 1/
SiC	Sailles loamy fine sand, 1 to 5 percent slopes
SLE	Sailles loamy fine sand, 5 to 12 percent slopes 1/
SnC	Sawyer very fine sandy loam, 1 to 5 percent slopes
SiC	Shatta silt loam, 1 to 5 percent slopes
SVF	Smithdale fine sandy loam, 6 to 20 percent slopes 1/
TrC	Trep loamy fine sand, 1 to 5 percent slopes

1/ Order three map units. Fewer soil examinations were made in these mapping units, and delineations and included areas are generally larger. These mapping units were designed primarily for woodland and wildlife habitat management.

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

National, state, or province
 County or parish
 Field sheet matchline and neatline

AD HOC BOUNDARY (label)

Small airport, airfield, park, oilfield, cemetery, or flood pool

STATE COORDINATE TICK 1 890 000 FEET

LAND DIVISION CORNER (sections and land grants)

ROAD EMBLEM & DESIGNATIONS

Interstate

Federal

State

RAILROAD

DAMS

Medium or Small (Named where applicable)

PITS

Gravel pit

MISCELLANEOUS CULTURAL FEATURES

(omit in urban areas)

Church

School

WATER FEATURES

DRAINAGE

Perennial, double line

Perennial, single line

Intermittent

LAKES, PONDS AND RESERVOIRS

Perennial

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS

BoC ScC

SOIL SAMPLE (normally not shown)

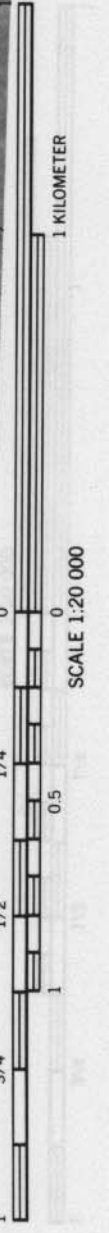
Ⓢ



CLAIBORNE PARISH



T. 18 N. T. 19 N.



SCALE 1:20 000

1805 000 FEET

1770 000 FEET

1805 000 FEET

Buck Lake

WEBSTER PARISH

Bear Creek

Bayou

14

13

18

11

12

7

2

1

6

CENTRAL GULF RAILROAD

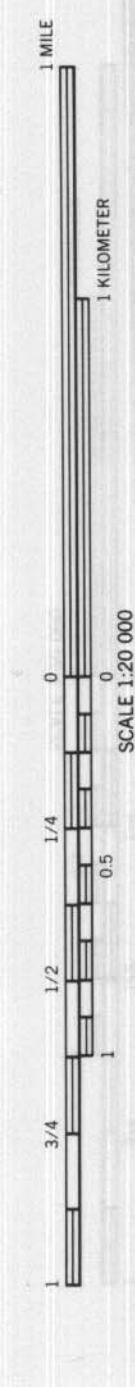
R. 8 W. | R. 7 W.

(Joins inset, sheet 6)

(Joins sheet 2)

1800 FEET

1805 000 FEET



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1983-1985 aerial photography. Coordinate grid ticks and lane division corners, if shown, are approximately positioned.

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BIENVILLE PARISH, LOUISIANA NO. 3



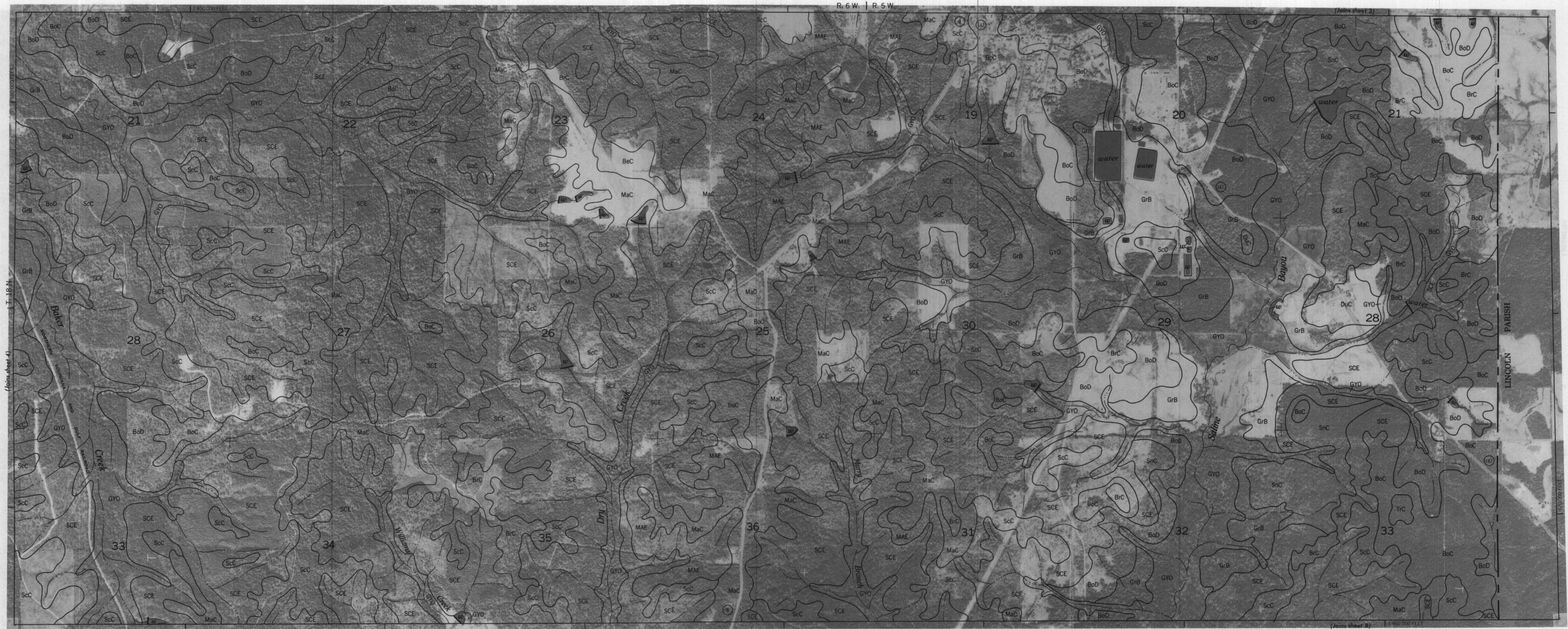
1 KILOMETER
SCALE 1:20 000
0.5
1
1:70 000 FEET

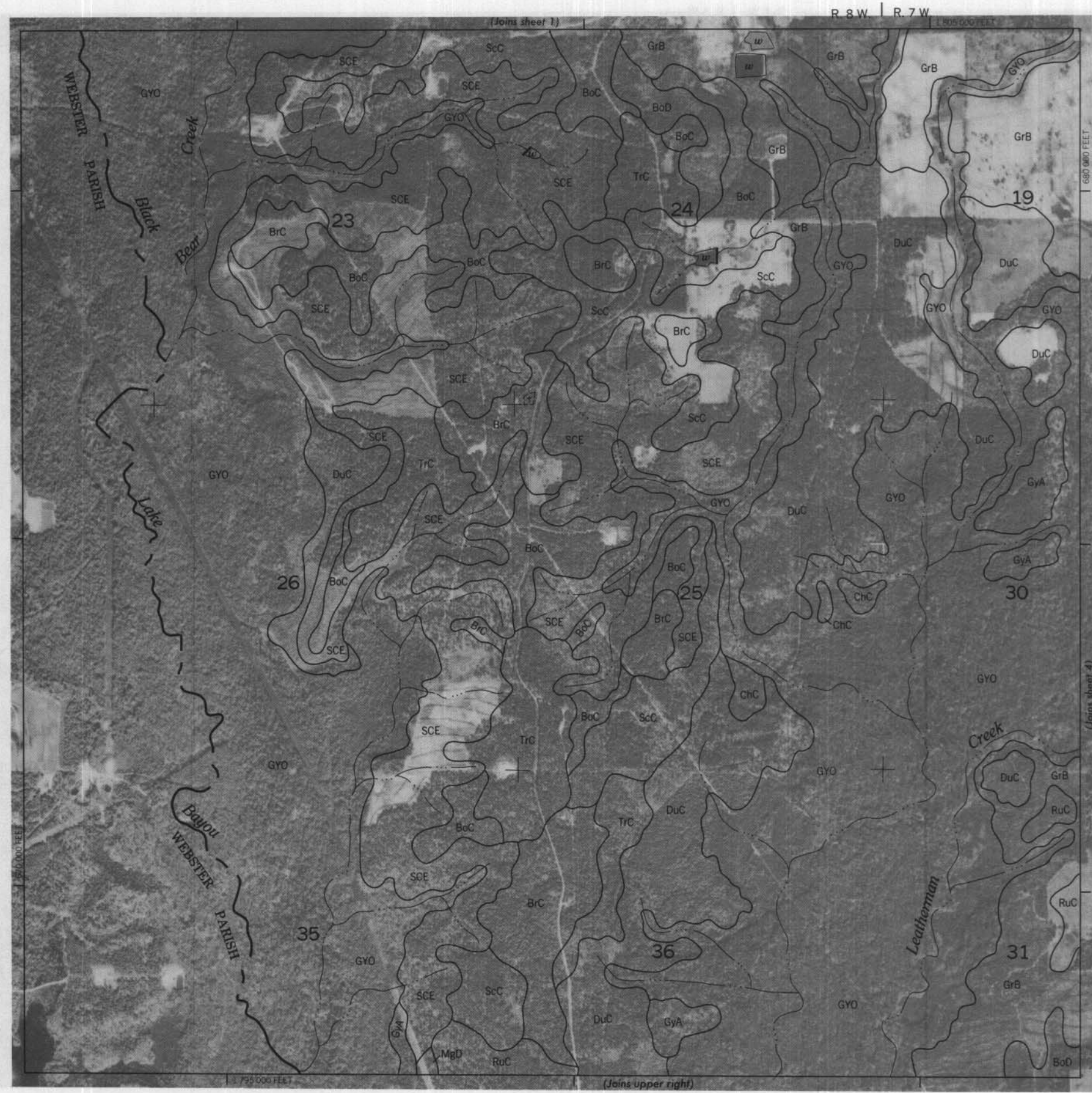


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BIENVILLE PARISH, LOUISIANA NO. 5





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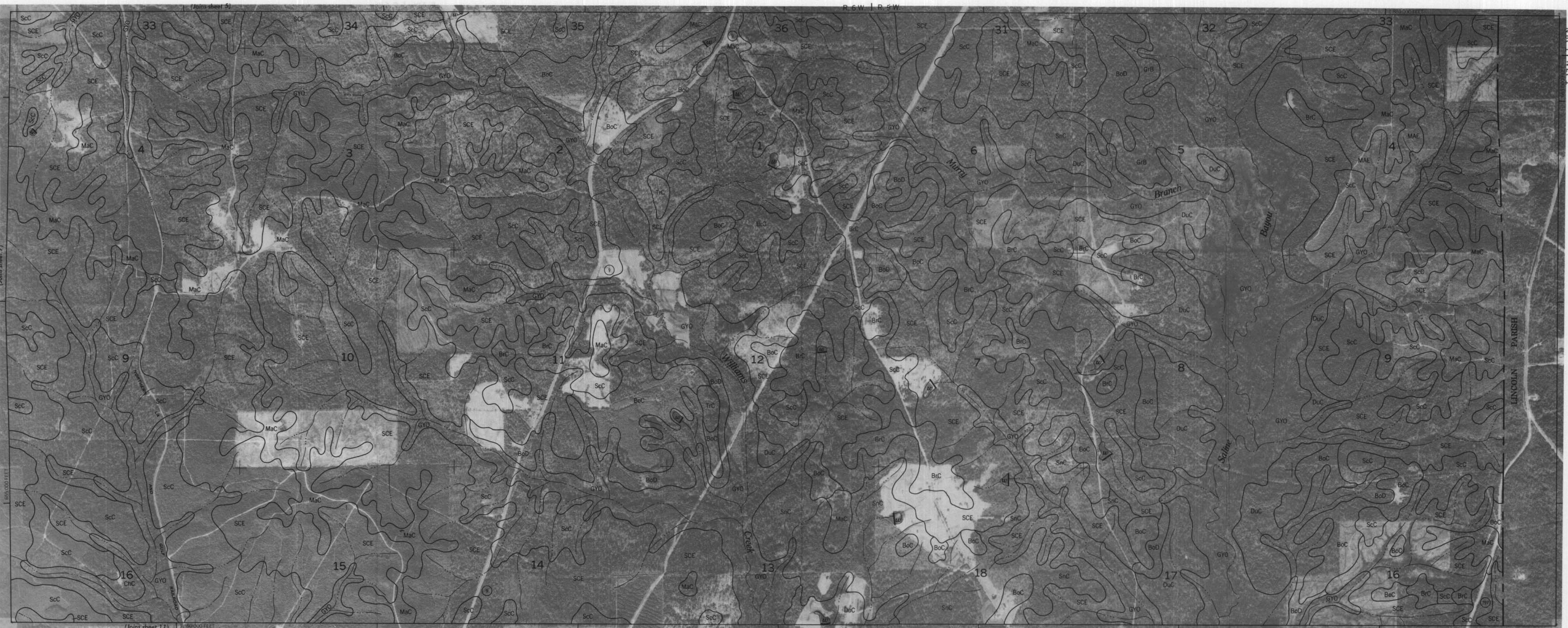
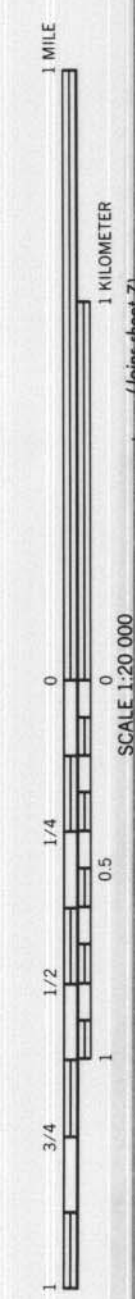
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BIENVILLE PARISH, LOUISIANA NO. 7



7

N



T. 17 N. 1 T. 18 N.

BIENVILLE PARISH, LOUISIANA NO. 8

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BIENVILLE PARISH, LOUISIANA NO. 9

T. 17 N. | T. 18 N.



(Joins sheet 14)

1:805,000 FEET

(Joins sheet 10)

1:805,000 FEET

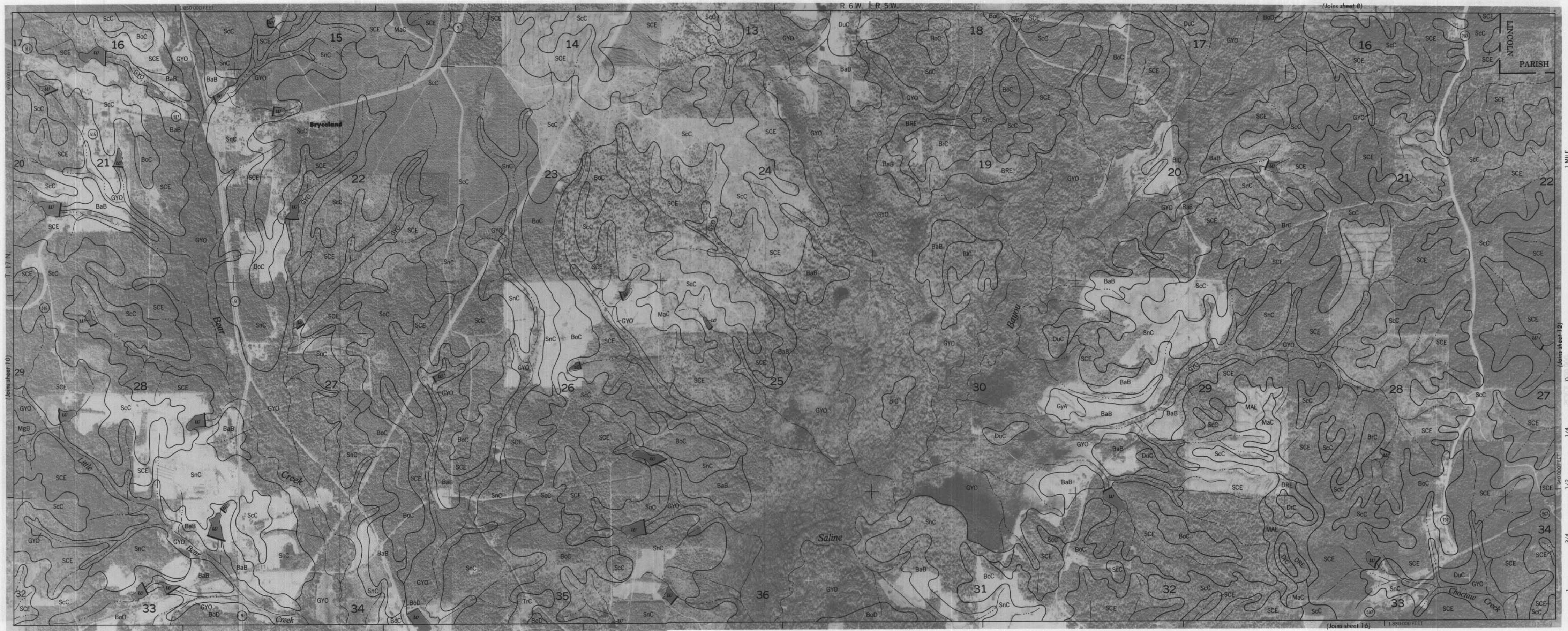
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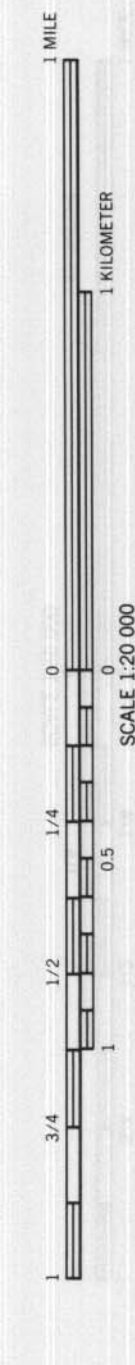
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BIENVILLE PARISH, LOUISIANA NO. 11



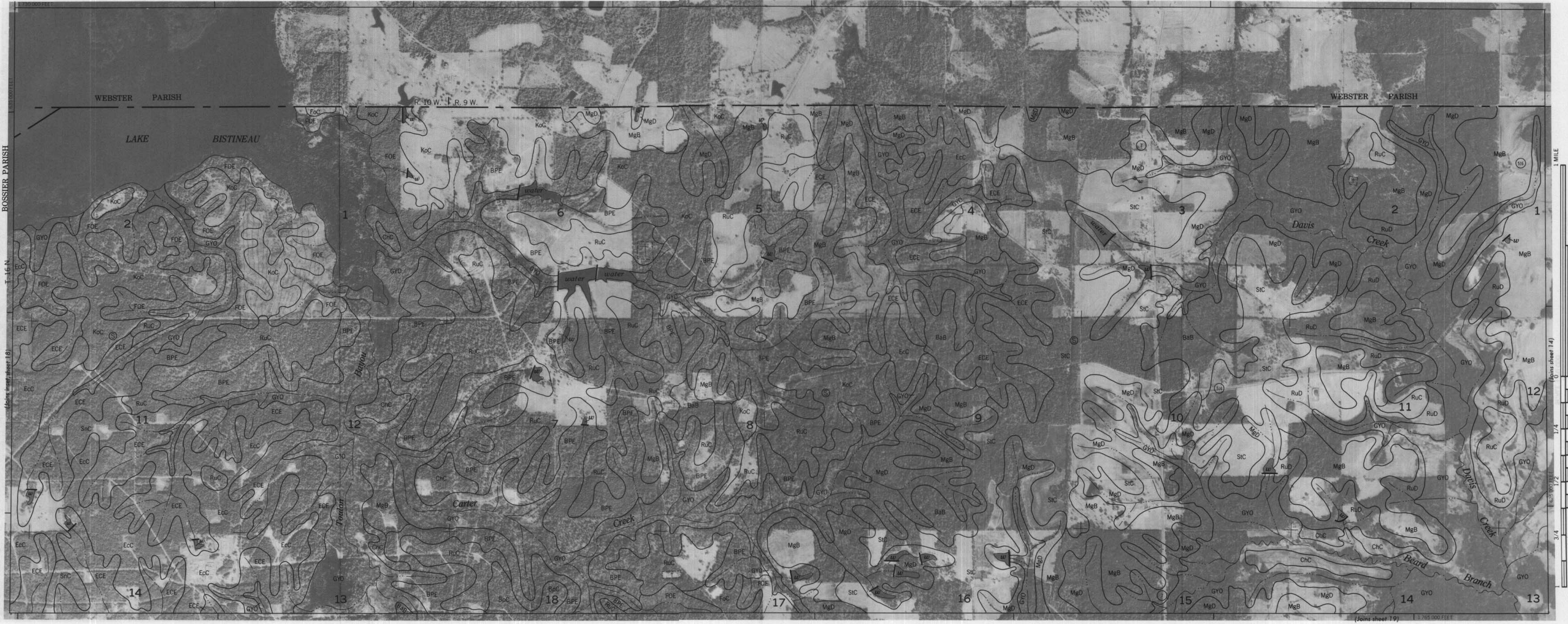
1 WILE
1 KILOMETER
SCALE 1:20 000



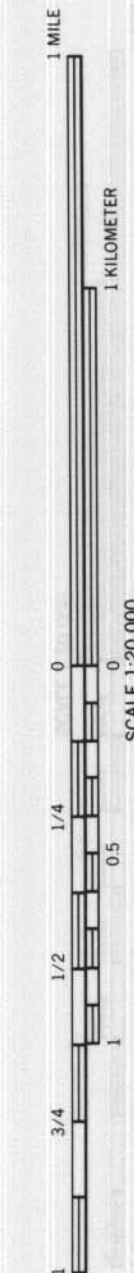
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BIENVILLE PARISH, LOUISIANA NO. 13



1 MILE
1 KILOMETER
SCALE 1:20 000
1/4
1/2
3/4
1
1 250 000 FEET
(Joins sheet 14)
(Joins sheet 19)



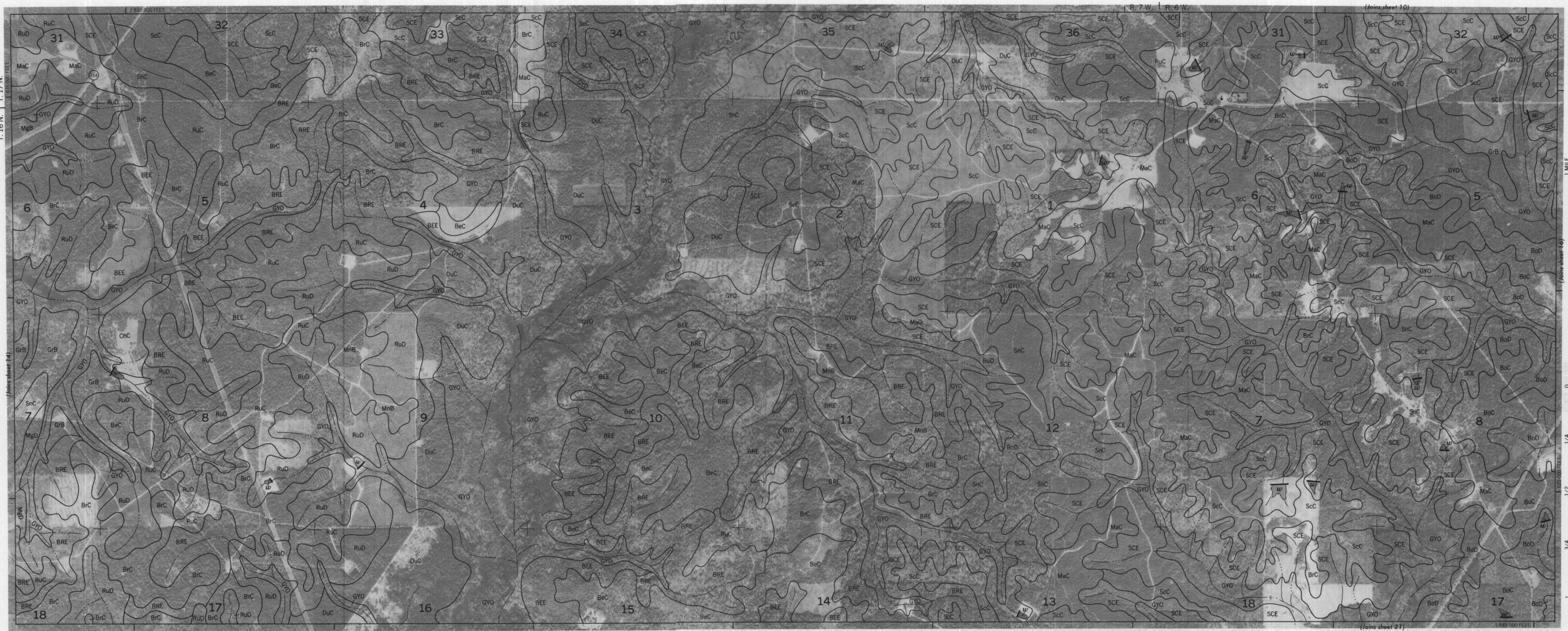
BIENVILLE PARISH, LOUISIANA NO. 14

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1983-1985 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 MILE
1 KILOMETER

SCALE 1:20 000



T. 16 N. | T. 17 N.

(Join sheet 14)

(Join sheet 10)

(Join sheet 21)

1:20 000 FEET

BIENVILLE PARISH, LOUISIANA NO. 15

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1983-1985 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

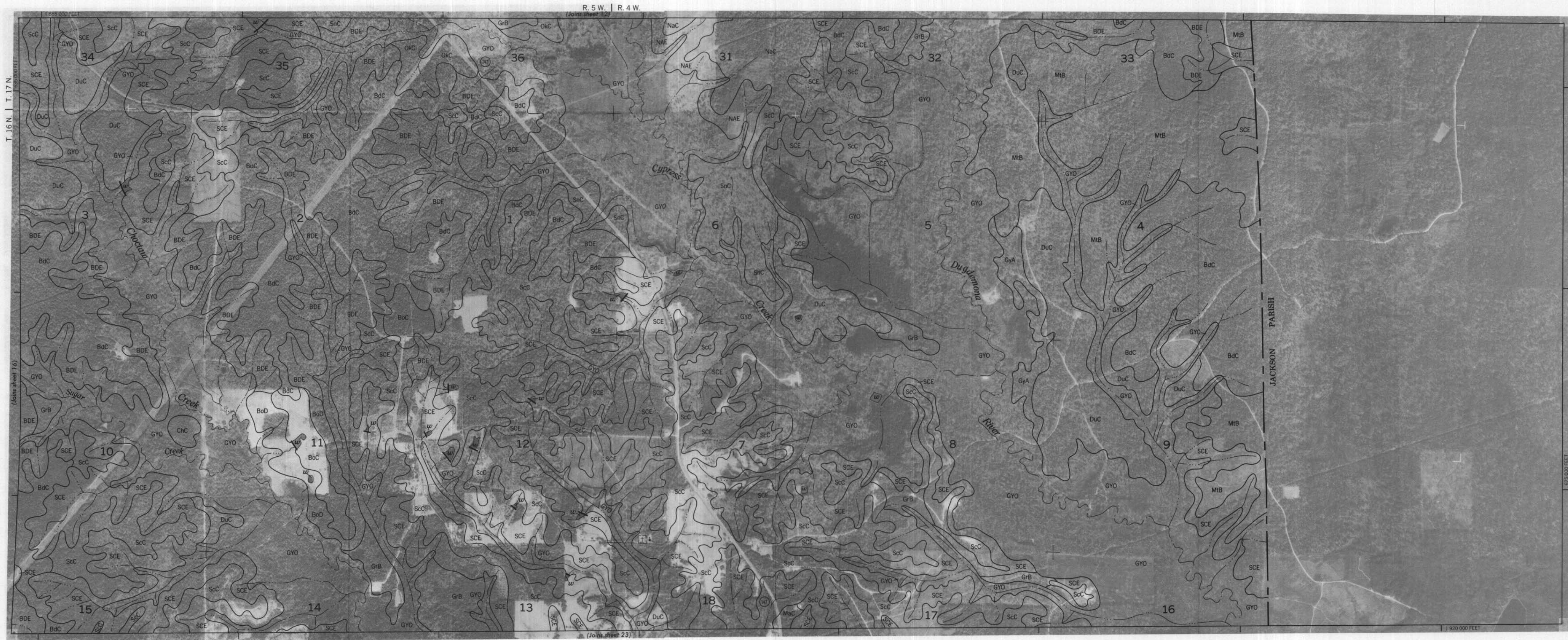


BIENVILLE PARISH, LOUISIANA NO. 19

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BIENVILLE PARISH, LOUISIANA NO. 17



1:920,000 FEET



1 MILE

1 KILOMETER

SCALE 1:20 000

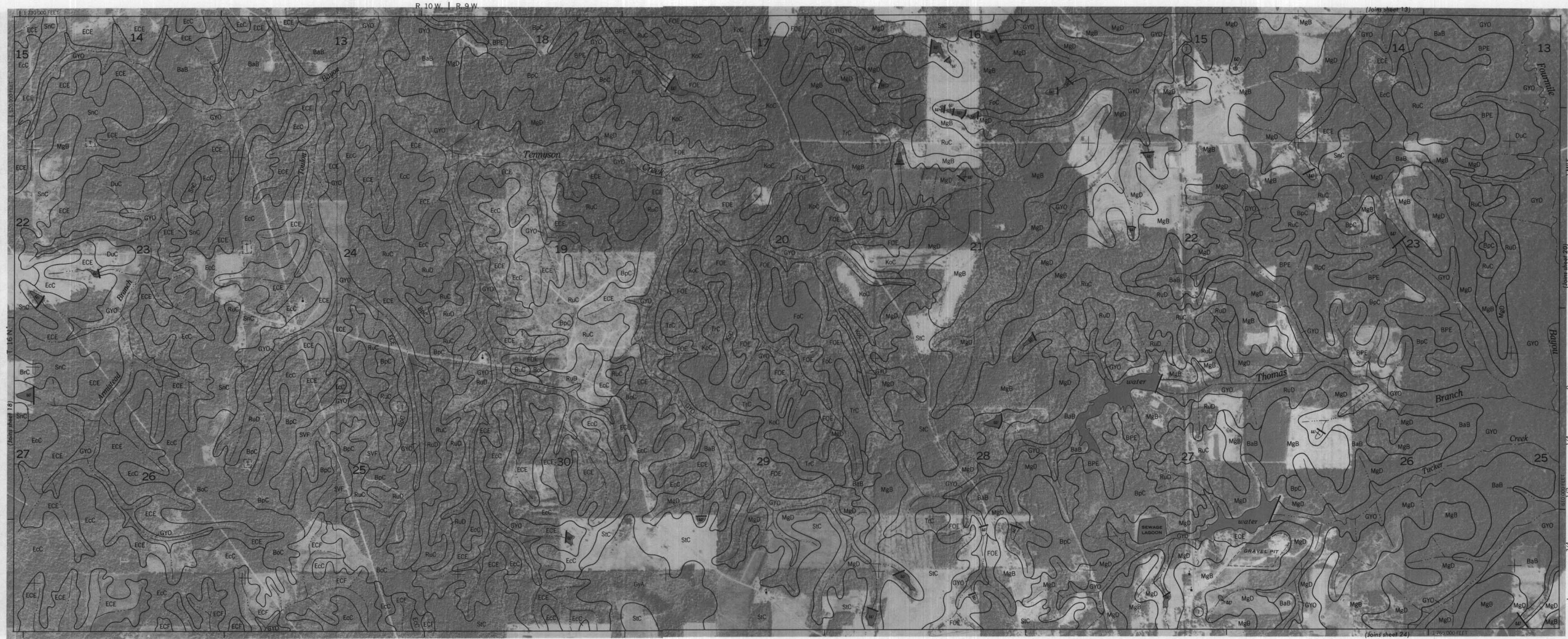
3/4 1/2 1/4 0 0.5 1

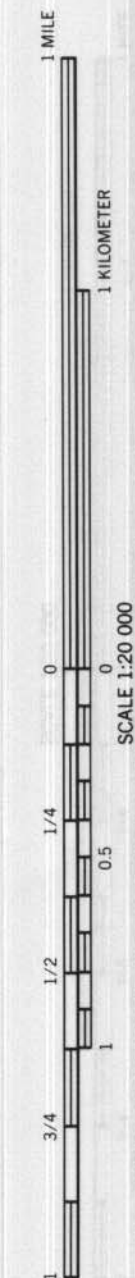


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BIENVILLE PARISH, LOUISIANA NO. 19





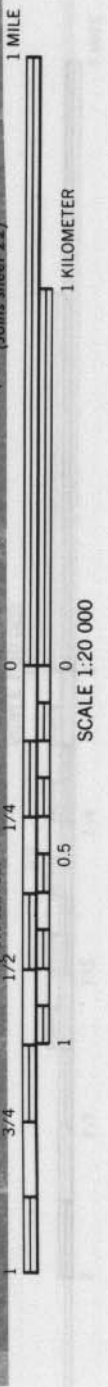
BIENVILLE PARISH, LOUISIANA NO. 20

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BIENVILLE PARISH, LOUISIANA NO. 21





(Joins sheet 16)

R. 6 W. | R. 5 W.

T. 16 N.



(Joins sheet 27)

BIENVILLE PARISH, LOUISIANA NO. 22

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BIENVILLE PARISH, LOUISIANA NO. 23

1:825,000 FEET (Join sheet 22) T. 16 N.

R. 5 W. | R. 4 W. (Join sheet 17)

(Join sheet 28) 1:825,000 FEET



1 MILE

1 KILOMETER

SCALE 1:20 000

595 000 FEET

0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5



(Joins sheet 19)

R 10 W | R 9 W

T 15 N | T 16 N

(Joins sheet 30)

(Joins sheet 25)

BIENVILLE PARISH, LOUISIANA NO. 24

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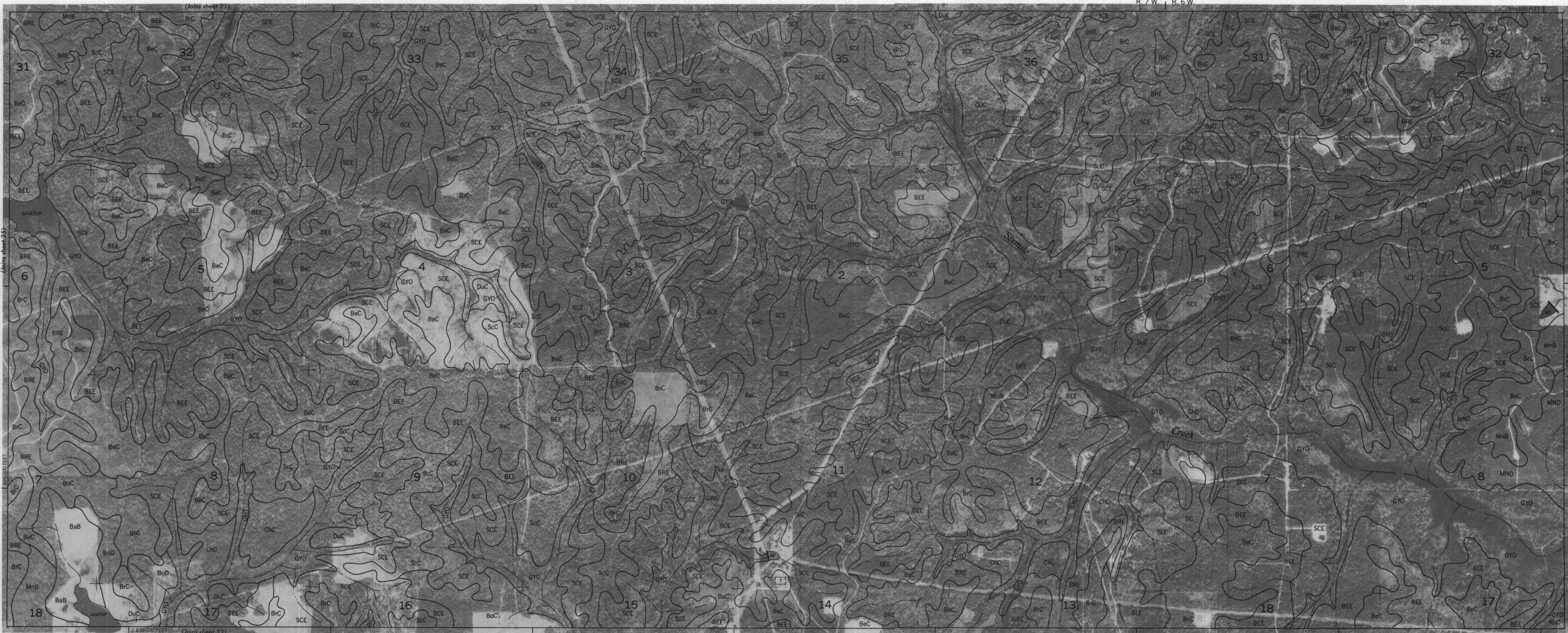
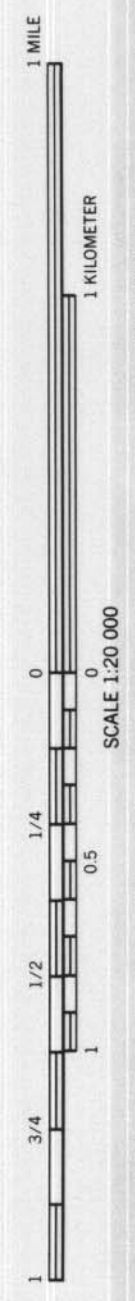
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BIENVILLE PARISH, LOUISIANA NO. 25



N

R. 7 W. | R. 6 W.

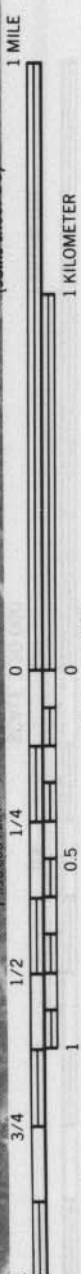
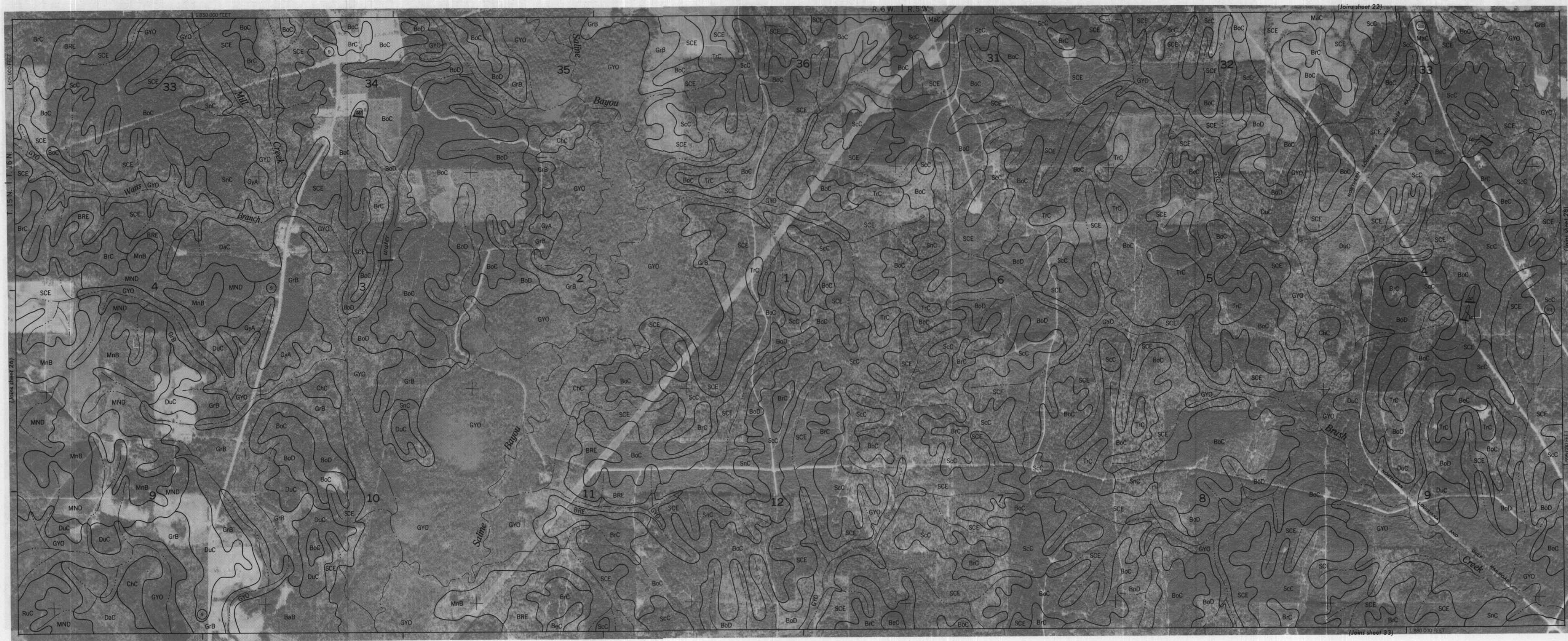


BIENVILLE PARISH, LOUISIANA NO. 26

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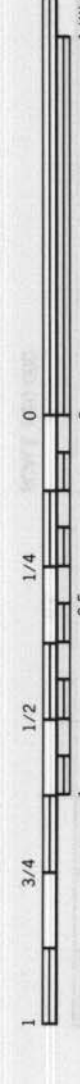
BIENVILLE PARISH, LOUISIANA NO. 27





1 MILE

1 KILOMETER



R. 5 W. | R. 4 W.



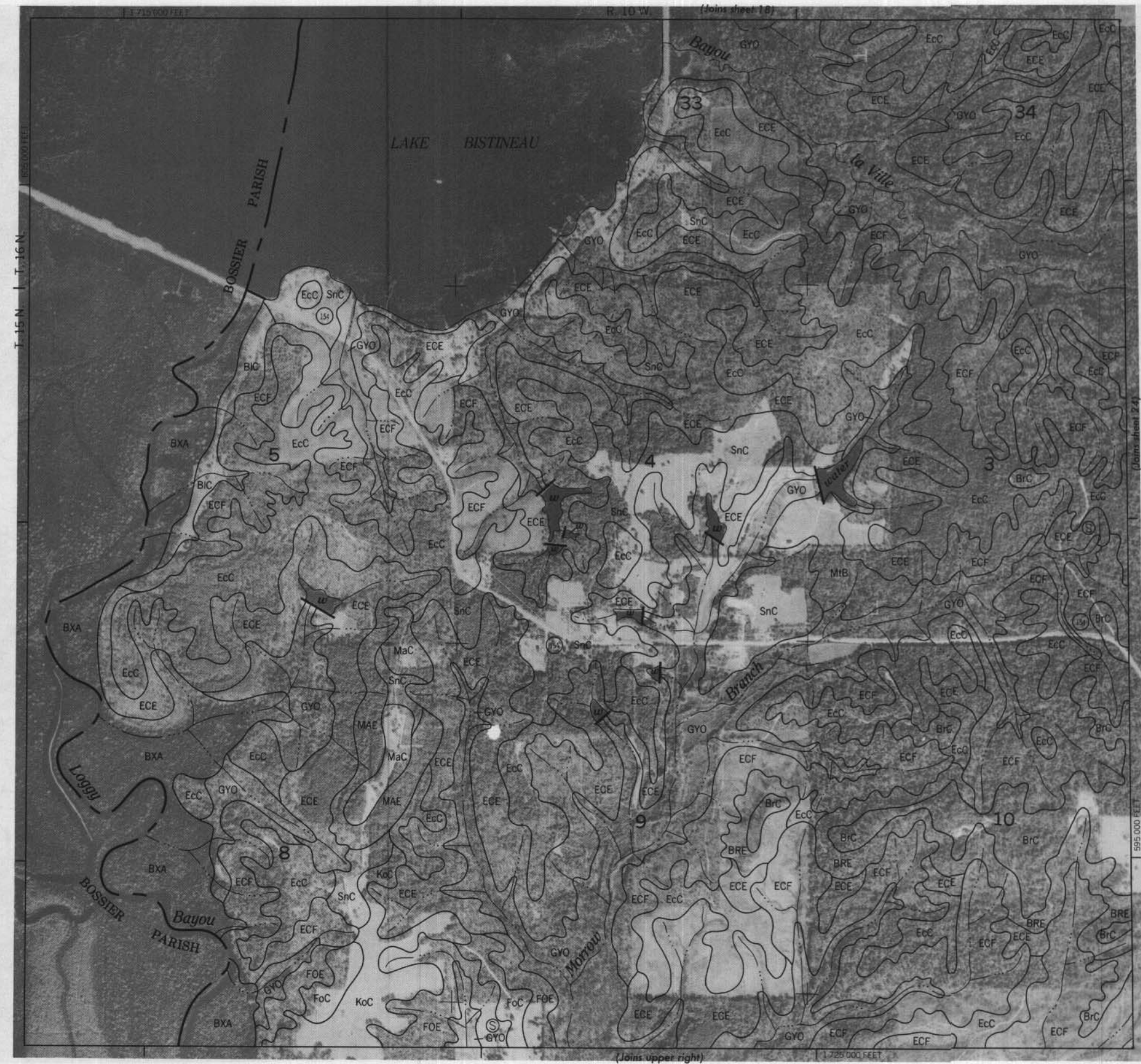
T. 15 N. | T. 16 N.

BIENVILLE PARISH, LOUISIANA NO. 28

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BIENVILLE PARISH, LOUISIANA NO. 29

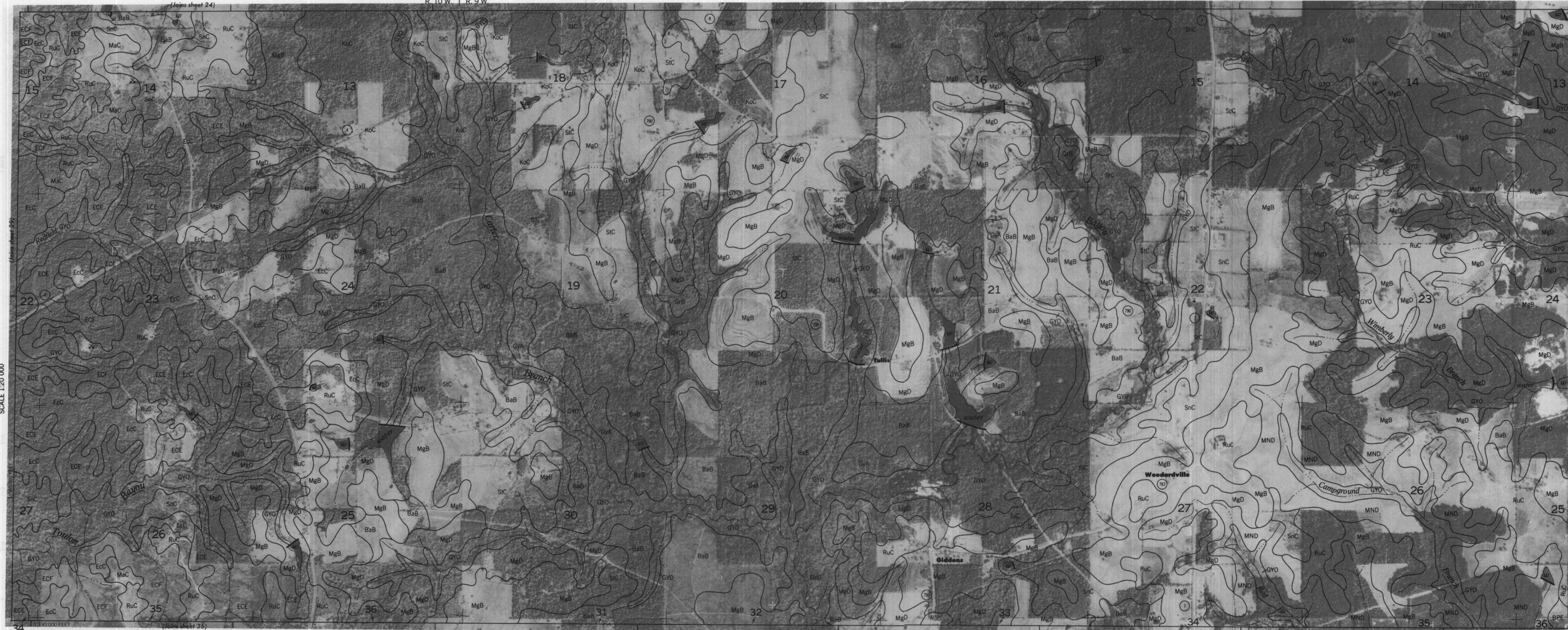




R. 10 W. | R. 9 W.

(Joins sheet 24)

1:265,000 FEET



(Joins sheet 35)

1:265,000 FEET

BIENVILLE PARISH, LOUISIANA NO. 30

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BIENVILLE PARISH, LOUISIANA NO. 31





R. 7 W. | R. 6 W.



BIENVILLE PARISH, LOUISIANA NO. 32

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corners, if shown, are approximately positioned.

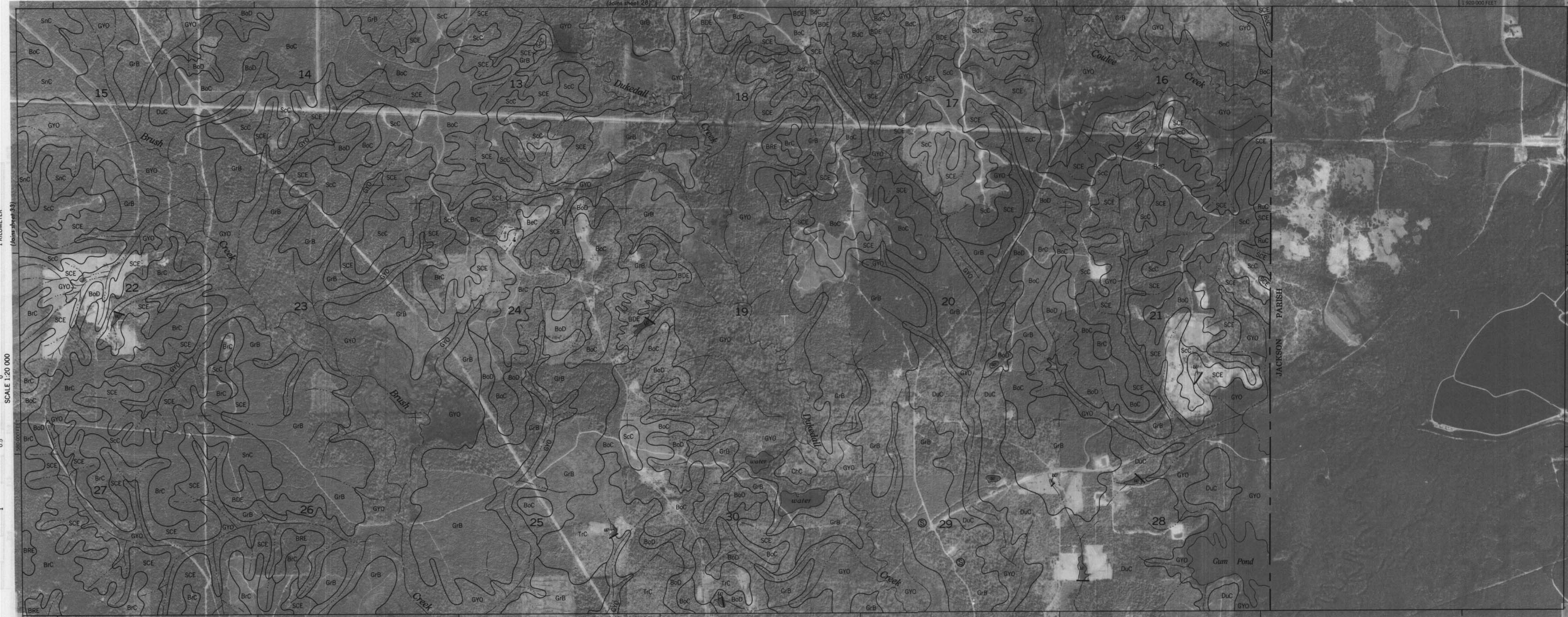
BIENVILLE PARISH, LOUISIANA NO. 33





R. 5 W. | R. 4 W.
(Joins sheet 28)

1:920,000 FEET

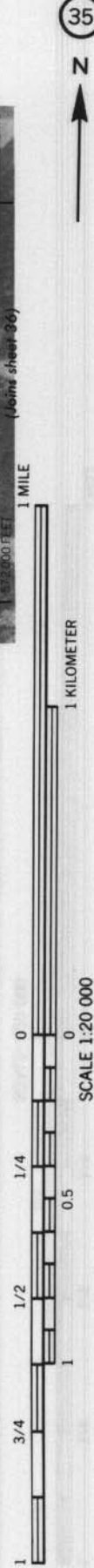
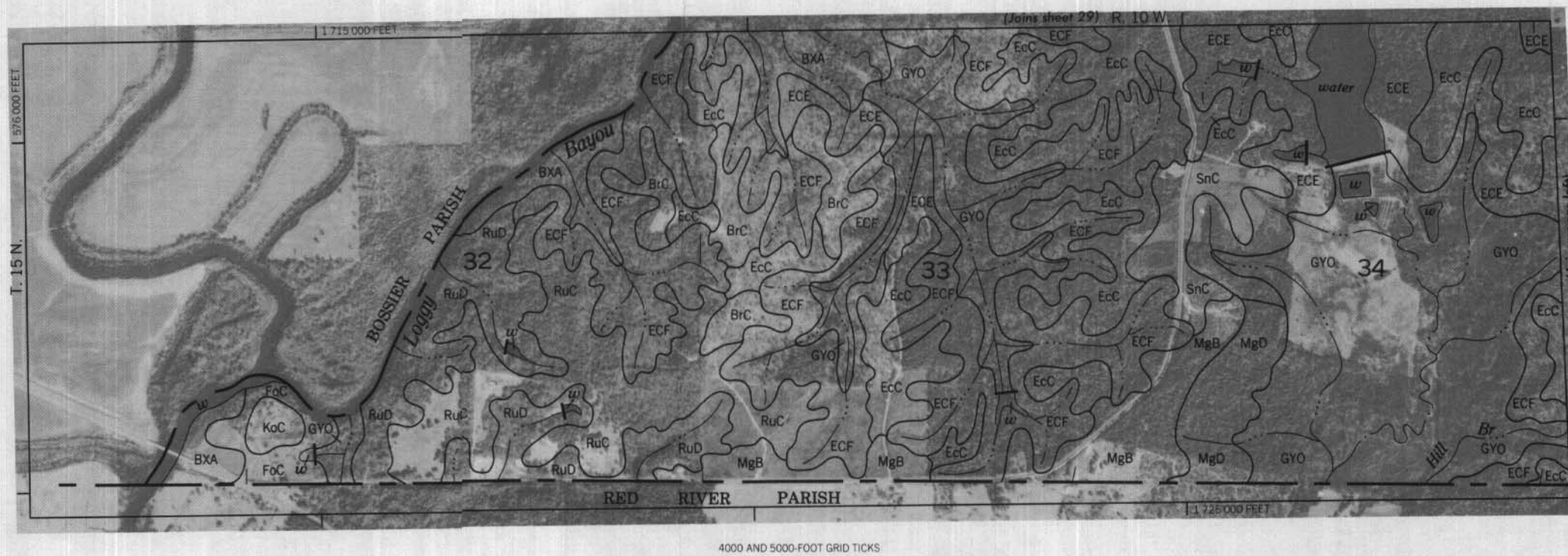
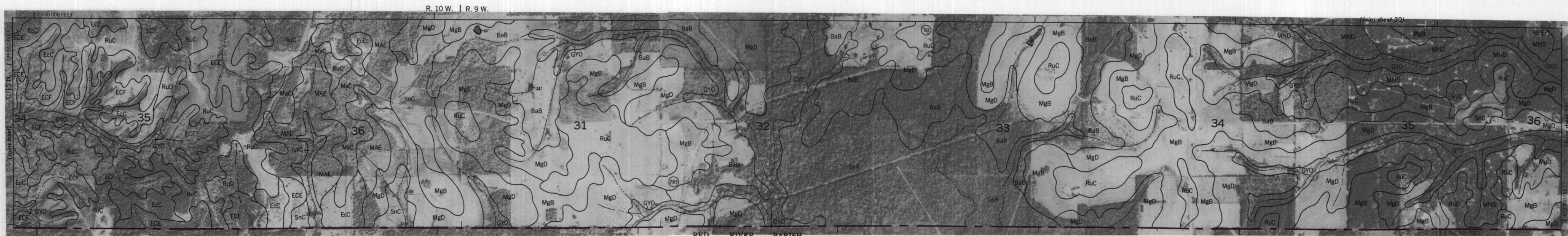


BIENVILLE PARISH, LOUISIANA NO. 34

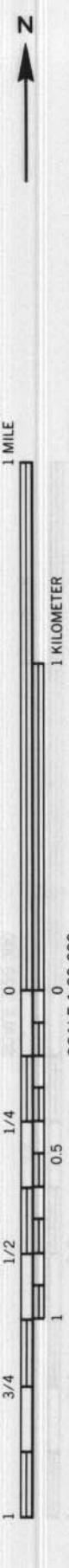
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BIENVILLE PARISH, LOUISIANA NO. 35



N



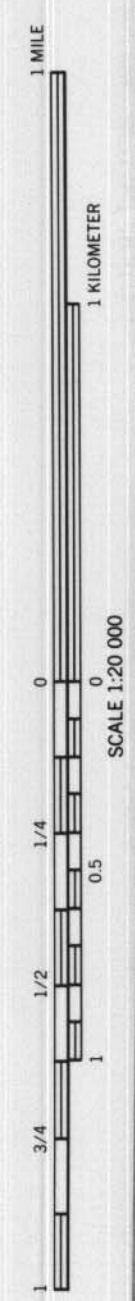
BIENVILLE PARISH, LOUISIANA NO. 36

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BIENVILLE PARISH, LOUISIANA NO. 37

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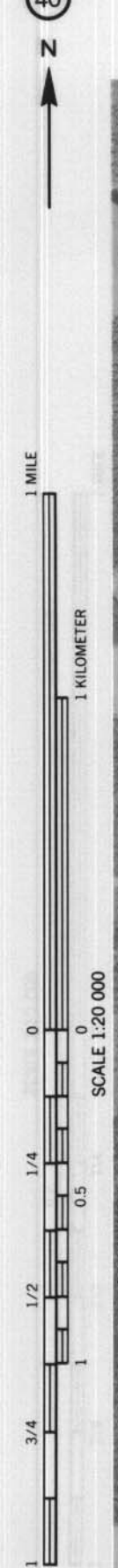
BIENVILLE PARISH, LOUISIANA NO. 38

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BIENVILLE PARISH, LOUISIANA NO. 39





BIENVILLE PARISH, LOUISIANA NO. 40

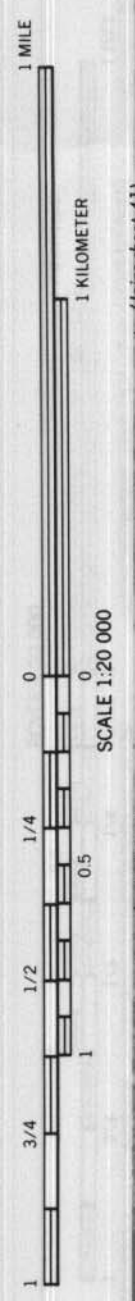
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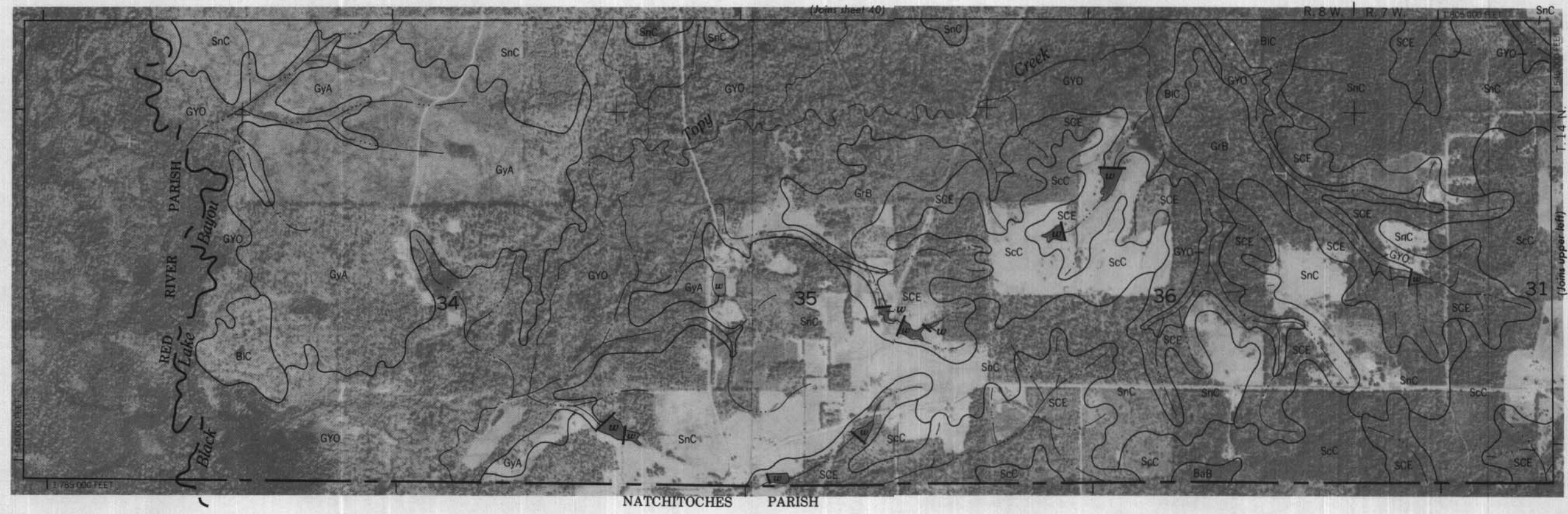
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BIENVILLE PARISH, LOUISIANA NO. 41

1:20,000
 1 MILE
 1 KILOMETER
 SCALE 1:20,000



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