Issued June 1971

SOIL SURVEY
Greene County, Alabama

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
ALABAMA AGRICULTURAL EXPERIMENT STATION
and
ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES

Major fieldwork for this soil survey was done in the period 1960-66. Soil names and descriptions were approved in 1967. Unless otherwise indicated, statements in this publication refer to conditions in the county in 1966.

This survey was made cooperatively by the Soil Conservation Service, the Alabama Agricultural Experiment Station, and the Alabama Department of Agriculture and Industries. It is part of the technical assistance furnished to the Greene County Soil and Water Conservation District.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or they can be purchased on individual order from the Cartographic Division, Soil Conservation Service, United States Department of Agriculture, Washington, D. C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms and woodlands; in selecting sites for roads, ponds, buildings and other structures; and in judging the suitability of tracts of land for agriculture, industry, and recreation.

Locating Soils

All the soils of Greene County, Alabama, are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the county in alphabetic order by map symbol and gives the capability classification of each. It also shows the page where each soil is described and the page for the woodland group in which the soil has been placed.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the discussions of the capability groups, woodland groups, and wildlife areas.

Foresters and others can refer to the section "Use of the Soils for Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Use of the Soils for Wildlife."

Engineers and builders can find, under "Engineering Uses of the Soils," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation and Classification of Soils."

Newcomers in the county will be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section "General Nature of the County," which gives additional information about the county.

Cover Picture

Pond built on Angie fine sandy loam, 5 to 8 percent slopes, eroded, furnishes water for livestock and for recreational purposes.

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SURVEY BY JAMES A. COTTON, SOIL CONSERVATION SERVICE

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UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE ALABAMA AGRICULTURAL EXPERIMENT STATION AND THE ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES

GREENE COUNTY is in the west-central part of Alabama (fig. 1). It has a land area of 637 square miles, or 407,680 acres. In 1970 the population of the county was 10,336. Eutaw, the county seat and largest town, is in the east-central part of the county. Rivers surround all but a small area in the northeastern part of the county. The northern part of the county is part of the Coastal Plain, the central and southern parts are on the Blackland Prairie, and the areas along the boundary are on a high stream terrace and on first bottoms of the Tombigbee, Black Warrior, and Sipsey Rivers.

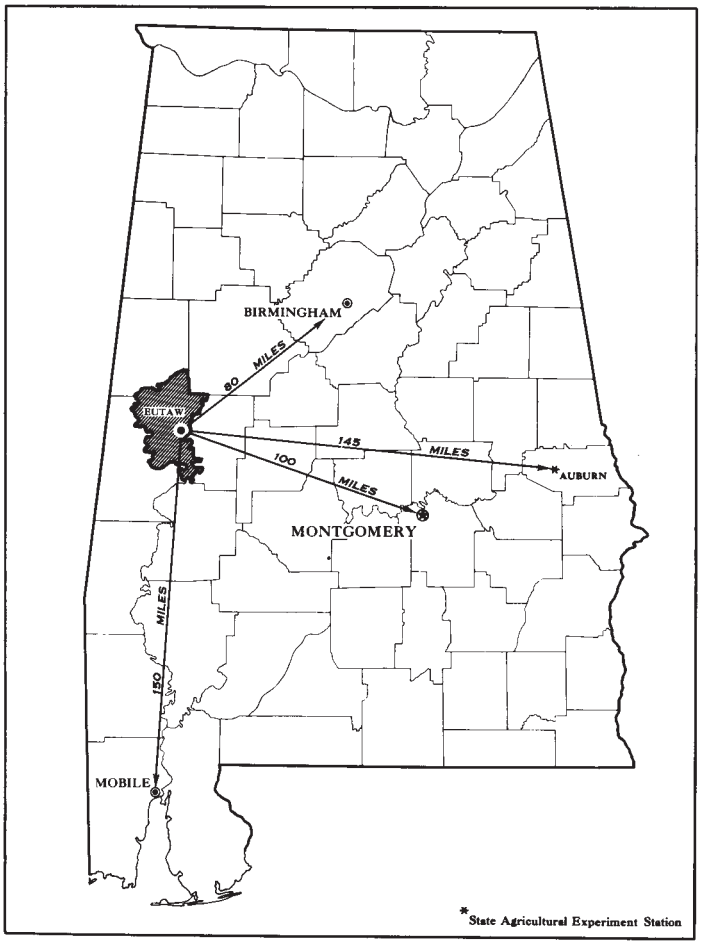

Figure 1.—**Location of Greene County in Alabama.**

The climate in the county is temperate and humid. Summers are long and hot. Winters generally are mild, though short cold spells are not uncommon. Rainfall generally is well distributed throughout the year.

About 30 percent of the land area is used for field crops or for pasture. Cotton and corn are the principal crops. Beef cattle are the principal livestock, but dairy cows and hogs are raised on some farms.

Many of the soils in the northern part of the county are not suited to row crops and pasture because they are steep and are susceptible to erosion. They are, however, well suited to trees. The soils in the Blackland Prairie are not suited to row crops, but they are well suited to pasture. The soils along the perimeter of the county are well suited to row crops, pasture, and trees. Field crops and pasture plants grown on all soils in the county respond well if fertilizer is applied; except for the alkaline soils in the Blackland Prairie, they also respond well to lime.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soils are in Greene County, where they are located, and how they can be used. The soil scientists went into the county knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, the kinds of rock, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. The Eutaw series, was named for Eutaw, the county seat of Greene County. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface soil and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Angie fine sandy loam, 2 to 5 percent slopes, is one of several phases within the Angie series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map in the back of this publication was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series. Three such kinds of mapping units are shown on the soil map of Greene County: soil complexes, soil associations, and undifferentiated groups.

A soil complex consists of areas of two or more soils, so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas. The name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Shubuta-Boswell complex, 8 to 12 percent slopes, eroded, is an example.

A soil association is made up of adjacent soils that occur as areas large enough to be shown individually on the soil map but are shown as one unit because the time and effort of delineating them separately cannot be justified. There is a considerable degree of uniformity in pattern and relative extent of the dominant soils, but the soils may differ greatly one from another. The name of an association consists of the names of the dominant soils, joined by a hyphen. Angie-Leaf association is an example.

An undifferentiated group is made up of two or more soils that could be delineated individually but are shown as one unit because, for the purpose of the soil survey, there is little value in separating them. The pattern and proportion of soils are not uniform. An area shown on the map may be made up of only one of the dominant soils, or of two or more. The name of an undifferentiated group consists of the names of the dominant soils, joined by "and." Marietta and Leeper soils is an example.

In most areas surveyed there are places where the soil material is so rocky, so shallow, or so severely eroded that it cannot be classified by soil series. These places are shown on the soil map and are described in the survey, but they are called land types and are given descriptive names. Gullied land is a land type in Greene County.

While a soil survey is in progress, soil scientists take soil samples needed for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soils in other places are also assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soils. Yields under defined management are estimated for all the soils.

The soil scientists set up trial groups of soils on the basis of yield and practice tables and other data they have collected. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. Then they adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Greene County, Alabama. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

Figure 2.—**A cultivated field on Magnolia fine sandy loam, 2 to 5 percent slopes, eroded, in the Shubuta-Magnolia association.**

Seven soil associations are in Greene County. They are discussed in the pages that follow.

1. Shubuta-Magnolia Association

Well-drained, nearly level to steep soils that have a fine-textured layer in the subsoil; on uplands of the Coastal Plain

This association consists of a hilly upland of the Coastal Plain that is highly dissected by many intermittent streams and a few permanent streams. The area is characterized by narrow, winding ridgetops, steep side slopes, and nearly level areas in narrow drainageways. The side slopes range from 12 to 30 percent, and most of them are wooded.

This association covers most of the northern part of the county. It is 30 percent Shubuta soils, 27 percent Magnolia soils, and 43 percent minor soils. The total acreage is about 34 percent of the county.

Shubuta soils are on narrow ridgetops and steep side slopes. They have a surface layer of dark grayish-brown and yellowish-brown fine sandy loam. The upper part of the subsoil is yellowish-red to red, friable to firm sandy clay loam or silty clay, and the lower part is yellowish-red silty clay or sandy clay loam mottled with shades of red, brown, and olive. The underlying material is stratified sandy and clayey marine sediment.

Magnolia soils are on ridgetops and side slopes. Their surface layer is brown fine sandy loam. The subsoil is thick, red and dark red, firm sandy clay loam to clay.

The minor soils are in the Angie, Boswell, Falaya, Lucy, Macon, Myatt, Ora, Rumford, Ruston, Sawyer, and Wagram series. Of these, the somewhat poorly drained Falaya soils make up 8 percent of the association. These nearly level Falaya soils occupy narrow areas in drainageways and along some of the larger creeks. They have a surface layer of brown sandy loam underlain by mottled light-gray and brown loam.

About 80 percent of this association is wooded; only a small acreage is cultivated. The cultivated fields are on ridgetops (fig. 2) and gently sloping toe slopes and benches along the drainageways. The soils on the hillsides are not suited to cultivation because they erode readily if cleared and cropped.

The major soils of this association are well suited to trees, range plants, and plants that provide food and cover for wildlife. A large part of this association was

once cleared and cultivated but later abandoned because of the hazard of erosion, droughtiness, difficulty of cultivation, low fertility, and small size of the fields.

Large tracts of land in this association are owned by pulp and paper companies and by individuals. They are used mainly for the production of timber. Most of the farms are about 200 acres in size. Cotton and corn are the main crops, and most farms have a few head of livestock. Farming is generally a part-time enterprise; most farmers have work away from the farm.

2. Sumter-Oktibbeha-Vaiden Association

Well-drained to somewhat poorly drained, nearly level to sloping soils that are fine textured throughout; on uplands of the Blackland Prairie

This association (fig. 3) consists of a nearly level to sloping upland that has a complex slope pattern. The area is dissected by many intermittent streams and a few permanent streams. The ridgetops are fairly wide, irregularly shaped, and gently sloping. The side slopes are short and have a dominant slope of 3 to 8 percent. The nearly level areas, on toe slopes and narrow drainageways, are 200 to 400 feet wide.

This association is 25 percent Sumter soils; 20 percent Oktibbeha soils; 15 percent Vaiden soils; and 40 percent minor soils. The total acreage is about 18 percent of the county.

Sumter soils, on ridgetops and side slopes, are well drained. They are calcareous and have a surface layer of grayish-brown silty clay. The subsoil is light yellowish-brown and grayish-brown clay. Depth to the underlying Selma chalk ranges from 24 to 40 inches.

Oktibbeha soils, on ridgetops and side slopes, are moderately well drained. They are strongly acid and have a thin surface layer of brown clay or loam. The upper part of the subsoil is yellowish-red to red, friable to firm, very sticky clay, and the lower part is mottled red, yellowish-brown, and light brownish-gray clay. Selma chalk is at a depth of 30 to 60 inches.

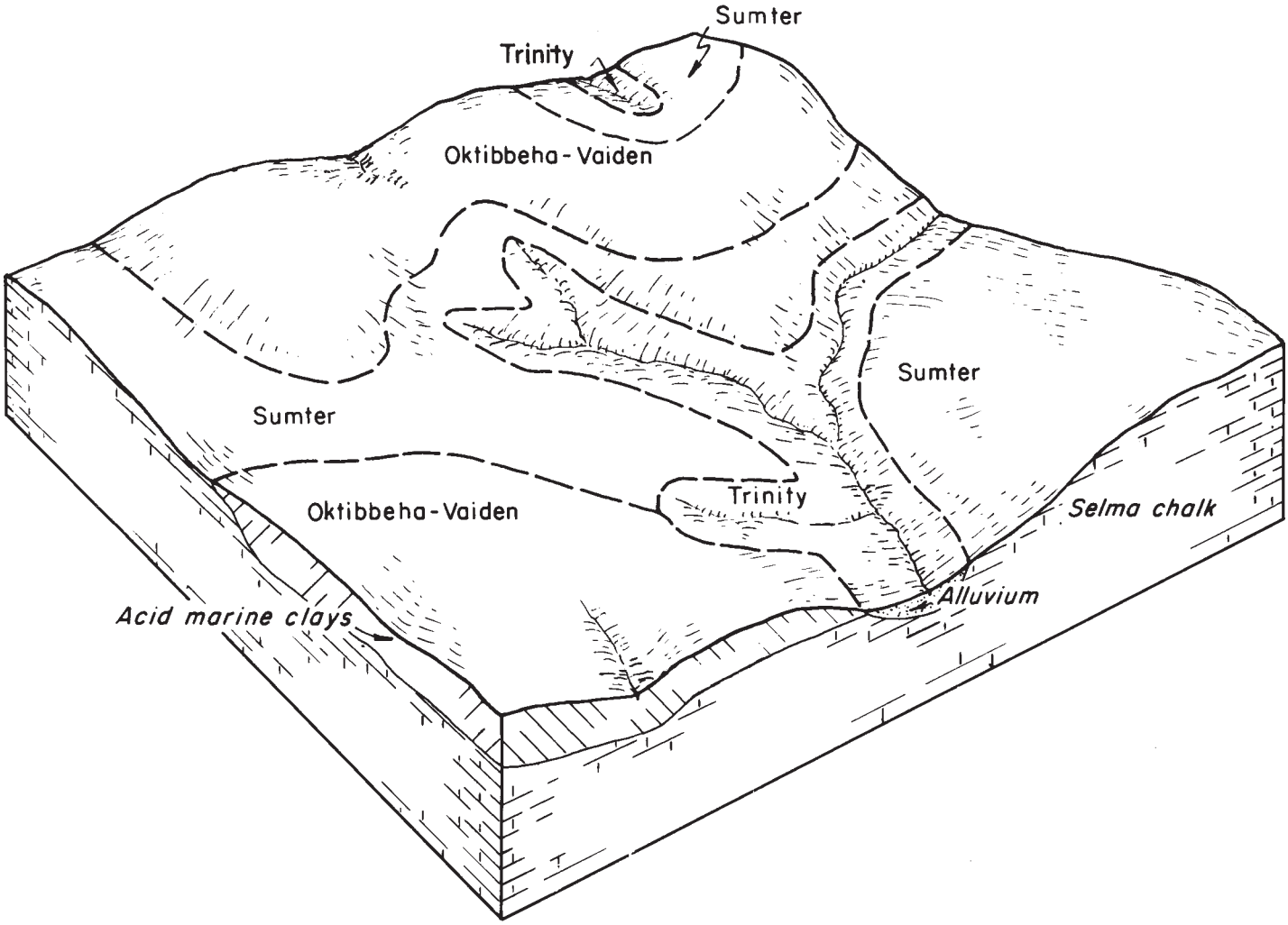

Figure 3.—**Cross section of association 2 showing topography, important soils, and underlying material.**

The somewhat poorly drained Vaiden soils are also on ridgetops and side slopes. They are strongly acid and have a thin surface layer of very dark gray silty clay. The upper part of the subsoil is yellowish-brown, sticky and plastic clay, and the lower part is yellowish-brown clay that is mottled with light gray and yellowish red. Selma chalk is at a depth ranging from 36 to 72 inches or more.

The minor soils in this association are the Catalpa, Eutaw, Forestdale, Kipling, Leeper, Trinity, and Watsonia, and the land type Gullied land. Of these, the moderately well drained, calcareous Trinity soils make up about 10 percent of the association. These nearly level soils occupy narrow areas in small drainageways. Their surface layer is very dark gray clay that is 24 inches or more thick. It is underlain by very dark gray to black clay.

About 85 percent of this association is cleared and used mostly for pasture or hay; only a small acreage is cultivated. Johnsongrass is the principal hay crop, and dallisgrass, fescuegrass, and Caley peas are the principal pasture plants. The soils are fine textured, difficult to till, and highly erodible. They are moderately fertile, and crops on these soils respond well to applications of fertilizer and lime.

Most farms in this association are 500 acres or larger in size and about half of them are operated by owners. Many farmers rent or lease other farms and thus operate units larger than their own farm. On most of the farms, cattle production is the main enterprise. A few dairy farms are also in this association. Most of the streams are intermittent, and water for livestock is provided by small ponds or artesian wells.

3. Leaf-Angie-Cahaba Association

Poorly drained to well-drained, nearly level to gently sloping soils that have a fine textured or moderately fine textured layer in the subsoil; on stream terraces; subject to occasional flooding

This association (fig. 4) consists of a broad, nearly level to gently sloping, low stream terrace that is subject to occasional flooding. The area is characterized by a series of low ridges and wet sloughs. Well drained and moderately well drained soils are on the ridges, and somewhat poorly drained and poorly drained soils are in the sloughs.

This association is along the Black Warrior, Tombigbee, and Sipsey Rivers. It is 35 percent Leaf soils; 20

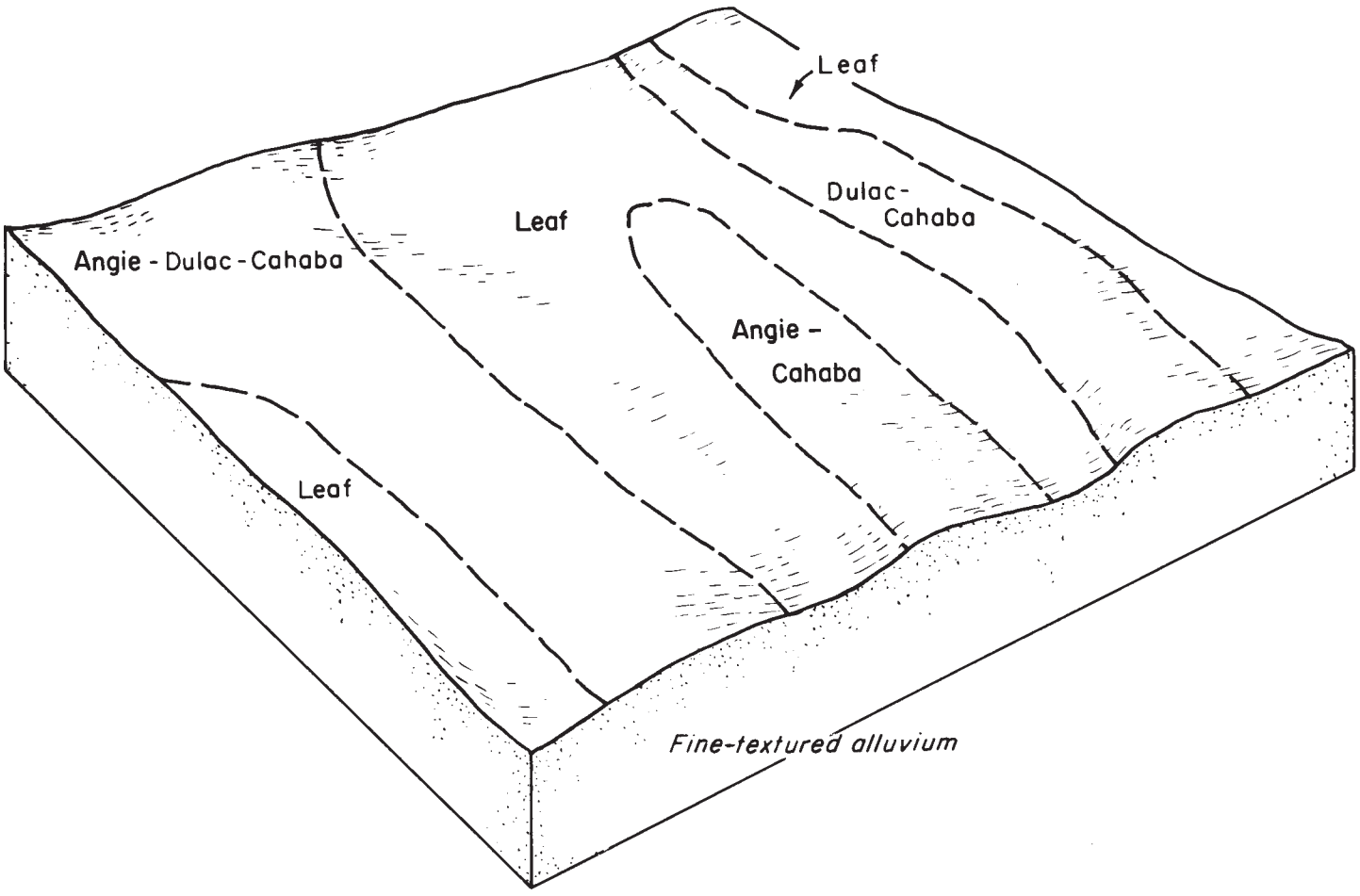

***Figure 4.*—Cross section of association 3 showing topography, important soils, and underlying material.**

percent Angie soils; 12 percent Cahaba soils; and 33 percent minor soils. The total acreage is about 20 percent of the county.

The poorly drained Leaf soils have a surface layer of dark grayish-brown silt loam 2 to 5 inches thick. The subsoil is light gray to gray silty clay loam or silty clay that is mottled with yellowish brown and strong brown. It is 60 to 96 inches thick.

Angie soils are moderately well drained to somewhat poorly drained. They have a surface layer of light yellowish-brown fine sandy loam. The upper part of the subsoil is yellowish-brown clay loam or silty clay, and the lower part is yellowish-brown, mottled brownish-yellow and mottled yellowish-red silty clay or clay. The underlying material is sandy clay loam to sandy loam.

Cahaba soils are well drained. They have a surface layer of dark-brown fine sandy loam. Their subsoil is reddish-brown and yellowish-red fine sandy loam to clay loam in the upper 24 inches, and yellowish-red fine sandy loam and strong-brown sandy loam in the next 22 inches. Below this is strong-brown fine sand.

The minor soils are the Bibb; Chastain; Dulac; Falaya; Lakeland; Myatt; Ochlockonee; Ruston, terrace; Sawyer; and Stough. Of these, Dulac soils make up about 5 percent of the association. They have a surface layer of dark grayish-brown silt loam. The upper part of the subsoil is mixed brown, yellowish-brown, and yellowish-red heavy silty clay loam. The lower part is yellowish-brown, brown, and dark yellowish-brown, compact and brittle silty clay loam or silty clay.

About 80 percent of this association is wooded. The cleared areas consist mainly of Angie, Cahaba, and Ruston, terrace, soils that are used for crops or pasture. These cleared areas are subject to occasional flooding. Crops on them are seldom damaged, though livestock may need to be moved to higher ground. The soils in this association are acid. Fertility is low to moderate. Much of the association is very poorly suited to cultivated crops and pasture because of poor drainage and a seasonal high water table. Also, water stands on the areas for long periods.

Most of the farms in this association are more than 600 acres in size and are owned mainly by individuals. Timber production is the primary enterprise. Nearly all of the woodland is owned by hunting clubs or the hunting rights are leased to such clubs. White-tailed deer, wild turkey, squirrel, rabbit, raccoon, opossum, and beaver flourish in these areas.

4. Savannah-Ruston Association

Moderately well drained to well drained, nearly level to moderately steep soils that have a predominantly medium textured subsoil; on high stream terraces and on uplands of the Coastal Plain

This association consists of a broad, nearly level upland and a high stream terrace that are dissected by a few intermittent and permanent streams. The area is characterized by broad, nearly level to gently sloping fields dissected by a few drainageways and low, wet sloughs.

This association is 40 percent Savannah soils; 35 percent Ruston soils; and 25 percent minor soils. The total acreage is about 8 percent of the county.

The moderately well drained Savannah soils have a surface layer of brown fine sandy loam. The upper part of the subsoil is yellowish-brown fine sandy loam or loam. A compact, brittle fragipan commonly is at a depth of 23 inches.

Ruston soils are well drained and have a surface layer of brown fine sandy loam. Their subsoil is yellowish-red fine sandy loam, clay loam or sandy clay loam 50 inches or more thick. It is underlain by sandy loam to sandy clay loam unconsolidated material.

The minor soils are the Lucy; Mashulaville; Myatt; Ochlockonee, local alluvium; Ora; Stough; and Troup.

About 75 percent of this association is cleared and is used for crops and pasture. The area is farmed intensively, and crops grow well under good management. The soils are acid. Fertility is low, but the response to applications of lime and fertilizer is good. These soils are easy to work and to keep in good tilth.

The average size of the farms in this association is about 160 acres. Some farmers, however, rent or lease other land and operate larger units. Cotton and corn are the chief row crops, and Coastal bermudagrass and bahiagrass are the chief pasture grasses. On many farms raising of beef cattle is an important enterprise. A few dairy farms and a few pecan groves are also in this association.

5. Leeper-Catalpa Association

Somewhat poorly drained to moderately well drained, nearly level soils that are fine textured throughout; on flood plains

This association consists of long, fairly wide flood plains along the large creeks in the prairie part of the county. It consists of nearly level areas that adjoin gently sloping uplands and stream terraces. The areas are subject to frequent flooding, mainly in spring and late in winter.

This association is along Boligee, Morgan, Needham, Taylor, Tubbs, and Willees Creeks and the lower reaches of Brush and Trussells Creeks. It is 45 percent Leeper soils, 20 percent Catalpa soils, and 35 percent minor soils. The total acreage is about 7 percent of the county.

Leeper soils are somewhat poorly drained. They have a surface layer of very dark grayish-brown and dark grayish-brown clay, commonly about 8 inches thick. The subsoil is very sticky and very plastic clay. It is mottled grayish brown and yellowish brown in the upper part and light gray, gray, and dark grayish brown in the lower part.

Catalpa soils are moderately well drained and have a surface layer of very dark grayish-brown clay about 20 inches thick. The subsoil is dark grayish-brown, dark-gray, and gray, very sticky and very plastic clay that is mottled with yellowish brown in the lower part.

The minor soils are in the Eutaw, Forestdale, Garner, Kipling, Marietta, and Trinity series. Of these, the poorly drained Garner soils make up about 7 percent of the association. They have a thin surface layer

of dark-gray and gray clay. The subsoil is gray to light-gray, very sticky and very plastic clay that has few to common dark yellowish-brown mottles.

About 70 percent of this association is cleared and is used for pasture (fig. 5), to which the soils are well suited; little is cropped. These soils are neutral to

Figure 5.—**Pasture of dallisgrass on Catalpa clay in the Leeper-Catalpa association.**

alkaline in reaction. Natural fertility is moderate to high. Crops on these soils respond well to applications of fertilizer. The very sticky and very plastic clay surface layer makes tillage difficult. Artificial drainage is needed in poorly drained and somewhat poorly drained areas. Except where floods cause scouring, erosion is not a hazard.

Most of the farms within this association extend into association 2.

6. Falaya-Ochlockonee Association

Somewhat poorly drained to well-drained, nearly level soils that are medium textured or moderately coarse textured to a depth of 3 or 4 feet or more; on flood plains

This association consists of long, narrow to fairly wide flood plains along large creeks in the northern part of the county. These nearly level areas adjoin gently sloping to steep uplands. They are subject to frequent flooding, mainly in spring and late in winter.

This association is along Brush, Minters, and Trussells Creeks, and some of the other larger creeks. It is 55 percent Falaya, 20 percent Ochlockonee, and 25 percent minor soils. The total acreage is about 8 percent of the county.

Falaya soils are somewhat poorly drained. They have a surface layer of dark grayish-brown fine sandy loam. The subsoil is dark grayish-brown loam in the upper part and mottled pale-brown and light brownish-gray to light-gray loam below.

The well-drained Ochlockonee soils have a surface layer of dark grayish-brown to brown fine sandy loam. Below is dark-brown, dark yellowish-brown, and brown fine sandy loam. In places gray mottles occur below a depth of 20 inches.

The minor soils are Angie, terrace; Bibb; Cahaba; Lakeland; Leaf; Myatt; and Sawyer. Of these, the poorly drained Bibb soils make up about 8 percent of the association. They have a surface layer of brown silt loam underlain by gray loam that has a few strong-brown and very dark grayish-brown mottles.

About 75 percent of this association is wooded. The areas that are cleared, mainly Ochlockonee soils, are used for crops and pasture. The soils are acid and are moderately fertile. Crops grow well under good management. Drainage is needed in the somewhat poorly drained and poorly drained areas. Except where floods cause scouring, erosion is not a hazard. Flooding occurs mainly late in winter and early in spring.

These soils are well suited to row crops, pasture plants, and trees. Because the areas of this association are long, narrow, and irregularly shaped, many farms extend into associations 1, 4, and 7. Corn and cotton are the principal row crops.

7. Magnolia-Savannah-Ora Association

Well drained and moderately well drained, nearly level to gently sloping soils that have a medium-textured to fine-textured subsoil; on uplands of the Coastal Plain

This association consists of a broad, nearly level to gently sloping upland that is dissected by a few intermittent streams.

This association is near Pleasant Ridge and Lewiston. It is 40 percent Magnolia soils, 25 percent Savannah soils, 25 percent Ora soils, and 10 percent minor soils. The total acreage is about 5 percent of the county.

Magnolia soils are well drained. They have a surface layer of brown fine sandy loam. The subsoil is thick, yellowish-red, red, and dark-red, friable to firm sandy clay loam to clay.

The moderately well drained Savannah soils have a surface layer of brown fine sandy loam. The upper part of the subsoil is yellowish-brown fine sandy loam to loam. A compact, brittle fragipan is at a depth of 20 to 30 inches.

Ora soils are moderately well drained. They have a surface layer of brown fine sandy loam and a subsoil of yellowish-red clay loam. A compact, brittle fragipan is at a depth of 20 to 36 inches.

The minor soils are in the Boswell, Mashulaville, Myatt, Rumford, Ruston, and Shubuta series.

Most of this association is cleared and used for crops or pasture. The area is farmed intensively, and the soils are among the most productive in the county.

The response to lime and fertilizer is good. Cotton and corn are the chief row crops, and Coastal bermudagrass is the chief hay crop. On a few farms the raising of beef cattle, dairy cattle, and poultry is the main enterprise.

The average size of the farms in this association is about 180 acres, but a few farmers rent or lease other land and operate larger farms. Most of the farming is done with mechanized equipment. The streams in this association are mostly intermittent, and water for livestock is provided by small farm ponds (fig. 6).

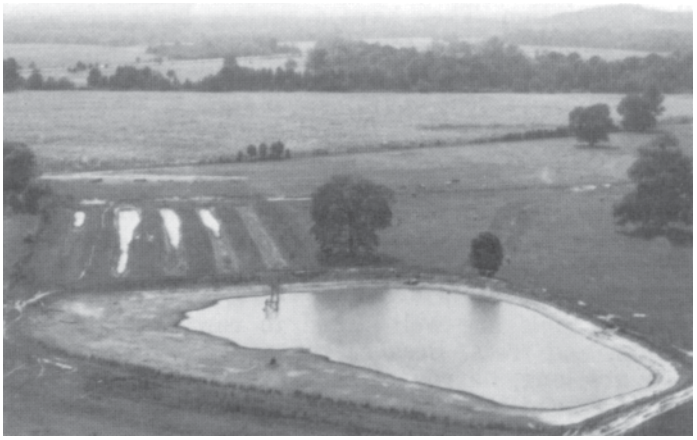

Figure 6.—**This small farm pond on Savannah fine sandy loam, 2 to 5 percent slopes, provides water for some livestock in the Magnolia-Savannah-Ora association.**

Descriptions of the Soils

This section describes the soil series and the mapping units of Greene County in alphabetical order. The procedure is first to describe the soil series, and then the mapping units in that series. Thus to get full information on any one mapping unit, it is necessary to read the description of that unit and also the description of the series to which it belongs. The description of a soil series mentions features that apply to all the soils in a series. Differences among the soils of one series are pointed out in the description of the individual soils or are indicated in the soil name. As mentioned in the section "How This Survey Was Made," not all mapping units are members of a soil series. Gullied land, for example, is a miscellaneous land type that does not belong to a soil series. It is listed, nevertheless, in alphabetic order along with the soil series.

Each series contains a short description of a typical soil profile and a much more detailed description of the same profile that scientists, engineers, and others can use in making highly technical interpretations. In the technical description, the color of each layer, or horizon, is given in words, such as yellowish brown, and is also indicated by symbols for hue, value, and chroma, such as 10YR 5/4. These symbols, called Munsell color notations, are used to evaluate the color of the soil precisely (*7*).[1] Unless otherwise stated all color terms are for moist soil.

Many of the terms used to describe the soils are defined in the Glossary at the back of this soil survey. For more general information about the soils, the reader can refer to the section "General Soil Map," where broad patterns of the soils are described. The approximate acreage and proportionate extent of the soils are given in table 1, and their location and extent are shown on the detailed soil map at the back of this survey. All of the soils mapped in the county are listed alphabetically in the "Guide to Mapping Units" in the back of the survey, and the capability unit, and the woodland group into which they have been placed are also given.

Angie Series

The Angie series consists of moderately well drained to somewhat poorly drained, acid soils on uplands and low stream terraces. Slopes range from 0 to 12 percent, but slopes of less than 8 percent are dominant. These soils formed in mostly fine-textured alluvium and marine sediment.

A representative profile in a cultivated area has a 6-inch plow layer of light yellowish-brown fine sandy loam. It has a thick subsoil that is yellowish-brown clay loam in the uppermost 4 inches; yellowish-brown, mottled silty clay to a depth of 36 inches; and mottled brownish-yellow, light-gray, and yellowish-red silty clay or clay to a depth of 72 inches.

The native vegetation is forest of mixed hardwoods and pines. About a quarter of the acreage has been cleared and is used for crops and pasture.

Profile of Angie fine sandy loam, terrace, 0 to 2 percent slopes, in a woodland that was once cultivated (3.5 miles northeast of Forkland in the SE¼NW¼ sec. 25, T. 20 N., R. 2 E.):

Ap—0 to 6 inches, light yellowish-brown (10YR 6/4) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; a few medium roots; a few, fine, black organic-matter specks; very strongly acid; clear, wavy boundary.

B1t—6 to 10 inches, yellowish-brown (10YR 5/4) clay loam; weak, fine, subangular blocky structure; friable; many fine roots; a few medium roots; a few, old, partly decayed roots; very strongly acid; gradual, wavy boundary.

B21t—10 to 23 inches, yellowish-brown (10YR 5/6) silty clay; many, medium, distinct, light brownish-gray and a few, faint, brownish-yellow and light yellowish-brown mottles; moderate, fine and medium, subangular blocky structure; friable, very hard, sticky and plastic; clay films on peds and in pores; a few fine and medium roots; very strongly acid; gradual, wavy boundary.

B22t—23 to 36 inches, yellowish-brown (10YR 5/6) silty clay; many, medium, distinct light-gray and common, medium, prominent red mottles; moderate, fine and medium, subangular blocky structure; very hard, firm, plastic, sticky; clay film on peds and in pores; a few fine and medium roots; very strongly acid; gradual, wavy boundary.

[1] Italic numbers in parentheses refer to Literature Cited, p. 92.

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent
Angie fine sandy loam, 2 to 5 percent slopes	2,361	0.6
Angie fine sandy loam, 5 to 8 percent slopes, eroded	1,047	.3
Angie fine sandy loam, terrace, 0 to 2 percent slopes	8,680	2.1
Angie fine sandy loam, terrace, 2 to 5 percent slopes	446	.1
Angie sandy clay loam, 5 to 12 percent slopes, severely eroded	803	.2
Angie-Leaf association	4,370	1.1
Bibb silt loam	3,057	.7
Binnsville clay, 3 to 8 percent slopes	443	.1
Boswell clay loam, 2 to 8 percent slopes, severely eroded	300	.1
Boswell fine sandy loam, 2 to 5 percent slopes, eroded	759	.2
Boswell fine sandy loam, 5 to 8 percent slopes, eroded	749	.2
Cahaba fine sandy loam, 0 to 3 percent slopes	9,256	2.3
Catalpa clay	5,412	1.3
Chastain clay	904	.2
Dulac silt loam, 0 to 2 percent slopes	3,916	1.0
Eutaw clay	5,807	1.4
Falaya fine sandy loam	24,107	5.9
Forestdale fine sandy loam	3,819	.9
Garner clay	1,972	.5
Gullied land	1,548	.4
Kipling loam, 0 to 1 percent slopes	1,226	.3
Kipling loam, 1 to 3 percent slopes, eroded	3,229	.8
Kipling loam, 3 to 5 percent slopes, eroded	765	.2
Kipling loam, 5 to 8 percent slopes, eroded	488	.1
Lakeland fine sand, 0 to 5 percent slopes	7,217	1.8
Leaf silt loam	22,885	5.6
Leaf-Angie association	15,739	3.9
Leeper clay	10,378	2.5
Macon clay loam, 5 to 12 percent slopes, severely eroded	1,181	.3
Macon fine sandy loam, 0 to 2 percent slopes	241	.1
Macon fine sandy loam, 2 to 5 percent slopes, eroded	2,557	.6
Macon fine sandy loam, 5 to 8 percent slopes, eroded	1,180	.3
Magnolia fine sandy loam, 0 to 2 percent slopes	1,837	.5
Magnolia fine sandy loam, 2 to 5 percent slopes, eroded	4,706	1.2
Magnolia fine sandy loam, 5 to 8 percent slopes, eroded	4,938	1.2
Magnolia fine sandy loam, 8 to 12 percent slopes, eroded	1,401	.3
Magnolia sandy clay loam, 2 to 8 percent slopes, severely eroded	3,430	.8
Marietta and Leeper soils	13,267	3.3
Mashulaville fine sandy loam	4,057	1.0
Myatt fine sandy loam	13,036	3.2
Ochlockonee fine sandy loam	6,571	1.6
Ochlockonee fine sandy loam, local alluvium	1,716	0.4
Oktibbeha clay, 1 to 3 percent slopes, eroded	4,438	1.1
Oktibbeha loam, 1 to 3 percent slopes, eroded	1,294	.3
Oktibbeha soils, 3 to 5 percent slopes, eroded	6,082	1.5
Oktibbeha soils, 5 to 8 percent slopes, eroded	1,990	.5
Ora fine sandy loam, 0 to 2 percent slopes	645	.2
Ora fine sandy loam, 2 to 5 percent slopes, eroded	4,167	1.0
Ora fine sandy loam, 5 to 8 percent slopes, eroded	2,244	.5
Rumford sandy loam, 0 to 5 percent slopes	1,370	.3
Ruston fine sandy loam, 0 to 2 percent slopes	5,541	1.4
Ruston fine sandy loam, 2 to 5 percent slopes	6,023	1.5
Ruston fine sandy loam, 5 to 8 percent slopes, eroded	2,668	.7
Ruston fine sandy loam, 8 to 12 percent slopes, eroded	1,262	.3
Ruston fine sandy loam, terrace, 0 to 5 percent slopes	5,977	1.5
Ruston complex, 12 to 25 percent slopes	3,486	.9
Savannah fine sandy loam, 0 to 2 percent slopes	11,285	2.8
Savannah fine sandy loam, 2 to 5 percent slopes	6,268	1.5
Savannah fine sandy loam, 5 to 8 percent slopes, eroded	590	.1
Sawyer fine sandy loam, 0 to 2 percent slopes	1,320	.3
Sequatchie sandy loam, 0 to 2 percent slopes	898	.2
Shubuta clay loam, 2 to 8 percent slopes, severely eroded	1,037	.3
Shubuta fine sandy loam, 0 to 2 percent slopes	2,320	.6
Shubuta fine sandy loam, 2 to 5 percent slopes, eroded	2,363	.6
Shubuta fine sandy loam, 5 to 8 percent slopes, eroded	4,785	1.2
Shubuta-Boswell complex, 8 to 12 percent slopes, eroded	7,651	1.9
Shubuta-Boswell complex, 8 to 12 percent slopes, severely eroded	3,062	.6
Shubuta-Magnolia-Falaya association, hilly	64,452	15.8
Stough fine sandy loam	3,037	.7
Sumter silty clay, 1 to 3 percent slopes, eroded	4,314	1.1
Sumter silty clay, 3 to 5 percent slopes, eroded	8,246	2.0
Sumter silty clay, 5 to 12 percent slopes, eroded	4,095	1.0
Sumter-Watsonia complex, 1 to 5 percent slopes, eroded	5,036	1.2
Sumter-Watsonia complex, 5 to 17 percent slopes, eroded	5,752	1.4
Trinity clay	8,098	2.0
Troup-Lucy complex, 8 to 25 percent slopes	5,759	1.4
Vaiden silty clay, 0 to 1 percent slopes	1,970	.5
Vaiden silty clay, 1 to 3 percent slopes, eroded	4,273	1.0
Vaiden silty clay, 3 to 5 percent slopes, eroded	439	.1
Wagram loamy fine sand, 0 to 5 percent slopes	822	.2
Wagram loamy fine sand, 5 to 8 percent slopes	395	.1
Gravel pits, intermittent lakes, and other small areas shown by standard symbols	425	.1
Total	407,680	100.0

B23t—36 to 52 inches, mottled brownish-yellow (10YR 6/6) and light-gray (10YR 7/1) silty clay or clay; moderate, fine, subangular blocky structure; very hard, firm, plastic, very sticky; clay films on peds and in pores; a few fine roots; very strongly acid; gradual, wavy boundary.

B24t—52 to 72 inches +, mottled yellowish-red (5YR 5/6), light-gray (10YR 7/1), and brownish-yellow (10-YR 6/6) clay; moderate, medium, subangular blocky structure; very hard, very firm, very sticky, very plastic; clay films on peds; very strongly acid.

The Ap horizon ranges from light yellowish brown to dark grayish brown. In uncultivated areas there is a very dark gray to dark grayish-brown A1 horizon and a light yellowish-brown to dark grayish-brown A2 horizon. The A horizon ranges from 2 to 8 inches in thickness. The B horizon, in which clay has accumulated, is more than 50 inches thick and has a clay content of more than 35 percent and a silt content of more than 30 percent in the uppermost 20 inches. Gray mottles occur within 25 inches of the surface. In the upper part of the B horizon, the color ranges from pale olive to yellowish brown or yellowish red, and gray mottles are few to common. The texture of this part of the profile ranges from heavy clay loam to clay. In the lower part of the B horizon, the texture ranges from loam to clay. Mica flakes are common in most places. Reaction of these soils is strongly acid to very strongly acid.

Angie soils occur on stream terraces with Cahaba, Dulac, Leaf, and Myatt soils, and on uplands mainly with Savannah, Ora, and Macon soils. Angie soils are less well drained

than Cahaba soils and have a finer textured subsoil. They have a less silty B horizon than Dulac soils, and they lack the fragipan that is characteristic of Dulac soils. Angie soils are less poorly drained than Leaf soils and are less gray in color throughout. They are less poorly drained than Myatt soils and have a finer textured subsoil. They have a finer textured subsoil than either Savannah or Ora soils, and they lack the fragipan that is characteristic of those soils. They are less well drained than Macon soils.

Angie fine sandy loam, 2 to 5 percent slopes (AfB).—This soil is mainly in the central and southern parts of the county. It has a 4-inch surface layer of brown fine sandy loam. The uppermost 12 inches of the subsoil is yellowish-brown clay loam. Below this is a 12-inch layer of yellowish-brown clay loam mottled with gray and strong brown. The lower part of the subsoil is mottled red, yellowish-brown, and light-gray clay.

Included in mapping were small areas of Savannah, Macon, and Ora soils and also a few small areas of soils that have a yellowish-red or red subsoil. About 5 percent of the acreage has a slope of less than 2 percent.

The natural fertility of this Angie soil is low, and the reaction is strongly acid to very strongly acid. The organic-matter content is low. Infiltration is moderate, but permeability is slow to very slow. The available water capacity is moderate.

This soil is well suited to pasture, hay, and woodland. It is suited to most kinds of crops grown in the county but is somewhat limited by the fine texture of the subsoil and the slow permeability. It is fairly easy to work but is suitable for tillage within only a narrow range of moisture content. The subsoil is waterlogged in wet weather. The erosion hazard is slight to moderate. Most areas are now used for crops or pasture. Capability unit IIe–14; woodland group 2w8.

Angie fine sandy loam, 5 to 8 pecent slopes, eroded (AfC2).—This soil is on uplands, mainly in the central and southern parts of the county. It has a 4-inch surface layer of light yellowish-brown fine sandy loam. The upper part of the subsoil is yellowish-brown heavy clay loam, and the lower part is yellowish-brown clay mottled with light gray, pale brown, and reddish brown.

Included in mapping were patches of yellowish-brown clay loam; small areas of Savannah, Macon, and Ora soils; and areas of soils that have a yellowish-red or red subsoil. A little chert and quartz gravel is on the surface and in the profile in places. Rills and shallow gullies have formed in most fields.

The natural fertility of this Angie soil is low, and the reaction is strongly acid to very strongly acid. The organic-matter content is low. Infiltration is moderate, and permeability is slow to very slow. The available water capacity is moderate.

This soil is well suited to pasture, hay, and woodland. It is fairly well suited to most kinds of crops grown in the county but is somewhat limited by the slow permeability. The erosion hazard is moderate. Most of the acreage is used for pasture. Capability unit IIIe–14; woodland group 2w8.

Angie fine sandy loam, terrace, 0 to 2 percent slopes (AgA).—This soil has the profile described as representative of the series. It is on low terraces along the rivers and the larger creeks in the county. In undisturbed areas the upper 3 inches of the surface layer typically is dark gray and the lower 4 inches is yellowish brown mottled with dark gray. In about a third of the acreage, the surface layer is loam or silt loam. Included in mapping were small areas of Leaf soils and Dulac soils.

The natural fertility of this Angie soil is low, and the reaction is strongly acid to very strongly acid. The organic-matter content is low. Infiltration is moderate, and permeability is slow. The available water capacity is moderate.

This soil is well suited to pasture and woodland. It is fairly well suited to most kinds of crops grown in the county but is somewhat limited by the slow permeability and the restricted drainage. It is late to warm up in spring. The subsoil is waterlogged in wet weather, and water stands on the surface for short periods, mainly late in winter and in spring. The dominant use is woodland. Capability unit IIw–13; woodland group 2w8.

Angie fine sandy loam, terrace, 2 to 5 percent slopes (AgB).—This soil has a 5-inch plow layer of brown fine sandy loam. The uppermost 12 inches of the subsoil is strong-brown heavy clay loam, and the lower part is yellowish-brown clay loam or sandy clay mottled with light gray and yellowish red. Included in mapping were small areas of silt loam and also small areas of Cahaba, Ruston, and Dulac soils.

The natural fertility of this Angie soil is low, and the reaction is strongly acid to very strongly acid. The organic-matter content is low. Infiltration is moderate, and permeability is slow. The available water capacity is moderate.

This soil is well suited to pasture and woodland. It is fairly well suited to most kinds of crops grown in the county but is somewhat limited by the slow permeability and the restricted drainage. The subsoil is waterlogged in wet weather. Crops respond to lime and fertilizer. The erosion hazard is slight to moderate. Capability unit IIe–14; woodland group 2w8.

Angie sandy clay loam, 5 to 12 percent slopes, severely eroded (AnD3).—This soil has a 2-inch surface layer of brown sandy clay loam. The upper 18 inches of the subsoil is strong-brown clay and sandy clay mottled with red and brown below a depth of 8 inches. The lower part is mottled light-gray, brownish-yellow, and red sandy clay. Most fields have many shallow gullies and a few deep ones. Terrace remnants are common in pastures and wooded areas. Included in mapping were areas of soils that have a red or a mottled red, gray, and brown subsoil.

The natural fertility of this Angie soil is low, and the reaction is strongly acid to very strongly acid. The organic-matter content is low. Infiltration is slow, and permeability is slow to very slow. The available water capacity is moderate.

This soil is generally not suited to cultivated crops, because the hazard of erosion is very high. It is hard to till and to work into a good seedbed, and it will clod if tilled when too wet. Pasture, meadow, and woodland, all of which provide a continuous cover of vegetation, are suitable uses. About a third of the acreage is idle,

another third is used for pasture, and the remaining third is in pine trees. Capability unit VIe–113; woodland group 3c2.

Angie-Leaf association (As).—This mapping unit consists mainly of moderately well drained to poorly drained, nearly level soils on broad, low stream terraces along the Black Warrior and Tombigbee Rivers. The areas are wooded and consist of low, narrow ridges and wet sloughs. The best drained soils are on the ridges and the poorest drained soils are in the low areas. The composition of this unit is more variable than that of most others in the county but has been controlled well enough that reliable interpretations can be made for the purposes for which the soils likely can be used.

Angie soils make up about 60 percent of the acreage in this association, and Leaf soils about 20 percent. Minor soils make up about 10 percent, and sandy areas and mixtures of soil material make up the rest. Each mapped area consists of Angie and Leaf soils, in amounts that vary less than 10 percent between areas, and of variable amounts of minor soils.

The moderately well drained to somewhat poorly drained Angie soils are on the ridges. They have a surface layer of very dark grayish-brown silt loam about 4 inches thick. The subsoil is brown silty clay in the upper 12 inches; yellowish-brown silty clay in the next 6 inches; and yellowish-brown loam and silty clay loam mottled with gray, strong brown, and red in the lower 20 inches. Below is yellowish-brown sandy loam several feet thick.

The natural fertility is low, and the reaction is strongly acid. The organic-matter content is low. Infiltration is moderate, and permeability is slow. The available water capacity is moderate.

The poorly drained Leaf soils are in the lower part of the association and are ponded for long periods. They have a surface layer of gray silt loam that is about 10 inches thick and is mottled with dark grayish brown. The subsoil in the upper 24 inches is gray silty clay mottled with brown and dark yellowish brown, and in the lower part is gray silty clay mottled with strong brown.

The natural fertility is low, and the reaction is strongly acid to very strongly acid. The organic-matter content is low. Infiltration is moderate, and permeability is slow. The available water capacity is moderate.

This association is not suited to row crops, because of the poor drainage, seasonal high water table, long periods of standing water, and susceptibility to occasional overflow. The irregular shape and complex pattern of the topography make drainage difficult. Deep cuts are needed in some areas to drain off the excess water. Also, fluctuating streams and flooding frequently clog or destroy ditch outlets. The present vegetation is chiefly deciduous hardwoods, but pines grow in a few scattered areas. Capability unit IVw–11; woodland group 2w9.

Bibb Series

The Bibb series consists of poorly drained, acid soils on flood plains. These soils formed in moderately coarse textured alluvium. Slopes range from 0 to 2 percent.

A representative profile has a 6-inch surface layer of brown, mottled silt loam. Below this is about 26 inches of gray, mottled loam; then about 18 inches of light-gray, mottled sandy loam; and below this, about 20 inches of olive sand or loamy sand.

The native vegetation consists of gum, maple, alder, swamp oaks, and hickory. Most of the acreage is woodland. The small areas that are cleared are used for pasture.

Profile of Bibb silt loam, on a narrow, wooded flood plain along a small creek (6 miles north of Eutaw, in the NW¼SE¼ sec. 29, T. 23 N., R. 2 E.):

A1—0 to 6 inches, brown (10YR 4/3) silt loam; common, fine, distinct, light-gray mottles and a few, fine, distinct, strong-brown mottles; weak, fine, granular structure; friable; many fine roots; very strongly acid; clear, smooth boundary.

C1g—6 to 32 inches, gray (5Y 5/1) loam; a few, fine, distinct, strong-brown and very dark grayish brown mottles; massive; friable; a few fine roots; a few, soft, brown concretions; very strongly acid; gradual, wavy boundary.

C2g—32 to 50 inches, light-gray (5Y 6/1) sandy loam; common, fine, distinct, pale-brown mottles; massive; very friable; very strongly acid; gradual, wavy boundary.

C3g—50 to 70 inches +, olive (5Y 5/3) sand or loamy sand; a few streaks of pale brown in lower part; single grain; very friable; very strongly acid.

The A horizon ranges from silt loam to sandy loam in texture and from brown to dark gray in color. The C1 and C2 horizons are loam or sandy loam and the clay content is less than 18 percent. The color of the C horizon ranges from light gray to gray and olive. Mica flakes, few to common in abundance, are present in most profiles. The reaction is strongly acid to very strongly acid.

Bibb soils are on first bottoms near the Ochlockonee, Falaya, and Chastain soils. They are coarser textured than Chastain soils and are grayer and more poorly drained than Ochlockonee and Falaya soils.

Bibb silt loam (Bb).—This is the only Bibb soil mapped in the county. It is nearly level and is on flood plains of the larger streams in the northern part of the county. It is subject to flooding and has a seasonal high water table. Included in mapping were small areas of Ochlockonee, Falaya, and Chastain soils.

Natural fertility is moderate in this soil, and reaction is very strongly acid. The organic-matter content is low. Drainage is poor, infiltration is moderate to slow, and permeability is moderate. The available water capacity is high.

Bibb silt loam is suited to pasture and to woodland. Because of excessive wetness, it is suited to only a few kinds of crops. The range of moisture content within which it can be tilled satisfactorily is narrow. Erosion is not a hazard, except where floods cause scouring. Most of the acreage is in woodland. Capability unit IVw–11; woodland group 2w9.

Binnsville Series

The Binnsville series consists of shallow, alkaline soils on uplands. These soils formed in fine-textured material weathered from Selma chalk. Slopes range from 3 to 8 percent.

In a representative profile, the surface layer is very dark gray clay about 6 inches thick. The next 2 inches is mixed very dark gray and light brownish-gray silty

clay, and the next 4 inches is light brownish-gray silty clay loam. Fragmented limestone rock is at a depth of 12 inches.

The native vegetation consists of scattered cedar, Osage-orange, and native prairie grasses. Most of the acreage is used for pasture.

Profile of Binnsville clay, 3 to 8 percent slopes, in a pasture (2 miles southeast of Boligee and 200 yards north of Five Points on the west side of the road in the SW¼SE¼ sec. 4, T. 20 N., R. 1 E.):

Ap—0 to 6 inches, very dark gray (10YR 3/1) clay; moderate, fine, granular structure; friable, sticky, very plastic; many fine roots; common, fine, lime nodules; 3 percent is hard limestone fragments; moderately alkaline, calcareous; clear, wavy boundary.

AC—6 to 8 inches, mixed very dark gray (10YR 3/1) and light brownish-gray (2.5Y 6/2) silty clay; moderate, very fine and fine, subangular blocky and moderate, fine, granular structure; friable, sticky, very plastic; common limestone fragments; moderately alkaline, calcareous; clear, smooth boundary.

C—8 to 12 inches, light brownish-gray (2.5Y 6/2) heavy silty clay loam; moderate, very fine and fine, subangular blocky structure and moderate, fine, granular structure; friable, sticky, very plastic; common limestone fragments; moderately alkaline, calcareous; clear, irregular boundary.

R—12 to 30 inches, white (10YR 8/1), hard, calcareous, fragmented limestone (locally called horsebone rock).

IIR—30 to 50 inches +, pale-brown (10YR 6/3), platy, calcareous Selma chalk; common, fine, distinct, light-gray (10YR 6/1) and brownish-yellow (10YR 6/6) mottles; partly weathered.

The Ap horizon ranges from very dark gray to black in color, from 4 to 10 inches in thickness, and from silty clay to clay in texture. The C horizon ranges from light brownish gray to pale olive in color and from silty clay loam to clay in texture. Reaction is mildly alkaline to moderately alkaline. Depth to bedrock ranges from 8 to 18 inches.

Binnsville soils are near the Oktibbeha, Sumter, Vaiden, and Watsonia soils. They are not so sticky and plastic as the acid Oktibbeha and Vaiden soils and have a thinner solum. They have a thinner solum than Sumter soils and are less sticky and plastic than Watsonia soils, both of which lack the dark-colored A horizon typical of Binnsville soils.

Binnsville clay, 3 to 8 percent slopes (BcC).—This is the only Binnsville soil mapped in the county. It occupies small areas, mainly on the breaks of short slopes in the prairie part of the county. It is shallow, well drained, and calcareous. Many limestone rock fragments are on the surface in most areas. Hard limestone rock crops out in many places. Slopes generally range from 3 to 8 percent. Most areas are narrow and are similar to escarpments.

Natural fertility is moderate in this soil, and reaction is moderately alkaline. The organic-matter content is moderate, and the available water capacity is low.

This soil is not suited to cultivated crops, but it is fairly well suited to pasture. It is difficult to work because of the fine texture of the surface layer and the many rock fragments on the surface. The root zone is shallow, and the erosion hazard is high. Capability unit VIe–22; woodland group 4c2c.

Boswell Series

The Boswell series consists of slowly permeable, acid soils on uplands in the northern part of the county. These soils formed in thick, unconsolidated beds of mainly clay and sandy clay marine sediment. Slopes range from 2 to 8 percent.

In a representative profile, the surface layer is dark-gray fine sandy loam about 2 inches thick. The subsurface layer is dark-brown fine sandy loam about 5 inches thick. The subsoil is yellowish-red sandy clay loam in the top 2 inches. The next 13 inches is red clay that has a few pale-brown and light brownish-gray mottles; the next 23 inches is mottled red and light-gray clay; and the next 27 inches is light-gray clay mottled with brownish yellow and dark red.

The native vegetation is mixed hardwoods and pines. Much of the acreage was once cleared, but most of it has reverted to pine forest.

Profile of Boswell fine sandy loam, 5 to 8 percent slopes, eroded, in a wooded area (4.5 miles north of Snoddy in the NE¼NW¼ sec. 35, T. 22 S., R. 13 W.):

A1—0 to 2 inches, dark-gray (10YR 4/1) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; 2 to 4 percent is ironstone fragments ¼ to 1 inch in diameter; strongly acid; clear, wavy boundary.

A2—2 to 7 inches, dark-brown (10YR 4/3) light fine sandy loam; weak, fine, granular structure; very friable, slightly hard; many fine roots; 2 to 4 percent is ironstone fragments ¼ to ¾ inch in diameter; strongly acid; clear, wavy boundary.

B1t—7 to 9 inches, yellowish-red (5YR 4/6) heavy sandy clay loam; weak, fine and medium, subangular blocky structure; hard; clay films on peds; common fine roots; 3 percent is ironstone fragments ¼ to 1 inch in diameter; very strongly acid; clear, wavy boundary.

B21t—9 to 19 inches, red (2.5YR 4/6) clay; a few, fine, distinct, pale-brown mottles; strong, medium, blocky structure; very hard, very plastic and sticky; clay films on peds; common fine roots; 1 to 2 percent of horizon is ironstone fragments ¼ to ¾ inch in diameter; very strongly acid; clear, wavy boundary.

B22t—19 to 22 inches, red (2.5YR 4/6) clay; many, medium, prominent mottles of light brownish gray; moderate, medium, subangular blocky structure; very hard, very plastic and sticky; a few fine roots; clay films on peds; cracks when dry and cracks extend into B23t horizon; very strongly acid; clear, wavy boundary.

B23t—22 to 45 inches, mottled red (2.5YR 4/6) and light-gray (10YR 6/1) clay; many, medium, prominent mottles; moderate, fine, subangular blocky structure; very hard, very sticky and plastic; clay films in cracks and in patches on peds; a few fine roots; very strongly acid; gradual, wavy boundary.

B3—45 to 72 inches, light-gray (10YR 6/1 to 7/1) clay; many, medium, distinct, brownish-yellow mottles and a few, medium, prominent, dark-red mottles; weak, fine, subangular blocky structure; firm, very hard, plastic and sticky; very strongly acid.

The A1 horizon ranges from very dark gray to grayish brown in color and from 2 to 5 inches in thickness. The A2 horizon, and the Ap horizon where present, range from dark brown to reddish brown or light yellowish brown. The A horizon is dominantly sandy loam to clay loam. The part of the B horizon having clay accumulation ranges up to more than 50 inches thick. In the upper part of the B horizon, the color ranges from yellowish red to dark red and the texture from sandy clay loam to clay. Gray mottles occur in the upper 25 inches of the solum. In places the lower part of the

B horizon has a red matrix mottled with gray and brown or is intensely mottled with red, gray, and brown. The texture in these places ranges from silty clay to clay. Reaction ranges from strongly acid to very strongly acid.

Boswell soils are near the Shubuta, Magnolia, Ruston, and Ora soils. They are more sticky and plastic than Shubuta soils and have a finer textured lower B horizon. Unlike the Magnolia soils, Boswell soils have distinct mottles in the lower B horizon and slow permeability. Boswell soils are finer textured than Ruston and Ora soils, and they lack the fragipan in the lower part of the B horizon that is characteristic of Ora soils.

Boswell clay loam, 2 to 8 percent slopes, severely eroded (BeC3).—This slowly permeable, sticky and plastic soil is on ridgetops and toe slopes. It has a 3-inch surface layer of reddish-brown clay loam. The subsoil is sticky and plastic clay. It is dark red in the upper 15 inches and mottled red and light gray in the lower 36 inches. Cracks form in the soil when it dries.

Included in mapping were small areas of Magnolia, Ruston, and Shubuta soils. Many old gully scars and terrace remnants are in most old fields. In most places a few ironstone fragments and quartz and chert pebbles are on the surface.

Natural fertility is moderate in this Boswell soil, and reaction is very strongly acid. The organic-matter content is moderate. Runoff is medium to rapid, infiltration is slow, and permeability is slow to very slow. The available water capacity is moderate.

This soil is not suited to cultivated crops. It is well suited to woodland, and under good management it is suited to pasture. It is difficult to work into a good seedbed and is suitable for tillage within only a very narrow range of moisture content. The hazard of further erosion is high. Capability unit VIe–113; woodland group 4c2.

Boswell fine sandy loam, 2 to 5 percent slopes, eroded (BoB2).—This soil is on ridgetops and toe slopes. It has a surface layer of brown fine sandy loam 5 inches thick. The subsoil is red, sticky and plastic clay in the uppermost 11 inches; mottled red and light-gray clay in the next 12 inches; and gray, very sticky and plastic clay mottled with red in the lower 36 inches.

Included in mapping were small areas that have stratified sandy and clayey material at a depth between 3 and 4 feet; small areas that have a surface layer of yellowish-red clay loam; and small areas where the surface layer is sandy loam 10 to 18 inches thick. Small areas of Magnolia and Shubuta soils were also included. In most places a few ironstone fragments and quartz and chert pebbles are on the surface. A few shallow gullies have formed in most areas.

Natural fertility is moderate in this Boswell soil, and reaction is strongly acid. The organic-matter content is low. Runoff is slow to medium, infiltration is slow, and permeability is slow to very slow. Available water capacity is moderate.

This soil is suited to most crops grown in the county, though suitability for some crops is limited by the slow internal drainage. It is well suited to pasture and woodland. The soil is fairly easy to work but can be tilled within only a narrow range of moisture content. The hazard of further erosion is moderate. Capability unit IIIe–14; woodland group 3c2.

Boswell fine sandy loam, 5 to 8 percent slopes, eroded (BoC2).—This slowly permeable, sticky and plastic soil is on ridgetops and toe slopes. It has the profile described as representative for the series.

Included in mapping were small areas that have a plow layer of yellowish-red clay loam; small areas that have a surface layer of sandy loam 8 to 18 inches thick; and small areas of Magnolia, Ruston, and Shubuta soils. Also included were a few areas that have stratified sandy and clayey material at a depth between 3 and 4 feet. A few shallow gullies are in many fields.

Natural fertility is moderate in this Boswell soil, and reaction is strongly acid. The organic-matter content is low. Runoff is medium, infiltration is slow, and permeability is slow to very slow. Available water capacity is moderate.

This soil is suited to most crops commonly grown in the county and is well suited to pasture and woodland. It is fairly easy to work and to keep in good tilth. The hazard of further erosion is moderate to high if this soil is cultivated. Capability unit IVe–13; woodland group 3c2.

Cahaba Series

The Cahaba series consists of well-drained, acid soils on low stream terraces. These soils are subject to occasional overflow, mainly in spring and late in winter. Slopes range from 0 to 3 percent, but slopes of 0 to 2 percent are dominant.

In a representative profile in a cultivated area, the surface layer is dark-brown fine sandy loam about 6 inches thick. The subsoil is reddish-brown fine sandy loam in the uppermost 4 inches; the next 8 inches is yellowish-red loam; the next 12 inches is yellowish-red sandy clay loam; the next 9 inches is yellowish-red fine sandy loam; and the next 13 inches is strong-brown sandy loam. Strong-brown fine sand is at a depth below 52 inches.

The native vegetation consists of mixed hardwoods and pines. About one-half of the acreage is now cleared and used for crops or pasture.

Profile of Cahaba fine sandy loam, 0 to 3 percent slopes, in a cultivated field (1¼ miles east of Black Warrior River Bridge that leads to Demopolis on farm-to-market road, then south on dirt road for one-fourth mile in the NW¼NW¼ sec. 8, T. 18 N., R. 3 E.):

Ap—0 to 6 inches, dark-brown (7.5YR 4/4) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B1—6 to 10 inches, reddish-brown (5YR 4/4) fine sandy loam; weak, fine, subangular blocky structure; very friable; many fine roots; strongly acid; gradual, wavy boundary.

B21t—10 to 18 inches, yellowish-red (5YR 4/8) loam; weak, fine and medium, subangular blocky structure; friable; patchy clay films on peds and in pores; sand grains coated with clay; a few fine roots; strongly acid; gradual, wavy boundary.

B22t—18 to 30 inches, yellowish-red (5YR 4/8) sandy clay loam; weak, fine and medium, subangular blocky structure; friable; patchy clay films; sand grains coated and bridged with clay; strongly acid; gradual, wavy boundary.

B31t—30 to 39 inches, yellowish-red (5YR 5/6) fine sandy loam; weak, fine and medium, subangular blocky

structure; very friable; sand grains coated and bridged with clay; strongly acid; gradual, wavy boundary.

B32—39 to 52 inches, strong-brown (7.5YR 5/8) sandy loam; very weak, fine, subangular blocky structure to massive; very friable; sand grains bridged and coated with clay; strongly acid; gradual, wavy boundary.

C—52 to 75 inches +, strong-brown (7.5YR 5/6) fine sand; single grain; loose; strongly acid.

In uncultivated areas the A1 horizon ranges from dark gray to grayish brown. It is fine sandy loam or loam in texture. In cultivated areas the Ap horizon ranges from brown to dark brown. The B1 horizon ranges from strong-brown to yellowish-red fine sandy loam to sandy clay loam. The color of the B2 horizon ranges from yellowish red to red, and the texture ranges from heavy loam to sandy clay loam. A distinct decrease in clay occurs from the B horizon to the C horizon. The C horizon ranges from pale brown to reddish brown in color and from light sandy loam to sand in texture. Reaction of the soils is strongly acid.

Cahaba soils are near the Angie, Dulac, Lakeland, Leaf, and Myatt soils. They are less silty than Dulac soils, and they lack the fragipan in the lower part of the subsoil characteristic of Dulac soils. They are less sandy than Lakeland soils. Cahaba soils are better drained than Angie, Leaf, and Myatt soils and lack the gray mottling in the upper 25 inches of the solum. They are coarser textured than Angie and Leaf soils.

Cahaba fine sandy loam, 0 to 3 percent slopes (CaB).—This is the only Cahaba soil mapped in the county. It is on low terraces along the Black Warrior, Sipsey, and Tombigbee Rivers and along some of the larger creeks in the county. During wet periods, mainly late in winter and early in spring, the water table is about 3.5 to 4 feet from the surface. About 85 percent of the acreage has slopes of 0 to 2 percent. Included in mapping were small areas of Dulac, Lakeland, and Ruston, terrace, soils.

Natural fertility and organic-matter content are low in this soil. Reaction is strongly acid. Infiltration and permeability are moderate to rapid. The available water capacity is moderate to low.

This soil is suited to most crops grown in the county, such as corn, cotton, soybeans, hay, and pasture. It is easy to work and can be tilled throughout a wide range of moisture content without clodding or crusting. In places plants are damaged from lack of water during short periods of drought. There is little or no hazard of erosion. Capability unit I–12; woodland group 2o7.

Catalpa Series

The Catalpa series consists of nearly level, moderately well drained, alkaline soils on flood plains along the larger creeks in the prairie part of the county. These soils formed in fine-textured alluvium and have a high shrink-swell potential (fig. 7). They are subject to frequent flooding, mainly in spring and late in winter. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is very dark grayish-brown, very sticky and very plastic clay about 20 inches thick. The subsoil also is very sticky and very plastic clay and is several feet thick. It is dark grayish brown and dark gray in the upper part and gray mottled with dark yellowish brown in the lower part.

The native vegetation consisted of hardwood trees, mainly hackberry, elm, cottonwood, and ash. Most of the acreage has been cleared and is used for pasture or hay.

Profile of Catalpa clay in a pasture (8.4 miles south of Eutaw on Meadowbrook Farm in the SW¼NW¼ sec. 8, T. 20 N., R. 2 E.):

Ap—0 to 4 inches, very dark grayish-brown (2.5YR 3/2) clay; moderate, fine, granular structure; friable, very hard, very sticky, very plastic; many fine roots; moderately alkaline; calcareous; clear, smooth boundary.

A1—4 to 20 inches, very dark grayish-brown (2.5Y 3/2) clay; massive when wet, but moderate, fine, granular and subangular blocky structure when moist or dry; friable to firm, very hard, very sticky, very plastic; fragments of partly decayed marine shells; a few black charcoal specks; a few fine roots; a few quartz pebbles; moderately alkaline; calcareous; gradual, wavy boundary.

B21—20 to 33 inches, dark grayish-brown (2.5Y 4/2) clay; massive when wet, but moderate, fine, granular and subangular blocky structure when moist or dry;

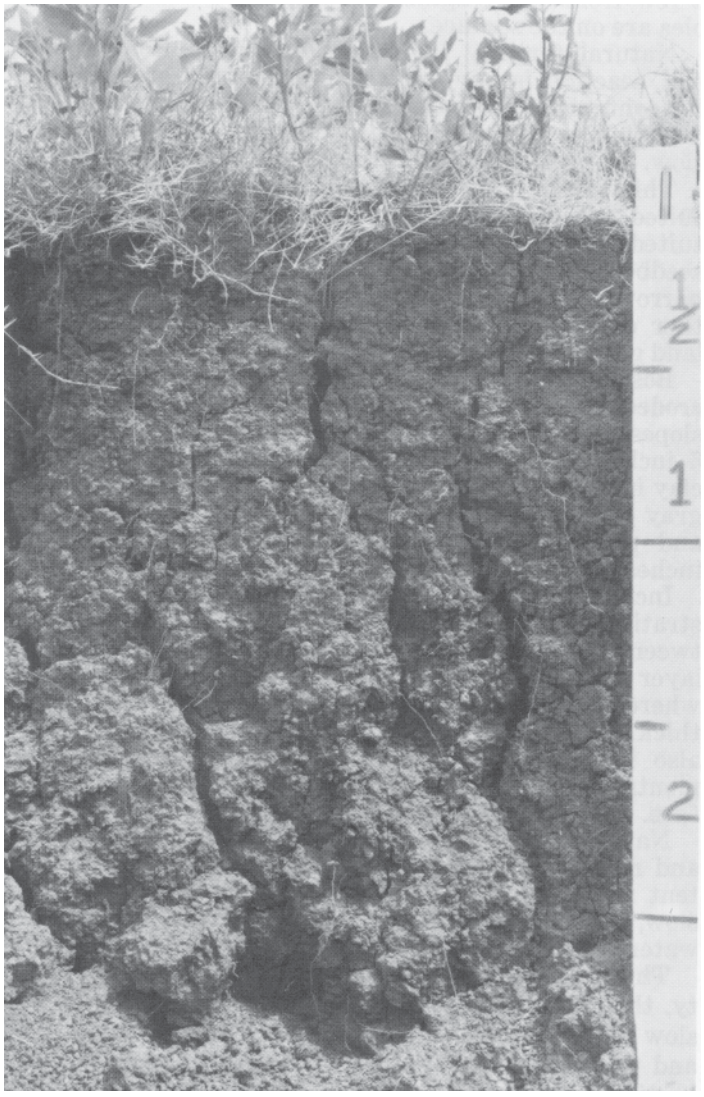

Figure 7.—**Catalpa clay showing large cracks that form as it dries. The measure is in feet.**

friable to firm, very hard, very sticky, very plastic; a few black charcoal specks; a few fine roots; a few quartz pebbles; moderately alkaline; calcareous; gradual, wavy boundary.

B22g—33 to 39 inches, dark-gray (5Y 4/1) clay; massive in place, but breaks to moderate, very fine and fine, subangular blocky structure; friable to firm, very hard, very sticky, very plastic; a few fine roots; peds have shiny faces; moderately alkaline; calcareous; clear, wavy boundary.

B23g—39 to 72 inches, gray (N 5/0) clay; many, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; massive in place, but breaks to fine, angular and subangular blocky structure; most peds have shiny faces; firm, very hard, very sticky, very plastic; a few fine roots; a few quartz pebbles; moderately alkaline; calcareous.

The A horizon ranges from very dark grayish brown to dark olive gray in color and from 10 to 24 inches in thickness. The B horizon ranges from dark grayish brown and grayish brown to gray. It generally is distinctly mottled with gray or brown below a depth of 20 inches. The texture of the A1, B21, and B22g horizons generally is clay. Large cracks, ½ to 2½ inches wide, form in this soil when it is dry and reach to a depth of 30 inches or more. These soils generally are calcareous throughout. Reaction ranges from neutral to moderately alkaline.

Catalpa soils are on flood plains near the Garner, Leeper, and Trinity soils. They are better drained than Garner and Leeper soils and are less gray than Leeper soils in the upper 20 inches of the solum. They are not so dark colored as Trinity soils and have a thinner surface layer.

Catalpa clay (Cc).—This is the only Catalpa soil mapped in the county. It is a nearly level soil that has a surface layer of very dark grayish brown. Included in mapping were small areas of Garner, Leeper, and Trinity soils.

Natural fertility and organic-matter content are moderate in this soil. Reaction is neutral to moderately alkaline. Infiltration and permeability are slow to very slow. The available water capacity is moderate to high.

This soil is suited to most crops grown in the area, and under good management, it is well suited to pasture and hay. Tillage is difficult, and this soil can be worked within only a narrow range of moisture content without clodding. Capability unit IIw–23; woodland group 1w5.

Chastain Series

The Chastain series consists of nearly level, poorly drained, medium acid to slightly acid soils on flood plains. These soils are subject to frequent flooding, mainly in spring and late in winter. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is gray clay about 5 inches thick. It is underlain by a thick layer of gray and light-gray, firm clay and sandy clay that is mottled with dark brown, yellowish brown, and pale brown.

The native vegetation was mainly gum, cypress, maple, and swamp oaks, but pines grew in a few places. Nearly all the acreage is wooded.

Profile of Chastain clay in a large wooded area (2 miles northwest of New Mt. Hebron in the NW¼NE¼ sec. 19, T. 22 N., R. 1 W.):

A1g—0 to 5 inches, gray (N 5/0) clay; common, medium, distinct, dark-brown (7.5YR 3/2) mottles; weak, coarse, granular structure; friable, hard, sticky; common fine roots; a few mica flakes; medium acid; gradual, smooth boundary.

C1g—5 to 36 inches, gray (N 5/0) clay; a few, fine, distinct, dark-brown mottles; massive; firm, very hard, sticky; a few fine roots; a few mica flakes; slightly acid; gradual, wavy boundary.

C2g—36 to 48 inches, light-gray (N 6/0) sandy clay; common, medium, distinct, dark-brown mottles; massive; firm, very hard; thin sand strata in places; slightly acid; gradual, wavy boundary.

C3g—48 to 66 inches, light-gray (N 6/0) clay; common, medium, distinct, dark-brown and yellowish-brown mottles; massive; firm, very hard; sand strata in places; 1 percent is chert gravel; slightly acid; gradual, wavy boundary.

C4g—66 to 72 inches +, light-gray (N 6/0) sandy clay; common, fine, distinct, pale-brown mottles; massive; firm, very hard; 1 percent is chert gravel; slightly acid; gradual, wavy boundary.

The A1 horizon ranges from gray to dark gray, and in places it is mottled with shades of brown. The C horizon ranges from gray to light gray. It generally contains a few to common mottles of brown or yellowish brown. Texture of these soils ranges from clay loam to clay. Reaction ranges from medium acid to slightly acid.

Chastain soils are near the Bibb, Falaya, and Ochlockonee soils. They are finer textured than Bibb soils but have similar drainage. They also are finer textured than Falaya and Ochlockonee soils but are more poorly drained.

Chastain clay (Ch).—This nearly level soil is the only Chastain soil mapped in the county. It occurs along the Black Warrior, Sipsey, and Tombigbee Rivers and along some of the larger creeks in the county. Included in mapping were small areas of Bibb and Falaya soils and small areas that are neutral in reaction.

The natural fertility and organic-matter content are moderate in this soil. Infiltration is slow to very slow, and permeability is very slow. The available water capacity is high.

This soil is poorly suited to cultivated crops, but if drained, it is well suited to pasture. It is difficult to work because of the fine texture of the surface layer. Poor drainage, long periods of standing water, and frequent floods are major limitations. Capability unit IVw–11; woodland group 2w9.

Dulac Series

The Dulac series consists of moderately well drained, acid soils that have a fragipan in the lower part of the subsoil. These soils are on low stream terraces along the Black Warrior and Tombigbee Rivers. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is dark grayish-brown silt loam about 6 inches thick. The upper part of the subsoil is mixed brown, yellowish-brown, and yellowish-red silty clay loam about 13 inches thick. The lower part is compact and brittle, yellowish-brown, brown, and dark yellowish-brown silty clay loam that is mottled with brown and light brownish gray and is more than 48 inches thick.

The native vegetation consisted of mixed hardwoods and pines. About one-third of the acreage is cleared and is used for crops and pasture.

Profile of Dulac silt loam, 0 to 2 percent slopes, in an idle field (⅛ mile north of the county line and ⅛ mile west of U.S. Highway 43 in the SE¼NE¼ sec. 12, T. 18 N., R. 2 E.):

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; com-

mon fine roots; strongly acid; abrupt, smooth boundary.

B1t—6 to 8 inches, mixed-brown (7.5YR 4/4), yellowish-brown (10YR 5/6), and brown (10YR 4/3) heavy silty clay loam; weak, fine, subangular blocky structure; friable to firm, common fine roots; a few, soft, black concretions; very strongly acid; gradual, wavy boundary.

B2t—8 to 19 inches, yellowish-red (5YR 5/8) heavy silty clay loam; a few, fine, distinct, light yellowish-brown (10YR 6/4) mottles; moderate, fine and medium, subangular blocky structure; firm, hard; a few fine roots; clay films on all peds and in pores and root channels; very strongly acid; gradual, wavy boundary.

Bx1—19 to 28 inches, yellowish-brown (10YR 5/6) silty clay loam; common, coarse, distinct, light yellowish-brown mottles and a few, medium, distinct, brown and light brownish-gray mottles; weak to moderate, fine, subangular blocky structure; firm; clay films on all ped surfaces; compact and brittle; a few fine roots; a few, soft, black concretions; very strongly acid; clear, wavy boundary.

Bx2—28 to 40 inches, brown (7.5YR 4/4) silty clay loam; many, coarse, distinct, light olive-gray (5Y 6/2) mottles and a few, medium, distinct, pale-brown and yellowish-brown mottles; moderate, medium, subangular blocky structure; firm, compact and brittle; cracks filled with gray material join to form large prisms; a few fine roots; clay films on peds; a few mica flakes; a few, soft, black concretions; very strongly acid; gradual, wavy boundary.

Bx3—40 to 72 inches +, dark yellowish-brown (10YR 4/4) silty clay loam; common, medium, distinct, light brownish-gray (2.5Y 6/2) mottles and a few, fine, distinct, light-gray mottles; weak, coarse, subangular blocky structure; firm, hard, compact and brittle; a few mica flakes; gray clay deposits in pores and cracks; very strongly acid.

In areas not cultivated, the A1 horizon ranges from very dark brown to dark grayish brown in color and from 3 to 6 inches in thickness. In cultivated areas the Ap horizon, or the A2 horizon where present, ranges from dark grayish brown to pale brown. The B1t horizon ranges from yellowish-brown to yellowish-red silt loam to silty clay loam. The B2t horizon ranges from strong-brown to red silty clay loam and is less than 35 percent clay. The Bx1 and Bx2 horizons range from yellowish brown to red and are mottled with red, brown, and gray. Texture of these horizons ranges from silt loam to silty clay loam. Color of the Bx3 horizon ranges from dark yellowish brown to reddish brown mottled with gray and brown. Texture of the Bx3 horizon ranges from silty clay to silty clay loam. Reaction of these soils is strongly acid to very strongly acid.

Dulac soils are on low stream terraces near the Angie, Cahaba, Leaf, Myatt, and Stough soils. They are not so clayey as Angie soils but are more silty than Cahaba soils, both of which lack a fragipan. Their drainage is poorer than that in Cahaba soils and better than that in the Leaf, Myatt, and Stough soils. Dulac soils are less sandy than Stough soils.

Dulac silt loam, 0 to 2 percent slopes (DuA).—This soil, on low stream terraces, is the only Dulac soil mapped in the county. It is subject to occasional flooding. In about 1 percent of the areas, slopes are more than 2 percent.

Included in mapping were small areas of Angie, terrace; Cahaba; and Leaf soils. Also included were small areas where the surface layer is loam and silty clay loam, and small areas where the layer directly above the fragipan is 35 to 40 percent clay.

Natural fertility and organic-matter content are low in this soil. Reaction is strongly acid. Infiltration is moderate to slow, permeability is slow, and available water capacity is moderate. The lower part of the subsoil is waterlogged during wet periods, mainly in spring and late in winter.

This soil is suited to most crops grown in the county. Crops on it respond well if lime and fertilizer are applied. Slow internal drainage and occasional flooding, however, limit use somewhat. Capability unit IIw–13; woodland group 3o7.

Eutaw Series

The Eutaw series consists of nearly level, poorly drained, acid soils on uplands and stream terraces in the prairie part of the county. These soils formed in thin beds of acid clay or fine-textured alluvium underlain by Selma chalk. They have high shrink-swell potential, and large cracks form in the soils as they dry.

In a representative profile, the surface layer is dark-gray clay about 6 inches thick and is mottled with light gray, pale brown, and grayish brown. The subsoil, about 24 inches thick, is light-gray, acid clay mottled with strong brown. The next 30 inches is light-gray, acid clay mottled with yellowish brown. It is underlain by mottled, light-gray and yellowish-brown, alkaline, clayey material.

The native vegetation was lowland hardwoods and a few pines. About 40 percent of the acreage is now cleared and used for pasture.

Profile of Eutaw clay, in a pasture (1¾ miles west of Eutaw in the SW¼NW¼ sec. 32, T. 22 N., R. 2 E.):

Ap—0 to 6 inches, dark-gray (10YR 4/1) clay; many, medium, distinct, light-gray (10YR 6/1), pale-brown (10YR 6/3), and grayish-brown (10YR 5/2) mottles; moderate, fine, granular structure; friable, very hard, very sticky, very plastic; many fine roots; a few, soft, black concretions; very strongly acid; abrupt, smooth boundary.

B21g—6 to 16 inches, light-gray (N 7/0) clay; many medium, distinct, strong-brown (7.5YR 5/6) mottles; moderate, fine, subangular blocky structure; firm, very hard, very sticky, very plastic; common fine roots; a few, soft, black concretions; pressure faces on peds; very strongly acid; clear, wavy boundary.

B22g—16 to 30 inches, light-gray (N 7/0) clay; many, medium, distinct, strong-brown (7.5YR 5/6) mottles; moderate, fine, subangular and angular blocky structure; firm, very hard, very sticky, very plastic; a few fine roots; a few, soft, black concretions; pressure faces on peds; very strongly acid; gradual, wavy boundary.

C1g—30 to 60 inches, light-gray (5Y 6/1) clay; many, medium, distinct, yellowish-brown (10YR 5/6) mottles; moderate, fine, angular blocky structure; firm, very hard, very sticky, very plastic; a few, soft, black concretions; common slickensides; very strongly acid; clear, irregular boundary.

C2g—60 to 72 +, light yellowish-brown (2.5Y 6/4) clay; many, fine, distinct, light-gray and yellowish-brown mottles; massive when wet, but breaks to fine, angular blocky structure; firm, very hard, very sticky, very plastic; a few black concretions; many slickensides; 2 to 4 percent is lime nodules; mildly alkaline.

The Ap horizon ranges from dark grayish brown to gray, and in places it is mottled with shades of brown or gray. The matrix color of the B horizon ranges from light gray to dark gray. In most places, common to many brown or yellow mottles are present. Texture of the B2 horizon

ranges from silty clay to clay. Slickensides are common in the C horizon. Reaction of the solum and of the C1g horizon is very strongly acid. The C2g horizon is neutral to moderately alkaline. Depth to neutral material or to alkaline material ranges from 42 inches to as much as 96 inches.

Eutaw soils are near the Forestdale, Garner, Kipling, Oktibbeha, and Vaiden soils. They have more clay in the B horizon than Forestdale, Kipling, and Oktibbeha soils. Eutaw soils are not so well drained as Kipling, Oktibbeha, and Vaiden soils. They are acid, unlike Garner soils that are alkaline throughout their profile.

Eutaw clay (Eu).—This is the only Eutaw soil mapped in the county. It is a very plastic, nearly level soil. During wet seasons, mainly in spring and late in winter, water stands on the soil for long periods. Included in mapping were small areas of Forestdale, Kipling, and Vaiden soils.

The natural fertility and organic-matter content are moderate in this soil. Reaction is very strongly acid. Infiltration is slow, permeability is very slow, and available water capacity is moderate.

This soil is poorly suited to cultivated crops because of poor drainage, a shallow water table, and difficulty of tillage. It is hard to work into a good seedbed, and clods form if the soil is tilled when too wet or too dry. Pasture and woodland are suitable uses. Capability unit IVw–23; woodland group 3c8.

Falaya Series

The Falaya series consists of nearly level, somewhat poorly drained, acid, alluvial soils on first bottoms and in narrow upland drainageways. These soils formed in alluvium washed from moderately coarse textured to fine-textured soils on uplands. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is dark grayish-brown fine sandy loam, about 5 inches thick, that has a few brown mottles. The subsoil is dark grayish-brown loam mottled with brown and light gray in the uppermost 11 inches; the next 20 inches is mottled pale-brown and light brownish-gray light loam; the next 10 inches is mottled light-gray, yellowish-brown, and dark yellowish-brown loam; and the next 20 inches is gray clay loam mottled with yellowish brown. The underlying material is gray clay loam distinctly mottled with strong brown.

The native vegetation consisted of gum, maple, oak, poplar, bay, hickory, and pine. About 25 percent of the acreage is cleared. The areas are used mainly for pasture, though a small acreage is cropped.

Profile of Falaya fine sandy loam in large wooded bottom (5.5 miles north of junction of Greene County Roads 51 and 30, along Road 51 and 200 feet west of the road in the NE¼SW¼ sec. 26, T. 24 N., R. 2 E.):

A1—0 to 5 inches, dark grayish-brown (10YR 4/2) fine sandy loam; a few, fine, distinct, brown mottles; weak, fine, granular structure; friable; many fine roots; very strongly acid; gradual, smooth boundary.

B1—5 to 16 inches, dark grayish-brown (10YR 4/2) loam; many, fine, faint, brown and light-gray mottles; weak, fine, subangular blocky and granular structure; friable; many fine roots; very strongly acid; gradual, wavy boundary.

B21g—16 to 36 inches, mottled pale-brown (10YR 6/3) and light brownish-gray (2.5Y 6/2) light loam; weak, fine and medium, subangular blocky structure; friable; common fine roots; very strongly acid; gradual, wavy boundary.

B22g—36 to 46 inches, mottled light-gray (10YR 6/1), yellowish-brown (10YR 5/6), and dark yellowish-brown (10YR 4/4) loam; weak, fine and medium, subangular blocky structure; friable; thin strata of sand; very strongly acid; gradual, wavy boundary.

B3g—46 to 66 inches, gray (10YR 6/1) clay loam; many, medium, distinct, yellowish-brown mottles; weak, fine and medium, subangular blocky structure; friable; thin strata of sand; very strongly acid; a few manganese concretions; gradual, wavy boundary.

Cg—66 to 72 inches +, gray (10YR 6/1) clay loam; many, medium, distinct, strong-brown mottles; massive; friable; very strongly acid.

The A1 horizon ranges from gray to brown, and in places it is mottled with brown and gray. In cultivated areas the Ap horizon ranges from brown to light yellowish brown and has gray mottles. Texture of the A horizon ranges from sandy loam to silt loam. Gray mottles occur at a depth between 10 and 30 inches. The B21g, B22g, B3g, and Cg horizons are distinctly mottled with gray, brown, and yellow, or they have a gray matrix that has many brown and yellow mottles. At a depth between 10 and 40 inches, the texture ranges from silt loam to light loam and the material is less than 18 percent clay and less than 15 percent coarser than very fine sand. Below a depth of 40 inches, the texture ranges from sandy loam to clay loam. The profile generally contains lenses or pockets of sand. Reaction of the soils ranges from strongly acid to very strongly acid.

Falaya soils are on flood plains near Bibb and Ochlockonee soils and adjacent to Myatt and Stough soils. They have poorer drainage than Ochlockonee soils and are somewhat finer textured, but they are better drained than Bibb and Myatt soils. Falaya soils have weaker structure than Myatt and Stough soils and lack the fragipan typical of Stough soils.

Falaya fine sandy loam (Fa).—This is the only Falaya soil mapped in the county. It is nearly level and occurs along the larger creeks and rivers in the county. The areas are subject to flooding, and crops are damaged occasionally. In places water stands on this soil for a few days after the floodwater has receded.

Included in mapping were small areas of Bibb and Ochlockonee soils. Also included were areas where the subsurface layer is sandy loam and clay loam.

Natural fertility is moderate in this soil, and reaction is very strongly acid. Infiltration is moderate, permeability is moderate to moderately rapid, and available water capacity is high.

This soil is easy to work and can be tilled throughout a wide range of moisture content without clodding or crusting. The flood hazard and somewhat poor drainage restrict the suitability of this soil for some crops. Except where floods cause scouring, erosion is not a hazard. Capability unit IIIw–12; woodland group 1w8.

Forestdale Series

The Forestdale series consists of nearly level, poorly drained, acid soils on uplands and stream terraces in the prairie part of the county. These soils formed in fine-textured alluvium or marine sediment. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is dark grayish-brown fine sandy loam, about 6 inches thick, that is mottled with light gray and light brownish gray. The subsoil is mottled light gray and yellowish brown clay loam in the uppermost 4 inches; the next

32 inches is gray clay mottled with strong brown; and the next 18 inches is light-gray clay mottled with red and brown. Below this is mottled light-gray and strong-brown clay.

The native vegetation is lowland hardwoods. About 25 percent of the acreage is now cleared and used for pasture.

Profile of Forestdale fine sandy loam in a pasture (2¼ miles west of Eutaw in the NE¼NE¼ sec. 36, T. 22 N., R. 1 E.):

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) fine sandy loam; many, medium, distinct, light-gray and light brownish-gray mottles; weak, fine, granular structure; very friable; many fine roots; very strongly acid; clear, wavy boundary.

B1tg—6 to 10 inches, mottled light-gray (10YR 6/1) and yellowish-brown (10YR 5/4) heavy clay loam; moderate, fine, subangular blocky structure; firm; common fine roots; patchy clay films on most peds; very strongly acid; gradual, wavy boundary.

B2tg—10 to 42 inches, gray (10YR 5/1) light clay; many, medium, distinct, strong-brown mottles; weak, coarse, prismatic structure that breaks to moderate, fine and medium, angular and subangular blocky structure; firm, very hard, plastic; a few fine roots; clay films on most peds; a few vesicles; a few quartz pebbles; seams or cracks extend downward and are filled with sandy loam; very strongly acid; gradual, wavy boundary.

B3tg—42 to 60 inches, light-gray (5Y 6/1) clay; many, medium, prominent red mottles and a few, medium, distinct, strong-brown mottles; weak, coarse, subangular blocky structure; firm, very hard, very sticky, very plastic; patchy clay films on peds; a few fine roots; a few quartz pebbles; fine slickensides; very strongly acid; gradual, wavy boundary.

Cg—60 to 72 +, mottled light-gray (5Y 6/1) and strong-brown (7.5YR 5/6) clay; many, medium, prominent mottles; massive; firm, very hard, very sticky, very plastic; a few, fine and medium, black concretions; a few slickensides; very strongly acid.

The Ap horizon ranges from dark grayish brown to gray. It generally is mottled with shades of brown or gray. The B1 horizon ranges from light gray to light brownish gray and is mottled with brown and yellow. Its texture ranges from sandy clay loam to light clay. The B2 horizon ranges from gray to light olive gray and has common to many mottles of brown and yellow. Texture ranges from sandy clay to clay. The B3 horizon has about the same color range as the B2 horizon, but the structure is not so strong and the clay coatings are patchy. Its texture is clay. The C horizon is mottled with shades of gray and brown. Slickensides are common in the lower part of the B3 horizon and in the C horizon. In the upper part of the solum, reaction is strongly acid to very strongly acid. Depth to neutral material or to alkaline material ranges from 4 to 8 feet.

Forestdale soils are near Eutaw, Kipling, Oktibbeha, and Vaiden soils. They are coarser textured than Eutaw and Vaiden soils and are less sticky and plastic in the upper part of the subsoil. They are not so well drained as Kipling, Oktibbeha, and Vaiden soils.

Forestdale fine sandy loam (Fo).—This nearly level soil is the only Forestdale soil mapped in the county. During wet seasons, mainly in winter and spring, water stands on this soil for long periods. Included in mapping were small areas of Eutaw, Kipling, and Vaiden soils.

The natural fertility and organic-matter content are moderate in this soil. Reaction is very strongly acid. Infiltration is moderate, permeability is slow, and available water capacity is moderate.

Because of poor drainage and a shallow water table, this soil warms up late in spring and is poorly suited to cultivated crops. The soil is suited to pasture and woodland. Capability unit IVw–23; woodland group 1w6.

Garner Series

The Garner series consists of poorly drained, alkaline soils on flood plains of the larger creeks in the prairie part of the county. These soils formed in fine-textured, calcareous alluvium. The areas are flooded frequently, mainly in winter and spring. Slopes range from 0 to 2 percent.

The surface layer in a representative profile is dark-gray clay about 12 inches thick. It is mottled in the lower part with light yellowish brown, brownish yellow, and dark gray. The subsoil is thick. It is gray clay mottled with dark yellowish brown and reddish yellow in the uppermost 16 inches; gray clay mottled with dark yellowish brown to a depth of 60 inches; and mottled light-gray and brownish-yellow clay to a depth of 72 inches.

The native vegetation consisted of hardwood trees, mainly hackberry and ash. About 20 percent of the acreage is cleared and is used for pasture.

Profile of Garner clay in a large wooded area (1 mile west of Allison in the NW¼NE¼ sec. 21, T. 21 N., R. 1 E.):

A11—0 to 2 inches, dark-gray (5Y 4/1) clay; moderate, very fine, granular structure; firm, very hard, very sticky, very plastic; many fine roots; mildly alkaline; clear, smooth boundary.

A12g—2 to 12 inches, gray (5Y 5/1) clay; common, fine, distinct, light yellowish-brown, brownish-yellow, and dark-gray mottles; moderate, fine, granular structure; firm, very hard, very sticky, very plastic; many fine roots; moderately alkaline; gradual, wavy boundary.

B21g—12 to 28 inches, gray (N 5/0) clay; common, fine, distinct, dark yellowish-brown and reddish-yellow mottles; massive when wet, but breaks to moderate, fine, angular blocky structure when dry; firm, very hard, very sticky, very plastic; a few fine roots; a few small slickensides; moderately alkaline; gradual, wavy boundary.

B22g—28 to 60 inches, gray (N 5/0) clay; common, medium, distinct, dark yellowish-brown mottles; moderate, fine and very fine, angular blocky structure; firm, very hard, very sticky, very plastic; many large slickensides that intersect; moderately alkaline; gradual, wavy boundary.

B3g—60 to 72 inches, mottled light-gray (5Y 6/1) and brownish-yellow (10YR 6/6) clay; massive; friable to firm, very hard, very sticky; a few manganese concretions; mildly alkaline.

The A11 horizon ranges from light gray to dark olive gray in color and from 2 to 5 inches in thickness. The Ap horizon, or A2 horizon where present, ranges from gray to light brownish gray and generally is mottled with shades of brown and yellow. The B2 horizon is gray and has few to common reddish-yellow and dark yellowish-brown mottles. Its texture is dominantly clay, but in places it ranges to silty clay loam. The B3 horizon generally is mottled with shades of gray, brown, or yellow, but in places it has a gray matrix and common to many brown or yellow mottles. Its texture is clay. Reaction of the soils is neutral to moderately alkaline. A few to common, soft, brown and black concretions are in most profiles.

Garner soils are near the Catalpa, Eutaw, Forestdale, Leeper, and Trinity soils. They have poorer drainage than Leeper soils. They are similar to the Eutaw and Forestdale soils, but unlike them are alkaline. They are not so well

drained as Catalpa and Trinity soils and lack the thick, dark-colored layers typical of those soils.

Garner clay (Gc).—This is the only Garner soil mapped in the county. It is a nearly level, sticky and plastic, alkaline soil. Included in mapping were small areas of Catalpa, Leeper, and Trinity soils.

The natural fertility and organic-matter content in this soil are moderate. Surface runoff, infiltration, and permeability are very slow. The available water capacity is moderate.

This soil is poorly suited to cultivated crops because of poor drainage and very slow permeability and because water stands on the areas for long periods. It is suited to woodland, and if drained, it is well suited to pasture. This soil is very difficult to work, and the range of moisture content within which the soil can be tilled satisfactorily is very narrow. Capability unit IVw–21; woodland group 3c2.

Gullied Land

Gullied land (Gu) is in the prairie part of the county. The areas are highly dissected by gullies that have cut into and exposed the underlying calcareous Selma chalk. Most of these gullies cannot be crossed with modern farm machinery. The areas between the gullies are small and are irregular in shape and therefore are not suited to crops or pasture. Some of these have a thin, acid clay capping of material similar to Watsonia soils and to the subsoil of Oktibbeha and Vaiden soils, but the material in others is similar to Sumter soils.

Natural fertility is moderate in this land type, and reaction is mildly alkaline. The organic-matter content is low. Surface runoff is rapid, and infiltration and permeability are very slow.

Many areas of Gullied land can be reclaimed and used for pasture and hay by land smoothing, planting adapted crops, and applying large amounts of fertilizer. All areas are poorly suited to cultivated crops because the erosion hazard is very high, and the surface layer and subsoil are thin. Capability unit VIIe–221; woodland group 4c2c.

Kipling Series

The Kipling series consists of somewhat poorly drained, acid soils on stream terraces and uplands in the prairie part of the county. These soils formed in fine-textured alluvium or marine sediment laid down on Selma chalk. Slopes range from 0 to 8 percent, but slopes of 0 to 3 percent are dominant.

In a representative profile, the surface layer is brown loam about 4 inches thick. The subsoil is yellowish-brown heavy clay loam in the uppermost 10 inches; mottled-gray, yellowish-red, light yellowish-brown, and strong-brown clay in the next 25 inches; and gray clay with strong-brown mottles in the remaining 9 inches. The next layer is light olive-gray sandy clay 8 inches thick over 9 inches of gray sandy clay loam that is mottled with yellowish brown. Selma chalk is at a depth of about 65 inches.

The native vegetation was chiefly various kinds of hardwoods, but pines grew in a few areas. About two-thirds of the acreage has been cleared and is used for pasture or hay.

Profile of Kipling loam, 1 to 3 percent slopes, eroded, in an unimproved pasture (4.5 miles northwest of Clinton on Alabama Highway 14 in the SW¼SW¼ sec 17, T. 23 N., R. 1 E.):

Ap—0 to 4 inches, brown (10YR 4/3) loam; moderate, fine, granular structure; friable; many fine roots; less than 1 percent is soft black concretions; a few quartz pebbles; very strongly acid; abrupt, wavy boundary.

B21t—4 to 14 inches, yellowish-brown (10YR 5/6) heavy clay loam; moderate, fine, subangular blocky structure; friable, very hard, plastic; 1 percent is soft black concretions; common fine roots; clay films on ped faces; very strongly acid; clear, wavy boundary.

B22t—14 to 21 inches, mottled-gray (5Y 6/1), yellowish-red (5YR 5/6), and light yellowish-brown (10YR 6/4) clay; moderate, very fine and fine, angular blocky structure; friable, very hard, very plastic; less than 1 percent is soft black concretions; a few small slickensides; clay films on ped faces; a few fine roots; very strongly acid; gradual, wavy boundary.

B23t—21 to 39 inches, mottled-gray (5Y 6/1), strong-brown (7.5YR 5/6), and yellowish-red (5YR 4/8) clay; moderate, very fine and fine, angular blocky structure; firm, very hard, very plastic; a few small slickensides; clay films on ped faces; a few black concretions; very strongly acid; gradual, wavy boundary.

B3g—39 to 48 inches, gray (5Y 6/1) clay; common, medium, prominent mottles of strong brown; massive in place, but breaks to fine and medium, subangular blocky structure; friable, very hard, very plastic; common medium slickensides; 15 percent is very fine black concretions; a few fine roots; very strongly acid; clear, wavy boundary.

C1g—48 to 56 inches, light olive-gray (5Y 6/2) sandy clay; a few, medium, distinct, black mottles and a few, medium, distinct, light olive-brown mottles; massive; friable to firm, very hard; common medium slickensides; 15 percent is very fine black concretions; a few fine roots; medium acid; clear, wavy boundary.

IIC2g—56 to 65 inches, gray (5Y 5/1) sandy clay loam; common, medium, distinct, yellowish-brown mottles; massive; friable, very hard; 15 percent is very fine black concretions; a few white lime concretions; a few, medium to coarse, partly weathered fragments of Selma chalk; common small slickensides; moderately alkaline.

IIR—65 inches +, Selma chalk (hard to dig with spade).

The Ap horizon ranges from dark gray to brown to yellowish brown in color and from 3 to 8 inches in thickness. The B21t horizon ranges from light olive brown to strong brown, and from clay loam to light clay. The B22t and B23t horizons are mottled gray, brown, and red and in places have a yellowish-brown matrix with many red and gray mottles. Texture ranges from sandy clay to clay. The C1g horizon ranges from light olive brown to gray, and in places it is mottled in shades of gray, red, and brown. Texture ranges from sandy clay loam to clay. In some places the IIC2 horizon is absent. Depth to Selma chalk or to marly clay ranges from 4 to 8 feet. Reaction of the solum ranges from strongly acid to very strongly acid.

Kipling soils are near Eutaw, Forestdale, Macon, Oktibbeha, Sumter, and Vaiden soils. They are coarser textured than Vaiden soils and are less sticky and plastic in the uppermost part of the solum. They are not so well drained as Oktibbeha soils, but they are better drained and less gray than Eutaw and Forestdale soils. Unlike the calcareous Sumter soils, Kipling soils are acid. Kipling soils are finer textured and have poorer drainage than Macon soils.

Kipling loam, 0 to 1 percent slopes (KlA).—This soil has a surface layer of brown loam 5 inches thick. The subsoil is yellowish-brown clay loam in the top 4 inches and is mottled red, yellowish-brown, and light-gray, sticky and plastic clay to a depth of 39 inches. The underlying material, about 20 inches thick, is mottled red and gray, sticky and plastic clay. Depth to Selma chalk is about 60 inches. During wet periods, mainly in spring and late in winter, the subsoil is waterlogged.

Included in mapping were small areas of Forestdale, Oktibbeha, and Vaiden soils. Also included were small areas where the profile is neutral to mildly alkaline.

Natural fertility is moderate in this soil, and the organic-matter content is low. Reaction is very strongly acid. Water enters the soil readily but moves through the profile slowly. The available water capacity is moderate.

Somewhat poor drainage and a seasonal high water table make this soil poorly suited to cultivated crops. The soil is well suited to pasture. It is fairly easy to work, but the range of moisture content within which it can be tilled satisfactorily is very narrow. The response to lime and fertilizer is good. Capability unit IIIw–24; woodland group 2c8.

Kipling loam, 1 to 3 percent slopes, eroded (KlB2).—This somewhat poorly drained soil has the profile described as representative of the series. It is on uplands and stream terraces.

Included in mapping were small areas of Eutaw, Forestdale, Oktibbeha, and Vaiden soils; small areas where the surface is 8 to 10 inches thick; and small areas that have a surface layer of fine sandy loam, sandy clay loam, or clay loam. A few shallow gullies are in most fields.

Natural fertility is moderate in this soil, and reaction is strongly acid. The organic-matter content is low. Water enters the soil readily but moves through the profile slowly. The available water capacity is moderate.

This soil is fairly well suited to most crops commonly grown in the county, but it is well suited to pasture. The somewhat poor drainage and moderate hazard of further erosion limit suitability of the soil for some crops. This soil is fairly easy to work, but the range of moisture content within which it can be tilled satisfactorily is narrow. The response to lime and fertilizer is good. Capability unit IIe–23; woodland group 2c8.

Kipling loam, 3 to 5 percent slopes, eroded (KlC2).—This somewhat poorly drained soil is on uplands. It has a surface layer of dark grayish-brown loam about 3 inches thick. The upper part of the subsoil, about 12 inches thick, is yellowish-brown light clay mottled with gray. The lower part, about 33 inches thick, is sticky and plastic clay mottled with red, yellowish brown, and light gray. It is underlain by olive-gray marly clay.

Included in mapping were small areas of Oktibbeha and Sumter soils, and small areas that have a surface layer of fine sandy loam, sandy clay loam, and clay loam. A few shallow gullies are in many fields.

Natural fertility is moderate in this soil, and reaction is very strongly acid. The organic-matter content is low. Water enters the soil readily but moves through the profile slowly. The available water capacity is moderate.

This soil is poorly suited to cultivated crops because internal drainage is slow and the erosion hazard is high. It is fairly easy to work, but it warms up late in spring. Pasture and hay are well suited. Capability unit IIIe–23; woodland group 2c8.

Kipling loam, 5 to 8 percent, eroded (KlD2).—This highly erodible soil is on ridgetops and side slopes. It has a surface layer of yellowish-brown loam about 3 inches thick. The upper part of the subsoil, about 6 inches thick, is yellowish-brown light sandy loam. The lower part of the subsoil, more than 48 inches thick, is sticky and plastic clay mottled with yellowish brown, yellowish red, and light gray.

Included in mapping were small areas of Oktibbeha and Vaiden soils, and small areas that have a surface layer of sandy clay loam and sandy clay. A few shallow gullies are in most fields.

Natural fertility is moderate in this soil, and reaction is very strongly acid. The organic-matter content is low. Runoff is rapid. Water enters the soil readily but moves through the profile slowly. The available water capacity is moderate.

This soil is poorly suited to cultivated crops because the hazard of further erosion is very high. It is suited to pasture, hay, and woodland. The response to lime and fertilizer is good. Capability unit IVe–23; woodland group 2c8.

Lakeland Series

The Lakeland series consists of excessively drained, acid soils on low stream terraces. These soils formed in thick beds of sandy alluvium and are subject to occasional overflow. Some areas have a high water table at a depth of about 5 to 8 feet, mainly during winter and spring. Slopes range from 0 to 5 percent, but slopes of 0 to 2 percent are dominant.

In a representative profile, the surface layer is very dark-grayish brown fine sand about 7 inches thick. Below is reddish-brown to brown fine sand to a depth of 18 inches; strong-brown fine sand to a depth of 32 inches; mixed very pale brown and brownish-yellow fine sand or sand to a depth of 54 inches; and very pale brown sand to a depth of 75 inches.

The native vegetation was chiefly low quality hardwoods, though pines grew in a few places. Most of the acreage has been cleared, but the areas are idle or have been planted to loblolly pine.

Profile of Lakeland fine sand, 0 to 5 percent slopes, in an idle area (2 miles southwest of Tishabee, in the SW¼NW¼ sec. 20, T. 19 N., R. 1 E.):

Ap—0 to 7 inches, very dark grayish-brown (10YR 3/2) fine sand; weak, very fine, granular structure; very friable; common fine roots; strongly acid; clear, smooth boundary.

C1—7 to 18 inches, reddish-brown (5YR 4/4) to brown (7.5YR 4/4) fine sand; weak, very fine, granular structure; very friable; common fine roots; strongly acid; gradual, wavy boundary.

C2—18 to 32 inches, strong-brown (7.5YR 5/6) fine sand; single grain; very friable; a few fine roots; very strongly acid; gradual, wavy boundary.

C3—32 to 54 inches, mixed very pale brown (10YR 7/4) and brownish-yellow (10YR 6/6) fine sand or sand; single grain; loose to very friable; strongly acid; gradual, wavy boundary.

C4—54 to 75 inches +, very pale brown (10YR 7/3) sand; single grain; loose to very friable; strongly acid; may be several feet thick.

The Ap horizon ranges from dark brown to very dark grayish brown in color and from 4 to 8 inches in thickness. The C1 and C2 horizons are dark-brown, strong-brown, or reddish-brown fine sand (less than 10 percent silt plus clay). The C3 and C4 horizons range from strong-brown to very pale brown fine sand to sand. Reaction of these soils ranges from strongly acid to very strongly acid.

Lakeland soils are on low stream terraces near Angie; Cahaba; and Ruston, terrace, soils. They are sandier than any of those soils.

Lakeland fine sand, 0 to 5 percent slopes (LaB).—This is the only Lakeland soil mapped in the county. It is an excessively drained soil on low terraces along the Black Warrior, Sipsey, and Tombigbee Rivers. Included in mapping were small areas that have a surface layer of sandy loam or loamy sand, and small areas of Cahaba and Ruston, terrace, soils.

Natural fertility and organic-matter content are low in this soil. Reaction is strongly acid. Water enters and moves through the soil rapidly. The available water capacity is very low.

The very low available water capacity makes this soil poorly suited to cultivated crops. It is suited, however, to pasture and woodland. Cultivated crops on this soil are likely to be damaged from lack of water during short periods of drought. The soil is easy to work, and it can be tilled throughout a wide range of moisture content without clodding or crusting. Capability unit IVs–11; woodland group 4s3.

Leaf Series

The Leaf series consists of nearly level, poorly drained soils. These soils formed in thick beds of fine-textured alluvium or marine sediment. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is dark grayish-brown silt loam about 3 inches thick. It is mottled with gray and light gray. The thick subsoil is light-gray silty clay loam mottled with yellowish brown in the uppermost 6 inches; gray silty clay with many yellowish-brown and strong-brown mottles to a depth of 46 inches; light-gray silty clay mottled with strong brown to a depth of 66 inches; and mottled gray, light-gray, and strong-brown silty clay to a depth of 76 inches.

The native vegetation was chiefly swamp hardwoods, though pines grew in a few places. Much of the acreage is wooded. Small areas have been cleared and drained, however, and are used for pasture.

Profile of Leaf silt loam, in a wooded area (5.5 miles northeast of Forkland, in the SW¼SW¼ sec. 20, T. 20 N., R. 3 E.):

A1—0 to 3 inches, dark grayish-brown (10YR 4/2) silt loam; common, fine, distinct, gray and light-gray mottles; weak to moderate, fine, granular structure; friable; many fine roots; very strongly acid; abrupt, smooth boundary.

B1tg—3 to 9 inches, light-gray (10YR 6/1) silty clay loam; many, medium, distinct, yellowish-brown mottles; moderate, medium, subangular blocky structure; firm, very hard; many fine roots; clay films on ped surfaces very strongly acid; gradual, wavy boundary.

B21tg—9 to 46 inches, gray (10YR 5/1) silty clay; many, medium, distinct, yellowish-brown and strong-brown mottles; strong, medium, subangular blocky structure, firm, very hard; clay films on ped surfaces; a few fine roots; very strongly acid; gradual, wavy boundary.

B22tg—46 to 66 inches, light-gray (10YR 6/1) silty clay; many, medium, distinct, strong-brown mottles; moderate, medium, subangular blocky structure; firm, very hard; clay films on ped surfaces; medium acid; gradual, wavy boundary.

B23tg—66 to 76 inches, mottled gray (10YR 5/1), light-gray (10YR 6/1), and strong-brown (7.5YR 5/6) silty clay; moderate, medium and coarse, subangular blocky structure; firm, very hard; clay films on ped surface; very strongly acid.

The A1 horizon ranges from very dark gray to grayish brown in color and from 2 to 10 inches in thickness. The Ap horizon, and the A2 horizon where present, range from gray to light brownish gray and generally are mottled with shades of brown. Texture of the A horizon ranges from fine sandy loam to silt loam. The upper part of the B2t horizon ranges from light gray to gray and has common to many brown and yellow mottles. Its texture ranges from silty clay loam to clay (more than 35 percent clay). In places the lower part of the B horizon has some prominent red mottles, but it is otherwise similar to the upper part of the B horizon. Reaction of these soils ranges from strongly acid to very strongly acid.

Leaf soils are near Angie, Bibb, Cahaba, and Myatt soils. They are grayer and more poorly drained than Angie soils and are finer textured than Bibb and Myatt soils. Leaf soils are not so well drained as Cahaba soils, but they are finer textured.

Leaf silt loam (Le).—This nearly level, poorly drained soil is on uplands and stream terraces throughout the county. During wet seasons water generally stands on this soil for long periods.

Included in mapping on the Tombigbee River terrace were small areas that have a surface layer that is as much as 24 inches thick. Also included were small areas where the surface layer is clay loam and silty clay loam.

Natural fertility and organic-matter content are moderate in this soil. Reaction is very strongly acid. Water enters the soil readily but moves through the profile slowly. The available water capacity is moderate.

This soil is poorly suited to cultivated crops. If it is drained, however, it is suited to row crops and is well suited to pasture. Poor drainage, ponded water, and susceptibility to flooding limit suitability for some crops. Adapted trees grow fast on this soil. Capability unit IVw–11; woodland group 2w9.

Leaf-Angie association (Lf).—This mapping unit consists mainly of poorly drained to moderately well drained, nearly level soils on broad stream terraces along the Black Warrior and Tombigbee Rivers. The areas are mainly wooded and consist of low, narrow ridges and wet sloughs. The poorly drained Leaf soils generally are in the low areas, and the better drained Angie soils generally are on the ridges. The composition of this unit is more variable than that of most

others in the county but has been controlled well enough that reliable interpretations can be made for the purposes for which the soils likely can be used.

Leaf soils make up about 40 percent of the acreage in this mapping unit, and Angie soils about 40 percent. Minor soils make up the rest. Included in mapping near the confluence of the Black Warrior and Tombigbee Rivers are areas where the surface layer is dark-gray to very dark gray silty clay loam about 10 to 20 inches thick. Each mapped area consists of Angie and Leaf soils, in amounts that vary 10 percent between areas, and of variable amounts of minor soils.

The poorly drained Leaf soils are in the low areas of the association and are ponded for long periods. They have a surface layer of gray silt loam that is about 2 inches thick. The subsoil, in the upper 36 inches, is gray silty clay mottled with yellowish brown and strong brown. The lower part, also about 36 inches thick, is mottled light-gray and strong-brown clay.

The natural fertility and organic-matter content are moderate in the Leaf soils. Reaction is very strongly acid. Infiltration is moderate, and permeability is slow. The available water capacity is moderate.

The somewhat poorly drained to moderately well drained Angie, terrace, soils occupy the higher part of the association. They have a surface layer of dark-gray silt loam about 3 inches thick over about 5 inches of dark yellowish-brown silt loam. The subsoil is yellowish-red silty clay in the upper 12 inches; yellowish-red silty clay mottled with light olive brown and light brownish gray in the next 20 inches; and strong-brown and yellowish-brown silty clay loam mottled with gray in the lower 25 inches.

Natural fertility and organic-matter content are low in the Angie soils. Reaction is strongly acid to very strongly acid. Infiltration is moderate, and permeability is slow. The available water capacity is moderate.

This association is not suited to row crops, because of the poor drainage, seasonal high water table, long periods of standing water, and susceptibility to occasional overflow. Many areas are difficult to drain because the level of the river normally is at a higher elevation than the areas it drains. The irregular shape and complex pattern of the topography make drainage difficult. Deep cuts are needed in some areas to drain off the excess water. Also, fluctuating streams and flooding frequently clog or destroy ditch outlets. The present vegetation is chiefly deciduous hardwoods, but pines grow in a few scattered areas. Capability unit IVw–11; woodland group 2w9.

Leeper Series

The Leeper series consists of somewhat poorly drained, alkaline soils on flood plains along the larger creeks in the prairie part of the county. These soils formed in fine-textured alluvium and are subject to frequent overflow. They have high shrink-swell potential, and cracks form in the soils as they dry. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is very dark grayish-brown and dark grayish-brown clay about 8 inches thick. The subsoil is mottled grayish-brown and yellowish-brown clay to a depth of about 15 inches; light-gray clay mottled with yellowish brown to a depth of 30 inches; gray clay mottled with dark yellowish brown to a depth of 50 inches; and dark grayish-brown clay mottled with gray to a depth of 72 inches.

The native vegetation was hardwoods, mainly hackberry, ash, elm, and cottonwood. About two-thirds of the acreage has been cleared and is used for pasture.

Profile of Leeper clay in an area used for pasture (6 miles southwest of Eutaw, in the NW¼NW¼ sec. 36, T. 21 N., R. 1 E.):

Ap—0 to 3 inches, very dark grayish-brown (2.5Y 3/2) clay; weak, very fine, granular structure; firm, very hard, very sticky, very plastic; many fine roots; 2 percent is small, black concretions; mildly alkaline; abrupt, clear boundary.

A1—3 to 8 inches, dark grayish-brown (2.5Y 4/2) clay; moderate, very fine, granular structure; firm, very hard, very sticky, very plastic; many fine roots; 3 percent is small, black concretions; moderately alkaline; clear, wavy boundary.

B21—8 to 15 inches, mottled grayish-brown (10YR 5/2) and yellowish-brown (10YR 5/6) clay; massive when wet, but moderate, fine, angular blocky structure when dry; firm, very hard, very sticky, very plastic; common fine roots; a few small slickensides; 2 percent is black concretions; mildly alkaline; gradual, wavy boundary.

B22g—15 to 30 inches, light-gray (10YR 6/1) clay; many, medium, distinct, yellowish-brown mottles; massive when wet, but moderate, fine, angular blocky structure when dry; firm, very hard, very sticky, very plastic; a few fine roots; common slickensides; 2 to 4 percent is black concretions; neutral; gradual, wavy boundary.

B23g—30 to 50 inches, gray (10YR 5/1) clay; many, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; massive when wet, but moderate, fine, angular blocky structure when dry; firm, very hard, very sticky, very plastic; many slickensides; 2 percent is black concretions; neutral; gradual, wavy boundary.

B3g—50 to 72 inches, dark grayish-brown (2.5Y 4/2) clay; common, medium, distinct, gray mottles; massive when wet, but moderate, fine, angular blocky structure when dry; firm, very hard, very sticky, very plastic; many slickensides; 1 percent is black concretions; mildly alkaline.

The Ap and A1 horizons range from very dark gray to dark grayish brown and very dark grayish brown. Their texture is silty clay or clay. The combined thickness of the Ap and A1 horizons ranges from 6 to 12 inches. The B2 horizon ranges from gray and grayish brown to light gray mottled with brown, though in places it is mottled with shades of gray and brown. Texture ranges from clay loam to clay. The B3 horizon ranges from dark grayish brown to gray and generally is mottled with gray. It is clay in texture. Common to many slickensides occur in the lower part of the B horizon. Reaction of these soils is neutral to moderately alkaline.

Leeper soils are near the Catalpa, Eutaw, Forestdale, Garner, and Trinity soils. They have a lighter colored A1 horizon than Catalpa and Trinity soils and are not so poorly drained as Garner soils. Unlike the poorly drained Eutaw and Forestdale soils, Leeper soils are mildly alkaline in the upper part of the profile.

Leeper clay (Lp).—This is the only Leeper soil mapped in the county. It is alkaline and is subject to frequent flooding, mainly in winter and early in spring. Included in mapping were small areas of Catalpa, Garner, and Trinity soils.

Natural fertility is moderate in this soil, and the response to fertilizer is good. Reaction is mostly mildly alkaline. Infiltration and permeability are slow to very slow. The available water capacity is moderate.

This soil is suited to such crops as corn, soybeans, and pasture plants, but it is difficult to work because of the sticky clay surface layer. The range of moisture content within which this soil can be tilled satisfactorily is narrow, and good tilth is difficult to maintain. Except where floods cause scouring, erosion is not a hazard. Capability unit IIIw–21; woodland group 1w6.

Lucy Series

The Lucy series consists of well-drained, coarse-textured, acid soils on hillsides in the uplands. These soils formed in thick beds of sand to sandy loam marine sediment. Slopes range from 8 to 25 percent.

In a representative profile, the surface layer is gray loamy sand about 4 inches thick. The subsurface layer is loamy sand that is yellowish brown in the upper part, very pale brown in the lower part, and about 20 inches thick. The subsoil is red sandy clay loam to a depth of 38 inches, and then red heavy fine sandy loam to a depth of 74 inches.

The native vegetation is mixed hardwoods and pines. Most of the acreage is in forest. Where slopes are less strong, a few small areas are cleared and planted to bahiagrass or bermudagrass.

Profile of Lucy loamy sand on 8 to 25 percent slopes, in a wooded area (3¼ miles southeast of Boligee in the NW¼SE¼ sec. 3, T. 20 N., R. 1 E.):

A1—0 to 4 inches, gray (10YR 5/1) loamy sand; very weak, fine, granular structure; loose to very friable; common fine roots; very strongly acid; clear, smooth boundary.

A21—4 to 10 inches, yellowish-brown (10YR 5/4) loamy sand; very weak, fine, granular structure; very friable; common fine roots; very strongly acid; clear, wavy boundary.

A22—10 to 24 inches, very pale brown (10YR 7/3) loamy sand; single grain; loose; very strongly acid; clear, wavy boundary.

B2t—24 to 38 inches, red (2.5YR 5/8) sandy clay loam; weak, fine, subangular blocky structure; friable; clay films on most ped surfaces; sand grains coated and bridged with clay; very strongly acid; gradual, wavy boundary.

B3t—38 to 74 inches +, red (2.5YR 5/8) heavy fine sandy loam; weak, fine, subangular blocky structure; friable; patchy clay films on peds; very strongly acid.

The A horizon ranges from sand to loamy sand in texture and from 3 to 8 inches in thickness. The A2 horizon, and the Ap horizon where present, range from yellowish brown to very pale brown loamy sand or sand. The combined thickness of the A1 and A2 horizons is 20 to 40 inches. The B horizon ranges from yellowish red to red in color, and from heavy fine sandy loam to sandy clay loam in texture. The horizon of clay accumulation is more than 50 inches thick, and the solum is more than 60 inches thick. Reaction of these soils is strongly acid to very strongly acid.

Lucy soils are near Rumford, Troup, and Wagram soils. They have a thicker surface layer than Troup soils and a coarser textured surface layer than Rumford soils. Their subsoil is redder than that of Wagram soils.

In this county Lucy soils are mapped only in a complex with Troup soils. The description of this complex follows the description of the Troup series in this survey.

Macon Series

The Macon series consists of well-drained, acid soils that formed in sandy clay loam or clay loam marine sediment. These soils generally are on ridgetops along a narrow strip where the prairie soils join the soils of the Coastal Plain. Slopes range from 0 to 12 percent, but slopes of 2 to 8 percent are dominant.

In a representative profile in a cultivated area, the surface layer is brown fine sandy loam about 9 inches thick. It has a thick subsoil that is dark-brown clay loam in the uppermost 3 inches; reddish-brown clay loam to a depth of 24 inches; yellowish-red clay loam mottled with light yellowish brown to a depth of 36 inches; strong-brown heavy clay loam mottled with pale brown to a depth of 50 inches; light yellowish-brown sandy clay mottled with yellowish brown and light gray to a depth of 60 inches; and pale-olive sandy clay mottled with light yellowish brown, light gray, black, and pale brown to a depth of 75 inches.

The native vegetation is mixed hardwoods and pines. Most areas have been cleared and are used mainly for pasture, but some of the smoother areas are cropped.

Profile of Macon fine sandy loam, 0 to 2 percent slopes, in a pasture (1.5 miles west of courthouse, at Eutaw, on New Mt. Hebron road; south of the road and east of a private road, in the SW¼NE¼ sec. 32, T. 22 N., R. 2 E.):

Ap—0 to 9 inches, brown (7.5YR 4/4) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; a few, very fine manganese concretions; strongly acid; abrupt, smooth boundary.

B1—9 to 12 inches, dark-brown (7.5YR 4/4) clay loam; massive to weak, fine, subangular blocky structure; friable to firm; common fine roots; 1 to 2 percent is manganese concretions; weak plowplan; strongly acid; clear, wavy boundary.

B21t—12 to 24 inches, reddish-brown (5YR 4/4) clay loam; moderate, fine, subangular blocky structure; firm; a few fine roots; clay films on peds and in pores; a few manganese concretions; medium acid; clear, wavy boundary.

B22t—24 to 36 inches, yellowish-red (5YR 4/6) clay loam; common, medium, distinct, light yellowish-brown mottles; moderate, fine and medium, subangular blocky structure; firm; a few fine roots; clay films on some peds; 2 to 4 percent is manganese concretions; some peds have black manganese coatings; medium acid; gradual, wavy boundary.

B23t—36 to 50 inches, strong-brown (7.5YR 5/6) heavy clay loam; common, medium, distinct, pale-brown mottles; weak, coarse, subangular blocky structure; firm, a few clay films on peds; 4 percent is manganese concretions; some peds have thin, black manganese coatings; very strongly acid; gradual, wavy boundary.

B24t—50 to 60 inches, light yellowish-brown (2.5Y 6/4) sandy clay; many, fine, distinct, yellowish-brown and light-gray mottles; weak, coarse, subangular blocky structure; firm; 2 percent is manganese concretions; patchy clay films on peds; very strongly acid; gradual, wavy boundary.

B3—60 to 75 inches, pale-olive (5Y 6/3) sandy clay; many, fine, distinct, light yellowish-brown, light-gray, black, and pale-brown mottles; weak, coarse, subangular blocky structure; firm; 2 to 4 percent is manganese concretions; very strongly acid.

The Ap horizon ranges from brown to dark brown in color, and from 4 to 12 inches in thickness. The B1 horizon ranges from dark brown to yellowish red, and from loam to clay loam. The Bt horizon is 48 inches or more thick. The

B21t horizon ranges from strong-brown to yellowish-red heavy loam to clay loam. The B22t horizon is similar to the B21t horizon, but in places it has a few to common pale-brown and light yellowish-brown mottles. The B23t and B24t horizons range from light yellowish brown to yellowish red and have a few to common pale-brown to light-gray mottles. Their texture ranges from sandy clay loam to clay. The B3 horizon ranges from strong brown to light gray and pale olive, and it has common to many brown, yellow, and black mottles. It is mottled in places, however, with shades of red, gray, and brown. Texture of the B3 horizon ranges from sandy clay loam to clay. In many areas manganese concretions occur at a depth between 20 and 36 inches. Reaction of these soils ranges from medium acid to very strongly acid.

Some areas of Macon soils occur near the Magnolia and Shubuta soils, but many are adjacent to Oktibbeha and Vaiden soils. Macon soils are coarser textured than Magnolia and Shubuta soils. They are better drained than Oktibbeha and Vaiden soils and are coarser textured throughout, but they are less sticky and plastic.

Macon clay loam, 5 to 12 percent slopes, severely eroded (MaD3).—This soil has a 4-inch plow layer of brown clay loam. The subsoil is strong-brown clay loam in the uppermost 12 inches. It is strong-brown clay loam or sandy clay loam that is mottled with pale brown and light gray in the lower 48 inches.

Included in mapping were small areas of Kipling and Oktibbeha soils. Also included were small areas where the upper subsoil is eroded away and the mottled lower subsoil is exposed. Old terrace remnants are in most old fields. Many areas are cut by an occasional deep gully and few shallow gullies.

Natural fertility is moderate in this soil, and reaction is strongly acid. Infiltration is slow. Permeability is moderate to moderately slow. Available water capacity is moderate.

This soil is not suited to cultivated crops, because of the very high hazard of further erosion and the difficulty of tillage. It can be tilled within only a narrow range of moisture content without clodding. This soil is suited to pasture and woodland, but most of the acreage is used for pasture. Capability unit VIe–113; woodland group 4c2.

Macon fine sandy loam, 0 to 2 percent slopes (McA).—This soil has the profile described as representative of the series. It is a well-drained, friable soil. Included in mapping were small areas of Kipling, Magnolia, Oktibbeha, and Vaiden soils.

Natural fertility is moderate in this soil, and reaction is medium acid to strongly acid. Infiltration is moderate, and permeability is moderate to moderately slow. Available water capacity is moderate.

This soil is well suited to cultivated crops, pasture, and woodland. It is easy to work and can be tilled throughout a wide range of moisture content. The response to lime and fertilizer is good. Erosion is not a hazard. Most of the acreage is cleared and is used for crops or pasture. Capability unit I–12; woodland group 3o1.

Macon fine sandy loam, 2 to 5 percent slopes, eroded (McB2).—This soil has a 4-inch plow layer of dark-brown fine sandy loam. The subsoil is yellowish-red clay loam in the uppermost 20 inches, and yellowish-red clay mottled with yellowish brown in the lower 36 inches. Included in mapping were small areas where the plow layer is strong-brown clay. Soft black concretions make up 1 to 2 percent of the soil material. A few shallow rills are present in cultivated areas.

Natural fertility is moderate in this soil, and reaction is strongly acid. Water enters this soil at a moderate rate and moves through it at a moderate to moderately slow rate. The available water capacity is moderate.

This soil is well suited to cultivated crops (fig. 8), pasture, and woodland. It is easy to work and can be tilled throughout a wide range of moisture content without clodding. The hazard of erosion is slight to moderate. Most of the acreage is cleared and is used for crops or pasture. Capability unit IIe–12; woodland group 3o1.

Macon fine sandy loam, 5 to 8 percent slopes, eroded (McC2).—This soil has a 5-inch plow layer of brown fine sandy loam. The subsoil is yellowish-red clay loam in the uppermost 15 inches. The next 10 inches is yellowish-red clay loam material that is mottled with

Figure 8.—**Corn on Macon fine sandy loam, 2 to 5 percent slopes, eroded.**

yellowish brown. The rest of the subsoil is mottled red and gray clay about 30 inches thick.

Included in mapping were small areas of Kipling, Magnolia, and Oktibbeha soils. Also included were small areas where the plow layer is sticky, yellowish-red clay loam.

Natural fertility is moderate in this soil, and reaction is strongly acid. Water enters this soil at a moderate rate and moves through the profile at a moderate to moderately slow rate. The available water capacity is moderate.

Under good management this soil is well suited to all crops commonly grown in the county. It is easy to work and can be tilled throughout a fairly wide range of moisture content without clodding or crusting. The hazard of further erosion is moderate, and the soil should be cultivated on the contour. Most of the acreage is used for pasture. Capability unit IIIe–11; woodland group 3o1.

Magnolia Series

The Magnolia series consists of well-drained, red soils on uplands. These soils formed in thick beds of sandy clay loam and sandy clay marine sediment. Slopes range from 0 to 12 percent, but slopes of 2 to 8 percent are dominant.

In a representative profile (fig. 9), the surface layer is brown fine sandy loam about 8 inches thick. The thick subsoil is yellowish-red sandy clay loam in the uppermost 5 inches; red heavy sandy clay loam to a depth of 22 inches; red clay to a depth of 36 inches; dark-red sandy clay to a depth of 55 inches; and yellowish-red sandy clay loam mottled with reddish yellow to a depth of 70 inches.

The native vegetation was mixed hardwoods and pines. Most of the acreage is cleared and is used for crops and pasture. A small part, mainly on the narrow isolated ridgetops and moderately steep side slopes, has reverted to pine forest.

Profile of Magnolia fine sandy loam, 0 to 2 percent slopes, in a cultivated field (2 miles southeast of the Sipsey River Bridge on Alabama Highway 14, north of the highway and 75 feet east of a private road, in the SE¼NE¼ sec. 33, T. 24 N., R. 1 W.):

Ap—0 to 8 inches, brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; medium acid; abrupt, smooth boundary.

B1—8 to 13 inches, yellowish-red (5YR 4/6) sandy clay loam; weak, fine, subangular blocky structure; friable; common fine roots; patchy clay films and some clean sand grains; strongly acid; clear, smooth boundary.

B21t—13 to 22 inches, red (2.5YR 4/6) heavy sandy clay loam to sandy clay; moderate, fine and medium, subangular blocky structure; friable to firm; a few fine roots; thin clay films on some peds; very strongly acid; gradual, wavy boundary.

B22t—22 to 36 inches, red (2.5YR 4/6) clay; moderate, fine, subangular blocky structure; firm; a few fine roots; clay films on peds and in pores; very strongly acid; gradual, wavy boundary.

B23t—36 to 55 inches, dark-red (2.5YR 3/6) sandy clay; moderate, medium, subangular blocky structure; firm; clay films on peds and in pores; very strongly acid; gradual, wavy boundary.

B3t—55 to 70 inches +, yellowish-red (5YR 4/6) sandy clay loam; common, medium, faint, reddish-yellow mottles; weak, coarse, subangular blocky structure; friable; 1 percent is quartz gravel; patchy clay films; sand grains coated and bridged with clay; very strongly acid.

The Ap horizon, and the A2 horizon where present, range from brown to light yellowish brown. In areas not cultivated, the A1 horizon ranges from dark gray to grayish brown and from 2 to 5 inches in thickness. In severely eroded areas, the Ap horizon ranges from yellowish red to dark red and from sandy clay loam to clay loam. The Bt horizon is more than 50 inches thick. The color of the B21t, B22t, and B23t horizons ranges from yellowish red to dark red. Texture of the B2 horizon ranges from heavy sandy clay loam to clay (more than 35 percent clay). The B3t horizon ranges from yellowish red to dark red and may or may not be mottled. Texture ranges from sandy clay loam to clay. Reaction of these soils ranges from medium acid to very strongly acid. This soil has chromas of more than 4 in the upper 40 inches of the Bt horizon.

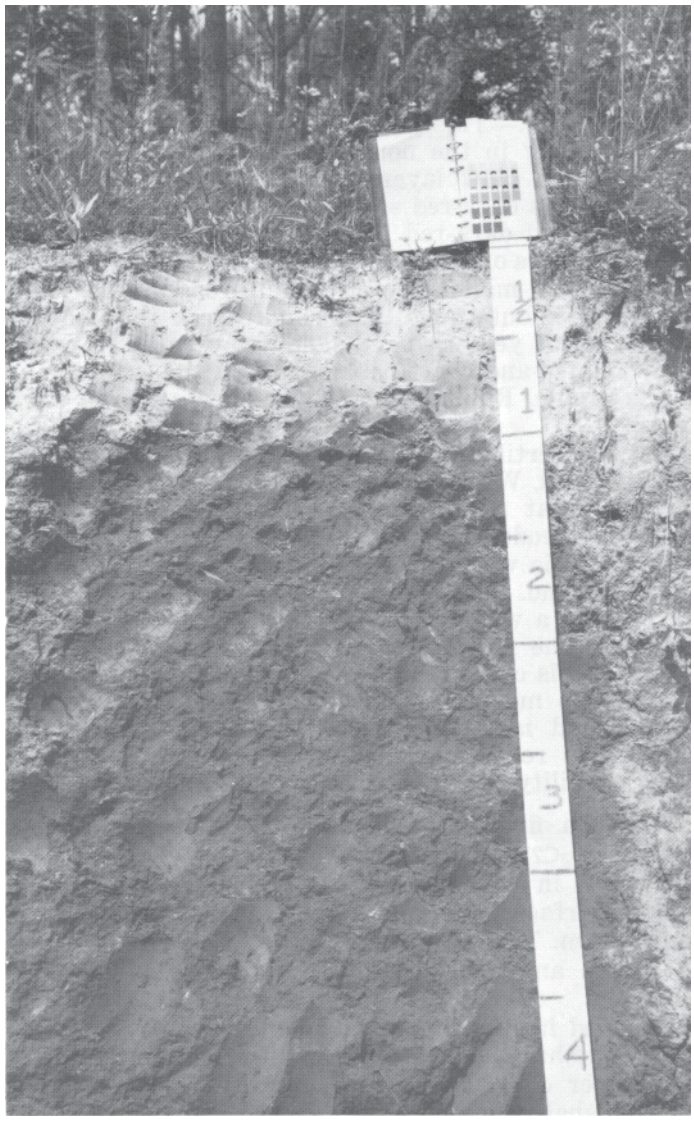

Figure 9.—**Profile of a Magnolia fine sandy loam. The light-colored surface layer is underlain by a dark-red clay. The measure is in feet.**

Magnolia soils are near Ora, Ruston, Savannah, and Shubuta soils. Their subsoil is finer textured than that of Ruston soils, and they lack the fragipan characteristic of Ora and Savannah soils. They are more permeable than Shubuta soils, but they lack the mottles in the B22t and B23t horizons typical of those soils.

Magnolia fine sandy loam, 0 to 2 percent slopes (MgA).—This soil has the profile described as representative of the series. It is well drained and is on ridgetops in the northern part of the county. Included in mapping were small areas of Ruston and Shubuta soils, and small areas that have a surface layer of dark brown to dark reddish brown.

Natural fertility is low in this soil, and reaction is medium acid to strongly acid. Infiltration and permeability are moderate. Available water capacity is moderate.

This soil is well suited to cultivated crops, pasture, and woodland. It can be tilled throughout a wide range of moisture content. The response to lime and fertilizer is good. Capability unit I–12; woodland group 3o1.

Magnolia fine sandy loam, 2 to 5 percent slopes, eroded (MgB2).—This soil is on ridges and side slopes, mainly in the northern part of the county. It has a 6-inch plow layer of brown fine sandy loam. The subsoil is dark-red sandy clay or clay in the upper 30 inches and dark-red heavy sandy clay loam in the lower 20 inches or more.

Included in mapping were small areas of Ora, Ruston, and Shubuta soils, and small areas that have a plow layer of yellowish-red sandy clay loam. In places a few quartz and chert pebbles are on the surface and in the profile. Rills and shallow gullies occur in some fields.

Natural fertility is low in this soil, and reaction is strongly acid. Water enters this soil readily and moves through it at a moderate rate. The available water capacity is moderate.

This soil is well suited to cultivated crops, pasture, and woodland. It is easy to work and can be tilled throughout a wide range of moisture content without clodding. The response to lime and fertilizer is good. If this soil is cultivated, the hazard of further erosion is slight to moderate. Most of the acreage has been cleared and is used for crops and pasture. A few areas have reverted to pine forest, or they are left idle. Capability unit IIe–12; woodland group 3o1.

Magnolia fine sandy loam, 5 to 8 percent slopes, eroded (MgC2).—This soil is on narrow ridges and side slopes in the northern part of the county. It has a 5-inch surface layer of light yellowish-brown fine sandy loam. The subsoil is dark-red clay in the upper 24 inches and dark-red sandy clay in the lower 36 inches.

Included in mapping were small areas of Ora, Ruston, and Shubuta soils and small areas that have a plow layer of yellowish-red sandy clay loam. A few rills and shallow gullies occur in many fields.

Natural fertility is low in this soil. Water enters this soil readily and moves through it at a moderate rate. The available water capacity is moderate.

This soil is well suited to most crops commonly grown in the area. The response to lime and fertilizer is good. If this soil is cultivated, the hazard of further erosion is moderate. Most of the acreage is cleared and is used for crops and pasture. Capability unit IIIe–11; woodland group 3o1.

Magnolia fine sandy loam, 8 to 12 percent slopes, eroded (MgD2).—This soil is on narrow ridgetops and side slopes in the northern part of the county. It has a 7-inch surface layer of light yellowish-brown fine sandy loam. The subsoil is red sandy clay to a depth of 32 inches and red sandy clay loam to a depth of 60 inches.

Included in mapping were small areas of Boswell, Ruston, and Shubuta soils, and small areas that have a surface layer of yellowish-red sandy clay loam. Rills and a few shallow gullies occur in most cultivated fields.

Natural fertility is low in this soil, and reaction is strongly acid. Infiltration and permeability are moderate. Available water capacity is moderate.

This soil is poorly suited to cultivated crops because of the moderately steep slopes and the high hazard of further erosion. It can be cultivated occasionally, however, under good management. This soil is difficult to work with mechanized equipment because of the moderately steep slopes. Most of the acreage is in pasture and woodland. Capability unit IVe–11; woodland group 3o1.

Magnolia sandy clay loam, 2 to 8 percent slopes, severely eroded (MnC3).—This soil is on ridges and side slopes in the northern part of the county. It has a 4-inch surface layer of reddish-brown sandy clay loam. The subsoil is dark-red clay in the upper 24 inches, and dark reddish-brown clay loam or clay mottled with yellowish brown in the lower 36 inches.

Included in mapping were small areas that have a surface layer of dark-red clay loam or clay. Remnants of old terraces are common in the areas. A few shallow gullies and an occasional deep gully occur in most old fields.

Natural fertility is low in this soil, and reaction is strongly acid. Water enters this soil slowly and moves through it at a moderate rate. The available water capacity is moderate.

Most areas of this soil were cleared and cropped in the past, but little is cropped at the present time. This soil is suited to cultivated crops, but the hazard of further erosion and the difficulty of tillage restrict suitability for some crops. Under good management, the soil is well suited to pasture. The range of moisture content within which the soil can be tilled is narrow. A large part of the acreage is used for pasture, or it has reverted to pine forest. Capability unit IIIe–111; woodland group 3c2.

Marietta Series

The Marietta series consists of moderately well drained, alkaline soils on first bottoms. These soils formed in mixed alluvium washed from Coastal Plain soils and from fine-textured prairie soils. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is dark-gray light clay loam about 4 inches thick. The upper part of the subsoil is light olive-brown sandy clay loam about 16 inches thick. It is mottled with dark grayish brown. Below this is mottled light-gray, brownish-yellow, and gray sandy clay loam to light sandy clay to a depth of about 56 inches. The underlying material is mottled light-gray and yellowish-brown heavy sandy clay.

The native vegetation was various kinds of hardwoods. Most of the acreage is cleared and is used for pasture. About one-half of the acreage is subject to frequent flooding late in winter and in spring. Seepage water is a problem in areas not flooded.

Profile of a Marietta clay loam in a pasture (3 miles north of Tishabee, in the SW¼SW¼ sec. 27, T. 20 N., R. 1 E.):

Ap—0 to 4 inches, dark-gray (10YR 4/1) light clay loam; moderate, fine, granular structure; friable; many fine roots; a few quartz pebbles; moderately alkaline; abrupt, smooth boundary.

B1—4 to 20 inches, light olive-brown (2.5Y 5/4) sandy clay loam; common, fine, distinct, dark grayish-brown mottles; weak, fine, subangular blocky structure; a few fine roots; a few quartz pebbles; moderately alkaline; clear, wavy boundary.

B21—20 to 30 inches, mottled light-gray (10YR 6/1) and brownish-yellow (10YR 6/6) sandy clay loam; weak, coarse, subangular blocky structure; friable; a few fine roots; a few quartz pebbles; moderately alkaline; gradual, wavy boundary.

B22g—30 to 42 inches, light-gray (10YR 6/1) heavy sandy clay loam; many, medium, distinct, yellowish-brown mottles; weak, coarse, subangular blocky structure; friable, slightly sticky, slightly plastic; a few quartz pebbles; moderately alkaline; gradual, wavy boundary.

B23g—42 to 56 inches, gray (N 6/0) light sandy clay; many, medium, distinct, dark yellowish-brown mottles; weak, coarse, subangular blocky structure to massive when wet; firm, sticky, plastic; a few quartz pebbles; moderately alkaline; gradual, wavy boundary.

Cg—56 to 72 inches, mottled light-gray (10YR 6/1) and yellowish-brown (10YR 5/6) heavy sandy clay; massive; firm, sticky, plastic; a few quartz pebbles; moderately alkaline.

The Ap horizon ranges from dark gray to grayish brown in color and from sandy loam to clay in texture, but light clay loam is dominant. The B1 horizon ranges from light olive brown to pale brown, and in places it is mottled with brown and yellow. Texture ranges from loam to sandy clay loam. The B21 and B22g horizons range from gray to brown and are mottled with brown and gray, but in places they are mottled with shades of brown and gray. Texture ranges from loam to sandy clay loam. The B23g and Cg horizons are gray mottled with brown, but in places they are mottled with gray and brown. Texture ranges from light sandy clay to clay. Reaction of these soils ranges from neutral to moderately alkaline.

Marietta soils are on first bottoms near Catalpa and Leeper soils. They are coarser textured than those soils.

In this county Marietta soils are mapped only in an undifferentiated unit with Leeper soils. The Leeper soils are described under the Leeper series in this survey.

Marietta and Leeper soils (Mr).—These soils are on toe slopes, at the heads of and along small drainageways, and on narrow bottoms in the prairie part of the county. They formed in material washed from the prairie soils and the Coastal Plain soils.

Marietta soils make up about 30 percent of this undifferentiated unit and Leeper soils about 20 percent. Minor soils are the Catalpa, about 12 percent; Garner, about 8 percent; and Trinity, about 10 percent. About 20 percent consists of soils that are so mixed and variable that they have not been classified. Many of these areas consist of stratified layers of sandy and clayey material. Also included are strongly acid soils that have a surface layer of dark grayish-brown clay and a subsoil of mottled brown and gray clay. Other included soils are moderately alkaline and have a surface layer of olive-gray loam and a subsoil of light-gray loam, underlain by light-gray loam or sandy clay loam mottled with yellowish brown.

The pattern and extent of the dominant soils vary. In most of the mapping units, the percentage of each ranges from 0 to 50 percent. The occurrence of the minor soils in the areas also varies and no area includes all the minor soils.

The moderately well drained Marietta soils have a 4-inch surface layer of dark-gray clay. The uppermost 16 inches of the subsoil is light olive-brown sandy clay loam mottled with dark grayish brown. The lower part of the subsoil, about 20 inches thick, is mottled light-gray and yellowish-brown sandy clay loam. The underlying material is gray sandy clay mottled with dark yellowish brown and yellowish brown. It is about 30 inches thick.

Natural fertility is moderate to high in the Marietta soils, and reaction is moderately alkaline. Infiltration is moderate. Permeability is moderate in the upper part of the profile, and moderately slow in the lower part. The available water capacity is moderate to high.

The somewhat poorly drained Leeper soils have a 12-inch surface layer of dark grayish-brown clay. The uppermost 20 inches of the subsoil is gray clay mottled with dark yellowish brown. The lower part of the subsoil, about 24 inches thick, is gray clay mottled with strong brown. The underlying material is gray sandy clay mottled with dark yellowish brown. It is about 16 inches thick. Large cracks form in this soil as it dries.

Natural fertility is moderate to high in the Leeper soils, and reaction is moderately alkaline. Infiltration and permeability are slow or very slow. The available water capacity is high.

These soils are fairly well suited to most crops grown in the area, though the somewhat poor drainage limits suitability for some crops. In places seepage water and flooding is a problem late in winter and spring. About two-thirds of the acreage is cleared and is used for pasture. Capability unit IIIw–21; woodland group 1w6.

Mashulaville Series

The Mashulaville series consists of poorly drained, acid soils that have a fragipan in the lower part of the subsoil. These soils are on uplands and stream terraces. They formed in thick beds of loam to clay loam marine sediment. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is dark-gray fine sandy loam about 5 inches thick. The upper part of the subsurface layer is gray fine sandy loam about 4 inches thick. Just below is about 6 inches of light-gray loam or silt loam mottled with yellowish brown. The compact and brittle fragipan is gray to

light-gray heavy loam or silt loam to a depth of 23 inches; mixed gray and light brownish-gray heavy loam or silt loam to a depth of 32 inches; grayish-brown clay loam mottled with light gray and strong brown to a depth of 66 inches; and light-gray sandy clay loam mottled with light yellowish brown to a depth of 80 inches.

The native vegetation is chiefly lowland hardwoods, though pines grow in a few places. Most of the acreage is wooded, but some is cleared and used for pasture.

Profile of Mashulaville fine sandy loam, in a wooded area (2.5 miles east of Forkland, in the NW¼NW¼ sec. 11, T. 19 N., R. 2 E.):

A1—0 to 5 inches, dark-gray (10YR 4/1) fine sandy loam; common, fine, faint, light-gray mottles; weak, fine, granular structure; very friable; very strongly acid; clear, smooth boundary.

A21g—5 to 9 inches, gray (10YR 5/1) fine sandy loam or loam; common, fine, faint, light-gray mottles; weak, fine, granular structure; very friable; very strongly acid; clear, smooth boundary.

A22g—9 to 15 inches, light-gray (10YR 6/1) loam or silt loam; a few, fine, distinct, yellowish-brown mottles; weak, fine, granular and weak, fine, subangular blocky structure; friable to firm, hard, slightly compact, brittle; very strongly acid; clear, irregular boundary.

Bx1—15 to 23 inches, gray (10YR 5/1) to light-gray (10YR 6/1) heavy loam or silt loam; common, fine, distinct, pale-brown and light yellowish-brown mottles; weak, medium, platy and weak, coarse, subangular blocky structure; firm, hard, compact and brittle; pockets of fine sandy loam and clay loam; polygonal cracks ½ to 1 inch wide filled with gray (10YR 5/1) clay loam; patchy clay films on peds; very strongly acid; clear, irregular boundary.

Bx2—23 to 32 inches, mixed gray (10YR 6/1) and light brownish-gray (10YR 6/2) heavy loam or silt loam; pockets of fine sandy loam and clay loam; weak, medium, platy and weak, very fine and medium, subangular blocky structure; firm, hard, compact and brittle; polygonal cracks filled with gray (10YR 5/1) clay loam; clay films; very strongly acid; clear, irregular boundary.

Bx3—32 to 50 inches, grayish-brown (10YR 5/2) clay loam; common, fine, faint, light-gray mottles and a few, fine, distinct, strong-brown mottles; weak to moderate, medium, subangular blocky structure; firm, hard, compact and brittle; polygonal cracks filled with gray (10YR 5/1) clay loam; clay films on peds and in pores and root channels; very strongly acid; gradual, wavy boundary.

Bx4—50 to 60 inches, light-gray (10YR 6/1) clay loam; common, fine, distinct, yellowish-brown mottles; moderate, fine, subangular blocky structure; firm, hard, compact and brittle; clay films on peds; very strongly acid; gradual, wavy boundary.

Bx5—60 to 80 inches +, light-gray (10YR 6/1 to 7/1) sandy clay loam; common, medium, distinct, light yellowish-brown mottles; weak, medium, subangular blocky structure; firm, hard, compact and brittle; patchy clay films on peds; very strongly acid.

The A1 horizon ranges from dark gray to black in color and from 2 to 5 inches in thickness. The Ap horizon, where present, ranges from light gray to very dark gray, and in places it is mottled with shades of brown. The A horizon ranges from 10 to 20 inches in thickness and from fine sandy loam to silt loam in texture. Texture of the Bx horizon ranges from heavy loam to clay loam. The matrix color of the Bx horizon is gray, light gray, light grayish brown, or grayish brown, and in places it has common to many brown and yellow mottles. Reaction of these soils ranges from strongly acid to very strongly acid throughout.

Mashulaville soils are near the Leaf, Myatt, Savannah, and Stough soils. They are not so well drained as Savannah soils, but they are somewhat finer textured than Stough soils. They are coarser textured than Leaf soils. Unlike the Leaf and Myatt soils, Stough soils have a fragipan.

Mashulaville fine sandy loam (Ms).—This is the only Mashulaville soil mapped in the county. It is a nearly level, poorly drained soil that has a seasonal high water table and a fragipan. During wet seasons, the subsoil is waterlogged for long periods. Included in mapping were small areas of Savannah and Stough soils.

Natural fertility is low in this soil. Water enters at a moderate rate and moves through the profile at a moderately slow rate. The available water capacity is moderate.

This soil is very poorly suited to cultivated crops because of the poor drainage and high water table. It is suited to pasture and woodland. Erosion is not a hazard. Capability unit IVw–11; woodland group 3w9.

Myatt Series

The Myatt series consists of poorly drained, acid soils. These soils formed in acid marine sediment and old alluvial sediment. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is brown fine sandy loam 5 inches thick that is mottled with gray. The thick subsoil is light-gray to light brownish-gray sandy clay loam mottled with brownish yellow in the uppermost 10 inches; light-gray to light brownish-gray sandy clay loam to clay loam mottled with light yellowish brown and red to a depth of 36 inches; light-gray sandy clay loam mottled with red, yellowish red, and light yellowish brown and red to a depth of 54 inches; light olive-gray clay loam mottled with light yellowish brown and yellowish brown to a depth of 65 inches; and light-gray sandy clay loam to fine sandy loam mottled with dark yellowish brown to a depth of 80 inches.

The native vegetation consists chiefly of hardwoods, but pines grow in a few places. A small part of the acreage is cleared and is used for pasture.

Profile of Myatt fine sandy loam in a pasture (1 mile southwest of Mantua in the NW¼SE¼ sec. 24, T. 24 N., R. 1 E.):

Ap—0 to 5 inches, brown (10YR 4/3) fine sandy loam; many, medium, distinct, gray mottles; weak, fine, granular structure; very friable; 1 percent is black concretions; very strongly acid; abrupt, smooth boundary.

B1tg—5 to 15 inches, light-gray (10YR 6/1) to light brownish-gray (10YR 6/2) sandy clay loam; common, fine, distinct, brownish-yellow mottles; weak, medium, subangular blocky structure; friable; patchy clay films on peds; a few black concretions; very strongly acid; gradual, wavy boundary.

B21tg—15 to 36 inches, light-gray (10YR 6/1) to light brownish-gray (10YR 6/2) sandy clay loam to clay loam; common, fine, faint, light yellowish-brown and common, fine, prominent, red mottles; weak to moderate, fine, subangular blocky structure; friable to firm; a few mica flakes; clay films on peds and in root channels; very strongly acid; gradual, wavy boundary.

B22tg—36 to 54 inches, light-gray (10YR 6/1) sandy clay loam; many, fine, prominent, red and yellowish-red mottles and a few, fine, faint, light yellowish-brown mottles; moderate, fine, subangular blocky structure; firm; a few mica flakes; a few black and dark-brown concretions; clay films on peds; very strongly acid; gradual, wavy boundary.

B23tg—54 to 65 inches, light olive-gray (5Y 6/2) clay loam; common, fine, distinct, light yellowish-brown and yellowish-brown mottles; weak to moderate, medium, subangular blocky structure; firm, common, soft, black concretions; patchy clay film on peds; very strongly acid; gradual, wavy boundary.

B3tg—65 to 80 inches, light-gray (5Y 6/1) sandy clay loam to fine sandy loam; common, medium, subangular blocky structure; friable; a few, soft, black concretions; very strongly acid.

In areas not cultivated, the A1 horizon ranges from dark gray to very dark grayish brown in color and from 2 to 5 inches in thickness. The Ap horizon, and the A2 horizon where present, range from dark gray to brown, and generally mottles of light gray are present. The Bt horizon is more than 50 inches thick. The B2 horizon ranges from heavy loam to clay loam in texture. It ranges from dark gray to light olive gray, and it generally has common to many mottles of brown, red, and yellow. The B3tg horizon generally is gray and has brown mottles, but in places it is mottled in shades of gray and brown. Texture ranges from sandy loam to silty clay loam. Reaction of these soils ranges from strongly acid to very strongly acid.

Myatt soils are near Angie, terrace, soils and near Cahaba; Leaf; and Ruston, terrace, soils. They are less well drained than Cahaba and Ruston, terrace, soils and are less clayey than Leaf soils. They are coarser textured than Angie, terrace, soils and are more poorly drained.

Myatt fine sandy loam (My).—This is the only Myatt soil mapped in the county. It is nearly level and poorly drained and has a seasonal high water table. It is on low stream terraces and uplands throughout the county.

Included in mapping were small areas of Angie and Leaf soils and a few small areas that have a surface layer more than 20 inches thick. Also included, and making up about 20 percent of the areas mapped, is a soil that has a silt loam surface layer that contains a large percentage of sand. In other included small areas, silty clay, clay, or sandy clay is at a depth between 24 and 36 inches.

Natural fertility is low in this soil. Infiltration is moderate, and permeability is slow. The available water capacity is moderate.

This soil is very poorly suited to cultivated crops because of the poor drainage, high water table, long periods of standing water, and susceptibility to flooding. It is suited to pasture and woodland. Erosion is not a hazard. Capability unit IVw–11; woodland group 2w9.

Ochlockonee Series

The Ochlockonee series consists of well-drained, acid soils on first bottoms and small, narrow upland drainageways. These soils formed in sandy to loamy alluvium. The areas on first bottoms are subject to frequent overflow. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is dark grayish-brown and brown fine sandy loam about 10 inches thick. The C horizon is dark-brown fine sandy loam to a depth of 28 inches; dark yellowish-brown fine sandy loam to a depth of 46 inches; brown to dark yellowish-brown fine sandy loam to a depth of 52 inches; and dark yellowish-brown light fine sandy loam to a depth of 72 inches.

The native vegetation was mixed hardwoods and pines. About one-half of the acreage is cleared and is cropped or used for pasture.

Profile of Ochlockonee fine sandy loam, in a wooded area along the Sipsey River (1¼ miles northwest of Pleasant Ridge, in the NW¼NW¼ sec. 29, T. 24 N., R. 1 W.):

Ap—0 to 3 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; a few mica flakes; very strongly acid; clear, smooth boundary.

A1—3 to 10 inches, brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; very friable; a few mica flakes; very strongly acid; gradual, wavy boundary.

C1—10 to 28 inches, dark-brown (10YR 3/3) fine sandy loam; weak, fine, granular structure; very friable; a few mica flakes; very strongly acid; gradual, wavy boundary.

C2—28 to 46 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; weak, fine, granular structure; very friable; a few mica flakes; very strongly acid; gradual, wavy boundary.

C3—46 to 52 inches, brown (10YR 4/3) to dark yellowish-brown (10YR 4/4) fine sandy loam; massive to weak, fine, granular structure; very friable; a few mica flakes; very strongly acid; gradual, wavy boundary.

C4—52 to 72 inches +, dark yellowish-brown (10YR 4/4) light fine sandy loam; single grain to weak, fine, granular structure; very friable; a few mica flakes; very strongly acid.

The Ap horizon ranges from brown to dark grayish brown, and the C horizon ranges from dark brown to yellowish brown. Texture of the C1 and C2 horizons generally is fine sandy loam. It ranges, however, from sandy loam to silt loam and is less than 18 percent clay and more than 15 percent coarser than very fine sand. Texture of the C3 and C4 horizons ranges from loamy sand to silt loam. In many areas a few chert and quartz pebbles are on the surface and in the profile. Mica flakes generally are present. In places gray mottles occur at a depth below 20 inches. Reaction of these soils ranges from strongly acid to very strongly acid.

Ochlockonee soils are near Bibb and Falaya soils. They are better drained than those soils and contain more fine sand and less silt and very fine sand.

Ochlockonee fine sandy loam (Oc).—This soil has the profile described as representative of the series. It is a nearly level, well-drained soil that is subject to flooding. Included in mapping were small areas of Bibb and Falaya soils. Also included were some isolated deposits of sand along many of the streambanks.

Natural fertility is moderate in this soil. Infiltration and permeability are moderate to rapid. The available water capacity is high.

This soil is suited to a wide range of crops and can be cropped intensively, but susceptibility to flooding limits suitability for some crops. The response to lime and fertilizer is good. Capability unit IIw–14; woodland group 2o7.

Ochlockonee fine sandy loam, local alluvium (Oe).—This soil occurs throughout the northern part of the county. The areas are in depressions on uplands, at the heads of and along small drainageways, and at the foot of steep slopes. The soil consists of moderately coarse

textured local alluvium washed from adjacent higher lying areas of Coastal Plain soils.

This soil has a 6-inch surface layer of dark-brown fine sandy loam underlain by brown fine sandy loam to a depth of 22 inches. It is brown loam mottled with gray to a depth of 36 inches, and brown fine sandy loam mottled with gray to a depth of 72 inches.

Natural fertility is moderate in this soil. Infiltration and permeability are moderate to rapid. The available water capacity is high.

This soil is well suited to intensive use. Because of its small size and irregular shape, however, it is treated about the same as the soils nearby on uplands. The response to lime and fertilizer is good. Erosion is not a hazard. About 75 percent of the acreage has been cleared and is used for crops and pasture. Capability unit I–13; woodland group 2o7.

Oktibbeha Series

The Oktibbeha series consists of moderately well drained, very slowly permeable, acid soils in the prairie part of the county. These soils formed in thin beds of acid clay over Selma chalk. They have high shrink-swell potential, and large cracks form in them as they dry. Slopes range from 1 to 8 percent, but slopes of 1 to 5 percent are dominant.

In a representative profile, the surface layer is brown clay about 4 inches thick. The subsoil is yellowish-red clay faintly mottled with light yellowish brown in the uppermost 10 inches; red clay mottled with light brownish gray to a depth of 40 inches; and mottled red, yellowish-brown, light yellowish-brown, and light brownish-gray clay to a depth of 50 inches. Partly weathered Selma chalk is at a depth of about 50 inches.

The native vegetation was mixed hardwoods and pines. Most of the acreage is cleared and is used for pasture. Locally these soils are called "red post oak" soils.

Profile of Oktibbeha clay, 1 to 3 percent slopes, eroded, in a pasture (5 miles southwest of Eutaw, in the SE¼SW¼ sec. 19, T. 21 N., R. 2 E.):

Ap—0 to 4 inches, brown (10YR 4/3) clay; moderate, fine and medium, granular structure; friable, very hard, very sticky; 1 percent is manganese concretions; very strongly acid; clear, smooth boundary.

B21t—4 to 14 inches, yellowish-red (5YR 4/6) clay; a few, fine, faint, light yellowish-brown mottles; moderate, fine, subangular blocky structure; friable, very hard, very sticky; clay films on all ped surfaces; strongly acid; clear, wavy boundary.

B22t—14 to 20 inches, red (2.5YR 4/6) clay; many, medium, prominent, light brownish-gray mottles; moderate to strong, fine, subangular blocky structure; firm, very hard, very sticky; thick clay films on all ped surfaces; very strongly acid; gradual, wavy boundary.

B23t—20 to 40 inches, red (2.5YR 4/6) clay; many, medium, prominent, light brownish-gray mottles; moderate, fine, subangular blocky structure; firm, very hard, very sticky; clay films on all ped surfaces; very strongly acid; gradual, wavy boundary.

B3—40 to 50 inches, mottled red (2.5YR 4/6), yellowish-brown (10YR 5/6), light yellowish-brown (10YR 6/4), and light brownish-gray (10YR 6/2) clay; massive to moderate, fine and medium, subangular blocky structure; firm, extremely hard, very sticky; a few small slickensides; very strongly acid; clear, irregular boundary.

IIR—50 inches +, partly weathered calcareous Selma chalk.

The Ap horizon ranges from dark grayish brown to dark brown in color and from loam to clay in texture. The B21t horizon is strong brown to red clay, and in places it is faintly mottled with shades of brown. The B22t, B23t, and B3 horizons are mottled red, gray, and brown, or in places they have a red or gray matrix intensely mottled with brown, red, or gray. The texture is clay, but in places it ranges to silty clay. Depth to Selma chalk ranges from 24 to 60 inches. Many small to medium slickensides are in the B3 horizon. In many areas a few chert and quartz pebbles are on the surface and in the profile. The solum is medium acid to very strongly acid, but below the solum reaction is neutral to moderately alkaline.

These soils are near Eutaw, Kipling, Sumter, Vaiden, and Watsonia soils. They are better drained than Kipling and Vaiden soils, and they have a thicker subsoil than Watsonia soils. Oktibbeha soils are darker colored and more acid than Sumter soils. They are better drained and less gray than Eutaw soils.

Oktibbeha clay, 1 to 3 percent slopes, eroded (OhB2).—This soil has the profile described as representative of the series. It is on ridgetops. Included in mapping were small areas that have a brown or dark-brown surface layer. Also included were small areas of Eutaw, Forestdale, Kipling, and Vaiden soils. Rills and shallow gullies are in most areas.

Natural fertility is moderate in this soil. Infiltration and permeability are very slow. The available water capacity is moderate.

This soil is fairly well suited to most crops grown in the county, but it is well suited to pasture. It is difficult to keep in good tilth, and the fine texture makes it hard to prepare a good seedbed.

The response to lime and fertilizer is good. If this soil is tilled, the hazard of further erosion is moderate. Most of the acreage has been cleared and is used for pasture. Capability unit IIe–23; woodland group 3c8.

Oktibbeha loam, 1 to 3 percent slopes, eroded (OkB2).—This soil has a 5-inch plow layer of brown loam. The subsoil is yellowish-red light clay in the upper 15 inches; light-gray clay mottled with red to a depth of 40 inches; and light-gray clay mottled with olive brown and yellowish brown to a depth of 58 inches. Selma chalk is at a depth of 58 inches.

Included in mapping were small areas of Kipling, Oktibbeha, Sumter, and Vaiden soils. Rills and shallow gullies are in most areas.

Natural fertility is moderate in this soil. Water enters the soil at a moderate rate and moves through the profile very slowly. The available water capacity is moderate.

This soil is suited to most crops grown in the county, and it is well suited to pasture. The response to lime and fertilizer is good. This soil is fairly easy to work, but it warms up slowly in spring because of the fine texture of the subsoil. If this soil is cultivated, the hazard of further erosion is moderate. Most of the acreage is cleared and is used for pasture, but a small part is used for row crops. Capability unit IIe–23; woodland group 3c8.

Oktibbeha soils, 3 to 5 percent slopes, eroded (OoC2).—The surface layer of these soils ranges from loam to clay in texture, but it generally is dark grayish-brown

clay about 3 inches thick. The subsoil is yellowish-red, sticky and plastic clay faintly mottled with yellowish brown in the upper 12 inches and mottled red, light olive-brown, and light brownish-gray clay in the lower 15 inches. Partly weathered Selma chalk is at a depth of 30 inches (fig. 10).

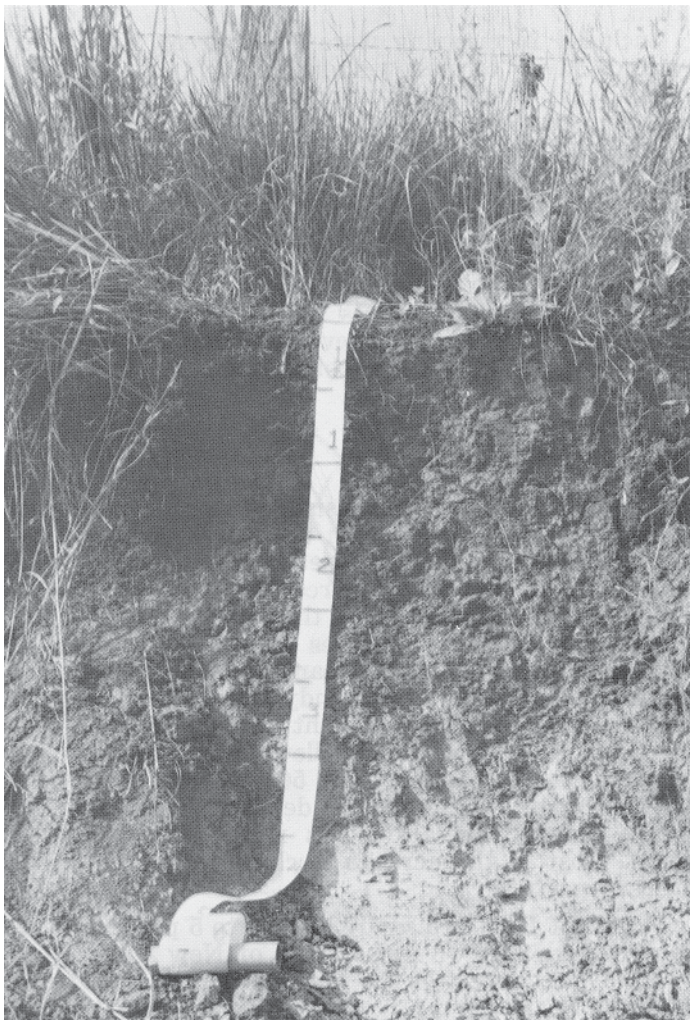

Figure 10.—**Profile of Oktibbeha clay, 3 to 5 percent slopes, eroded. The measure is in feet.**

Included in mapping were small areas of Kipling, Sumter, and Vaiden soils. A few shallow gullies occur in many fields.

Natural fertility is moderate in these soils. Water enters the soils at a slow rate and moves through the profile at a very slow rate. The available water capacity is moderate.

These soils are suited to cultivated crops, and they are well suited to pasture. The hazard of erosion is high, however, and the clay in the soils makes tillage difficult. The response to lime and fertilizer is good. Most of the acreage is cleared and is used for pasture. Capability unit IIIe–23; woodland group 3c8.

Oktibbeha soils, 5 to 8 percent slopes, eroded (OoD2). —The surface layer of these soils ranges from 2 to 6 inches in thickness and from loam to clay in texture, but it generally is brown to dark-brown clay about 3 inches thick. The subsoil is red clay in the upper 12 inches and mottled red and light-gray, sticky and plastic clay in the lower 36 inches. Selma chalk is at a depth of 50 inches.

Included in mapping were small areas of Sumter and Vaiden soils. A few shallow gullies and old gully scars are in most fields.

Natural fertility is moderate in this soil. Runoff is rapid, and the hazard of further erosion is very high. Infiltration is slow to very slow, and permeability is very slow. The available water capacity is moderate.

These soils are well suited to pasture. The response to lime and fertilizer is good. The high hazard of further erosion and the difficulty of tillage severely limit use of these soils for row crops. Capability unit IVe–23; woodland group 3c8.

Ora Series

The Ora series consists of acid soils that have a fragipan in the lower part of the subsoil. These soils formed on uplands in unconsolidated beds of sandy loam and sandy clay loam marine sediment. Slopes range from 0 to 8 percent, but slopes of 2 to 5 percent are dominant.

In a representative profile, the surface layer is brown fine sandy loam about 5 inches thick. The subsoil is yellowish-red clay loam in the upper 21 inches. The compact and brittle lower part of the subsoil is a fragipan. It is red clay loam mottled with yellowish brown and light gray and extends to a depth of 72 inches.

The native vegetation was mixed hardwoods and pines. Most of the acreage is cleared and is used for row crops or pasture. A few isolated areas are wooded.

Profile of Ora fine sandy loam, 2 to 5 percent slopes, eroded, in a field (2.5 miles east of U.S. Highway 43 on Dollarhide Camp Road, in the SE¼NE¼ sec. 3, T. 20 N., R. 2 E.):

Ap—0 to 5 inches, brown (7.5YR 5/4) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; a few quartz pebbles; very strongly acid; abrupt, smooth boundary.

B21t—5 to 12 inches, yellowish-red (5YR 4/8) clay loam; moderate, fine and medium, subangular blocky structure; friable; common fine roots; clay films on peds and in pores and old root channels; a few very fine manganese concretions; very strongly acid; clear, wavy boundary.

B22t—12 to 26 inches, yellowish-red (5YR 5/8) clay loam; moderate, fine, subangular blocky structure; friable; common fine roots; clay films on peds and in pores and old root channels; very strongly acid; clear, wavy boundary.

Bx1—26 to 30 inches, reddish-yellow (7.5YR 6/6) light sandy clay loam; many, medium, distinct, yellowish-red, red, and light-gray mottles; weak, thick, platy structure to massive, but breaks to weak, fine, subangular blocky; firm, compact in place, brittle; patchy clay films on peds; some clean sand grains; very strongly acid; clear, wavy boundary.

Bx2—30 to 50 inches, red (2.5YR 5/8) clay loam; many, medium, prominent, light yellowish-brown and light-gray mottles; weak, coarse, polygonal structure that breaks to weak, medium, subangular blocky; firm to very firm; compact in place, brittle; clay films on peds; clayey material in polygonal cracks; very strongly acid; gradual, wavy boundary.

Bx3—50 to 72 inches, red (2.5YR 4/8) clay loam; many, medium, prominent, brownish-yellow mottles and a few, medium, prominent, light-gray mottles; moderate, medium, subangular blocky structure; clay films on peds; firm, compact and brittle; very strongly acid.

The Ap horizon ranges from dark grayish brown to yellowish brown or pale brown. The B21t horizon ranges from strong brown to red, and from heavy loam to clay loam. The Bx1 and Bx2 horizons range from reddish yellow to red, and they are mottled with shades of brown, gray, and red. In places these horizons lack a matrix and are mottled in shades of red, brown, and gray. The fragipan is at a depth between 20 and 36 inches and has about the same range in texture as the upper part of the B21t horizon. The Bx3 horizon ranges from yellowish red to dark red and has common to many brown and gray mottles. Its texture ranges from sandy loam to clay loam. Reaction of these soils ranges from strongly acid to very strongly acid.

Ora soils are near Magnolia, Ruston, Savannah, and Shubuta soils. They have a less clayey B horizon than Magnolia and Shubuta soils, and unlike the Magnolia, Ruston, and Shubuta soils, they have a fragipan. Their B horizon is not so brown as that of Savannah soils.

Ora fine sandy loam, 0 to 2 percent slopes (OrA).—The plow layer of this soil generally is brown fine sandy loam about 7 inches thick, but it ranges from 5 to 12 inches in thickness. Below is about 20 inches of yellowish-red, friable clay loam. This is underlain by compact and brittle, mottled yellowish-red, brown, and light-gray sandy clay loam. Included in mapping were small areas that have a subsoil of yellowish brown or strong brown.

Natural fertility is low in this soil, and the available water capacity is moderate. Water enters this soil readily and moves through it at a moderate rate to the fragipan, then it moves more slowly.

This soil is suited to many crops. It is easy to work and can be tilled throughout a wide range of moisture content without clodding. The response to lime and fertilizer is good. Most of the acreage is cleared and is used for crops or pasture. Capability unit IIs–15; woodland group 3o7.

Ora fine sandy loam, 2 to 5 percent slopes, eroded (OrB2).—This soil has the profile described as representative of the series. Depth to the fragipan ranges from 20 to 30 inches. The areas occur throughout the county. Included in mapping were small areas of Ruston, Savannah, and Stough soils and small areas that have a plow layer of yellowish-red sandy clay loam.

Natural fertility is low in this soil, and the available water capacity is moderate. Water enters this soil readily and moves at a moderate rate to the fragipan, then it moves more slowly.

This soil is suited to many crops. It is easy to work and can be tilled throughout a wide range of moisture content without clodding or crusting. If this soil is cultivated, the hazard of further erosion is slight to moderate. Most of the acreage is used for crops or pasture. Capability unit IIe–15; woodland group 3o7.

Ora fine sandy loam, 5 to 8 percent slopes, eroded (OrC2).—This soil has a 4-inch surface layer of brown fine sandy loam. It is underlain by yellowish-red, friable sandy clay loam about 26 inches thick. Below is a compact and brittle fragipan, about 42 inches thick, of yellowish-red sandy clay loam that is mottled with red and gray. In some areas the fragipan is not continuous and the subsoil is underlain by red sandy clay loam.

Included in mapping were small areas that have a surface layer of yellowish-red sandy clay loam and small areas that have a texture of loamy sand. A few rills and shallow gullies occur in many fields.

Natural fertility is low in this soil. Infiltration is moderate to rapid. Permeability is moderate to the fragipan; then it is slow. The available water capacity is moderate.

This soil is easy to work and can be tilled throughout a fairly wide range of moisture content without clodding or crusting. It is suited to many crops. If this soil is cultivated, however, the hazard of further erosion is moderate. Capability unit IIIe–15; woodland group 3o7.

Rumford Series

The Rumford series consists of well-drained, acid soils. These soils formed on uplands in thick beds of sandy marine sediment. Slopes range from 0 to 5 percent, but slopes of 0 to 2 percent are dominant.

In a representative profile, the surface layer is brown sandy loam about 7 inches thick. The subsoil is strong-brown fine sandy loam in the uppermost 7 inches; yellowish-red fine sandy loam to a depth of 30 inches; and strong-brown light sandy loam to a depth of 38 inches. Below this is yellowish-brown sandy loam or loamy sand to a depth of 50 inches and very pale brown sand or loamy sand to a depth of 70 inches.

The native vegetation was mixed hardwoods and pines. Most of the acreage is cleared and is used for crops or pasture.

Profile of Rumford sandy loam, 0 to 5 percent slopes, in a cropped field (3 miles north of New West Greene and 200 yards west of the road, in the SW¼SE¼ sec. 13, T. 23 N., R. 2 W.):

Ap—0 to 7 inches, brown (10YR 4/3) sandy loam; weak, fine, granular structure; very friable; common fine roots; very strongly acid; abrupt, smooth boundary.

B1—7 to 14 inches, strong-brown (7.5YR 5/6) fine sandy loam; weak, fine, subangular blocky structure; very friable; a few fine roots; very strongly acid; gradual, smooth boundary.

B21t—14 to 24 inches, yellowish-red (5YR 5/8) fine sandy loam; weak, medium, subangular blocky structure; friable; a few fine roots; patchy clay films on peds; sand grains coated and bridged with clay; very strongly acid; gradual, wavy boundary.

B22t—24 to 30 inches, yellowish-red (5YR 5/8) fine sandy loam; common, medium, distinct, light yellowish-brown mottles; weak, medium, subangular blocky structure; very friable; patchy clay films on a few peds; sand grains coated and bridged with clay; very strongly acid; gradual, wavy boundary.

B3t—30 to 38 inches, strong-brown (7.5YR 5/6) light sandy loam; common, medium, distinct, light yellowish-brown mottles; weak, medium, subangular

blocky structure; very friable; patchy clay films on a few peds; sand grains coated and bridged with clay; very strongly acid; gradual, wavy boundary.

C1—38 to 50 inches, yellowish-brown (10YR 5/6) sandy loam or loamy sand; common, medium, distinct, pale-brown mottles; single grain; very friable; very strongly acid; gradual, wavy boundary.

C2—50 to 70 inches, very pale brown (10YR 5/3) sand or loamy sand; single grain; loose; very strongly acid.

The Ap horizon, and the A2 horizon where present, range from brown to pale brown. The B1 horizon ranges from strong-brown to yellowish-red sandy loam to light loam. The Bt horizon is less than 50 inches thick. The B2t horizon ranges from yellowish-red to red sandy loam to light loam. Its clay content is dominantly 14 to 18 percent, and the silt content is more than 15 percent. The B3 horizon ranges from strong-brown to red light sandy loam to fine sandy loam. A distinct decrease in clay occurs from the B horizon to the C horizon. The C horizon ranges from yellowish brown to very pale brown. Its texture ranges from sandy loam to sand. Reaction of these soils ranges from strongly acid to very strongly acid.

Rumford soils are near Magnolia, Ora, Ruston, Savannah, and Sequatchie soils. They have a coarser textured B2 horizon than Magnolia and Ruston soils. Rumford soils have a lighter colored A horizon than Sequatchie soils, and they lack the fragipan characteristic of Ora and Savannah soils.

Rumford sandy loam, 0 to 5 percent slopes (RfB).—This is the only Rumford soil mapped in the county. It occurs throughout the county. Included in mapping were small areas of Ruston, Savannah, and Sequatchie soils. About 70 percent of the acreage of these included areas have slopes that range from 0 to 2 percent.

Natural fertility is low in this soil. Infiltration and water capacity are low.

This soil is well suited to most locally grown row crops and pasture plants. It is also well suited to pine trees. During short periods of drought, plants are damaged from lack of water. This soil is easy to work and can be tilled throughout a wide range of moisture content without clodding or crusting. Most of the acreage has been cleared and is used for crops or pasture. Capability unit IIs–12; woodland group 3o1.

Ruston Series

The Ruston series consists of well-drained, acid soils on uplands and stream terraces. These soils formed in thick beds of unconsolidated sandy loam to sandy clay loam sediment. Slopes range from 0 to 25 percent, but slopes of 0 to 5 percent are dominant.

In a representative profile, the surface layer is brown fine sandy loam 8 inches thick. The thick subsoil is yellowish-red heavy fine sandy loam in the uppermost 8 inches; yellowish-red light clay loam to a depth of 30 inches; yellowish-red sandy clay loam to a depth of 60 inches; and yellowish-red light fine sandy loam to a depth of 80 inches. Below is strong-brown sandy loam mottled with pale brown.

The native vegetation was mixed hardwoods and pines. Most of the areas on slopes of 5 percent or less have been cleared and are used for row crops or pasture.

Profile of Ruston fine sandy loam, 0 to 2 percent slopes, in a pasture (1 mile east of Eutaw on Three Mile Landing Road, in the NE¼SW¼ sec. 34, T. 22 N., R. 2 E.):

Ap—0 to 8 inches, brown (7.5YR 4/4) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B1t—8 to 16 inches, yellowish-red (5YR 4/6) heavy fine sandy loam; weak, fine, subangular blocky structure; friable; patchy clay films; sand grains coated and bridged with clay; strongly acid; gradual, wavy boundary.

B21t—16 to 30 inches, yellowish-red (5YR 4/6) light clay loam; weak to moderate, medium, subangular blocky structure; friable to firm; clay films on most peds; very strongly acid; gradual, wavy boundary.

B22t—30 to 44 inches, yellowish-red (5YR 4/6) sandy clay loam; weak to moderate, medium, subangular blocky structure; friable; clay films on most peds; a few, small, black concretions; very strongly acid; gradual, wavy boundary.

B23t—44 to 60 inches, yellowish-red (5YR 4/8) sandy clay loam; weak, medium, subangular blocky structure; friable; patchy clay films; sand grains coated and bridged with clay; a few small manganese concretions; very strongly acid; gradual, wavy boundary.

B3t—60 to 80 inches, yellowish-red (5YR 5/6) light fine sandy loam; weak, medium, subangular blocky structure; friable; patchy clay films; sand grains coated and bridged with clay; a few small manganese concretions; very strongly acid; gradual, wavy boundary.

C—80 to 108 inches, strong-brown (7.5YR 5/6) sandy loam; a few, medium, distinct, pale-brown mottles; very weak, fine, subangular blocky structure; very friable; very strongly acid.

In areas not cultivated the A1 horizon ranges from dark gray to dark grayish brown. The Ap horizon, and the A2 horizon where present, range from brown to pale brown. The A horizon is less than 20 inches thick, but the Bt horizon is more than 50 inches thick. The B1t horizon ranges from strong-brown to yellowish-red sandy loam or sandy clay loam. The B2t horizon ranges from yellowish-red to red heavy loam or light clay loam, and it is 18 to 35 percent clay and more than 20 percent silt. The B3t horizon ranges from strong brown to yellowish red, and in places it is mottled with pale brown. It ranges from sandy loam to sandy clay. The C horizon ranges from strong-brown to pale-brown sandy loam or loamy sand. Reaction of these soils ranges from strongly acid to very strongly acid.

Ruston soils are on uplands and stream terraces near Magnolia, Ora, Rumford, Savannah, and Shubuta soils. Ruston soils have a coarser textured subsoil than Magnolia and Shubuta soils, and they lack the fragipan that is characteristic of Ora and Savannah soils. They have a finer textured B2 horizon than Rumford soils.

Ruston fine sandy loam, 0 to 2 percent slopes (RsA).—This soil has the profile described as representative of the series (fig. 11). The areas occur throughout the county. Included in mapping were small areas of Magnolia and Ora soils.

Natural fertility is low in this soil. Infiltration and permeability are moderate to moderately rapid. The available water capacity is moderate.

This soil is well suited to all locally grown crops. It is easy to work and can be tilled throughout a wide range of moisture content without clodding or crusting. There is little or no hazard of erosion. Capability unit I–12; woodland group 3o1.

Ruston fine sandy loam, 2 to 5 percent slopes (RsB).—This soil occurs throughout the county. It has a 6-inch surface layer of friable, brown fine sandy loam. The subsoil is yellowish-red clay loam in the uppermost 24 inches and yellowish-red sandy clay loam in the lower 24 inches or more. Included in mapping were

Figure 11.—**Profile of Ruston fine sandy loam, 0 to 2 percent slopes. The measure is in feet.**

small areas that have a surface layer 8 to 18 inches thick.

Natural fertility is low in this soil. Infiltration and permeability are moderate to moderately rapid. The available water capacity is moderate.

This soil is suited to many crops. It is easy to work and can be tilled throughout a wide range of moisture content without clodding or crusting. If this soil is cultivated, the hazard of erosion is slight to moderate. Capability unit IIe–12; woodland group 3o1.

Ruston fine sandy loam, 5 to 8 percent slopes, eroded (RsC2).—This soil occurs throughout the county. It has a 6-inch surface layer of friable, pale-brown fine sandy loam. The subsoil is yellowish-red sandy clay loam in the upper 40 inches and strong-brown heavy fine sandy loam in the lower 12 inches or more.

Included in mapping were small areas of Ora, Savannah, and Shubuta soils, and small areas that have a surface layer of dark-brown to yellowish-red sandy clay loam. A few rills and shallow gullies are in many fields.

The natural fertility and organic-matter content are low in this soil. Reaction is strongly acid. Water enters this soil readily and moves through it at a moderate to a moderately rapid rate. The available water capacity is moderate.

This soil is suited to all locally grown crops. It is easy to work and can be tilled throughout a wide range of moisture content without clodding or crusting. If this soil is cultivated, the hazard of erosion is moderate. Capability unit IIIe–11; woodland group 3o1.

Ruston fine sandy loam, 8 to 12 percent slopes, eroded (RsD2).—This soil occurs throughout the county. It has a 6-inch surface layer of friable, brown fine sandy loam. The subsoil is yellowish-red sandy clay loam in the upper 30 inches and yellowish-red heavy fine sandy loam in the lower 24 inches or more

Included in mapping were small areas of Magnolia, Ora, and Shubuta soils. Rills and a few shallow gullies are in most fields.

Natural fertility is low in this soil. Infiltration and permeability are moderate to moderately rapid. The available water capacity is moderate.

This soil is well suited to pasture and woodland. It is poorly suited to cultivated crops because of the high hazard of further erosion. It can be cultivated occasionally, however, under good management. The cultivated areas generally are small and are not tilled with mechanized equipment. Most of the acreage is wooded or is in pasture; only a few areas are cultivated. Capability unit IVe–11; woodland group 3o1.

Ruston fine sandy loam, terrace, 0 to 5 percent slopes (RuB).—This well-drained soil is on low stream terraces along the Black Warrior, Sipsey, and Tombigbee Rivers. It is subject to occasional overflow. It has an 8-inch surface layer of brown fine sandy loam. The subsoil is yellowish-red clay in the upper 30 inches. It is strong-brown fine sandy loam mottled with reddish brown and light yellowish-brown in the lower 30 inches. This is underlain by light yellowish-brown loamy sand or sand.

Included in mapping were small areas that have a surface layer of loam and silt loam. About 90 percent of the acreage of these included areas has slopes of 0 to 2 percent.

Natural fertility is low in this soil. Water enters this soil readily and moves through it at a moderate to a moderately rapid rate. The available water capacity is moderate.

This soil is suited to most crops grown in the county, and it is well suited to pasture and woodland. It is easy to work and can be tilled throughout a wide range of moisture content. The response to lime and

fertilizer is good. Crops occasionally are damaged by flooding. Capability unit IIw–13; woodland group 3o1.

Ruston complex, 12 to 25 percent slopes (RoE).—The soils in this mapping unit occur in an intricate pattern on the upper part of steep hillsides in the northwestern part of the county near Pleasant Ridge. The areas are narrow and long and are entirely wooded.

Ruston soils are dominant in this mapping unit. They have a dark-gray sandy loam to loamy sand surface layer, 3 inches thick, underlain by a light yellowish-brown sandy loam to loamy sand subsurface layer about 12 inches thick. The subsoil is red clay loam to a depth of 34 inches, yellowish-red sandy clay loam to a depth of 58 inches, and strong-brown fine sandy loam to a depth of 66 inches.

Other soils that were not classified are more shallow and are finer textured or coarser textured than the Ruston soils. The included soils change abruptly within a short distance.

Natural fertility is low in these soils. Infiltration and permeability are moderate to moderately rapid. The available water capacity is moderate.

This mapping unit is not suited to cultivated crops because of the steep slopes and the very high hazard of erosion. It is well suited to woodland. The native vegetation is mixed hardwoods and pines. Capability unit VIIe–19; woodland group 3r2.

Savannah Series

The Savannah series consists of moderately well drained, acid soils that have a fragipan in the lower part of the subsoil. These soils formed on uplands and stream terraces in unconsolidated beds of medium textured to moderately fine textured sediment. Slopes range from 0 to 8 percent, but slopes of 0 to 5 percent are dominant.

In a representative profile, the surface layer is brown fine sandy loam about 8 inches thick. The subsoil is yellowish-brown heavy fine sandy loam or loam to a depth of 23 inches. The compact and brittle fragipan in the lower part of the subsoil is yellowish-brown heavy loam mottled with light yellowish brown, strong brown, gray, and yellowish red to a depth of 33 inches; yellowish-brown sandy clay loam mottled with red, pale brown, and gray to a depth of 45 inches; and mottled red, yellowish-red, strong-brown, yellowish-brown, and gray sandy clay loam to a depth of 72 inches.

The native vegetation was mixed hardwoods and pines. Most of the acreage is cleared and is used for crops or pasture.

Profile of Savannah fine sandy loam, 0 to 2 percent slopes, in a pasture (½ mile south of Forkland, on east side of gravel road and ¼ mile from and parallel to U.S. Highway 43, in the NE¼NE¼ sec. 10, T. 19 N., R. 2 E.):

Ap—0 to 8 inches, brown (10YR 4/3) fine sandy loam; massive to weak, fine, granular structure; very friable; a few fine roots; strongly acid; abrupt, smooth boundary.

B1—8 to 11 inches, yellowish-brown (10YR 5/6) heavy fine sandy loam or loam; weak, thick, platy structure (plowpan); friable; a few fine roots; some material from the Ap horizon is mixed with this horizon; strongly acid; gradual, smooth boundary.

B21t—11 to 17 inches, yellowish-brown (10YR 5/6) heavy loam; moderate to weak, fine and medium, subangular blocky structure; friable; patchy clay films on peds; a few fine roots; very strongly acid; gradual, smooth boundary.

B22t—17 to 23 inches, yellowish-brown (10YR 5/6) heavy loam; weak to moderate, fine and medium, subangular blocky structure; friable; a few, fine, grass roots; patchy clay films on peds; a few, fine, soft, brown concretions; very strongly acid; clear, smooth boundary.

Bx1—23 to 26 inches, yellowish-brown (10YR 5/6) heavy loam; many, medium, faint mottles of brown to strong brown, light yellowish brown, and pale brown; moderate, medium, subangular blocky structure; firm to friable when moist; clay films on ped faces and in pores; compact and brittle; very strongly acid; clear, wavy boundary.

Bx2—26 to 33 inches, yellowish-brown (10YR 5/6) heavy loam; many, fine and medium, distinct mottles of light yellowish brown, gray, and yellowish red; moderate, thick, platy structure that breaks to moderate, medium, subangular blocky; friable to firm, compact and brittle; clay films on ped faces in pores; gray color takes on horizontal alinement; very strongly acid; clear, smooth boundary.

Bx3—33 to 45 inches, yellowish-brown (10YR 5/6) sandy clay loam; many, fine and medium, distinct mottles of red, pale brown, and gray; weak, medium, subangular blocky structure; firm to friable, hard, compact and brittle; clay films on horizontal as well as vertical ped faces; gray color takes on vertical alinement; very strongly acid; gradual, smooth boundary.

Bx4—45 to 60 inches, mottled strong-brown (7.5YR 5/6), yellowish-brown (10YR 5/6), yellowish-red (5YR 5/6), gray (10YR 6/1), and red (2.5YR 5/6) sandy clay loam; weak, medium to coarse, subangular blocky structure; friable, hard, compact and brittle; very strongly acid; gradual, smooth boundary.

Bx5—60 to 72 inches, mottled red (2.5YR 4/6), yellowish-red (5YR 4/6), strong-brown (7.5YR 5/6), and gray (10YR 6/1) clay loam or sandy clay loam; weak, medium, subangular blocky structure; friable, very hard, compact and brittle; very strongly acid.

The color of the Ap horizon, or the A2 horizon where present, ranges from dark grayish brown to pale brown. The upper part of the Bt horizon ranges from yellowish brown to strong brown. This horizon ranges from heavy sandy loam to clay loam, and it is 25 to 35 percent clay and more than 20 percent silt. Depth to the fragipan ranges from 20 to 30 inches. In some places the fragipan has a matrix of yellowish brown that has common to many brown, red, and gray mottles. In other places the matrix has distinct to prominent mottles of red, brown, yellow, and gray. The texture ranges from heavy sandy loam to clay loam. The degree of fragipan development is weak to moderate. Reaction of these soils ranges from medium acid to extremely acid.

Savannah soils are near Magnolia, Mashulaville, Ruston, Shubuta, and Stough soils. Unlike the Ruston soils, Savannah soils have a fragipan. They have a less clayey B horizon than Magnolia and Shubuta soils and are better drained than Mashulaville soils. Their B horizon is finer textured than that of Stough soils.

Savannah fine sandy loam, 0 to 2 percent slopes (SaA).—This soil has the profile described as representative for the series (fig. 12). It occurs throughout the county. Included in mapping were small areas of Ora soils.

Natural fertility is low in this soil. Infiltration is moderate. Permeability is moderate to the fragipan,

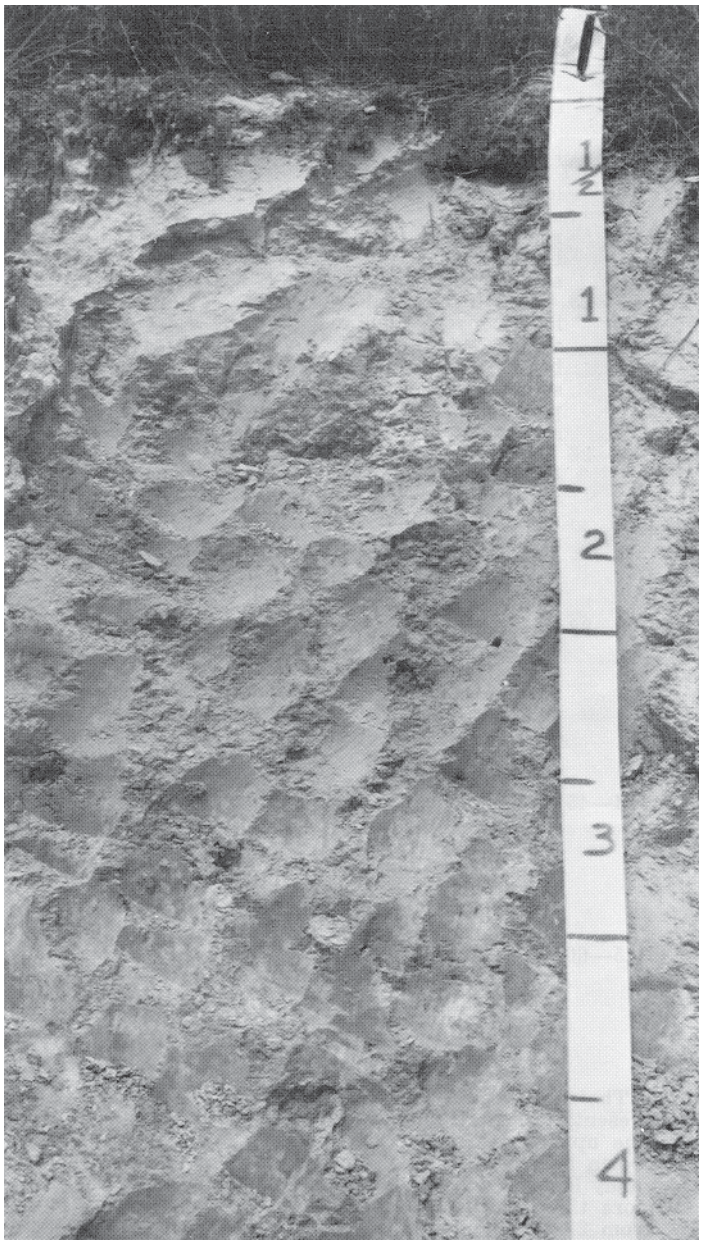

Figure 12.—**Profile of Savannah fine sandy loam, 0 to 2 percent slopes. The measure is in feet.**

then it is slow. The available water capacity is moderate.

Although this soil is slow to warm up in spring, it is suited to most crops grown in the county. It is easy to work and can be tilled throughout a fairly wide range of moisture content. A crust forms on the soil after a rain and at times hinders growth of crops. Also, the fragipan restricts the movement of roots and water. During wet seasons the subsoil is waterlogged for short periods and some low areas are flooded occasionally. Capability unit IIs–15; woodland group 3o7.

Savannah fine sandy loam, 2 to 5 percent slopes (SaB).—This soil occurs throughout the county. It has a 6-inch surface layer of brown fine sandy loam. The subsoil is yellowish-brown sandy clay loam in the upper 18 inches. The compact and brittle fragipan in the lower part of the subsoil is mottled yellowish-brown, light yellowish-brown, light brownish-gray, and strong-brown light sandy clay loam more than 36 inches thick.

Included in mapping were small areas that have a surface layer of loam, silt loam, and yellowish brown, sticky clay loam. Southeast of Boligee and north of Taylor Creek are areas of Savannah soil that have a discontinuous fragipan and a subsoil that in places ranges to heavy clay loam.

Natural fertility is low in this soil. Water enters the soil readily and moves through the profile at a moderate rate to the fragipan; then it moves more slowly. The available water capacity is moderate.

Although this soil is late to warm up in spring, it is suited to most crops grown in the county. It is easy to work and can be tilled throughout a wide range of moisture content. The fragipan restricts the movement of roots and water in this soil. Also, a crust forms as the soil dries, and at times hinders growth of crops. If this soil is cultivated, the hazard of erosion is slight to moderate. Capability unit IIe–15; woodland group 3o7.

Savannah fine sandy loam, 5 to 8 percent slopes, eroded (SaC2).—This soil occurs throughout the county. It has a 5-inch surface layer of grayish-brown fine sandy loam. The subsoil is yellowish-brown to strong-brown clay loam in the upper 20 inches. The compact and brittle fragipan in the lower part of the subsoil is strong-brown, light clay loam mottled with light yellowish brown, gray, and brownish yellow.

Included in mapping were small areas of Ora soils and small areas that have a surface layer of yellowish-brown clay loam. A few rills and gullies are in most fields.

Natural fertility is low in this soil. Infiltration is moderate, and permeability is moderate to the fragipan; then it is slow. The available water capacity is moderate.

This soil is suited to most crops grown in the county. It is easy to work, but clods form if the soil is tilled when too wet or too dry. A crust forms as the soil dries and at times hinders growth of crops. If this soil is cultivated, the hazard of further erosion is moderate. Capability unit IIIe–15; woodland group 3o7.

Sawyer Series

The Sawyer series consists of moderately well drained, acid soils that are medium textured in the upper part of the subsoil and fine textured in the lower part. These soils formed on uplands and stream terraces in thick beds of unconsolidated, medium-textured and fine-textured sediment. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is very dark gray fine sandy loam about 3 inches thick. The subsurface layer is brown fine sandy loam about 6 inches thick. The thick subsoil is yellowish-brown

loam to a depth of 26 inches; yellowish-brown silty clay mottled with light brownish gray and yellowish red to a depth of 30 inches; and mottled light-gray, yellowish-brown, and yellowish-red silty clay to a depth of 60 inches.

The native vegetation is mixed hardwoods and pines. About one-half of the acreage is cleared and is used for row crops or pasture.

Profile of Sawyer fine sandy loam, 0 to 2 percent slopes, in a woodland that was once cultivated; (one-half mile northwest of Ridge, in the NW¼SE¼ sec. 36, T. 24 N., R. 2 W.):

A1—0 to 3 inches, very dark gray (10YR 3/1) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

A2—3 to 9 inches, brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; very strongly acid; clear, smooth boundary.

B1t—9 to 14 inches, yellowish-brown (10YR 5/4) loam; a few, fine, faint, brown mottles; weak, fine, subangular blocky structure; friable; common fine roots; patchy clay films; sand grains coated and bridged with clay; very strongly acid; gradual, wavy boundary.

B21t—14 to 26 inches, yellowish-brown (10YR 5/6) loam; weak, fine, subangular blocky structure; friable; a few fine roots; patchy clay films; sand grains coated and bridged with clay; 1 percent is quartz gravel; a few mica flakes; very strongly acid; clear, wavy boundary.

IIB22t—26 to 30 inches, yellowish-brown (10YR 5/4) silty clay; common, fine, distinct, light brownish-gray and yellowish-red mottles; moderate, fine, subangular blocky structure; firm; a few fine roots; clay films on most peds; a few mica flakes; very strongly acid; gradual, wavy boundary.

IIB23t—30 to 40 inches, mottled light-gray (10YR 6/1), yellowish-brown (10YR 5/6), and yellowish-red (5YR 4/8) silty clay; moderate, fine, subangular blocky structure; firm; a few fine roots; clay films on most peds; a few mica flakes; very strongly acid; gradual, wavy boundary.

IIB24t—40 to 60 inches, mottled light-gray (10YR 6/1) and yellowish-brown (10YR 5/6) silty clay; moderate, fine, subangular blocky structure; firm; a few fine roots; clay films on most peds; a few mica flakes; extremely acid; clear, wavy boundary.

The A1 horizon ranges from dark grayish brown to very dark gray in color, and from 2 to 4 inches in thickness. The Ap horizon and the A2 horizon, where present, range from pale brown to dark brown. The B1t and B21t horizons range from strong brown to olive brown in color, and from loam to silty clay loam in texture. Depth to the fine-textured IIB22t horizon ranges from 20 to 30 inches. The IIB22t, IIB23t, and IIB24t horizons range from sandy clay to clay and generally are intensively mottled with gray, brown, and red. Reaction of these soils ranges from strongly acid to extremely acid.

Sawyer soils are near Angie, Cahaba, and Leaf soils. They are not so well drained as Cahaba soils and are less red, but the lower part of their B horizon is finer textured than that in those soils. They are less clayey in the upper part of the B horizon than Angie and Leaf soils. They also are better drained than Leaf soils.

Sawyer fine sandy loam, 0 to 2 percent slopes (SeA).—This is the only Sawyer soil mapped in the county. It is medium textured in the upper part of the subsoil and fine textured in the lower part. During wet seasons, the subsoil is waterlogged for short periods. Included in mapping were small areas that have a fine-textured subsoil at a depth between 14 and 18 inches.

Natural fertility is low in this soil. Water enters the soil readily and moves through the upper part of the subsoil at a moderate rate and through the lower part of the subsoil at a slow rate. The available water capacity is moderate.

This soil is suited to most locally grown row crops and to pasture and woodland. It is easy to work and can be tilled throughout a fairly wide range of moisture content without clodding or crusting. Most of the acreage is subject to occasional flooding, but crops are seldom damaged. Capability unit IIw–13; woodland group 2w8.

Sequatchie Series

The Sequatchie series consists of well-drained soils that have a dark surface layer. These soils formed on uplands in thick beds of sandy loam marine sediment or stream alluvium. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is dark-brown light sandy loam about 7 inches thick. The subsurface layer is dark reddish-brown light sandy loam about 8 inches thick. The subsoil is yellowish-red sandy loam in the upper 13 inches and yellowish-red fine sandy loam and light fine sandy loam to a depth of about 60 inches. The underlying material is yellowish-red loamy sand.

The native vegetation is mixed hardwoods and pines. Most of the acreage is cleared and is used for crops or pasture.

Profile of Sequatchie sandy loam, 0 to 2 percent slopes, in a cropped field (2.5 miles west of Forkland, in the NW¼SE¼ sec. 7, T. 19 N., R. 2 E.):

Ap—0 to 7 inches, dark-brown (10YR 3/3) light sandy loam; weak, fine, granular structure; very friable; a few fine roots; very strongly acid; clear, smooth boundary.

A3—7 to 15 inches, dark reddish-brown (5YR 3/4) light sandy loam; weak, fine, granular structure; very friable; a few fine roots; slightly compact in place; very strongly acid; gradual, wavy boundary.

B21t—15 to 28 inches, yellowish-red (5YR 4/8) sandy loam; weak, fine, granular structure; very friable; sand grains coated and bridged with clay; a few fine and medium roots; very strongly acid; gradual, wavy boundary.

B22t—28 to 48 inches, yellowish-red (5YR 4/8) fine sandy loam; weak, fine, subangular blocky structure; very friable; patchy clay films on some peds; sand grains coated and bridged with clay; a few fine roots; very strongly acid; gradual, wavy boundary.

B23t—48 to 60 inches, yellowish-red (5YR 4/8) light fine sandy loam; weak, fine, subangular blocky structure; very friable; sand grains coated and bridged with clay; a few fine roots; very strongly acid; gradual, wavy boundary.

C—60 to 80 inches +, yellowish-red (5YR 4/8) loamy sand; very weak, fine, subangular blocky structure; very friable; sand grains coated or stained; very strongly acid.

The A horizon ranges from 10 to 18 inches in thickness, and from dark brown to dark reddish brown in color. The Bt horizon ranges from 25 to 50 inches in thickness. The texture of the B21t and B22t horizons ranges from sandy loam to light loam, and from strong brown to yellowish red. Patchy clay films are on some peds, and the sand grains are coated and bridged with clay. The B23t horizon ranges from

loamy sand to fine sandy loam, and from strong brown to yellowish red. The C horizon ranges from loamy sand to sand, and from pale brown to yellowish red. In places it is several feet thick. The solum ranges from about 40 to 60 inches in thickness. Reaction of these soils ranges from strongly acid to very strongly acid.

Sequatchie soils occur near Rumford, Ruston, and Savannah soils. They have a coarser textured B horizon than Ruston soils and a darker colored Ap horizon than Rumford soils. Sequatchie soils are coarser textured than Savannah soils and lack the fragipan characteristic of those soils.

Sequatchie sandy loam, 0 to 2 percent slopes (SfA).—This is the only Sequatchie soil mapped in the county. It is on uplands in the southern and western parts of the county. Included in mapping were small areas of Rumford and Ruston soils.

Natural fertility is low in this soil. Infiltration and permeability are moderately rapid. The available water capacity is low.

This soil is suited to many kinds of crops and pasture plants. It is easy to work and can be tilled throughout a wide range of moisture content without clodding or crusting. The response to lime and fertilizer is good. In places plants are damaged from lack of water during short dry periods. Most of the acreage is cleared and is used for crops or pasture. Capability unit IIs–12; woodland group 2o7.

Shubuta Series

The Shubuta series consists of well-drained, acid soils on uplands and stream terraces. These soils formed in stratified beds of fine-textured marine sediment. Slopes range from 0 to 30 percent.

In a representative profile, the surface layer is dark grayish-brown fine sandy loam about 5 inches thick. The subsurface layer is yellowish-brown fine sandy loam about 4 inches thick. The thick subsoil is yellowish-red sandy clay loam in the uppermost 2 inches; red silty clay to a depth of 22 inches; yellowish-red silty clay mottled with pale olive and red to a depth of 36 inches; yellowish-red sandy clay loam mottled with pale brown, yellowish brown, and pale olive to a depth of 52 inches; and mottled yellowish-brown and yellowish-red sandy clay loam and stratified sandy and clayey material to a depth of 72 inches.

The native vegetation is mixed hardwoods and pines. Most of the acreage is wooded, but large areas on the smoother slopes are used for crops or pasture.

Profile of Shubuta fine sandy loam, 2 to 5 percent slopes, eroded, in a cropped field (1⅛ miles south of Union, in the SE¼SE¼ sec. 17, T. 23 N., R. 2 E.):

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; very strongly acid; clear, smooth boundary.

A2—5 to 9 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, fine, granular structure; very friable; many fine roots and a few medium roots; very strongly acid; clear, smooth boundary.

B1t—9 to 11 inches, yellowish-red (5YR 5/8) sandy clay loam; weak, fine, subangular blocky structure; friable; clay films on most ped surfaces; common fine roots; very strongly acid; clear, smooth boundary.

B21t—11 to 22 inches, red (2.5YR 4/6) silty clay; moderate to strong, medium, subangular blocky structure; firm, slightly plastic; thick clay films on all ped surfaces; common fine roots; a few medium roots; very strongly acid; gradual, wavy boundary.

B22t—22 to 36 inches, yellowish-red (5YR 4/6) silty clay on ped exteriors and interiors; many, fine, distinct, pale-olive and red mottles in ped interiors; strong, fine and medium, subangular and angular blocky structure; firm, slightly plastic; thick clay films on all ped surfaces; a few fine roots; very strongly acid; clear, wavy boundary.

B23t—36 to 46 inches, yellowish-red (5YR 4/6) to red (2.5YR 4/6) clay loam; common, fine, distinct, yellowish-brown and pale-brown mottles; weak to moderate, coarse, subangular blocky structure; firm; patchy clay films; a few fine roots; very strongly acid; clear, wavy boundary.

B31t—46 to 52 inches, yellowish-red (5YR 4/6) heavy sandy clay loam; common, fine, distinct, pale-brown and pale-olive mottles; moderate, coarse, subangular blocky structure; firm; patchy clay films on peds; extremely acid; clear, wavy boundary.

B32t—52 to 72 inches +, mottled yellowish-brown (10YR 5/6) and yellowish-red (5YR 5/6) sandy clay; moderate, coarse, subangular blocky structure; firm; extremely acid.

The Ap horizon generally ranges from pale brown to yellowish brown or dark grayish brown, but in severely eroded areas it ranges to reddish brown. Where present, the A1 horizon ranges from grayish brown to dark gray. The A horizon ranges from 3 to 18 inches in thickness and from sandy loam to clay loam in texture. The horizon of clay accumulation is as much as 50 inches thick or more. The B1t horizon ranges from strong brown to red, and from sandy clay loam to clay loam. The B21t and B22t horizons range from yellowish red to red and from heavy clay loam to clay. In places the lower part of the B22t horizon has a few to common, brown, yellow, and gray mottles. The B23t horizon ranges from strong brown to red and has common to many, brown, yellow, and gray mottles. Its texture ranges from sandy clay loam to silty clay loam. The B31t and B32t horizons range from yellowish red to yellowish brown and are mottled with shades of gray, brown, and red or may lack a matrix color and be mottled in shades of brown, red, or gray. The material in these horizons ranges from sandy clay loam to sandy clay and contains sandy pockets. Reaction of these soils ranges from extremely acid to strongly acid.

Shubuta soils are near Boswell, Magnolia, Ora, and Ruston soils. Unlike the Magnolia soils, Shubuta soils have mottles in the lower part of the B2 horizon. Shubuta soils have a finer textured B horizon than Ruston soils. They are not so sticky and plastic as Boswell soils, and their B2 and B3 horizons are less clayey. Their B horizon is finer textured than that of Ora soils, and they lack the fragipan characteristic of those soils.

Shubuta clay loam, 2 to 8 percent slopes, severely eroded (SgC3).—This soil has a plow layer of reddish-brown clay loam about 3 inches thick. The subsoil is red, firm silty clay slightly mottled with brownish yellow in the upper 10 inches; yellowish-red silty clay mottled with medium red and pale olive in the next 24 inches; and then mottled red, light-gray, and strong-brown sandy clay loam about 24 inches thick.

Included in mapping were small areas of Boswell, Magnolia, and Ruston soils. Also included were a few small areas where the subsoil has been eroded away and the stratified parent material exposed. Some shallow gullies and an occasional deep gully are in most fields.

Natural fertility is low in this soil. Water enters this soil slowly and moves through it at a moderately slow to slow rate. The available water capacity is moderate.

This soil is poorly suited to cultivated crops because of the difficulty of tillage, risk of getting a poor stand,

and the high hazard of erosion. It is better suited to pasture or woodland, but it can be cultivated periodically. This soil is difficult to work. The range of moisture content within which it can be tilled satisfactorily is narrow. Also, clods form if this soil is tilled when too wet or too dry. Capability unit VIe–113; woodland group 3c2.

Shubuta fine sandy loam, 0 to 2 percent slopes (ShA).—This soil is on stream terraces. It has a 7-inch plow layer of brown fine sandy loam. The upper part of the subsoil is reddish-brown clay about 12 inches thick. The lower part, about 48 inches thick, is reddish-brown clay loam or sandy clay loam mottled with gray and underlain by mottled pale-brown, light-gray, and brownish-yellow loam.

Included in mapping were small areas that have a surface layer of loam and silt loam. Also included were a few small areas that have a surface layer of yellowish-red clay loam.

Natural fertility is low in this soil. Runoff is slow. Water enters the soil readily and moves through it at a moderately slow to slow rate. The available water capacity is moderate.

This soil is suited to most crops grown in the county and is well suited to pasture and woodland. The response to lime and fertilizer is good. The moderately slow permeability and slow internal drainage make the soil wet in spring. As a result, growth of crops is slowed somewhat. Capability unit IIs–14; woodland group 3o1.

Shubuta fine sandy loam, 2 to 5 percent slopes, eroded (ShB2).—This soil has the profile described as representative for the series. It is in the northern part of the county. Included in mapping were small areas of Boswell, Magnolia, Ora, and Ruston soils. Also included were small areas that have a plow layer of yellowish-red or red, sticky clay loam. Rills and a few shallow gullies are in many fields. A few quartz, chert, and ironstone fragments are on the surface.

Natural fertility is low in this soil. Water enters the soil readily and moves through it at a moderately slow to slow rate. The available water capacity is moderate.

This soil is suited to pasture and to most crops grown in the county, and it is well suited to woodland. The response to lime and fertilizer is good. This soil is fairly easy to work and can be tilled throughout a fairly wide range of moisture content. If it is cultivated, the hazard of further erosion is slight to moderate. Capability unit IIe–14; woodland group 3o1.

Shubuta fine sandy loam, 5 to 8 percent slopes, eroded (ShC2).—This soil is in the northern part of the county. It has a 5-inch surface layer of light yellowish-brown fine sandy loam. The subsoil is red silty clay in the upper 20 inches. It is red silty clay loam that has many light yellowish-brown and light-gray mottles in the lower 25 inches. This is underlain by red sandy clay loam that is mottled with gray and yellow and is stratified with sandy material.

Included in mapping were small areas of Boswell, Magnolia, Ora, and Ruston soils. Also included were small areas that have a surface layer 10 to 20 inches thick and small areas where the surface layer is yellowish-red, sticky clay loam. Rills and shallow gullies are in most cultivated fields.

Natural fertility is low in this soil. Water enters the soil readily and moves through it at a moderately slow to slow rate. The available water capacity is moderate.

This soil is suited to most crops grown in the county. It is well suited to pasture and woodland. If this soil is cultivated, the hazard of further erosion is moderate. Capability unit IIIe–14; woodland group 3o1.

Shubuta-Boswell complex, 8 to 12 percent slopes, eroded (SmD2).—The soils in this complex are on narrow ridgetops and on moderately steep side slopes and foot slopes. The areas occur throughout the northern part of the county. The Shubuta soil makes up 42 percent of the complex; Boswell soil, 20 percent; Ruston soil, 13 percent; and Magnolia soil, 15 percent. The remaining 10 percent consists of Ora and Wagram soils.

The Shubuta soil has an 8-inch surface layer of pale-brown sandy loam. The subsoil is red silty clay in the upper 20 inches and red silty clay loam or sandy clay loam mottled with brownish yellow in the lower 24 inches. Natural fertility is low in this soil. Infiltration is moderate, and permeability is moderately slow to slow. The available water capacity is moderate.

The Boswell soil has a 4-inch surface layer of yellowish-brown sandy loam. The subsoil is yellowish-red clay in the upper 12 inches and very sticky and plastic, mottled red and gray clay in the lower 48 inches. This soil is low in natural fertility. Infiltration is moderate, and permeability is very slow. The available water capacity is moderate.

Included in mapping were small areas that have a surface layer 10 to 20 inches thick. Also included were small areas that have a surface layer of strong-brown to yellowish-red clay loam. Old terrace remnants and gully scars are in most old fields.

The soils of this complex are not suited to cultivated crops because they are moderately steep; are underlain by tough, plastic clay; and have a very high hazard of further erosion. They are well suited to trees, permanent pasture, and hay. Most of the acreage is wooded, but a few areas are used for pasture. Capability unit VIe–14; woodland group 3c2.

Shubuta-Boswell complex, 8 to 12 percent slopes, severely eroded (SmD3).—The soils in this complex are on narrow ridgetops, hillsides, and foot slopes throughout the northern part of the county. Old terrace remnants, gully scars, and gullies are in most areas.

The Shubuta soil makes up 40 percent of the complex; Boswell soil, 30 percent; Magnolia and Ruston soils, 10 percent each; and Ora, Rumford, and Wagram soils, the remaining 10 percent. Each mapping unit contains the two major soils, but the distribution and extent are variable. Each delineation contains one or all of the minor soils.

The Shubuta soil has a 4-inch surface layer of strong-brown sandy loam. The subsoil is red sandy clay and clay in the upper 24 inches and yellowish-red fine sandy loam mottled with yellowish brown and light gray in the lower 24 inches. This is underlain by stratified layers of strong-brown sandy loam and pale-olive

silty clay. This soil is low in natural fertility. Infiltration is slow, and permeability is moderately slow to slow. The available water capacity is moderate.

The Boswell soil has a 3-inch plow layer of yellowish-brown clay loam. The subsoil is yellowish-red clay in the upper 12 inches and mottled light gray and red, sticky and plastic clay in the lower 36 inches. This soil is low in natural fertility. Infiltration is slow, and permeability is very slow. The available water capacity is moderate.

The soils in this complex are not suited to cultivated crops because of the steep slopes and very high hazard of further erosion. They are suited to woodland, and under good management, they are suited to pasture. These soils are difficult to work, and the range of moisture content within which they can be tilled satisfactorily is very narrow. Also, clods form if these soils are tilled when they are too wet or too dry. All of the acreage has been cleared and cropped in the past, but most of it has reverted to pines. Capability unit VIe–113; woodland group 4c2.

Shubuta-Magnolia-Falaya association, hilly (SnE).—This mapping unit is made up of soils on rough hilly upland highly dissected by a dendritic drainage pattern. The areas are in the northern part of the county. They consist of narrow winding ridgetops, steep hillsides, and narrow areas in draws. In most places slopes range from 12 to 30 percent, but the areas in the draws are nearly level. The composition of this unit is more variable than that of most others in the county but has been controlled well enough that reliable interpretations can be made for the purposes for which the soils likely can be used.

Shubuta soils make up about 35 percent of the acreage in this association in amounts that range from 25 to 45 percent; Magnolia soils, about 22 percent in amounts that range from 14 to 30 percent; and Falaya soils, about 10 percent in amounts that range from 8 to 12 percent. The remaining acreage consists chiefly of Ruston and Boswell soils.

Shubuta soils occur throughout the association on ridgetops and hillsides. They have a 3-inch surface layer of dark-gray fine sandy loam. The next 4 inches is yellowish-brown fine sandy loam. The subsoil is yellowish-red clay in the upper 12 inches; yellowish-red clay loam in the next 12 inches; and yellowish-red clay loam that has many light-gray and red mottles in the lower 14 inches. Below this is yellowish-red sandy loam and light-olive gray clay in alternating layers.

Natural fertility is low in the Shubuta soils, and reaction is very strongly acid. Infiltration is moderate, and permeability is moderately slow to slow. The available water capacity is moderate.

Magnolia soils occur throughout the association on ridgetops and hillsides. They have a 2-inch surface layer of grayish-brown fine sandy loam. The next 5 inches is yellowish-brown fine sandy loam. The subsoil is dark-red clay in the upper 36 inches and dark-red clay or clay loam in the lower 36 inches.

Natural fertility is low in the Magnolia soils, and reaction is strongly acid. Infiltration and permeability are moderate, and the available water capacity is moderate.

The Falaya soils are nearly level and occupy strips in narrow drainageways. They have a 6-inch surface layer of brown silt loam. The subsoil is mottled brown, dark-brown, and light brownish-gray loam about 36 inches thick. It is underlain by mottled light-gray, yellowish-brown, and pale-olive clay loam about 24 inches thick.

Natural fertility is moderate in the Falaya soils. Infiltration is moderate, and permeability is moderate to moderately rapid. The available water capacity is high.

This association is not suited to cultivated crops because of the steep slopes and very high hazard of erosion. It is well suited to woodland. Most of the acreage is wooded and the dominant trees are oak, hickory, and pine. A few small areas were once cleared, but they have reverted to pine forest. Capability unit VIIe–19; woodland group 3r2.

Stough Series

The Stough series consists of somewhat poorly drained, acid soils that have a weak fragipan in the lower part of the subsoil. These soils formed on uplands and stream terraces in thin beds of marine sediment and old stream alluvium. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is dark-gray fine sandy loam about 3 inches thick. The subsurface layer is light yellowish-brown fine sandy loam about 10 inches thick. The subsoil above the fragipan is mottled light yellowish-brown, brownish-yellow, and light brownish-gray loam about 9 inches thick. The fragipan is about 60 inches thick. It is mottled light yellowish-brown, yellowish brown, light brownish-gray and strong-brown loam and heavy fine sandy loam in the upper 15 inches and mottled light brownish-gray and light yellowish brown sandy clay loam below. The gray color increases with depth.

The native vegetation is mixed hardwoods and pines. About 60 percent of the acreage is wooded. The cleared areas are used mainly for pasture, but a few small areas are used for row crops.

Profile of Stough fine sandy loam in a wooded pasture (1 mile east of Forkland, 200 yards NNE. of Estes Grocery, in the NE¼NE¼ sec. 4, T. 19 N., R. 2 E.):

Ap—0 to 3 inches, dark-gray (10YR 4/1) fine sandy loam; weak, fine, granular structure; very friable; common fine roots; strongly acid; clear, wavy boundary.

A2—3 to 8 inches, light yellowish-brown (2.5Y 6/4) fine sandy loam; weak, medium, subangular blocky structure; very friable, slightly compact; a few small roots; some mixing of material from layer above; strongly acid; clear, smooth boundary.

A3—8 to 13 inches, light yellowish-brown (2.5Y 6/4) heavy fine sandy loam; common, fine, distinct, brownish-yellow and a few, fine, faint, light brownish-gray mottles; weak, fine and medium, subangular blocky structure; friable; a few fine roots; strongly acid; gradual, smooth boundary.

B2t—13 to 22 inches, mottled light yellowish-brown (2.5Y 6/4), brownish-yellow (10YR 6/6), and light brownish-gray (2.5Y 6/2) light loam; fine, distinct mottles; weak to moderate, fine and medium, subangular blocky structure; friable; sand grains coated and bridged with clay; a few fine roots;

crayfish holes filled with gray material; average of one crayfish hole and krotovina per 2 square feet; random gray streaks; water moves fairly rapidly through the gray streaks; strongly acid; clear, smooth boundary.

Bx1—22 to 28 inches, mottled light yellowish-brown (2.5Y 6/4), yellowish-brown (10YR 5/6), and light brownish-gray (2.5Y 6/2) loam; a few, fine, distinct, strong-brown mottles; weak to moderate, fine and medium, subangular blocky structure; friable, slightly compact and brittle; thin patchy clay films on peds and in pores; a few, soft, brown concretions ¼ inch in diameter; vertical gray streaks ¼ to 1 inch wide; crayfish holes filled with gray material; average of one crayfish hole and krotovina per 2 square feet; water moves fairly rapidly through gray streaks; very strongly acid; clear, smooth boundary.

Bx2—28 to 37 inches, mottled light brownish-gray (2.5Y 6/2), strong-brown (7.5YR 5/8), and light yellowish-brown (2.5Y 6/4) heavy fine sandy loam; massive in place, but breaks to moderate, medium, subangular blocky structure; friable to firm, slightly compact and brittle; patchy clay films on peds and in pores; sand grains coated and bridged with clay; a few, soft, brown concretions ¼ inch in diameter; vertical gray streaks ¼ to 1 inch wide; crayfish holes filled with gray material; average of one crayfish hole and krotovina per 2 square feet; water moves fairly rapidly through gray streaks; very strongly acid; gradual, smooth boundary.

Bx3—37 to 82 inches, mottled light brownish-gray (2.5Y 6/2) and light yellowish-brown (10YR 5/8) sandy clay loam; moderate, medium, subangular blocky and angular blocky structure; firm, compact and brittle; clay films and gray clay coatings on peds; vertical polygonal cracks ¼ to 1 inch wide; crayfish holes filled with gray material; average of one crayfish hole and krotovina per 2 square feet; water moves fairly rapidly through gray streaks; very strongly acid.

In areas not cultivated, the A1 horizon ranges from grayish brown to dark gray. The Ap and A2 horizons range from dark gray and pale brown to light olive brown. The B2t horizon ranges from light yellowish brown to light olive brown and has few to common gray mottles in the upper 10 inches. This horizon ranges from sandy loam to loam and is less than 18 percent clay and more than 15 percent silt. The Bx (fragipan) horizon generally is mottled with shades of gray, yellow, and brown. The range in texture is the same as that for the B2t horizon except that in places it ranges to sandy clay loam in the lower part. The fragipan expression is weak. Reaction is strongly acid to very strongly acid.

Stough soils are near Leaf, Mashulaville, Myatt, and Savannah soils. They have poorer drainage than Savannah soils and their B2t and Bx horizons are mostly coarser textured. Stough soils are better drained and have a coarser textured B horizon than Leaf, Mashulaville, and Myatt soils, and unlike the Leaf and Myatt soils, they have a fragipan.

Stough fine sandy loam (St).—This is the only Stough soil mapped in the county. It is nearly level and occupies small areas throughout the county. Included in mapping were small areas of Mashulaville and Savannah soils and small areas that have a suface layer of loam and silt loam.

Natural fertility is low in this soil. Water enters this soil readily and moves through it at a moderate rate to the fragipan; then it moves more slowly. The available water capacity is low.

This soil is poorly suited to cultivated crops because of the somewhat poor drainage and the seasonal high water table. Pasture and woodland are well suited. During wet seasons the subsoil is waterlogged, and water stands on the surface for short periods. Occasionally some of the low areas are flooded. Also, the soil is late to warm up in spring, and planting of crops therefore is delayed. Capability unit IIIw–12; woodland group 2w8.

Sumter Series

The Sumter series consists of well-drained, fine-textured, alkaline soils in the prairie part of the county. These soils formed in material weathered from Selma chalk. Slopes range from 1 to 12 percent, but slopes of 1 to 5 percent are dominant.

In a representative profile, the surface layer is grayish-brown silty clay about 6 inches thick. The subsoil is light yellowish-brown clay in the upper 12 inches and light yellowish-brown clay mottled with pale olive in the lower 6 inches. The underlying material is mixed pale-yellow and light brownish-gray clay mottled with olive yellow. Partly weathered soft Selma chalk is at a depth of about 34 inches.

The native vegetation was short grasses and legumes and a few cedar trees. Most of the acreage is cleared and is used for pasture, hay, and small grain. A few small areas on the more gentle slopes are used for row crops.

Profile of Sumter silty clay, 1 to 3 percent slopes, eroded, in a pasture (1 mile west of the junction of Dollarhide Road and U.S. Highway 43, in the SW¼NE¼ sec. 6, T. 20 N., R 2 E.):

Ap—0 to 6 inches, grayish-brown (2.5Y 5/2) silty clay; moderate, fine, granular structure; friable; hard; many fine roots; mildly alkaline; calcareous; abrupt, wavy boundary.

B1—6 to 9 inches, clay that is 60 percent light yellowish brown (2.5Y 6/4) and 40 percent grayish brown (2.5Y 5/2); moderate, fine, granular and moderate, very fine, blocky structure; firm, hard; many fine roots; 1 percent is iron concretions; 1 percent is white lime concretions; mildly alkaline; calcareous; clear, wavy boundary.

B2—9 to 18 inches, light yellowish-brown (2.5Y 6/4) clay; moderate, very fine, angular and subangular blocky structure; firm, hard; a few fine roots; 3 to 5 percent is soft, white, lime concretions; mildly alkaline; calcareous; clear, wavy boundary.

B3—18 to 24 inches, light yellowish-brown (2.5Y 6/4) clay; many, medium, distinct mottles of pale olive and a few, fine, distinct mottles of brownish yellow; moderate, very fine and fine, angular and subangular blocky structure; firm, hard; 5 to 8 percent is soft, white lime concretions; a few thin ironstone fragments; mildly alkaline; calcareous; gradual, wavy boundary.

C1—24 to 34 inches, mixed pale-yellow (5Y 7/3) and light brownish-gray (2.5Y 6/2) clay; common, fine, distinct, olive-yellow mottles; weak, thin and medium, platy structure; firm, hard; a few clay coatings in cracks; calcareous; mildly alkaline; clear, wavy boundary.

C2—34 to 42 inches +, pale-yellow (5Y 7/3) platy, partly weathered soft, Selma chalk; light-gray (5Y 6/1) clay coatings in cracks; a few, medium, distinct, yellowish-brown mottles; massive; occurs in horizontal plates; a few flattened roots in cracks; calcareous; can be dug with spade.

The Ap horizon ranges from dark gray to pale brown in color and from 2 to 8 inches in thickness. The B1 horizon ranges from light yellowish brown and grayish brown to

pale yellow and generally is mottled with shades of brown. Its texture ranges from silty clay loam to clay. In some profiles the B1 horizon is absent. The B2 horizon ranges from pale brown to pale yellow and olive yellow. This horizon ranges from silty clay to clay and is more than 35 percent clay. The B3 horizon ranges from light yellowish brown to pale olive and pale yellow and is mottled with shades of brown, olive, and gray. Texture ranges from clay loam to clay. The C horizon ranges from light gray to pale yellow and is mottled with shades of brown and gray. Depth to Selma chalk ranges from about 20 to 48 inches. Reaction ranges from mildly alkaline to moderately alkaline, and the soils are calcareous throughout.

Sumter soils are near Oktibbeha, Vaiden, and Watsonia soils on the uplands and near Trinity soils on the flood plains. They are not so sticky and plastic as Oktibbeha and Vaiden soils, which are acid in the upper part of the solum. They have a thicker solum than Watsonia soils, and their A horizon is thinner and lighter colored than that of Trinity soils.

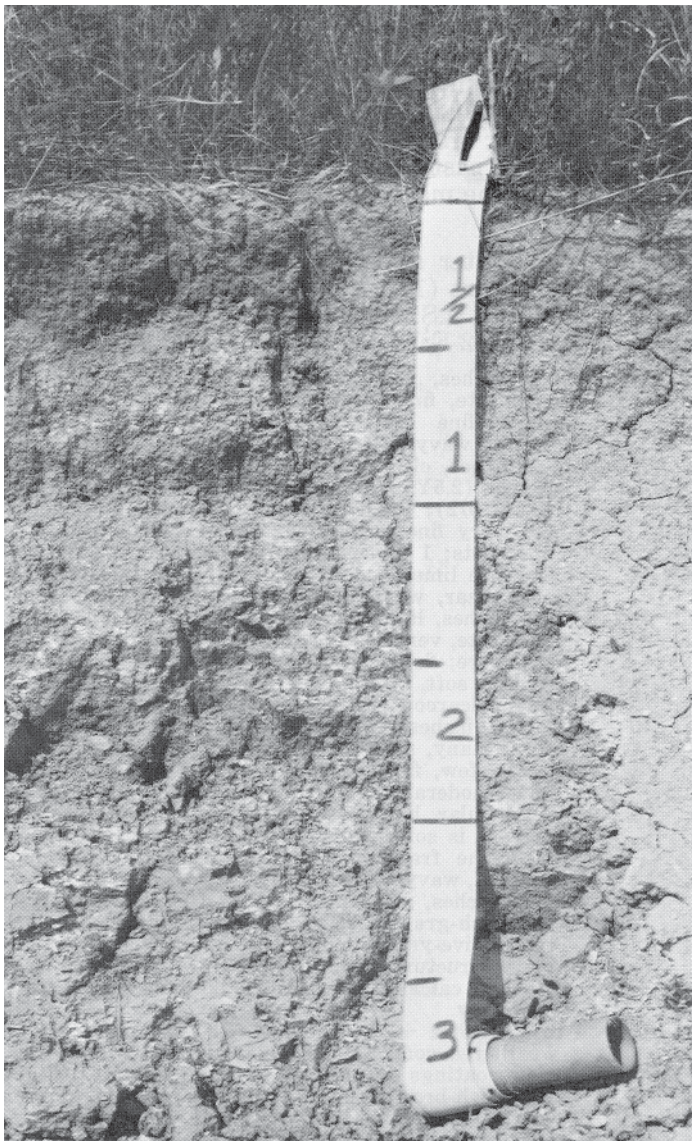

Figure 13.—**Profile of Sumter silty clay, 3 to 5 percent slopes, eroded. Measure is in feet.**

Sumter silty clay, 1 to 3 percent slopes, eroded (SuB2).—This soil has the profile described as representative for the series. It is on uplands. Included in mapping were small areas of Oktibbeha, Trinity, and Vaiden soils and small areas that have a surface layer of silty clay loam. Shallow gullies are in most areas.

Natural fertility is moderate in this soil. Infiltration and permeability are slow, and available water capacity is moderate.

This soil is fairly well suited to most crops grown in the county. It is difficult to work because of the fine texture of the surface layer. The range of moisture content within which this soil can be tilled satisfactorily is very narrow. Clods form if the soil is tilled when it is too wet or too dry. If this soil is used for crops, the hazard of further erosion is slight to moderate. Small grains, pasture, and hay are well suited, but most of the acreage is used for hay or pasture. Capability unit IIe–22; woodland group 4c2c.

Sumter silty clay, 3 to 5 percent slopes, eroded (SuC2).—This soil has a 5-inch surface layer of dark-gray silty clay. The subsoil is pale-yellow clay. It has a few white lime concretions in the upper 17 inches and has many light-gray mottles in the lower 8 inches. Light-gray partly weathered Selma chalk is at a depth of 30 inches (fig. 13).

Included in mapping were small areas of Oktibbeha, Vaiden, and Watsonia soils. Also included were small areas where the solum is only 10 to 20 inches thick and small areas that have a surface layer of clay loam, silty clay loam, and clay.

Natural fertility is moderate in this soil. Infiltration and permeability are slow. The available water capacity is moderate.

This soil is fairly well suited to most crops grown in the county. It is well suited to small grains and pasture and to johnsongrass and other plants grown for hay. The response to fertilizer is good. The fine texture of the surface layer makes this soil difficult to work. Also, the range of moisture content within which this soil can be tilled satisfactorily is very narrow. Clods form if this soil is tilled when it is too wet or too dry. If this soil is cultivated, the hazard of further erosion is moderate. Most of the acreage is used for pasture and hay. Capability unit IIIe–22; woodland group 4c2c.

Sumter silty clay, 5 to 12 percent slopes, eroded (SuD2).—This soil has a 3-inch plow layer of dark grayish-brown silty clay. The subsoil is pale-yellow clay and has common to many white lime concretions. It is underlain by light olive-gray partly weathered Selma chalk.

Included in mapping were small areas of Oktibbeha and Vaiden soils and small areas where the Selma chalk is exposed. Also included were small areas that have a plow layer of clay loam and silty clay loam.

Reaction is moderately alkaline in this soil. Natural fertility is moderate, and the organic-matter content is low. Runoff is very rapid, and infiltration and permeability are slow. The available water capacity is moderate.

This soil is generally not suited to cultivated crops because of the moderately steep slopes and the very

high hazard of further erosion. Pasture and hay are well suited. This soil is difficult to work, and the range of moisture content within which it can be tilled satisfactorily is very narrow. Clods form if this soil is worked when it is too wet or too dry. Capability unit VIe–22; woodland group 4c2c.

Sumter-Watsonia complex, 1 to 5 percent slopes, eroded (SwB2).—These soils are on complex slopes in small, irregular areas. The Sumter soil makes up 40 percent of the complex, and Watsonia soil 30 percent. Macon, Oktibbeha, Trinity, and Vaiden soils make up the remaining 30 percent. Both dominant soils occur in each mapped area, but the percentage of Sumter soil ranges from about 30 to 50 and that of Watsonia soil from about 20 to 40. The extent and distribution of the minor soils vary.

The Sumter soil has a 4-inch surface layer of dark grayish-brown silty clay. The subsoil is light yellowish-brown silty clay in the upper 12 inches. It is mixed pale-olive and light olive-gray silty clay that has common white lime nodules in the lower part. Partly weathered Selma chalk is at a depth of about 26 inches. This soil is moderate in natural fertility. Reaction is moderately alkaline. Infiltration and permeability are slow. The available water capacity is moderate.

The Watsonia soil has a 2-inch surface layer of dark-brown clay. The subsoil is reddish-brown clay that has light olive-brown mottles in the lower part. Depth to Selma chalk is about 16 inches. This soil is moderate in natural fertility. Reaction is strongly acid to mildly alkaline. Infiltration and permeability are very slow, and available water capacity is moderate.

The soils in this complex are poorly suited to cultivated crops, but they are well suited to pasture and hay. They are difficult to till because of the fine-textured, sticky and plastic surface layer and the high hazard of further erosion. Most of the acreage is cleared and is used for pasture. Capability unit IVe–22; woodland group 4c2c.

Sumter-Watsonia complex, 5 to 17 percent slopes, eroded (SwE2).—These well-drained and somewhat poorly drained soils are on complex slopes in small, irregular areas. The Sumter soil makes up 28 percent of this complex; Watsonia soil, 28 percent; and Kipling soil, 15 percent. The minor Macon, Oktibbeha, and Vaiden soils make up about 15 percent of the complex. Included with the minor soils in mapping, and making up about 4 percent of the complex, were areas that have 10 to 20 inches of sandy material underlain by tough, very plastic clay. The dominant soils occur in each mapped area, but the pattern and extent of the soils in each area varies. Sumter and Watsonia soils, however, each occupy from about 15 to 35 percent of each mapped area.

The well-drained Sumter soil has a 3-inch plow layer of dark-gray clay loam over about 4 inches of dark-gray gravelly clay loam. The subsoil is pale-brown silty clay about 24 inches thick. It is underlain by partly weathered Selma chalk at a depth of 36 inches. This soil is moderate in natural fertility. Reaction is moderately alkaline. Infiltration and permeability are slow, and available water capacity is moderate.

The well-drained Watsonia soil has a 3-inch surface layer of dark grayish-brown clay. It is underlain by about 12 inches of yellowish-brown clay. Partly weathered Selma chalk is at a depth of 15 inches. This soil is moderate in natural fertility. Reaction is strongly acid to mildly alkaline. Infiltration and permeability are very slow, and available water capacity is moderate.

The somewhat poorly drained Kipling soil has a 3-inch plow layer of yellowish-brown gravelly sandy loam. The subsoil is yellowish-brown sandy clay loam in the upper 6 inches; mottled red, strong-brown, and light-gray clay in the next 24 inches; and mottled red and light-gray clay in the lower part. Partly weathered Selma chalk is at a depth of 48 inches. This soil is moderate in natural fertility. Reaction is acid, infiltration is moderate, and permeability is slow. The available water capacity is moderate.

These soils are not suited to cultivated crops, because of the moderately steep slopes and very high hazard of further erosion. They are well suited to pasture and hay. These soils are very difficult to work into a suitable seedbed. Most of the acreage is cleared and is used for pasture. Capability unit VIe–22; woodland group 4c2c.

Trinity Series

The Trinity series consists of moderately well drained, fine-textured, alkaline soils in the prairie part of the county. These soils are very sticky and very plastic. They formed in fine-textured alluvium. Slopes range from 0 to 2 percent.

In a representative profile, the surface layer is very dark gray clay about 5 inches thick. Below is very dark gray to black clay to a depth of 24 inches; next very dark gray clay to a depth of 50 inches; and then very dark grayish-brown clay.

The native vegetation is prairie grasses and a few trees, such as cottonwood, ash, hackberry, elm, and hickory. Most of the acreage is cleared and is used for pasture and hay.

Profile of Trinity clay in a pasture (5 miles southwest of Eutaw, in the SW¼NW¼ sec. 32, T. 21 N., R. 2 E.):

Ap—0 to 5 inches, very dark gray (10YR 3/1) clay; moderate, fine, granular structure; friable, very hard, very sticky; many fine roots; 1 to 2 percent is lime nodules; moderately alkaline; calcareous; gradual, smooth boundary.

A11—5 to 24 inches, very dark gray (10YR 3/1) to black (10YR 2/1) clay; moderate, coarse, granular to moderate, fine and medium, subangular blocky structure; friable, very hard, very sticky; common fine roots; 1 to 2 percent is lime nodules; moderately alkaline; calcareous; gradual, wavy boundary.

A12—24 to 50 inches, very dark gray (10YR 3/1) clay; weak, coarse, granular structure; friable, very hard, very sticky; a few fine roots; 1 to 2 percent is iron and manganese concretions; 1 to 2 percent is lime nodules; moderately alkaline; calcareous; a few small slickensides; gradual, wavy boundary.

A13—50 to 60 inches, very dark grayish-brown (2.5Y 3/2) clay; massive; friable, very hard, very sticky; 4 to 6 percent is iron concretions; 1 to 2 percent is lime nodules; common, medium slickensides; moderately alkaline; calcareous.

The Ap and A11 horizons are very dark gray to black and are as much as 24 inches or more thick. The A12 and A13 horizons range from black to olive gray, and in places these horizons are mottled with gray and brown below a depth of 24 inches. Lime nodules and manganese concretions are common in the lower horizons. Buried A horizons are common. Reaction ranges from neutral to moderately alkaline.

Trinity soils are near Catalpa, Leeper, Oktibbeha, Sumter, and Vaiden soils. They have a thicker A horizon than that in Catalpa soils. They are better drained than Leeper soils, and their A horizon is thicker and darker colored. Trinity soils are darker colored than Sumter soils and have a thicker solum. Unlike the Vaiden and Oktibbeha soils, they are alkaline in the upper part of the solum.

Trinity clay (Tr).—This is the only Trinity soil mapped in the county. It is nearly level and calcareous. The areas occur along small drainageways and at the foot of slopes.

Included in mapping were small areas of Catalpa, Leeper, and Sumter soils. Also included were small areas that have a surface layer of silty clay loam and silty clay.

Natural fertility is moderate in this soil, and infiltration and permeability are very slow. The available water capacity is moderate to high.

This soil is well suited to most row crops grown in the county. It is also well suited to pasture and hay. The response to fertilizer is good, but the sticky and plastic surface layer makes the soil difficult to work. The range of moisture content within which this soil can be tilled satisfactorily is very narrow. Also, large clods form when this soil is tilled. Capability unit IIw–23; woodland group 1w6.

Troup Series

The Troup series consists of excessively drained, coarse-textured, acid soils. These soils formed on hillsides in thick beds of sand to sandy loam marine sediment. Slopes range from 8 to 25 percent.

In a representative profile, the surface layer is dark-gray loamy sand about 3 inches thick. Below is light yellowish-brown loamy sand to a depth of 18 inches; light yellowish-brown sand to a depth of 30 inches; and very pale brown sand to a depth of 60 inches. The subsoil is red light sandy loam to a depth of 70 inches, and then red sandy loam to a depth of 80 inches or more.

The native vegetation is chiefly various kinds of hardwoods, but pines grow in a few places. Most of the acreage is in forest. A few small areas on the milder slopes are cleared and planted to bahiagrass or to bermudagrass.

Profile of Troup loamy sand, 8 to 25 percent slopes, in a wooded area (3¼ miles east of Boligee, in the SE¼SW¼ sec. 35, T. 21 N., R. 1 E.):

A1—0 to 3 inches, dark-gray (10YR 4/1) loamy sand; very weak, fine, granular structure; loose to very friable; strongly acid; clear, smooth boundary.

A21—3 to 18 inches, light yellowish-brown (10YR 6/4) loamy sand; very weak, fine, granular structure; loose to very friable; strongly acid; clear, wavy boundary.

A22—18 to 30 inches, light yellowish-brown (10YR 6/4) sand; single grain; loose; strongly acid; gradual, wavy boundary.

A23—30 to 60 inches, very pale brown (10YR 8/3) sand; single grain; loose; strongly acid; clear, wavy boundary.

B21t—60 to 70 inches, red (2.5YR 5/6) light sandy loam; weak, fine, subangular blocky structure; very friable; sand grains coated and bridged with clay; very strongly acid; gradual, wavy boundary.

B22t—70 to 80 inches +, red (2.5YR 4/6) sandy loam; weak, fine, subangular blocky structure; very friable; patchy clay films; sand grains coated and bridged with clay; very strongly acid.

The A1 horizon ranges from dark gray to grayish brown. The Ap horizon, if present, and the A2 horizon range from yellowish brown to very pale brown. The A horizon is more than 40 inches thick, but on the average it is about 60 inches thick. Texture ranges from loamy sand to sand. The B2t horizon ranges from strong brown to red, and from light sandy loam to loam. A few chert and quartz pebbles occur throughout the profile. Reaction of these soils ranges from strongly acid to very strongly acid.

Troup soils occur on steep hillsides near Cahaba, Lucy, Rumford, and Wagram soils. They have a thicker surface layer than any of these soils.

In this county Troup soils are mapped only in a complex with Lucy soils. The Lucy soils are described under the Lucy series.

Troup-Lucy complex, 8 to 25 percent slopes (TuE).—These soils are on cone-shaped hills in the southwestern part of the county, and on short slopes that border the flood plain of the Black Warrior, Sipsey, and Tombigbee Rivers and some of the larger creeks. These areas are small and complex in shape.

The Troup soil makes up about 40 percent of this complex, and the Lucy soil, about 25 percent. The minor Cahaba, Rumford, Ruston, Sawyer, Shubuta, and Wagram soils make up about 30 percent of the acreage, and the remaining 5 percent consists of included areas. The soil material in the included areas is so mixed and stratified that it could not be classified.

Both dominant soils are in each mapped area, and the percentage of Troup soil ranges from 30 to 50 percent and that of the Lucy soil from 15 to 50. The percentage of the minor soils is extremely variable, and no area contains all of the minor soils.

The Troup soil has a 3-inch surface layer of dark-brown loamy sand. Below is 24 inches of light yellowish-brown loamy sand and then 36 inches of pale-brown sand. The subsoil is red sandy loam 20 inches or more thick. This excessively drained soil is low in natural fertility. Reaction is strongly acid to very strongly acid. Infiltration is rapid, and permeability is moderately rapid. The available water capacity is low.

The Lucy soil has a 4-inch surface layer of gray loamy sand. Below is yellowish-brown loamy sand about 6 inches thick, and then very pale brown loamy sand about 14 inches thick. The subsoil is red sandy clay loam to a depth of 38 inches, then red fine sandy loam to a depth of 74 inches. This soil is low in natural fertility. Reaction is strongly acid to very strongly acid. Infiltration is rapid, and permeability is moderate to moderately rapid. The available water capacity is low to medium.

Steep slopes and low available water capacity make these droughty soils poorly suited to cultivated crops. Under good management, however, these soils can be used for pasture. A few small areas have been cleared and planted to Coastal bermudagrass or bahiagrass, but most of the acreage is wooded. Capability unit VIIs–11; woodland group 3s2.

Vaiden Series

The Vaiden series consists of fine-textured, somewhat poorly drained, acid soils in the prairie part of the county. These soils are very sticky and very plastic. They formed in thick beds of acid clay underlain by Selma chalk. Slopes range from 0 to 5 percent, but slopes of 1 to 3 percent are dominant.

In a representative profile, the surface layer is very dark gray silty clay about 3 inches thick. The subsoil is yellowish-brown clay to a depth of 6 inches and yellowish-brown clay mottled with yellowish red and light gray to a depth of 13 inches. Below this is gray clay mottled with yellowish red and yellowish brown to a depth of 31 inches; mottled light-gray and yellowish-brown clay to a depth of 52 inches; and then mottled yellowish-brown and pale-olive clay to a depth of 60 inches. Selma chalk is at a depth of about 60 inches.

The native vegetation was mixed hardwoods and pines. Most of the acreage is cleared and is used for pasture or hay.

Profile of Vaiden silty clay, 0 to 1 percent slopes, in a pasture (3.1 miles south of West Alabama Stockyards, in the SW¼NW¼ sec. 19, T. 21 N., R. 2 E.):

Ap—0 to 3 inches, very dark gray (10YR 3/1) silty clay; moderate, very fine, granular structure; friable, very hard, sticky, very plastic; common fine roots; very strongly acid; clear, wavy boundary.

B2—3 to 6 inches, yellowish-brown (10YR 5.8) clay; a few, fine, faint, yellowish-red mottles; moderate, fine, subangular blocky structure; firm, very hard, very sticky, very plastic; common fine roots; tongues of material from the Ap horizon extend into this horizon; peds have shiny pressure faces; very strongly acid; clear, wavy boundary.

B&C—6 to 13 inches, yellowish-brown (10YR 5/6) clay; common, fine, distinct, yellowish-red mottles and a few, fine, distinct, light-gray mottles; moderate, very fine and fine, angular blocky structure; firm, very hard, very sticky, very plastic; common fine roots; 1 percent is soft black concretions; most peds have shiny pressure faces; very strongly acid; clear, wavy boundary.

C1—13 to 31 inches, gray (10YR 6/1) clay; many, medium, prominent, yellowish-red mottles and a few, fine, distinct, yellowish-brown mottles; moderate, very fine, angular blocky structure; firm, very hard, very sticky, very plastic; a few fine roots; most peds have shiny pressure faces; less than 1 percent is soft black concretions; very strongly acid; gradual, wavy boundary.

C2—31 to 52 inches, mottled light-gray (10YR 6/1) and yellowish-brown (10YR 5/6) clay; moderate, very fine, angular blocky structure; firm, very hard, very sticky, very plastic; a few fine roots; many small slickensides; 2 percent is soft, black concretions; very strongly acid; gradual, irregular boundary.

IIC3—52 to 60 inches, mottled yellowish-brown (10YR 5/6) and pale-olive (5Y 6/3) clay; massive but breaks to fine and very fine angular blocky structure; friable, very hard, very sticky, very plastic; many slickensides; 2 percent is soft, black concretions; a few fine roots; mildly alkaline; clear, irregular boundary.

IIR—60 inches +, white (10YR 8/1) and light yellowish-brown (10YR 6/4), platy, partly weathered Selma chalk or soft limestone.

The Ap horizon ranges from brown to very dark gray in color, and from 2 to 5 inches in thickness. The B2 horizon is light olive brown to yellowish brown and generally is mottled with gray or red. The C1 horizon generally is mottled red, gray, and brown, and in places it has a brown matrix mottled with red and gray. Texture ranges from silty clay to clay. The C2 and IIC3 horizons generally are mottled yellowish brown or olive brown and gray. Texture ranges from clay to silty clay. Common to many slickensides that intersect in the lower solum are present. Reaction of these soils ranges from strongly acid to very strongly acid in the solum, and from slightly acid to moderately alkaline in the lower part of the profile.

Vaiden soils are near Eutaw, Forestdale, Kipling, Oktibbeha, and Sumter soils. Unlike the calcareous Sumter soils, Vaiden soils are acid throughout. Vaiden soils are not so gray as Eutaw and Forestdale soils and are not so poorly drained. The upper part of their solum is less friable and more clayey than that of Kipling soils. They are not so well drained as Oktibbeha soils, and their B2 horizon is less red.

Vaiden silty clay, 0 to 1 percent slopes (VaA).—This soil has the profile described as representative for the series. It is on uplands. Included in mapping were small areas of Eutaw, Forestdale, Kipling, and Oktibbeha soils.

Natural fertility is moderate in this soil. Infiltration and permeability are very slow. The available water capacity is moderate.

Somewhat poor drainage and very slow internal drainage make this soil poorly suited to cultivated crops. Pasture and hay are well suited. Preparing a suitable seedbed is very difficult, and the range of moisture content within which this soil can be tilled satisfactorily is very narrow. The response to lime and fertilizer is good. Capability unit IIIw–24; woodland group 3c8.

Vaiden silty clay, 1 to 3 percent slopes, eroded (VaB2).—This soil is on uplands. It has a 3-inch surface layer of very dark grayish-brown silty clay. The subsoil is yellowish-brown, very sticky and very plastic clay about 13 inches thick. It is underlain by about 34 inches of yellowish-brown, very sticky and very plastic clay that is mottled with light gray and yellowish red. Below is mottled light olive-brown and olive clay. Partly weathered Selma chalk is at a depth of about 60 inches.

Included in mapping were a few small areas that have a surface layer of clay. A few shallow gullies are in many fields.

Natural fertility is moderate in this soil. Infiltration and permeability are very slow. The available water capacity is moderate.

This soil is suited to most crops grown in the county and is well suited to pasture and hay. It is, however, hard to work, and preparing a suitable seedbed for crops is very difficult. The somewhat poor drainage also limits the suitability for some crops. The range of moisture content within which this soil can be tilled satisfactorily is very narrow. Also, if this soil is tilled, large clods form and further erosion is a moderate hazard. The response to lime and fertilizer is good. Capability unit IIIe–23; woodland group 3c8.

Vaiden silty clay, 3 to 5 percent slopes, eroded (VaC2).—This soil is on uplands. It has a 4-inch plow layer of dark-brown silty clay. The subsoil is yellowish-brown clay about 6 inches thick. It is underlain by 30 inches of yellowish-brown clay mottled with gray and strong brown. Below is olive-yellow clay mottled with light brownish gray. Selma chalk is at a depth of 54 inches.

Natural fertility is moderate in this soil. Infiltration and permeability are very slow. The available water capacity is moderate.

The high hazard of further erosion and the somewhat poor drainage make this soil poorly suited to cultivated crops. Pasture and hay are well suited. This soil is hard to work, and preparing a suitable seedbed is difficult. Also, the range of moisture content within which this soil can be tilled satisfactorily is very narrow. Furthermore large clods form when the soil is cultivated. The response to lime and fertilizer is good. Capability unit IIIe–23; woodland group 3c8.

Wagram Series

The Wagram series consists of well-drained, coarse-textured, acid soils in the northern part of the county. These soils formed in thick, unconsolidated beds of loamy sand and sandy loam marine sediment. Slopes range from 0 to 8 percent, but slopes of 0 to 5 percent are dominant.

In a representative profile, the plow layer is brown loamy fine sand about 8 inches thick. Below is mixed brown and pale-brown loamy fine sand to a depth of 12 inches; light yellowish-brown loamy fine sand mottled with pale brown to a depth of 20 inches; and then pale-brown loamy fine sand to a depth of 30 inches. The subsoil is light yellowish-brown sandy clay loam to a depth of 45 inches; yellowish-brown heavy sandy clay loam mottled with pale brown and strong brown to a depth of 60 inches; and mottled strong-brown and light brownish-gray heavy sandy clay loam to a depth of 72 inches.

The native vegetation is mixed hardwoods and pines. Most of the acreage was once cleared and cropped, but much of it has reverted to pine forest. A few areas are cropped, and a few remain idle.

Profile of Wagram loamy fine sand, 0 to 5 percent slopes, in an idle field (5 miles west of Eutaw on Greene County Road No. 12, then three-eighths of a mile north on a farm-to-market road, and 100 feet west of road; in the NW¼NW¼ sec. 20, T. 22 N., R. 1 E.):

Ap—0 to 8 inches, brown (10YR 4/3) loamy fine sand; single grain; very friable; common fine roots; very strongly acid; abrupt, smooth boundary.

A1—8 to 12 inches, mixed brown (10YR 4/3) and pale-brown (10YR 6/3) loamy fine sand; single grain; very friable; common fine roots; very strongly acid; clear, smooth boundary.

A21—12 to 20 inches, light yellowish-brown (10YR 6/4) loamy fine sand; many, fine, pale-brown mottles; single grain; loose to very friable; very strongly acid; gradual, wavy boundary.

A22—20 to 30 inches, pale-brown (10YR 6/3) loamy fine sand; single grain; loose to very friable; very strongly acid; gradual, wavy boundary.

B21t—30 to 45 inches, light yellowish-brown (10YR 6/4) sandy clay loam; weak, medium, subangular blocky structure; friable; patchy clay films; sand grains coated and bridged with clay; very strongly acid; gradual, wavy boundary.

B22t—45 to 60 inches, yellowish-brown (10YR 5/4) heavy sandy clay loam; common, medium, distinct, pale-brown and strong-brown mottles; weak, medium and coarse, subangular blocky structure; friable to firm; patchy clay films on a few peds; a few clean sand grains; very strongly acid; gradual, wavy boundary.

B23t—60 to 72 inches +, mottled strong-brown (7.5YR 5/6) and light brownish-gray (2.5Y 6/2) heavy sandy clay loam; weak, medium and coarse, subangular blocky structure; friable to firm; patchy clay films; pockets of sandy material; a few clean sand grains; very strongly acid.

The Ap horizon ranges from dark grayish brown to pale brown, and the A2 horizon, from pale brown to light olive brown. Texture generally is loamy fine sand, but it ranges from loamy fine sand to sand. The A horizon is 20 to 40 inches thick. The Bt horizon ranges from light olive brown to strong brown. In some places the lower part of the Bt horizon is uniform yellowish brown to strong brown, and in other places it is mottled with shades of yellow and gray. Texture of the Bt horizon ranges from sandy loam to sandy clay loam. Reaction of these soils ranges from strongly acid to very strongly acid.

Wagram soils are near Lucy, Ora, Rumford, Ruston, Shubuta, and Troup soils. They have a thicker, more sandy A horizon than Ora, Rumford, Ruston, and Shubuta soils. Wagram soils lack the red B horizon typical of Lucy, Rumford, Ruston, and Shubuta soils, and their B horizon is not so clayey as that of Shubuta soils. They lack the fragipan characteristic of Ora soils.

Wagram loamy fine sand, 0 to 5 percent slopes (WaB).—This soil has the profile described as representative for the series. It is on uplands and stream terraces. Included in mapping were small areas of Ora, Rumford, and Ruston soils and a few small areas that have slopes of more than 5 percent.

Natural fertility is low in this soil. Water enters the soil at a rapid rate and moves through the profile at a moderately rapid rate. The available water capacity is low.

This soil is poorly suited to cultivated crops because of the low available water capacity and the coarse-textured surface layer. It is well suited to pasture, hay, and woodland. This soil can be tilled throughout a wide range of moisture content, but crops are damaged from lack of water during periods of drought. If this soil is cultivated, the hazard of erosion is slight to moderate. Capability unit IIs–12; woodland group 3s2.

Wagram loamy fine sand, 5 to 8 percent slopes (WaC).—This soil is on uplands. It has an 8-inch plow layer of brown loamy fine sand. Below is about 20 inches of pale-brown loamy fine sand. The subsoil is yellowish-brown sandy clay loam more than 36 inches thick.

Included in mapping were small areas of Ora, Rumford, and Ruston soils. Also included, and making up about 15 percent of the acreage, are areas that have slopes of more than 8 percent.

Natural fertility is low in this soil. Water enters this soil at a rapid rate and moves through the profile at a moderately rapid rate. The available water capacity is low.

This soil is poorly suited to cultivated crops because of the low available water capacity and the coarse-textured plow layer. It is well suited to pasture, hay, and woodland. Crops are damaged from lack of water during periods of drought. This soil can be tilled throughout a wide range of moisture content, however, without clodding or crusting. If this soil is cultivated, the hazard of erosion is moderate. Capability unit IIIs–12; woodland group 3s2.

Watsonia Series

The Watsonia series consists of shallow, well-drained, fine-textured, strongly acid to moderately alkaline soils. These soils occur throughout the prairie part of the county. They formed in very thin beds of acid clay over Selma chalk. Slopes range from 1 to 17 percent, but slopes of 1 to 8 percent are dominant.

In a representative profile, the surface layer is dark grayish-brown clay about 3 inches thick. The subsoil is reddish-brown clay to a depth of 8 inches and mottled red and light olive-brown clay to a depth of 12 inches. The underlying material is light olive-brown clay to a depth of 16 inches. Soft Selma chalk occurs at a depth of about 16 inches.

The native vegetation was oak and cedar forest. Most of the acreage has been cleared and is used for pasture and hay.

Profile of Watsonia clay, 1 to 5 percent slopes, eroded, in a pasture (2 miles southwest of Eutaw on U.S. Highway 11, then three-fourths of a mile west on a farm-to-market road, and 500 feet south of the road in the SE¼NW¼ sec. 6, T. 21 N., R. 2 E.) :

Ap—0 to 3 inches, dark grayish-brown (10YR 4/2) clay; massive; firm, very hard, very plastic, very sticky; many fine roots; very strongly acid; abrupt, smooth boundary.

B21—3 to 8 inches, reddish-brown (5YR 4/4) clay; moderate to strong, medium, subangular blocky structure; firm, very hard, very plastic, very sticky; common fine roots; ped faces are shiny; very strongly acid; clear, wavy boundary.

B22—8 to 12 inches, mottled yellowish-red (5YR 4/6) and light olive-brown (2.5Y 5/4) clay; moderate, fine and very fine, subangular and angular blocky structure; firm, very hard, very plastic, very sticky; a few fine roots; a few slickensides; a few, fine, black concretions; ped faces are shiny; very strongly acid; clear, wavy boundary.

IIC—12 to 16 inches, light olive-brown (2.5Y 5/4) clay; massive; firm, very hard, very sticky, very plastic; a few fine roots; slickensides are common but do not intersect; a few, fine, black concretions; moderately alkaline; clear, wavy boundary.

IIR—16 to 30 inches +, light brownish-gray (2.5Y 6/2) soft Selma chalk; thick platy structure; many, fine, white lime nodules; moderately alkaline.

The Ap horizon ranges from brown to dark brown or dark grayish brown in color. Its texture is clay. The B horizon ranges from yellowish brown to red, and in places it is mottled in shades of red, brown, and olive. The texture is dominantly clay, but in places it is silty clay. The solum ranges from 10 to 20 inches in thickness. Fine slickensides are common in the lower part of the B horizon and in the C horizon. The C horizon ranges from strong brown to pale olive, and in places it is mottled. Its texture is clay. In some places the C horizon is absent. Reaction of these soils ranges from very strongly acid to moderately alkaline.

Watsonia soils are near Binnsville, Oktibbeha, Sumter, and Vaiden soils. They have a thinner solum than Oktibbeha, Sumter, and Vaiden soils, and they are more sticky and plastic than Sumter soils. Their A horizon is thinner and lighter colored than that of Binnsville soils.

In this county Watsonia soils are mapped only in complexes with Sumter soils. The Sumter soils are described under the Sumter series in this survey.

Use of the Soils for Crops and Pasture

This section explains how the soils of Greene County can be managed for crops and pasture. It describes the classification system used by the Soil Conservation Service and discusses management practices for groups of soils that have similar potentialities and requirements. Then it gives estimates of the average yield of the crops commonly grown.

Capability Grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for range, for forest trees, or engineering.

In the capability system, all kinds of soils are grouped at three levels, the capability class, subclass, and unit. These are discussed in the following paragraphs.

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, 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, require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife. (None in Greene County.)

Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife.

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife.

Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, or water supply, or to esthetic purposes. (None in Greene County.)

CAPABILITY SUBCLASSES are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless 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); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s* and *c*, because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, range, woodland, wildlife, or recreation.

CAPABILITY UNITS are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units generally are designated by adding an Arabic numeral to the subclass symbol, for example IIe–12 or IIIe–11. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

Management by Capability Units[2]

In this section the soils of the county that require about the same kind of management are grouped in capability units. The significant features of the soils in each capability unit, together with their hazards and limitations, are described, and suggestions for use and management are given. The names of soil series represented are mentioned in the description of each capability unit, but this does not mean that all soils of a given series appear in the unit. The names of all soils in any given capability unit can be found by referring to the "Guide to Mapping Units" at the back of this survey. The capability units are not numbered consecutively, because not all the units used in Alabama are in this county.

Specific statements about the amount of lime and the kinds and amount of fertilizer to use are not given in the suggestions for management. Lime and fertilizer should be applied according to the results of soil tests and field trials.

Further information about specific management can be obtained from the local representative of the Soil Conservation Service, the Extension Service, or the Agricultural Experiment Station.

[2] O. D. FINCHER, conservation agronomist, Soil Conservation Service, assisted in the preparation of this section.

Capability unit I–12

This unit consists of deep, well-drained, nearly level soils of the Cahaba, Macon, Magnolia, and Ruston series. These soils have a surface layer of brown fine sandy loam. The subsoil is thick, yellowish-red to dark-red loam, sandy clay loam, clay loam, and clay. These soils make up about 4 percent of the county. About 80 percent of the acreage is used for crops, 15 percent is in pasture, and 5 percent is wooded.

Infiltration is moderate in these soils, and permeability is moderately slow or moderate to rapid. Available water capacity is moderate. Roots easily penetrate to a depth of several feet. The organic-matter content is low, and the natural fertility is moderate or low. Reaction is medim acid to very strongly acid. Runoff is slow to very slow.

***Figure 14.*—Cotton ready for harvesting on Magnolia fine sandy loam, 0 to 2 percent slopes. Estimated average yield is 840 pounds of lint per acre.**

These soils are suited to cotton, corn, soybeans, small grains, and truck crops. (fig. 14). If large amounts of fertilizer are applied and sufficient lime is added, row crops can be grown each year.

The soils in this unit are in good tilth and can be worked throughout a wide range of moisture content without clodding. Erosion can be controlled if rows

are arranged across slopes and if crop residues are returned to the soil.

Capability unit I–13

The only soil in this unit is Ochlockonee fine sandy loam, local alluvium. This nearly level, well-drained soil is in depressions on uplands, at the heads of and along small drainageways, and at the foot of steep slopes. In most places the surface layer is brown fine sandy loam, and the subsurface layer is yellowish-brown loam or fine sandy loam. Flooding is not a hazard, but seepage water is a problem during wet periods. This soil makes up about 0.5 percent of the county. About 60 percent of the acreage is used for crops, 25 percent is in pasture, and 15 percent is wooded.

Infiltration and permeability are moderate to rapid in this soil, and available water capacity is high. Roots readily penetrate to a depth of several feet. The organic-matter content is low, and the natural fertility is moderate. Reaction is strongly acid to very strongly acid. Runoff is slow to very slow, and erosion is not a serious hazard.

This soil is suited to corn, cotton, small grains, soybeans, some truck crops, and most grasses and legumes. If adequate amounts of fertilizer and lime are added and if the supply of organic matter is maintained by returning all crop residues to the soil, row crops can be grown each year. This soil is fairly easy to keep in good tilth. It can be tilled throughout a fairly wide range of moisture content.

Capability unit IIe–12

This unit consists of deep, gently sloping, well-drained soils of the Macon, Magnolia, and Ruston series that are mostly eroded. These soils have a surface layer of fine sandy loam. The subsoil is thick, yellowish-red to dark-red, friable to firm loam, sandy clay loam, clay loam, and clay. These soils make up about 3.5 percent of the county. About 50 percent of the acreage is used for crops, 35 percent is in pasture, and 15 percent is wooded.

Infiltration is moderate in these soils, and permeability is moderately slow or moderate to rapid. Available water capacity is moderate. Roots readily penetrate to a depth of several feet. The organic-matter content is low, and the natural fertility is moderate or low. Reaction is medium acid to very strongly acid. Runoff is slow to medium, and the erosion hazard is slight to moderate.

Large amounts of organic material are needed for maintaining fertility and for protecting the soils from further erosion. The residues from corn, small grains, or other crops that produce large amounts of residues provide sufficient organic matter if shredded and left on the surface until spring. If peanuts, cotton, truck crops, or other crops that produce little residue are grown, a cover crop, such as a small grain, is needed in winter. Cultivating on the contour, constructing terraces, and using waterways that have been planted to perennial grasses (fig. 15) also help to control runoff and thus prevent further erosion.

***Figure 15.*—Waterway on Ruston fine sandy loam, 2 to 5 percent slopes, which is planted to Coastal bermudagrass, safely removes excess water.**

Capability unit IIe–14

This unit consists of moderately well drained and well drained, gently sloping soils of the Angie and Shubuta series. These soils are on uplands and stream terraces, and some areas are eroded. They have a surface layer of fine sandy loam. The subsoil is yellowish-brown to red clay loam to clay. In about half of the acreage, the lower part of the subsoil is mottled with gray; and in the remaining acreage, the underlying material is stratified sandy and clayey material. These soils make up about 1 percent of the county. About 25 percent of the acreage is used for crops, 25 percent is in pasture, and 50 percent is wooded.

Water enters these soils readily, but it moves through the profile at a moderate to slow rate. Available water capacity is moderate. The organic-matter content and natural fertility are low. Reaction is strongly acid to very strong acid. Runoff is slow to medium, and the erosion hazard is slight to moderate.

These soils are suited to corn, cotton, soybeans, truck crops, and to most grasses and legumes. If fertilizer and lime are applied and if all crop residues are left on these soils, a suitable cropping system is 2 years of close-growing crops followed by 2 years of row crops. Contour tillage, terraces, and grassed waterways help to control erosion. These soils are fairly easy to work. Crops on them respond well if lime is applied.

Capability unit IIe–15

This unit consists of deep, moderately well drained, gently sloping soils of the Ora and Savannah series. These soils have a fragipan in the lower part of the subsoil, and some areas are eroded. They have a surface layer of light-colored fine sandy loam about 6 inches thick. The subsoil is yellowish-brown to red, friable loam to clay loam in the upper 18 inches. It is a mottled, compact and brittle fragipan that has a sandy clay loam texture in the lower part. During wet seasons, mainly late in winter and spring, a perched

water table causes the subsoil to be waterlogged. These soils make up about 25 percent of the county. About 60 percent of the acreage is cultivated, 30 percent is in pasture, and 10 percent is wooded or is left idle.

Infiltration is moderate in these soils. Permeability is moderate above the fragipan and slow in the fragipan. Available water capacity is moderate. Roots easily penetrate to the fragipan, but penetration is greatly restricted in the fragipan. The organic-matter content and natural fertility are low. Reaction is medium acid to very strongly acid. Runoff is slow to medium, and the hazard of erosion is slight to moderate.

These soils are suited to corn, cotton, soybeans, small grains, and pasture grasses and legumes. The range of moisture content within which these soils can be tilled is narrow. A suitable cropping system is 2 years of small grains or other close-growing crops followed by 2 years of row crops. All crop residues should be shredded and left on the surface until the seedbed is prepared in spring. Contour tillage, terraces, and grassed waterways (fig. 16) are needed for control of runoff and erosion.

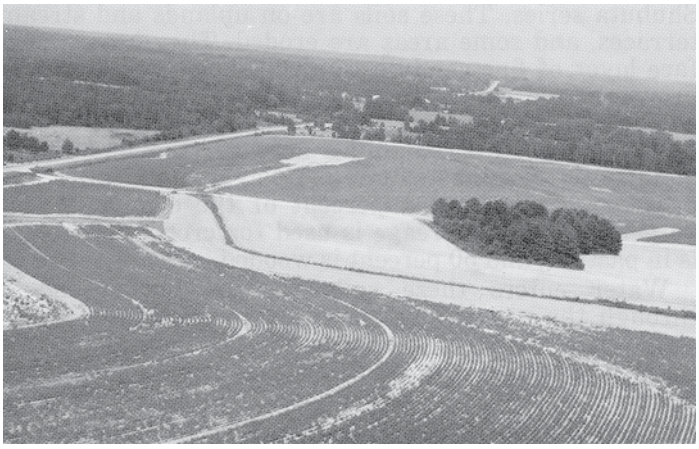

Figure 16.—**System of terraces, contour tillage, and grassed waterways on Savannah fine sandy loam, 2 to 5 percent slopes.**

Capability unit IIe–22

Sumter silty clay, 1 to 3 percent slopes, eroded, is the only soil in this unit. It has a surface layer of dark-gray silty clay 2 to 5 inches thick. The subsoil is pale-yellow silty clay and clay. Selma chalk is at a depth between 2 and 5 feet. This soil makes up slightly more than 1 percent of the county. Most of the acreage is open and is used for pasture or hay. A few small areas are cropped.

Infiltration and permeability are slow in this soil, and available water capacity is moderate. The organic-matter content is low, and the natural fertility is moderate. Reaction is moderately alkaline.

A suitable cropping system for this soil is 3 years of grass followed by 1 year of a row crop. Hay and pasture plants suited to this soil are johnsongrass and dallisgrass planted with legumes. All tillage should be done on the contour. The range of moisture content within which this soil can be tilled is narrow. Consequently, tillage and other fieldwork are difficult if this soil is tilled when it is too wet or too dry.

Capability unit IIe–23

This unit consists of moderately well drained to somewhat poorly drained, gently sloping, eroded soils of the Kipling and Oktibbeha series. The thin surface layer is brown to dark-gray or light yellowish-brown loam or clay. The subsoil is yellowish-brown to red, sticky and plastic clay loam to clay that is mottled with gray or brown in the upper part. It is mottled red, brown, and gray, very sticky and plastic clay in the lower part. Selma chalk is at a depth between 3 and 8 feet. These soils make up about 3 percent of the county. Most of the acreage is used for pasture or hay, but small areas are used for row crops and as woodland.

Water enters these soils at a moderate to slow rate and moves through the profile very slowly. Available water capacity is moderate. The organic-matter content is low, and the natural fertility is moderate. Reaction is medium acid to very strongly acid. Runoff is medium, and the erosion hazard is moderate.

A suitable cropping system for these soils is 3 years or more of perennial grasses and legumes followed by 1 year of a row crop. Cotton, corn, soybeans, and small grains are fairly well suited, and legumes and such grasses as johnsongrass and dallisgrass are well suited. All tillage should be done on the contour. The range of moisture content within which these soils can be tilled is narrow. As a result, and especially where the texture is clay, the soil is difficult to till and large clods form if the soil is worked when too wet or too dry.

Capability unit IIs–12

This unit consists of well-drained to excessively drained soils of the Rumford, Sequatchie, and Wagram series. In about 90 percent of the acreage, the soils have a surface layer of pale-brown to grayish-brown sandy loam or loamy fine sand 5 to 15 inches thick. The subsoil is yellowish-red fine sandy loam or loam about 36 inches thick, and the underlying material is loamy sand or sand several feet thick. The remaining acreage consists of Wagram soil, which has a surface layer of light-colored loamy fine sand 20 to 40 inches thick. The subsoil is yellowish-brown loam to sandy clay loam 36 to 72 inches thick. The soils in this unit make up about 1 percent of the county. About 40 percent of the acreage is used for crops, 20 percent is in pasture, and 40 percent is wooded.

Water enters these soils readily, and it moves through the profile at a moderate to moderately rapid rate. The available water capacity is medium or low, and plants are damaged from lack of water during short periods of drought. Roots readily penetrate to a depth of several feet. The organic-matter content and natural fertility are low. Reaction is strongly acid to very strongly acid. Runoff is slow to very slow, and the erosion hazard is slight.

A suitable cropping system for these soils is 3 years of sod followed by 2 years of row crops. Row crops can be grown each year if all crop residues are shredded and left on the surface. All tillage should be done on the contour. If these soils are properly fertilized, cotton, corn, soybeans, small grains, and truck crops are well suited. Coastal bermudagrass and bahiagrass are excellent plants for hay and grazing. Fertilizer leaches from these soils very rapidly, and it should be added in split applications.

Capability unit IIs–14

Shubuta fine sandy loam, 0 to 2 percent slopes, is the only soil in this unit. It is a moderately well drained to well drained, slowly permeable soil. The surface layer is light yellowish-brown to very dark gray fine sandy loam. The subsoil is yellowish-brown to red loam to clay in the upper part. It is dark-brown to pale-brown sandy clay loam to clay mottled with gray, light brownish gray, and strong brown in the lower part. This soil makes up about 3 percent of the county. About one-half of the acreage is used for pasture, hay, or crops.

Infiltration is moderate in this soil, and permeability is moderately slow to slow. Available water capacity is moderate. The organic-matter content and natural fertility are low. Runoff is slow. Reaction is strongly acid to very strongly acid.

If this soil is properly fertilized, it is well suited to corn, cotton, small grains, soybeans, and truck crops. Coastal bermudagass, bahiagrass, and fescue are suitable plants for hay and grazing. Row crops can be grown each year if all crop residues are shredded and left on the surface until the soil is prepared for seeding in spring. All tillage should be done on the contour.

Capability unit IIs–15

This unit consists of deep, moderately well drained, nearly level soils of the Ora and Savannah series. These soils have a surface layer of light-colored fine sandy loam. The subsoil is yellowish-brown to red, friable loam to clay in the upper part, and it is a mottled, compact and brittle fragipan in the lower part. Its texture is sandy clay loam. Depth to the fragipan is about 24 inches. These soils make up about 3 percent of the county. About 50 percent of the acreage is cultivated, 40 percent is in pasture, and 10 percent is wooded or is left idle.

Infiltration is moderate in these soils. Permeability is moderate above the fragipan, but slow through the fragipan. The subsoil is waterlogged during wet seasons, mainly late in winter and spring. Available water capacity is moderate. Roots readily penetrate to the fragipan, but penetration within the fragipan is much slower. The organic-matter content and natural fertility are low. Reaction is medium acid to very strongly acid. Runoff is slow to very slow, and the hazard of erosion is slight.

If these soils are properly fertilized, they are well suited to corn, cotton, small grains, soybeans, and truck crops. Coastal bermudagrass, bahiagrass, and fescue are suitable plants for hay and grazing. Row crops can be grown each year if all crop residues are shredded and left on the surface until the soil is prepared for seeding in spring. All tillage should be done on the contour.

Capability unit IIw–13

This unit consists of well-drained and moderately well drained, nearly level soils of the Angie, Dulac, Ruston, and Sawyer series. These soils are on low stream terraces and are susceptible to occasional flooding. Most of the soils have a surface layer of brown fine sandy loam or silt loam about 6 inches thick. The subsoil is yellowish-red loam to silty clay loam in the upper 10 to 18 inches. Except for the Ruston soil the lower part of the subsoil is yellowish-brown silty clay loam mottled with gray. In the Ruston soil the lower part of the subsoil is strong-brown fine sandy loam. These soils make up about 2.5 percent of the county. About 50 percent of the acreage is wooded, 20 percent is used for crops, and 30 percent is pastured.

Water enters these soils readily, but it moves through the profile at a moderate to slow rate. The subsoil is waterlogged during wet periods, mainly late in winter and spring. Available water capacity is moderate. The organic-matter content and natural fertility are low. Reaction is strongly acid to very strongly acid. Runoff is slow to very slow and there is little or no erosion hazard.

These soils are suited to corn, cotton, and soybeans, and they are well suited to Coastal bermudagrass, bahiagrass, and fescue grown for pasture. If large amounts of organic matter are returned to the soil, row crops can be grown each year. In places shallow ditches are needed to remove excess surface water.

Capability unit IIw–14

Ochlockonee fine sandy loam is the only soil in this unit. It is a nearly level, well-drained soil on first bottoms. The surface layer is dark grayish-brown fine sandy loam. Below is brown to yellowish brown fine sandy loam to loam that is mottled with gray at a depth below 20 inches. Generally, lenses or pockets of sand are in the profile. This soil makes up about 1 percent of the county. About 60 percent of the acreage is wooded, 15 percent is used for crops, and 25 percent is in pasture.

This soil is subject to frequent flooding, mainly in winter and early in spring. The floodwater covers the soil for a period of 1 to 2 days. Water enters the soil readily and moves through the profile at a moderate to rapid rate. The available water capacity is high. Roots readily penetrate to a depth of several feet. The organic-matter content is low, and the natural fertility is moderate. Reaction is strongly acid to very strongly acid. Runoff is slow to very slow. Except where floods cause scouring, erosion is not a hazard.

This soil is suited to corn, cotton, small grain, soybeans, and truck crops. Coastal bermudagrass, bahiagrass, and fescue are suitable plants for pasture and hay. If large amounts of organic matter are returned to the soil and if all crop residues are left on the surface until the seedbed is prepared in spring, row crops can be grown each year.

Capability unit IIw–23

This unit consists of moderately well drained, nearly level soils of the Catalpa and Trinity series. The surface layer of these soils is very dark grayish-brown, dark olive gray to black, sticky and plastic clay between 15 and 30 inches thick. It is underlain by dark grayish-brown to very dark gray, sticky and plastic clay that is mottled with gray or light gray. About 40 percent of the acreage consists of Catalpa soil on first bottoms that are subject to frequent flooding. Areas of Trinity soil are not subject to flooding, but seepage water is a problem. These soils make up about 3.5 percent of the county. Most of the acreage is used for pasture or hay.

Infiltration and permeability are slow to very slow in these soils. Available water capacity is moderate to high. The organic-matter content and natural fertility are moderate. Reaction is neutral to moderately alkaline. Runoff is slow to very slow. Except where floods cause scouring, erosion is not a hazard.

These soils are suited to corn, soybeans, and small grains. Johnsongrass, dallisgrass, and fescue are suitable plants for pasture and hay. If all crop residues are returned to the soil, row crops can be grown each year. Commercial lime is not needed on these soils. In places shallow drainage ditches are needed to remove excess surface water.

Capability unit IIIe–11

This unit consists of deep, well-drained, sloping soils of the Macon, Magnolia, and Ruston series that are eroded. These soils have a surface layer of light-colored fine sandy loam. The subsoil is thick, yellowish-red to dark-red, friable to firm loam, sandy clay loam, clay loam, and clay. These soils make up about 2 percent of the county. About 40 percent of the acreage is used for crops, about 40 percent is in pasture, and about 20 percent is wooded.

Infiltration is moderate in these soils, and permeability is moderately slow to moderately rapid. Available water capacity is moderate. Roots easily penetrate to a depth of several feet. The organic-matter content is low, and the natural fertility is moderate to low. Reaction is medium acid to very strongly acid. Runoff is medium, and the hazard of erosion is moderate.

A suitable cropping system for these soils is 3 years of perennial grasses followed by 2 years of row crops. These soils are suited to most crops generally grown in the county, such as corn, cotton, and small grains. Coastal bermudagrass, bahiagrass, and sericea lespedeza are suitable plants for pasture and hay. All tillage should be done on the contour. Erosion can be reduced by shredding all crop residues and leaving them on the surface until the soil is prepared for seeding in spring. Terraces and grassed waterways are needed if row crops are grown. The response to lime and fertilizer is good.

Capability unit IIIe–14

This unit consists of deep, gently sloping and sloping, eroded soils of the Angie, Boswell, and Shubuta series. These soils have a surface layer of light-colored fine sandy loam. The subsoil is yellowish-brown to red heavy clay loam or clay in the upper 12 inches. The lower part of the subsoil is mottled red, brown, and gray, sticky and plastic clay in about two-fifths of the areas, and stratified sandy and clayey material in the remaining areas. Some areas of the Angie soil are flooded occasionally.

The soils in this unit make up about 2 percent of the county. About 60 percent of the acreage is wooded, 20 percent is used for crops, and 20 percent is in pasture.

Water enters these soils at a moderate to slow rate and moves through the profile moderately slowly to very slowly. Available water capacity is moderate. The organic-matter content and natural fertility are low. Reaction is strongly acid to very strongly acid. Runoff is medium, and the hazard of erosion is moderate.

A suitable cropping system for these soils is 3 or 4 years of perennial grasses followed by 2 years of row crops. These soils are suited to corn, cotton, and small grains. They are also suited to Coastal bermudagrass, bahiagrass, and sericea lespedeza grown for hay and pasture. Large amounts of organic matter are needed to protect the soils from further erosion. The residues from corn, small grains, or other crops that produce large amounts of residues provide sufficient organic matter. If crops that produce little residue are grown, a cover crop, such as a small grain, is needed in winter. All tillage should be done on the contour. Terraces and grassed waterways are needed if row crops are grown.

Capability unit IIIe–15

This unit consists of moderately well drained, sloping, eroded soils of the Ora and Savannah series. These soils have a surface layer of light-colored fine sandy loam about 6 inches thick. The subsoil is yellowish-brown to red, friable loam to clay loam in the upper 18 inches. It is a mottled compact and brittle fragipan of loam to sandy clay loam in the lower part. Depth to the pan is about 24 inches.

These soils make up about 0.5 percent of the county. About 30 percent is used for crops, 40 percent is wooded, and 30 percent is pastured.

Water and roots readily penetrate these soils above the fragipan, but penetration is much slower within the fragipan. Because of a perched water table, the lower part of the subsoil is waterlogged during wet seasons, mainly late in winter and spring. Available water capacity is moderate. The organic-matter content and natural fertility are low in these soils. Reaction is medium acid to very strongly acid. Runoff is medium, and the hazard of erosion is moderate.

A suitable cropping system for these soils is 4 years of perennial grasses followed by 2 years of row crops. These soils are suited to corn, cotton, and small grains. They also are suited to Coastal bermudagrass, bahiagrass, and sericea lespedeza for pasture and hay. All crop residues should be shredded and left on the surface until the soil is cultivated in spring. All tillage should be done on the contour. If row crops are grown, terraces and grassed waterways are needed for control of runoff and to prevent further erosion.

Capability unit IIIe–22

Sumter silty clay, 3 to 5 percent slopes, eroded, is the only soil in this unit. It has a surface layer of

grayish-brown to dark-gray silty clay or clay. Selma chalk is at a depth between 24 and 60 inches. This soil makes up about 2 percent of the county. Most of the acreage is used for pasture or hay, but a few small areas are cropped.

Infiltration and permeability are slow in this soil. Available water capacity is moderate. The organic-matter content is low, and natural fertility is moderate. Reaction is mildly alkaline to moderately alkaline. Runoff is medium, and the hazard of erosion is moderate.

Figure 17.—**Johnsongrass being cut for hay on Sumter silty clay, 3 to 5 percent slopes, eroded.**

This soil is suited to hay and pasture. The best adapted plants are johnsongrass (fig. 17) and dallisgrass planted with legumes. A suitable cropping system is 6 years of grass followed by 1 year of a row crop. All tillage should be done on the contour. The range of moisture content within which this soil can be tilled satisfactorily is narrow. Consequently when the soil is too wet or too dry, tillage and other fieldwork are difficult.

Capability unit IIIe–23

This unit consists of moderately well drained and somewhat poorly drained, eroded soils of the Kipling, Oktibbeha, and Vaiden series. These sloping soils are on prairie uplands. The thin surface layer is brown and very dark gray loam or clay. The upper part of the subsoil is yellowish-brown to red, sticky and plastic clay loam or clay mottled with gray or brown. The lower part of the subsoil is mottled red, brown, and gray very sticky and plastic clay. Selma chalk is at a depth between 2 and 8 feet. These soils make up about 2 percent of the county. About 80 percent of the acreage is used mainly for pasture or hay, though small areas are cropped. About 20 percent is wooded.

Infiltration is moderate to slow in these soils, and permeability is slow to very slow. Available water capacity is moderate. The natural fertility is moderate, and the organic-matter content is low. Reaction is medium acid to very strongly acid. Runoff is medium to rapid, and the erosion hazard is high in cultivated areas. Tillage is difficult, and these soils can be worked within only a narrow range of moisture content without clodding.

A suitable cropping system for these soils is 4 years or more of perennial grasses and legumes followed by 1 year of a row crop. All tillage should be done on the contour.

Pasture and hay plants suited to these soils are Coastal bermudagrass, bahiagrass, johnsongrass, dallisgrass, and fescue.

Capability unit IIIe–111

Magnolia sandy clay loam, 2 to 8 percent slopes, severely eroded, is the only soil in this unit. It is well-drained and is on uplands. Shallow gullies are common in most areas. The surface layer is yellowish-red sandy clay loam about 3 inches thick. The subsoil is red to dark-red heavy clay loam to clay to a depth of several feet.

This soil makes up about 1 percent of the county. All of the acreage has been cropped, but many areas have reverted to pines. Small areas are cropped, but a moderate acreage is used for pasture.

Water enters this soil slowly, but its movement through the profile is moderate. Available water capacity is moderate. The organic-matter content and natural fertility are low. Reaction is strongly acid. Runoff is medium to rapid, and the hazard of erosion is moderate to high.

A suitable cropping system for this soil is 4 years of grass followed by 2 years of row crops. This soil is fairly well suited to corn, cotton, soybeans, and small grains, but it is better suited to hay and pasture. Suitable hay and pasture plants are Coastal bermudagrass, bahiagrass, fescue, and sericea lespedeza. Tillage is difficult, and the range of moisture content within which this soil can be tilled satisfactorily is narrow. A crust forms on the soils and the stands of crops therefore are likely to be poor.

Capability unit IIIs–12

Wagram loamy fine sand, 5 to 8 percent slopes, is the only soil in this unit. It has a surface layer of light-colored loamy fine sand, 20 to 40 inches thick. The subsoil is yellowish-brown sandy clay loam, 50 or more inches thick. This soil makes up less than 0.1 percent of the county. Most of the acreage is idle or has a cover of pine trees, though a few small areas are cropped.

Water enters this soil readily and moves rapidly through the loamy sand surface layer and moderately rapid through the sandy clay loam subsoil. The available water capacity is low, and plants are damaged from lack of water during short periods of drought. Roots readily penetrate the soil to a depth of several feet. The organic-matter content and natural fertility are low in this soil. Runoff is slow, and the hazard of erosion is slight to moderate.

A suitable cropping system for these soils is 3 years or more of perennial grasses followed by 1 or 2 years of row crops. Corn, cotton, small grains, soybeans, and truck crops grow well if this soil is properly fertilized. Coastal bermudagrass and bahiagrass are well suited for hay and grazing. Fertilizer leaches from this soil very rapidly, and it should be applied in split applications. Leaving all crop residues on the

surface until the soil is prepared in spring helps to reduce erosion. All tillage should be done on the contour.

Capability unit IIIw-12

This unit consists of somewhat poorly drained, nearly level soils of the Falaya and Stough series. These soils are on first bottoms and on stream terraces. About 30 percent of the acreage is flooded frequently, and about 10 percent is flooded occasionally. About 60 percent of the acreage is not susceptible to flooding, but seepage water is a problem. These soils have a surface layer of light-colored sandy loam to fine sandy loam underlain by yellowish-brown sandy loam to silt loam that is mottled with gray.

The soils in this unit make up about 7 percent of the county. About 75 percent of the acreage is wooded, 15 percent is in pasture, and 10 percent is used for crops.

Water enters these soils readily and moves through the profile at a moderate to slow rate. Because of a seasonal high water table, the subsoil is waterlogged during wet seasons, mainly late in winter and spring. The available water capacity is high to medium. The organic-matter content is low, and the natural fertility is moderate to low. Reaction is strongly acid to very strongly acid. Runoff is slow to very slow. Except where floods cause scouring, erosion is not a hazard.

These soils are suited to corn and soybeans. They also are suited to Coastal bermudagrass and bahiagrass, and to fescue grown with legumes. The range of moisture content within which these soils can be tilled is narrow. If large amounts of crop residue are returned to the soil, row crops can be grown each year. All crop residues should be left on the surface until the soil is prepared for seeding in spring. In places ditches are needed to remove excess surface water.

Capability unit IIIw-21

This unit consists of moderately well drained to somewhat poorly drained, nearly level soils of the Leeper and Marietta series. These are on first bottoms, on toe slopes, and at the heads of and along small drainageways. They have a surface layer of dark grayish-brown, sticky and plastic clay loam to clay about 8 inches thick. Below is mottled gray and yellowish-brown, very sticky and plastic sandy clay loam to clay.

These soils make up about 6 percent of the county. About half of the acreage is wooded and half is used for pasture and hay, though some small areas are cropped.

Infiltration and permeability are slow to very slow in these Leeper soils, and moderate to moderately slow in the Marietta soils. Available water capacity is moderate. About 75 percent of the acreage is subject to frequent flooding, mainly late in winter and in spring. The organic-matter content and natural fertility are moderate. Runoff is slow to very slow. Except where floods cause scouring, erosion is not a hazard.

These soils are suited to corn, soybeans, johnsongrass, dallisgrass, and fescue. If large amounts of plant residues are returned to the soil, row crops can be grown each year. These soils are difficult to till, and the range of moisture content within which they can be tilled is narrow. Clods form if these soils are tilled when too wet or too dry. In places shallow ditches are needed to remove excess surface water.

Capability unit IIIw-24

This unit consists of somewhat poorly drained and poorly drained, nearly level soils of the Kipling and Vaiden series. These soils are on uplands and stream terraces in the prairie part of the county. They have a surface layer of brown fine sandy loam, loam, and silty clay about 4 to 5 inches thick. The subsoil is gray or yellowish-brown clay loam or clay mottled with pale brown and gray in the upper part. It is mottled yellowish-brown and light-gray, sticky and plastic clay in the lower part. Red mottles are present in places. Selma chalk is at a depth of about 60 inches.

These soils make up about 1.5 percent of the county. Most of the acreage is cleared and is used for pasture and hay. Small areas are wooded or are in crops.

Water enters these soils moderately to slowly and moves through the profile slowly to very slowly. During wet periods the subsoil is waterlogged, mainly late in winter and spring. Available water capacity is moderate. The organic-matter content is low, and the natural fertility is moderate. Reaction is medium acid to extremely acid. Runoff is slow to very slow, and the hazard of erosion is slight.

***Figure 18.*—Fescue on Vaiden silty clay, 0 to 1 percent slopes.**

These soils are suited to corn and cotton, and to bahiagrass, dallisgrass, and fescue (fig. 18). If all crop residues are returned to the soil, row crops can be grown each year. The range of moisture content within which these soils can be tilled is narrow, particularly in the Vaiden soil. Large clods form if tillage is done when the soils are too wet or too dry. In places shallow drainage ditches are needed to remove excess surface water.

Capability unit IVe–11

This unit consists of well-drained, eroded soils of the Magnolia and Ruston series. These moderately steep soils are in the uplands. They have a surface layer of brown fine sandy clay loam about 6 inches thick. The subsoil is yellowish-red to red sandy clay loam to clay in the upper 36 inches. It is yellowish-red sandy clay to fine sandy loam in the lower 30 inches.

The soils in this unit make up about 0.5 percent of the county. About 60 percent of the acreage is wooded, 25 percent is in pasture, and 15 percent is used for crops.

Infiltration is moderate in these soils, and permeability is moderate to moderately rapid. Available water capacity is moderate. Roots readily penetrate these soils to a depth of several feet. The organic-matter content and natural fertility are low. Reaction is strongly acid to very strongly acid. Runoff is rapid, and the hazard of erosion is high.

A suitable cropping system for these soils is 4 years of perennial grasses followed by 1 year of row crops. These soils are suited to corn, cotton, small grains, and soybeans, but they are better suited to pasture grasses and legumes. If large amounts of crop residues are returned to the soils, row crops can be grown each year. Contour tillage, terraces, and grassed waterways are needed, however, if row crops are grown. The moderately steep slopes make it difficult to use mechanized farm equipment on these soils.

Capability unit IVe–13

Boswell fine sandy loam, 5 to 8 percent slopes, eroded, is the only soil in this unit. It is moderately well drained and is on uplands. The surface layer is light-colored fine sandy loam. The subsoil is yellowish-red to dark-red silty clay or clay in the upper part, and it is mottled red and gray, very sticky and plastic clay in the lower part. It is underlain by gray clay mottled with yellowish red and strong brown.

This soil makes up 0.5 percent of the county. About 75 percent of the acreage is wooded, 15 percent is used for crops, and 10 percent is in pasture.

Water enters this soil slowly and moves through the profile slowly to very slowly. Available water capacity is moderate. The organic-matter content and natural fertility are low. Reaction is strongly acid to very strongly acid. Runoff is medium to rapid, and the hazard of erosion is high.

Grasses and legumes are better suited to this soil than other crops, but corn, cotton, and small grains are grown in some areas. If cultivated crops are grown, a suitable cropping system is 3 years of perennial grasses and 1 year of a row crop. Contour tillage, terraces, and grassed waterways are needed for control of erosion. In addition, all crop residues should be left on the surface.

Capability unit IVe–22

Only the Sumter-Watsonia complex, 1 to 5 percent slopes, eroded, is in this unit. These well-drained soils are on upland prairies. The surface layer is grayish-brown to dark grayish-brown silty clay or clay 2 to 4 inches thick. The subsoil is yellowish-red to pale-yellow silty clay or clay. It is underlain by light-gray, partly weathered Selma chalk at a depth between 10 and 40 inches.

The soils in this unit make up about 1 percent of the county. Most of the acreage is open and is used mostly for pasture and hay.

Infiltration and permeability are slow to very slow. The available water capacity is moderate. Roots readily penetrate through the soils to Selma chalk. The organic matter content and natural fertility are moderate. Reaction is strongly acid to moderately alkaline. Runoff is rapid, and if these soils are tilled, the hazard of erosion is high.

These soils are not suited to cultivated crops. They are suited to such pasture and hay plants as johnsongrass, dallisgrass, and Caley peas.

Capability unit IVe–23

This unit consists of moderately well drained to somewhat poorly drained, sloping, eroded soils of the Kipling and Oktibbeha series. The thin surface layer is brown and dark-brown loam to clay. The upper part of the subsoil is yellowish-brown to red, sticky and plastic clay loam to clay mottled with brown or gray. The lower part of the subsoil is mottled red, brown, and gray, very sticky and plastic clay. Selma chalk is at a depth between 30 and 72 inches. These soils make up about 0.5 percent of the county. Nearly all of the acreage is open and is used for pasture or hay.

Water enters these soils at a moderate or slow rate, and it moves through the profile slowly to very slowly. Available water capacity is moderate. The organic-matter content is low, and the natural fertility is moderate. Reaction is medium acid to very strongly acid. Runoff is rapid, and the hazard of erosion is high to very high.

A suitable cropping system for these soils is 6 or more years of perennial grasses followed by 1 year of a small grain. The soils are suited to pasture and hay. Suitable plants are dallisgrass, johnsongrass, and small grains. Except for areas that have a loam surface layer, these soils are very difficult to work. Also large clods form in them when they are tilled.

Capability unit IVs–11

The only soil in this unit is Lakeland fine sand, 0 to 5 percent slopes. This excessively drained soil is on low stream terraces. It is subject to occasional overflow, mainly late in winter and in spring. The surface layer is dark-brown fine sand. The subsurface layer is reddish-brown fine sand about 20 inches thick underlain by reddish-yellow to very pale brown fine sand to a depth of several feet.

This soil makes up about 2 percent of the county. Most of the acreage is open. About 75 percent is idle, 10 percent is in pasture, 5 percent is used for crops, and 10 percent is wooded.

Infiltration and permeability are rapid in this soil. Available water capacity is low, and plants are damaged from lack of water during short periods of drought. The water table is at a depth of about 5 feet during wet periods. The organic-matter content and natural fertility are low. Reaction is strongly acid to very strongly acid. Runoff is slow to very slow, and the hazard of erosion is slight.

This soil is suited to grasses and legumes, mainly bahiagrass and ball clover. Coastal bermudagrass grows on this soil, but the soil is not so well suited to bahiagrass.

Capability unit IVw–11

This unit consists of nearly level, poorly drained soils of the Angie, Bibb, Chastain, Leaf, Mashulaville, and Myatt series. These soils are subject to flooding or ponding, mainly late in winter and in spring. In places water stands on these soils for a long time. The surface layer is uniform gray or mottled gray and brown sandy loam to clay. The subsoil is gray fine sandy loam to clay mottled with brown and yellow. In Mashulaville soils, which make up about 6 percent of the acreage, a compact and brittle, strongly expressed fragipan is at a depth of about 15 inches.

The soils in this unit make up about 16 percent of the county. Most of the acreage is wooded. Small isolated areas are cleared and are used for pasture.

Water enters these soils at a slow or moderate rate, and it moves through the profile at a moderate to a very slow rate. Available water capacity is moderate to high. The organic-matter content and natural fertility are low to moderate. Reaction is strongly acid to very strongly acid in most places. It is medium acid to slightly acid, however, in Chastain clay, which makes up about 2 percent of the acreage. Runoff is slow to very slow. Except where floods cause scouring, erosion is not a hazard.

These soils are not suited to row crops. They should be planted to bahiagrass or fescue for pasture. Drainage ditches are needed.

Capability unit IVw–21

The only soil in this unit is Garner clay. This level soil is on first bottoms and low stream terraces. It is subject to frequent flooding. The subsurface layer is waterlogged during wet periods, mainly late in winter and spring. In places water stands on the surface for long periods. The surface layer is gray or dark gray, and in places it is mottled with brown. The subsoil is gray, very sticky and plastic clay that is mottled with brown.

This soil makes up about 0.5 percent of the county. About 40 percent of the acreage is open and is used for pasture, about 60 percent is wooded, and a few small areas are cropped.

Water enters this soil very slowly and moves through the profile very slowly. Available water capacity is moderate. The organic-matter content is moderate, and natural fertility is moderate to high. Reaction is neutral to moderately alkaline. Runoff is slow to very slow. Except where floods cause scouring, erosion is not a hazard.

This soil is suited to dallisgrass for pasture. Fescue grows well on this soil, but winter grazing is a problem during wet periods. A system of drainage ditches is needed.

Capability unit IVw–23

This unit consists of nearly level, poorly drained soils of the Eutaw and Forestdale series. These soils are on uplands and stream terraces. The thin surface layer is gray or brown clay or fine sandy loam. The upper part of the subsoil is gray clay or clay loam mottled with brown, and the lower part of the subsoil is gray, very sticky and very plastic clay mottled with yellowish brown and strong brown. Selma chalk and marly clay are at a depth between 5 and 8 feet. In places water stands on these soils for long periods, mainly late in winter and in spring.

The soils in this unit make up about 1.5 percent of the county. About 60 percent of the acreage is wooded, and about 40 percent is in pasture. A few small areas are cropped.

Water enters these soils at a moderate to slow rate and moves through the profile slowly to very slowly. Available water capacity is moderate. The organic-matter content and natural fertility are moderate. Reaction is very strongly acid in the upper part of these soils. Runoff is slow to very slow, and there is little or no hazard of erosion.

Most cleared areas of these soils are pastured. Suitable pasture plants are dallisgrass and fescue. The soils in this unit are very difficult to work, and the range of moisture content within which they can be tilled is very narrow. Grazing of fescue is a problem during wet periods in winter and early in spring. Crawfish chimneys occur in some places and make mowing of pastures difficult. The lateral movement of water is slow in these soils, and close spacing of ditches therefore is needed for adequate drainage.

Capability unit VIe–14

Only Shubuta-Boswell complex, 8 to 12 percent slopes, eroded, is in this unit. These are well drained to moderately well drained, eroded soils. The thin surface layer is fine sandy loam. The subsoil is yellowish-red to red clay loam to clay in the upper part. It is mottled brown, yellowish-red, and gray sandy clay loam to clay in the lower part.

The soils in this unit make up about 2 percent of the county. About 80 percent of the acreage is wooded, about 20 percent is in pasture or is idle, and a small acreage is used for crops.

Water enters these soils at a moderate rate and moves through the profile moderately slowly or very slowly. Available water capacity is moderate. The organic-matter content and natural fertility are low. Reaction is strongly acid to very strongly acid. Runoff is rapid, and the hazard of erosion is high to very high.

These soils are suited to grasses for pasture. Suitable plants include Coastal bermudagrass and bahiagrass.

Capability unit VIe–22

This unit consists of sloping to moderately steep, shallow to deep, well-drained soils of the Binnsville, Sumter, and Watsonia series. These soils are on uplands in the prairie part of the county. The surface layer is very dark grayish-brown, dark grayish-brown, and yellowish-brown silty clay to clay. The subsoil is very pale brown to yellowish-red silty clay or clay. Selma chalk is at a depth between 10 and 48 inches. In about 1 percent of the acreage, Binnsville soils have a

surface layer of very dark gray to black clay about 6 inches thick. It is underlain by Selma chalk at a depth between 10 and 15 inches.

The soils in this unit make up about 2 percent of the county. About 80 percent of the acreage is open and used mainly for unimproved pasture. About 20 percent of the acreage is wooded.

Infiltration is slow in these soils, and permeability is slow to very slow. Available water capacity is low to moderate. The organic-matter content is moderate to low, and the natural fertility is moderate. Reaction is strongly acid to moderately alkaline. Runoff is rapid to very rapid, and the hazard of erosion is very high.

These soils are suited to small grains, johnsongrass, and dallisgrass. If small grains are planted, a suitable cropping system is 6 years or more of perennial grasses followed by 1 year of a small grain. These soils are difficult to work and are highly erodible.

Capability unit VIe–113

This unit consists of nearly level to moderately steep, well-drained and moderately well drained, severely eroded soils of the Angie, Boswell, Macon, and Shubuta series. These soils have a thin surface layer of brown to reddish-brown clay loam. The subsoil is yellowish-red to red clay loam to clay in the upper part. It is strong brown to red sandy clay loam to clay mottled with brown, red, and gray in the lower part. Shallow gullies and a few deep gullies are common in most places.

These soils make up about 1.5 percent of the county. About 80 percent of the acreage is wooded, and 20 percent is in pasture or is idle. A few small areas are cropped.

Water enters these soils slowly and moves through the profile at a moderate or very slow rate. Available water capacity is moderate, the organic-matter content is low, and the natural fertility is moderate to low. Reaction is strongly acid to very strongly acid. Runoff is moderate to very rapid, and the hazard of erosion is very high.

These soils are suited to Coastal bermudagrass and bahiagrass, planted along with compatible legumes, for pasture. The soils are difficult to work. A crust forms after heavy rains, and stands of crops are likely to be poor.

Capability unit VIIe–19

This unit consists of well-drained to somewhat poorly drained, moderately steep and hilly soils of the Falaya, Magnolia, Ruston, and Shubuta series. These soils are on hillsides and in very narrow drainageways. They have a surface layer of light-colored fine sandy loam. The subsoil is yellowish-red to dark-red loam to clay mottled with gray and brown.

These soils make up about 17 percent of the county. They are best suited to woodland. Most of the acreage is wooded, but a few small areas are used for pasture.

Infiltration is moderate to rapid in these soils, and permeability is moderately rapid to moderately slow. Available water capacity is moderate to high. Roots readily penetrate to a depth of several feet. The organic-matter content and natural fertility are low. Reaction is strongly acid to very strongly acid. Runoff is rapid to very rapid. The hazard of erosion is slight in the Falaya soils, but it is very high in the Magnolia, Ruston, and Shubuta soils.

Capability unit VIIe–221

Only Gullied land is in this unit. This mapping unit is highly dissected by many shallow and deep gullies that have cut into and exposed Selma chalk. In places small areas occur between the gullies that are irregular in shape. The soil material in these areas is brown or dark grayish-brown clay and silty clay underlain by 10 to 15 inches of pale-yellow to yellowish-red silty clay and clay. This mapping unit makes up 0.5 percent of the county.

Infiltration and permeability are slow to very slow in Gullied land. The organic-matter content is low, and the natural fertility is moderate. Reaction is mildly alkaline to moderately alkaline. Runoff is very rapid, and the hazard of erosion is very high.

Most of Gullied land is idle, but in many places cedar trees grow on small patches of soil material between the gullies. The areas are suitable for use as woodland.

Capability unit VIIs–11

Only Troup-Lucy complex, 8 to 25 percent slopes, is in this unit. These are excessively drained, sandy soils on hillsides. The surface layer is light-colored loamy sand 20 to 60 inches thick. The subsoil is yellowish-red and red fine sandy loam and sandy clay loam.

These soils make up about 1 percent of the county. Most of the acreage is wooded. A few small areas are cleared and are used for pasture.

Infiltration is rapid in these soils, and permeability is moderately rapid. Available water capacity is low, and plants are damaged from lack of water during short periods of drought. The organic-matter content and natural fertility are low. Reaction is strongly acid to very strongly acid.

Estimated Yields

The estimated average yields per acre of the principal crops grown in Greene County are shown in table 2 for each soil mapped. The estimates assume a high level of management. They are based on records of actual yields on local farms, on yields obtained in long-term experiments, and on estimates made by agricultural workers who have had experience with the crops and the soils. All estimates are based on an average amount of rainfall in the area over a long period of time without irrigation.

The management required to obtain the yields shown in table 2 are as follows:

1. Fertilizer and lime are added according to the needs indicated by soil tests.
2. Cropping systems suggested in the section describing the capability units are followed.
3. Water is used or is disposed of by means of contour cultivation, or artificial drainage.
4. Seedbeds are well prepared and are properly seeded.
5. Good crop varieties and seeding mixtures are

TABLE 2.—*Estimated average acre yields of principal crops under high management*

[Absence of a figure indicates crop is not commonly grown on the soil or is not economically suited to that soil]

Soil	Corn	Cotton lint	Oats	Coastal bermuda-grass	Coastal bermuda-grass	Johnson-grass hay	Bahia-grass and legume	Fescue and legume	Dallis-grass and legume
	Bu.	*Lb.*	*Bu.*	*Tons*	*Cow-acre-days* [1]	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Angie fine sandy loam, 2 to 5 percent slopes	42	500	50	4.0	210	.....	210	130	.....
Angie fine sandy loam, 5 to 8 percent slopes, eroded	40	475	50	3.75	200	.....	200	120	.....
Angie fine sandy loam, terrace, 0 to 2 percent slopes	60	600	55	5.0	190	.....	200	150	150
Angie fine sandy loam, terrace, 2 to 5 percent slopes	55	575	50	4.5	190	.....	200	130	.....
Angie sandy clay loam, 5 to 12 percent slopes, severely eroded	.....	.....	.....	.....	.....	.....	170	.....	.....
Angie-leaf association	.....	.....	.....	.....	.....	.....	180	150	.....
Bibb silt loam	.....	.....	.....	.....	.....	.....	180	150	.....
Binnsville clay, 3 to 8 percent slopes	.....	.....	.....	.....	.....	.....	.....	.....	90
Boswell clay loam, 2 to 8 percent slopes severely eroded	.....	.....	.....	.....	160	.....	160	.....	.....
Boswell fine sandy loam, 2 to 5 percent slopes, eroded	42	330	40	.....	190	.....	190	.....	150
Boswell fine sandy loam, 5 to 8 percent slopes, eroded	38	300	36	.....	180	.....	180	.....	140
Cahaba fine sandy loam, 0 to 3 percent slopes	85	810	60	5.5	240	.....	220	.....	.....
Catalpa clay	85	.....	80	.....	.....	4.2	.....	190	200
Chastain clay	.....	.....	.....	.....	.....	.....	.....	190	200
Dulac silt loam, 0 to 2 percent slopes	65	650	60	5.0	205	.....	210	150	.....
Eutaw clay	.....	.....	.....	.....	.....	.....	.....	150	150
Falaya fine sandy loam	85	.....	.....	5.5	220	.....	220	185	.....
Forestdale fine sandy loam	.....	.....	.....	.....	.....	.....	.....	150	150
Garner clay	.....	.....	.....	.....	.....	.....	.....	150	150
Gullied land	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kipling loam, 0 to 1 percent slopes	60	600	.....	.....	.....	.....	210	130	170
Kipling loam, 1 to 3 percent slopes, eroded	55	600	55	.....	200	3.5	200	115	160
Kipling loam, 3 to 5 percent slopes, eroded	50	575	50	.....	190	3.0	190	115	160
Kipling loam, 5 to 8 percent slopes, eroded	.....	.....	.....	.....	180	2.8	180	.....	150
Lakeland fine sand, 0 to 5 percent slopes	.....	.....	.....	3.0	165	.....	165	.....	.....
Leaf silt loam	.....	.....	.....	.....	.....	.....	180	150	.....
Leaf-Angie association	.....	.....	.....	.....	.....	.....	180	150	.....
Leeper clay	80	.....	.....	.....	.....	3.3	.....	180	200
Macon clay loam, 5 to 12 percent slopes, severely eroded	.....	.....	.....	3.0	190	.....	190	.....	.....
Macon fine sandy loam, 0 to 2 percent slopes	85	840	70	6.0	250	.....	230	150	.....
Macon fine sandy loam, 2 to 5 percent slopes, eroded	80	820	60	5.5	240	.....	220	140	.....
Macon fine sandy loam, 5 to 8 percent slopes, eroded	70	775	50	5.0	230	.....	210	130	.....
Magnolia fine sandy loam, 0 to 2 percent slopes	85	840	70	6.0	250	.....	230	150	.....
Magnolia fine sandy loam, 2 to 5 percent slopes, eroded	80	820	60	5.5	240	.....	220	140	.....
Magnolia fine sandy loam, 5 to 8 percent slopes, eroded	65	775	50	5.0	230	.....	210	130	.....
Magnolia fine sandy loam, 8 to 12 percent slopes, eroded	60	700	45	4.5	220	.....	200	120	.....
Magnolia sandy clay loam, 2 to 8 percent slopes, severely eroded	55	700	45	3.5	200	.....	190	100	.....
Marietta and Leeper soils	70	.....	70	.....	.....	.....	190	180	180
Mashulaville fine sandy loam	.....	.....	.....	.....	.....	.....	160	150	.....
Myatt fine sandy loam	.....	.....	.....	.....	.....	.....	160	150	.....
Ochlockonee fine sandy loam	90	775	70	6.0	250	.....	240	200	150
Ochlockonee fine sandy loam, local alluvium	100	800	80	6.0	260	.....	250	200	150
Oktibbeha clay, 1 to 3 percent slopes, eroded	50	550	50	.....	.....	2.5	.....	160	180
Oktibbeha loam, 1 to 3 percent slopes, eroded	55	575	55	3.0	175	2.5	190	160	180
Oktibbeha soils, 3 to 5 percent slopes, eroded	45	525	45	.....	.....	2.0	.....	150	180
Oktibbeha soils, 5 to 8 percent slopes, eroded	.....	.....	.....	.....	.....	.....	.....	140	170
Ora fine sandy loam, 0 to 2 percent slopes	65	700	60	5.0	240	.....	225	135	.....
Ora fine sandy loam, 2 to 5 percent slopes, eroded	60	650	60	5.0	240	.....	225	135	.....
Ora fine sandy loam, 5 to 8 percent slopes, eroded	55	625	50	4.5	235	.....	210	120	.....
Rumford sandy loam, 0 to 5 percent slopes	55	550	55	5.0	230	.....	220	.....	.....

TABLE 2.—*Estimated average acre yields of principal crops under high management*—Continued

Soil	Corn	Cotton lint	Oats	Coastal bermudagrass	Coastal bermudagrass	Johnsongrass hay	Bahiagrass and legume	Fescue and legume	Dallisgrass and legume
	Bu.	*Lb.*	*Bu.*	*Tons*	*Cow-acre-days* [1]	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Ruston complex, 12 to 25 percent slopes									
Ruston fine sandy loam, 0 to 2 percent slopes	80	750	65	6.0	250		250	150	
Ruston fine sandy loam, 2 to 5 percent slopes	75	725	60	5.75	250		250	150	
Ruston fine sandy loam, 5 to 8 percent slopes, eroded	70	700	55	5.0	240		240	120	
Ruston fine sandy loam, 8 to 12 percent slopes, eroded	50	650	50	4.5	220		220	110	
Ruston fine sandy loam, terrace, 0 to 5 percent slopes	80	750	65	6.0	250		250	150	
Savannah fine sandy loam, 0 to 2 percent slopes	65	700	60	4.5	235		225	135	
Savannah fine sandy loam, 2 to 5 percent slopes	60	650	60	4.5	235		225	135	
Savannah fine sandy loam, 5 to 8 percent slopes, eroded	55	625	50	4.0	230		210	120	
Sawyer fine sandy loam, 0 to 2 percent slopes	65	600	60	4.75	235		225	135	
Sequatchie sandy loam, 0 to 2 percent slopes	55	550	55	5.0	230		220		
Shubuta clay loam, 2 to 8 percent slopes, severely eroded			40	4.0	170		170		
Shubuta fine sandy loam, 0 to 2 percent slopes	60	600	55	5.0	205		180	150	
Shubuta fine sandy loam, 2 to 5 percent slopes, eroded	55	550	50	5.0	200		200	130	
Shubuta fine sandy loam, 5 to 8 percent slopes, eroded	50	525	45	4.5	180		180	110	
Shubuta-Boswell complex, 8 to 12 percent slopes, eroded					170		170		
Shubuta-Boswell complex, 8 to 12 percent slopes, severely eroded					150		150		
Shubuta-Magnolia-Falaya association, hilly									
Stough fine sandy loam	50				200		220	150	
Sumter silty clay, 1 to 3 percent slopes, eroded	55	550	75			5.0			170
Sumter silty clay, 3 to 5 percent slopes, eroded	50	500	70			5.0			170
Sumter silty clay, 5 to 12 percent slopes, eroded			60			4.5			160
Sumter-Watsonia complex, 1 to 5 percent slopes, eroded			70			5.0			170
Sumter-Watsonia complex, 5 to 17 percent slopes, eroded			55			4.5			160
Trinity clay	100		80			5.0		200	200
Troup-Lucy complex, 8 to 25 percent slopes									
Vaiden silty clay, 0 to 1 percent slopes			60					150	150
Vaiden silty clay, 1 to 3 percent slopes, eroded	45	500	70			2.5		150	150
Vaiden silty clay, 3 to 5 percent slopes, eroded		450	55			2.0		140	140
Wagram loamy fine sand, 0 to 5 percent slopes				3.5	170		170		
Wagram loamy fine sand, 5 to 8 percent slopes				3.0	160		160		

[1] A term used to express the carrying capacity of pasture. It is the number of animal units carried per acre multiplied by the number of days the pasture is grazed during a single grazing season without injury to the sod. An acre of pasture that provides 30 days of grazing for two cows has a carrying capacity of 60 cow-acre-days.

used at proper planting rates and suggested planting dates.
6. Diseases, insects, and undesirable plants are controlled.
7. Grazing is regulated.

Use of the Soils for Woodland[3]

Originally, Greene County was wooded, except possibly for some parts of the alkaline prairie. Now trees cover about 65 percent of the county, or 262,800 acres (*10*).

Good stands of commercial trees are produced in the woodlands of the county. The acreage is almost equally divided between pines and hardwoods. Pines generally grow on the hills, and hardwoods on the broad bottoms along the rivers and creeks.

The woodlands of the county provide employment for many. The value of the wood products is substantial, though it is below its possible potential. This section therefore has been provided to explain how soils affect tree growth and management in the county. In the pages that follow the limitations to the growing of trees and the ratings for each limitation are discussed and yield information for specific kinds of trees is given.

Woodland Suitability Groups

The soils of Greene County have been placed in woodland suitability groups to assist owners in planning the use of their soils for wood crops. Each group is made up of soils that are suited to the same kinds of trees; that need approximately the same kind of management when the vegetation on them is similar; and that have about the same potential productivity.

Each woodland group is identified by a three-part symbol, such as 1w5, 2c8, or 3r2. The first part of the symbol, always a number, indicates relative potential productivity of the soils in the group: 1=very high; 2=high; 3=moderately high; 4=moderate; and 5=low. These ratings are based on field determinations of average site index. Site index is the height, in feet, that the dominant trees of a given species, on a specified kind of soil, reach in a natural, unmanaged stand in a stated number of years. For the merchantable hardwoods and softwoods in this county, the site index is the height reached in 50 years, except for cottonwood, for which the index is height reached in 30 years.

The five foregoing ratings are based on field determination of average site index of an indicator forest type or species. Site indexes are grouped into site quality classes, and the classes are used to arrive at approximate expected yields per acre in cords and board feet. On basis of research studies, site index can be converted into approximate expected growth and yield per acre in cords and board feet. For this county, conversions of average site index into volumetric growth and yield are based on research as follows: loblolly and shortleaf pines *(6)*, cottonwood *(11)*, and oaks *(8)*.

The second part of the symbol identifying a woodland group is a small letter. This letter indicates an important soil property that imposes a slight to severe hazard or limitation in managing the soils of the group for wood crops. A letter *c* shows that the main limitation is the kind or amount of clay in the upper part of the soils in the group; *o* shows that the soils have few limitations that restrict their use for trees; *r* shows that the main limitation is steep slopes; *s* shows that the soils are sandy and dry, have little or no difference in texture between surface layer and subsoil (or B horizon), have low available water capacity, and generally have a low supply of plant nutrients; *w* shows that water in or on the soil, either seasonally or year round, is the chief limitation.

The third part of the symbol indicates degree of hazard or limitation and general suitability of the soils for certain kinds of trees.

The *numeral 1* indicates soils that have no or only slight limitations and that are best suited to needleleaf trees.

The *numeral 2* indicates soils that have one or more moderate limitations and are best suited to needleleaf trees.

The *numeral 3* indicates soils that have one or more severe limitations and that are best suited to needleleaf trees.

The *numeral 4* indicates soils that have no or only slight limitations and are best suited to broadleaf trees.

The *numeral 5* indicates soils that have one or more moderate limitations and are best suited to broadleaf trees.

The *numeral 6* indicates soils that have one or more severe limitations and are best suited to broadleaf trees.

The *numeral 7* indicates soils that have no or only slight limitations and are suited to either needleleaf or broadleaf trees.

The *numeral 8* indicates soils that have one or more moderate limitations and are suited to either needleleaf or broadleaf trees.

The *numeral 9* indicates soils that have one or more severe lmitations and are suited to either needleleaf or broadleaf trees.

The *numeral 0* indicates that the soils are not suitable for producing timber commercially.

The hazards or limitations that affect management of soils for woodland are windthrow hazard, erosion hazard, equipment limitations, seedling mortality, and plant competition.

To facilitate management, the soils of Greene County have been placed in woodland groups, which are described in the following pages. Important parts of the description of each woodland group are the verbal ratings made for hazard of windthrow, hazard of erosion, limitation to use of equipment, hazard of seedling mortality, and risk of competition from undesirable plants. These ratings are always *slight*, *moderate*, or *severe*. The following explanations of these ratings apply to

[3] W. G. AIKEN, woodland conservationist, Soil Conservation Service, assisted in preparation of this section.

the descriptions of all the woodland suitability groups in Greene County.

Windthrow hazard measures the effect of the soils on root development and the ability of the soil to hold trees firmly. The hazard is *slight* when effective rooting is more than 20 inches and the tree withstands most wind; *moderate,* when effective rooting is from 10 to 20 inches and some trees are blown down during periods of excessive soil wetness and strong wind; *severe,* when effective rooting is 10 inches or less and trees will not stand alone in strong wind.

Erosion hazard refers to the potential hazard of soil losses in well-managed woodland. The hazard is *slight* if expected soil losses are small; *moderate* if some soil losses are expected and care is needed during logging and construction to reduce soil losses; *severe* if special methods of operation are necessary for preventing excessive soil losses. In Greene County only the steep soils are subject to severe erosion.

Equipment limitations are rated on basis of soil characteristics that restrict or prohibit the use of equipment commonly used in tending and harvesting the trees. In Greene County soil characteristics having the most limiting effect are drainage, depth to the water table, slope, and texture of the surface layer. *Slight* means there is no restriction in the kind of equipment or in the time of year it is used; *moderate* means that use of equipment is restricted for less than 3 months of the year; and *severe* means that special equipment is needed and its use is restricted for more than 3 months of the year.

Seedling mortality refers to the expected degree of mortality of planted seedlings as influenced by kinds of soil when plant competition is not a limiting factor. Considered in the ratings are depth to the water table, hazard of flooding, drainage, soil depth and structure, and degree of erosion. Normal rainfall, good planting stock, and proper planting are assumed. A rating of *slight* indicates an expected loss of less than 25 percent of the planted seedlings; *moderate,* a loss of 25 to 50 percent of the seedlings; and *severe,* a loss of more than 50 percent of the seedlings. Special preparation of the site is needed before planting for soils rated severe and for most soils rated moderate.

Plant competition is rated on basis of the degree to which unwanted plants invade openings in the tree canopy. Considered in the ratings are available moisture capacity, fertility, drainage, and degree of erosion. A rating of *slight* means that competition from other plants is not a problem; *moderate,* that plant competition delays development of fully stocked stands of desirable trees; and *severe,* that plant competition prevents establishment of a desirable stand unless intensive site preparation and such practices as weeding are used to control undesirable plants.

In table 3 the soils are placed in woodland suitability groups, management limitations that are based on soils are given, and some of the preferred timber species and their average site indexes are shown.

Woodland group 1w5

Most of the soils in this group are cleared for crops and pasture. Because they are alkaline, only hardwoods and cedars grow well on these soils.

Equipment limitations and competition from other plants are moderate on these soils. Seedling mortality and the hazards of erosion and windthrow are slight.

Species to favor in existing stands are cottonwood, sweetgum, oak, sycamore, ash, and black walnut. Trees preferred for planting are cottonwood, black walnut, ash, yellow-poplar, and sweetgum.

Soils of this group are very highly productive. The average site indexes for important trees on these soils and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 1w6

The soils in this group are better suited to hardwoods and redcedar than to other trees.

Competition from other plants and equipment limitations are severe on these soils. Seedling mortality is moderate. Roots can penetrate to a depth between 10 and 20 inches, and the hazard of windthrow is moderate.

Species to favor in existing stands and trees preferred for planting are cottonwood, sweetgum, yellow-poplar, black walnut, and oak.

Soils of this group are very highly productive. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 1w8

The soils in this group are fertile and have high available water capacity. Both pines and hardwoods grow well on these soils.

Competition from other plants, equipment limitation, and seedling mortality are moderate on these soils, but all other limitations are slight.

Species to favor in existing stands are loblolly pine, shortleaf pine, cottonwood, yellow-poplar, sweetgum, and water oak. Trees preferred for planting are loblolly pine, yellow-poplar, cottonwood, sweetgum, cherrybark oak, black walnut, and sycamore.

Soils of this group are very highly productive. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 2o7

Both pines and hardwoods grow well on soils of this group. Because of the clay and silt in the subsoil, limitations to use of these soils for trees range between slight and moderate.

Species to favor in existing stands and trees preferred for planting are loblolly pine, yellow-poplar, sweetgum, cottonwood, black walnut, and oaks.

Soils of this group are highly productive. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 2c8

Pines and hardwoods grow well on these soils. Equipment limitations and seedling mortality are

TABLE 3.—*Woodland suitability groups, average site indexes, and yearly growth per acre of important trees*

Woodland group and soil symbols	Important trees	Average site index	Yearly growth rate per acre	
			Cords	*Board feet (Doyle rule)*
Group 1w5: Cc.	Cottonwood	105	2.5	500
	Sweetgum	100	1.6	420
	Oak	90	1.3	300
	Black walnut	90	1.4	290
Group 1w6: Fo, Tr, Lp, Mr.	Sweetgum	98	1.6	420
	Cottonwood	95	1.7	400
	Oak	85	1.2	220
	Black walnut	90	1.3	300
Group 1w8: Fa.	Loblolly pine	100	1.8	770
	Shortleaf pine	95	1.9	500
	Cottonwood	100	2.4	500
	Yellow-poplar	110	1.8	520
	Sweetgum	105	1.7	490
	Water oak	100	1.5	410
Group 2o7: CaB, Oc, Oe, SfA.	Loblolly pine	90	1.5	580
	Shortleaf pine	95	1.6	510
	Sweetgum	90	1.5	360
	Yellow-poplar	95	1.4	310
	Oak	80	1.4	350
Group 2c8: KlA, KlB2, KlC2, KlD2.	Loblolly pine	90	1.5	580
	Cottonwood	95	1.7	400
	Sweetgum	90	1.4	320
	Oak	85	1.2	240
Group 2w8: St, AgA, AgB, AfB, AfC2, SeA.	Loblolly pine	90	1.5	580
	Sweetgum	95	1.7	400
	Willow oak	85	1.2	220
	Water oak	85	1.2	220
Group 2w9: As, Ch, Le, Lf, My, Bb.	Loblolly pine	90	1.5	580
	Cottonwood	100	2.5	500
	Sweetgum	90	1.5	360
	Water oak	90	1.3	300
Group 3o1: McA, McB2, McC2, MgA, MgB2, MgC2, MgD2, RfB, RsA, RsB, RsC2, RsD2, RuB, ShA, ShB2, ShC2.	Loblolly pine	85	1.4	520
	Slash pine	85	1.4	500
	Shortleaf pine	80	1.5	450
	Longleaf pine	75	1.1	320
Group 3o7: DuA, OrA, OrB2, OrC2, SaA, SaB, SaC2.	Loblolly pine	83	1.3	480
	Shortleaf pine	70	1.4	390
	Sweetgum	80	1.1	240
	Southern red oak	75	1.1	150
Group 3c2: AnD3, BoB2, BoC2, Ga, MnC3, SgC3, SmD2.	Loblolly pine	85	1.4	520
	Shortleaf pine	75	1.5	440
	Longleaf pine	74	1.1	300
Group 3c8: Eu, OhB2, OkB2, OoC2, OoD2, VaA, VaB2, VaC2.	Loblolly pine	80	1.3	440
	Shortleaf pine	70	1.4	390
	Oak	75	1.1	150
Group 3r2: RoE, SnE.	Loblolly pine	76	1.2	386
	Shortleaf pine	65	1.3	340
	Longleaf pine	65	0.8	210
Group 3s2: TuE, WaB, WaC.	Loblolly pine	80	1.3	420
	Slash pine	80	1.3	440
	Shortleaf pine	70	1.4	390
	Longleaf pine	60	0.7	160
Group 3w9: Ms.	Loblolly pine	85	1.4	520
	Sweetgum	80	1.1	390
	Water oak	72	1.0	130
	Shumard oak	75	1.1	150
	White oak	—	—	—
Group 4c2: BeC3, MaD3, SmD3.	Loblolly pine	75	1.2	370
	Shortleaf pine	65	1.3	340
	Longleaf pine	60	0.7	160
Group 4c2c: BcC, GuSuB2, SuC2, SuD2, SwB2, SwE2.	Redcedar	40	0.5	100–200[1]
	Loblolly pine	50	0.5	140
Group 4s3: LaB.	Loblolly pine	75	1.3	380
	Slash pine	75	1.5	350
	Longleaf pine	60	0.7	170

[1] International scale, ¼-inch kerf.

moderate, and all other soil-related problems are slight.

Species to favor in existing stands are sweetgum, cherrybark oak, shumard oak, white oak, and loblolly pine. Species to plant are sweetgum, cherrybark oak, and loblolly and slash pine.

Soils of this group are highly productive. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 2w8

Pines and hardwoods grow well on these soils. Equipment limitations and competition from other plants are moderate to severe, but the hazard of windthrow is moderate. Harvesting equipment bogs down and damages roots during wet seasons, but limitations are only moderate.

Species to favor in existing stands are loblolly pine, sweetgum, sycamore, oak, ash, cottonwood, and yellow-poplar. Trees preferred for planting are loblolly pine, sweetgum, oak, ash, cottonwood, and yellow-poplar. Yellow-poplar, pine, and cottonwood should be planted only in the better drained areas.

Soils of this group are highly productive. The average site indexes for important trees on soils of this group and the approximately yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 2w9

These soils have a relatively high water table. Both pines and hardwoods grow on them, but most trees on these soils are hardwoods.

The hazard of windthrow is slight to moderate on these soils. Competition from other plants, seedling mortality, and equipment limitations are severe. Equipment bogs down and damages roots during wet seasons.

Species to favor in existing stands are loblolly pine, cottonwood, sweetgum, water oak, cherrybark, ash, and sycamore. Trees preferred for planting are loblolly pine, ash, cottonwood, sycamore, cherrybark oak, sweetgum, and yellow-poplar. Yellow-poplar, pine, and cottonwood should be planted only on the better drained areas.

Soils of this group are highly productive. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 3o1

These soils are friable, and many of them are eroded. They grow both pines and hardwoods, but pines are better suited than other trees.

Equipment limitations and plant competition range from slight to moderate on these soils, but all other limitations are slight.

Species to favor in existing stands are loblolly pine, slash pine, shortleaf pine, and longleaf pine. Trees preferred for planting are loblolly pine and slash pine.

Productivity of the soils of this group is moderately high. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 3o7

The soils in this group are suited to pines and hardwoods. All soil-related management problems are slight.

The species to favor are loblolly pine, shortleaf pine, slash pine, sweetgum, yellow-poplar, black walnut, and oak. The species to plant are loblolly pine and slash pine.

Productivity of the soils in this group is moderately high. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 3c2

Pines and hardwoods are grown on these soils, but pines are better suited than hardwoods.

Competition from other plants, equipment limitations, and seedling mortality are moderate on these soils, but all other limitations are slight.

Species to favor in existing stands are loblolly pine, slash pine, shortleaf pine, and longleaf pine. Trees preferred for planting are loblolly pine and slash pine.

Productivity of the soils in this group is moderately high. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 3c8

These soils are suited to pines and hardwoods. Competition from other plants, seedling mortality, and equipment limitations are moderate on these soils.

Species to favor in existing stands are loblolly pine, shortleaf pine, and oak. Trees preferred for planting are loblolly pine and slash pine.

Productivity of this group of soils is moderately high. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year are shown in table 3.

Woodland group 3r2

This group of soils is best suited to pine. Areas of these soils are closely intermingled or occur in a complex pattern. The topography is rough and hilly. This group makes up 40 percent of the county, and most areas are in the northern part.

Seedling mortality is moderate on these soils. Equipment limitations and the hazard of erosion are moderate to severe.

Species to favor in existing stands are loblolly pine and slash pine. Yellow-poplar and sycamore can be planted on toe slopes and in narrow drainageways.

Productivity of the soils of this group is moderately high. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year are shown in table 3.

Woodland group 3s2

Low fertility and droughtiness make these soils better suited to pines than to hardwoods.

Competition from other plants, seedling mortality, and equipment limitations are moderate on these soils. Erosion is a hazard only on short, steep slopes.

Species to favor in existing stands are loblolly pine, slash pine, shortleaf pine, and longleaf pine. Trees preferred for planting are loblolly pine and slash pine.

Productivity of this group of soils is moderately high. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year are shown in table 3.

Woodland group 3w9

These soils are suited to pines and hardwoods. They are presently growing mostly hardwoods.

The equipment restrictions and seedling mortality are severe. All other soil-related management problems are slight to moderate.

The species to favor are sweetgum, shumard oak, white oak, yellow-poplar, and loblolly pine. The trees to plant are sweetgum, slash pine, loblolly pine, and cherrybark oak.

Productivity of this group of soils is moderately high. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Woodland group 4c2

These soils are better suited to pines than to other trees. Seedling mortality, equipment limitations, and the hazard of further erosion are moderate on these soils. All other limitations are slight.

Species to favor in existing stands are loblolly pine, slash pine, shortleaf pine, and longleaf pine. Trees preferred for planting are slash pine and loblolly pine.

Productivity of soils of this group is moderate. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year are shown in table 3.

Woodland group 4c2c

Because the soils in this group are alkaline, shallow, and droughty, they are better suited to redcedar than to other trees. Pines grow only in a few areas.

Pine should be managed in a short rotation for pulpwood. Redcedar is fairly profitable to grow because stumpage prices are high, and the cedar trade uses small logs. Christmas trees are also a good market possibility.

Competition from other plants is slight on these soils, but all other limitations are moderate to severe.

The species to favor in existing stands and the tree preferred for planting is redcedar.

Productivity of soils of this group is moderate. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year are shown in table 3.

Woodland group 4s3

This group of soils is low in fertility and is excessively drained. It is better suited to pines than to other trees.

Seedling mortality is severe, equipment limitations are moderate, but the other soil related management problems are slight.

Species to favor in existing stands are loblolly pine, longleaf pine, slash pine, and shortleaf pine. Species to plant are slash pine, loblolly pine, and longleaf pine.

Productivity of soils in this group is moderate. The average site indexes for important trees on soils of this group and the approximate yearly growth rate per acre per year under good management are shown in table 3.

Use of the Soils for Wildlife[4]

This section discusses the four wildlife habitat areas in the county and describes the kinds of wildlife and food and cover available in each area. Then, it rates the soils according to their suitability for eight elements of wildlife habitat and for three kinds of wildlife. Finally, it explains the rating and discusses the elements and the kinds of wildlife.

Three of the wildlife habitat areas in the county consist of two soil associations, and the other is made up of a single soil association. The soil associations are outlined on the general soil map at the back of the survey.

[4] ROBERT W. WATERS, biologist, Soil Conservation Service.

WILDLIFE AREA 1

This area consists of soil associations 1 and 6. It is in the northern part of the county. Shubuta and Magnolia soils are dominant in association 1 and are the principal upland soils in this wildlife area. Falaya and Ochlockonee soils are dominant in association 6 and are the main soils on the flood plains.

Most of this wildlife area is wooded. Mixed hardwoods, mainly oak and hickory, and pines are predominant on the uplands, and maple, gum, sycamore, beech, elm, bay, sweetgum, and poplar are predominant on the lowlands. Many small trees, shrubs, and vines, such as dogwood, blackberry, persimmon, sparkleberry, wildgrape, smilax, and Japanese honeysuckle, grow on the soils in this area and are important for wildlife food and cover.

White-tailed deer, gray squirrel, bobwhite quail, cottontail rabbit, and many other animals and birds are common in this wildlife area.

White-tailed deer are plentiful throughout the area and are a nuisance in places. They are likely to damage crops in small outlying fields, where cowpeas, corn, potatoes, melons, and soybeans are planted. Deer frequent areas where oak trees are available because the acorns help to provide excellent browse for deer. Large tracts in this wildlife area have been planted to pines for use by paper companies and individuals. These areas make poor habitat for deer.

Both gray squirrel and fox squirrel live in this wildlife area. The gray squirrel prefers heavily wooded areas, and the fox squirrel prefers upland areas and areas that have been heavily cut over. Both species frequently live in the same area. Choice foods are acorns, hickory nuts, pine seeds, beechnuts, blackgum, flowering dogwood, blackcherry, elm, grapes, mulberry, and yellow-poplar. These squirrels also eat a wide variety of such foods as herbs, insects, and roots.

Bobwhite quail prefer cultivated fields, fields that have been out of cultivation from 3 to 10 years, and cutover woodland. They do not live in heavily wooded places. Choice natural foods are acorns, annual lespedeza, blackberry, butterfly peas, common ragweed, milk peas, partridge peas, pine seed, sweetgum, and beggarweed. Choice farm crops are browntop millet, corn, cowpeas, grain sorghum, and annual and bicolor lespedezas.

The cottontail rabbit lives in most parts of this wildlife area. A few even frequent large wooded areas. Rabbits are most abundant in small well-scattered areas of hay, pasture, and woodland, and in areas left idle. Choice fall and winter foods are leaves and stems of succulent forbs, grasses, legumes, and shrubs. Choice spring and summer foods are green shoots, fruits, and grasses, and branch tips, buds, and bark of various shrubs and trees.

Among other kinds of wildlife common to this area are beaver, bobcats, fox, muskrats, mink, and skunks. Beaver prefer to make their homes along the slow flowing, smaller streams. Bobcats live throughout the area, and they hunt largely where rabbits, mice, chipmunk, and squirrel are plentiful. Fox frequent brushy pastures, idle crop fields, thickets, and the edges of woodland. Muskrats and mink are common along streams

flowing through most wooded bottom lands. Skunks live throughout the area.

Many kinds of warblers, thrushes, vireos, and woodpeckers make their homes in the woodland in this area. The open and brushy areas are favored by various songbirds, such as cardinals, blue grosbeaks, meadowlarks, mockingbirds, blue jays, and sparrows.

WILDLIFE AREA 2

This area consists of soil associations 2 and 5. It is mostly in the central part of the county. Sumter, Oktibbeha, and Vaiden soils are dominant in association 2 and are the principal upland soils in this association. Leeper and Catalpa soils are dominant in association 5. The principal soils are on the flood plains. Also on the flood plains are small areas of Trinity soils.

Most of this wildlife area is cleared and is used chiefly for pasture and hay. Only a small acreage is cropped. Cattle raising is the chief enterprise. Post oak, hickory, and hackberry are the dominant trees on the bottom lands.

Mourning dove, bobwhite quail, cottontail rabbit, and many kinds of birds are common in this wildlife area.

The mourning dove likes to eat seeds from barnyard grass, bristlegrass, browntop millet, bull paspalum, corn, cranesbill, croton, grain sorghum, Japanese millet, pines, pokeberry, proso, common ragweed, sweetgum, and wheat. Doves prefer to build their nests in trees that have fairly large horizontal limbs and little concealing vegetation. Such trees are common along land lines and in fence rows. Cedars are preferred for roosting areas, but doves frequently roost on relatively bare ground, even during winter.

Few bobwhite quail live in this wildlife area. Some of the pastures provide suitable food for part of the year, but most pastures do not provide year-round food.

The number of cottontail rabbits is small in this area. A few live along fence rows, ditchbanks, and streambanks where there is a fair amount of food and cover.

More openland birds frequent this area than wildlife areas 1 and 3. Among them are meadowlarks, sparrows, shrikes, brown thrashers, mockingbirds, cardinals, and blue jays.

WILDLIFE AREA 3

This area consists of soil association 3. It is mostly along the Black Warrior, Sipsey, and Tombigbee Rivers, and the areas are subject to occasional flooding. Angie, Cahaba, and Leaf soils make up the association.

Most of this wildlife area is wooded. Only a small acreage is cropped. The cleared areas are either in cotton and corn or are in pasture. Timber is the primary enterprise. Oak, hickory, gum, and maple trees predominate, but beech, ash, cypress, bay, and poplar trees grow in places. Many small trees, shrubs, and vines provide food and cover for wildlife. Hunting clubs either own or lease the hunting rights on most of this wildlife area.

White-tailed deer, wild turkey, gray squirrel, and beaver are common in this wildlife area. In addition many waterfowl and songbirds frequent the area.

White-tailed deer are the most plentiful game animal within this area. Many of the wooded areas have been cut over often enough that the tender growth of young trees, shrubs, and vines provide an abundance of succulent browse near the ground level. In most of the area, oak trees produce an abundance of acorns that are relished by deer. In large areas mature hardwoods shade the ground to the extent that deer browse is becoming scarce. Opening up the tree canopy permits the sunlight to reach the ground and encourages growth of plants for use as browse. Pines have been planted on some better drained fields that once were farmed. The areas provide poor habitat for deer, because as the pine trees mature, most of the ground vegetation dies from lack of sunlight.

Wild turkey are found throughout most of this area. Choice foods for late fall, winter, and spring are acorns, beechnuts, dogwood, and wild grapes. Such agricultural crops as small grains and winterclover provide green browse in winter. Choice foods for summer and early fall are blackberries, mulberries, seeds of various grasses and forbs, and insects. Young turkeys depend almost entirely upon insects and grass seed for food during their first few months. The insects and seed are found mostly in openings, along roadsides and the edges of fields, and in cutover woodland.

Gray squirrel are abundant in this area. The mature hardwoods of the area provide excellent habitat for gray squirrel. In addition most of the woodland has an understory of smaller trees and shrubs that make good habitat. Also, the mature hardwoods contain ample cavities that the squirrel like to use as den sites. Choice foods are herbs, insects, and roots, which are abundant on the forest floor.

Beaver are common on many of the poorly drained areas. Because the gradient of the streams in the area is relatively low, the areas provide good sites for beaver dams. Beaver ponds and other wet areas are well distributed throughout most of this area.

Wood ducks nest in tree cavities near swamps and beaver ponds in this wildlife area. Wood ducks, black ducks, and mallards winter in the area, and many of the water areas therefore provide good hunting. Bittern, heron, and egret also are common. In addition the large areas of mature hardwoods provide excellent habitat for many kinds of warblers.

WILDLIFE AREA 4

This area consists of associations 4 and 7. The soils in this area are mostly near the southern, western, and northern boundaries of the county. They are chiefly on broad, nearly level uplands and on a high stream terrace that is dissected by a few intermittent and permanent streams. Savannah and Ruston soils are dominant in association 4 and Magnolia, Savannah, and Ora soils are dominant in association 7. Magnolia and Ora are the dominant soils on the uplands, and Savannah and Ruston are the dominant soils on the terraces. Falaya soils are dominant in the lowlands.

Nearly all of this wildlife area is cleared and is used for cotton and corn, or it is pastured. Oaks, hickories, and pines are the predominant trees on wooded upland areas, and maple, sweetgum, poplar, beech, and bay trees are on the lowlands.

Bobwhite quail, mourning dove, and cottontail rabbit are the most important wildlife in this area. Also abundant are many kinds of waterfowl and small animals, as well as various kinds of birds.

Bobwhite quail are abundant on areas where the distribution of suitable food and cover is good. Cropland, pasture, and areas planted to pine provide little food or cover for quail. Cutover wooded areas and idle cropland, however, have a high population of quail.

The mourning dove likes to stay in trees along the edges of fields and pastures and near farmhouses and other open places. Waste grain in many of the large cornfields attracts large numbers of doves in fall and early in winter. Some of the pastures, idle fields, and cutover woodland provide ample food in spring and summer and early in fall. Doves also feed on waste grain found around some of the dairies. They eat the seeds of pine and sweetgum trees in fall. They particullarly like to feed where such seed falls on fairly bare ground, such as that near the edges of cultivated fields. Doves like an ample supply of clean water. They can be attracted to an area by constructing farm ponds.

Except in the larger areas of cropland and pasture, the cottontail rabbit frequents most parts of this wildlife area. The leaves and stems of succulent forbs, grasses, and shrubs and the green shoots, fruits, branch tips, buds, and bark of various trees along the edges of cultivated fields provide excellent food for rabbit. Ample cover is available in the cutover woodland and along ditchbanks and edges of fields under low-growing, trailing briers, Japanese honeysuckle, thickets, and annual weeds.

Beaver live along all of the smaller streams. The wet areas provided by beaver dams and other poorly drained areas attract many heron, bittern, and wood duck. Raccoon and mink are common near lakes, ponds, and streams. Both red and gray fox are fairly abundant in this wildlife area. Many kinds of vireos, warblers, thrushes, and woodpeckers live in the woodland. Blackbirds and grackles are common throughout the area, especially in winter.

Habitat Elements and Kinds of Wildlife

Table 4 lists the soils in the county and rates their suitability for eight elements of wildlife habitat and for three groups, or kinds, of wildlife. The ratings are 1, 2, 3, and 4, each number indicating relative suitability for various elements. A rating of 1 denotes well suited; 2, suited; 3, poorly suited; and 4, not suited. Soils that are well suited have few limitations, those that are suited have moderate limitations, and those that are poorly suited have severe limitations.

The elements of wildlife habitat and the kinds of wildlife are discussed in the paragraphs that follow.

Habitat elements.—Each soil is rated in table 4 according to its suitability for various kinds of plants and other elements that make up wildlife habitats. The eight wildlife habitat elements are—

GRAIN AND SEED CROPS. These crops include seed-producing annual plants that are established by planting, such as corn, wheat, millet, cowpeas, and chufa.

GRASSES AND LEGUMES. Making up this group are domestic perennial grasses and herbaceous legumes that are established by planting. Suitable plants are clover, rye, ryegrass, annual and bicolor lespedezas, vetch, and oats.

WILD HERBACEOUS UPLAND PLANTS. This group consists of perennial grasses and weeds that generally are established naturally. Among the plants are blackmilkpeas, partridge peas, and beggarweed.

HARDWOOD PLANTS. These plants are nonconiferous trees, shrubs, and woody vines that produce fruits, nuts, buds, catkins, twigs, or foliage that wildlife eat. They commonly are established naturally but may also be planted. Among the plants are oaks, beech, cherry, hawthorn, flowering dogwood, grapes, and Japanese honeysuckle.

CONIFEROUS PLANTS. These plants are cone-bearing trees and shrubs. They are important to wildlife mainly as cover, but they also furnish browse or seeds. The plants commonly are established naturally, but, in many places, are planted. Among these plants are pines, redcedar, and cypress.

WETLAND FOOD AND COVER PLANTS. In this group are annual and perennial, wild, herbaceous plants of moist to wet sites. These plants include smartweed, wild millet, bulrush, sedges, cutgrass, and cattails. Submerged and floating aquatic plants are not included.

SHALLOW WATER DEVELOPMENTS. These developments are impoundments or excavations, for controlling water, generally not more than 5 feet deep. Examples of such developments are low dikes and levees, shallow dugout ponds, level ditches, and other devices that control the water level in areas of bottom-land hardwoods, in marshy streams, or in drainage channels.

EXCAVATED PONDS. These are dugout ponds or a combination of dugout ponds and low dikes or dams. They hold enough water of suitable quality and depth to support fish or wildlife.

Kinds of wildlife.—Table 4 rates the soils according to their suitability for three kinds of wildlife in the county—openland, woodland, and wetland wildlife.

OPENLAND WILDLIFE. This group consists of birds and mammals that normally frequent cropland, pasture, meadow, fence rows, lawns, and areas overgrown with grasses, shrubs, and weeds. Examples of openland wildlife are bobwhite quail, meadowlark, mourning dove, cottontail rabbit, fox, cardinals, and mockingbirds.

WOODLAND WILDLIFE. In this group are birds and mammals that normally frequent stands made up of hardwood trees, shrubs, and vines; coniferous trees and shrubs; or a mixture of these plants. Examples of woodland wildlife are white-tailed deer, gray squirrel, raccoon, wild turkey, thrushes, vireos, tanagers, and woodpeckers.

WETLAND WILDLIFE. This group consists of birds and mammals that normally frequent ponds, marshes, swamps, and other wet areas. Examples of wetland wildlife are beaver, mink, muskrat, black ducks, wood ducks, rails, herons, and shore birds.

TABLE 4.—*Suitability of soils for elements of wildlife habitats and for kinds of wildlife*

[Ratings 1, 2, 3, and 4 are explained in the text]

Soil series and map symbols	Wildlife habitat elements								Kinds of wildlife		
	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood plants	Coniferous plants	Wetland food and cover plants	Shallow water developments	Excavated ponds	Openland wildlife	Woodland wildlife	Wetland wildlife
Angie:											
AfB	1	1	1	1	1	4	4	1	1	2	4
AfC2	2	1	1	1	1	4	4	1	1	2	4
AgA	2	2	2	1	2	1	1	1	1	1	1
AgB	2	1	1	1	2	2	2	1	1	1	2
AnD3	3	3	2	2	2	4	4	1	2	2	4
As	3	2	3	1	2	1	1	1	2	1	1
(For ratings of Leaf soil in this unit refer to Leaf series in this table.)											
Bibb:											
Bb	3	2	3	1	2	1	1	1	4	1	1
Binnsville:											
BcC	4	4	2	2	[1]2	4	4	2	1	3	4
Boswell:											
BeC3	3	3	2	2	2	4	4	2	3	1	4
BoB2	2	1	1	1	1	4	4	1	2	2	4
BoC2	3	1	1	1	1	4	4	1	2	2	4
Cahaba:											
CaB	1	1	1	1	1	3	3	3	2	1	2
Catalpa:											
Cc	1	1	2	1	[1]1	2	2	1	1	3	2
Chastain:											
Ch	3	2	3	1	2	1	1	1	4	1	1
Dulac:											
DuA	2	1	1	1	1	2	2	1	2	1	2
Eutaw:											
Eu	3	2	2	1	1	1	1	1	2	1	1
Falaya:											
Fa	2	2	3	1	2	1	1	1	2	1	1
Forestdale:											
Fo	3	2	2	1	1	1	1	1	2	1	1
Garner:											
Ga	3	2	3	2	[1]2	1	1	1	2	1	1
Gullied land:											
Gu	4	4	2	2	[1]2	4	4	4	3	2	4
Kipling:											
KlA	3	2	2	1	1	1	1	1	1	1	2
KlB2	2	1	1	1	1	4	4	1	1	1	3
KlC2	3	1	1	1	1	4	4	1	1	1	4
KlD2	3	1	1	1	1	4	4	1	1	1	4
Lakeland:											
LaB	3	3	4	3	3	4	4	4	3	2	4
Leaf:											
Le	3	2	3	1	2	1	1	1	2	1	1
Lf	3	2	3	1	2	1	1	1	2	1	1
(For ratings of Angie soil in this unit, refer to Angie series in this table.)											

TABLE 4.—*Suitability of soils for elements of wildlife habitats and for kinds of wildlife*—Continued

Soil series and map symbols	Wildlife habitat elements								Kinds of wildlife		
	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood plants	Coniferous plants	Wetland food and cover plants	Shallow water developments	Excavated ponds	Openland wildlife	Woodland-wildlife	Wetland wildlife
Leeper:											
Lp	3	2	3	2	[12]	1	1	1	2	1	1
Macon:											
MaD3	3	3	2	2	2	4	4	2	2	1	4
McA	1	1	1	1	1	4	4	2	1	1	4
McB2	1	1	1	1	1	4	4	2	1	1	4
McC2	2	1	1	1	1	4	4	2	1	1	4
Magnolia:											
MgA	1	1	1	1	1	4	4	2	1	1	4
MgB2	1	1	1	1	1	4	4	2	1	1	4
MgC2	2	2	1	1	1	4	4	2	1	1	4
MgD2	3	3	1	1	1	4	4	2	2	1	4
MnC3	3	3	2	2	2	4	4	2	2	1	4
Marietta:											
Mr (For ratings of Leeper soils in this unit, refer to Leeper series in this table.)	3	2	3	2	[12]	1	1	1	2	1	1
Mashulaville:											
Ms	3	2	3	1	2	1	1	1	2	1	1
Myatt:											
My	3	2	3	1	2	1	1	1	2	1	1
Ochlockonee:											
Oc	1	1	1	1	1	1	2	1	1	1	2
Oe	1	1	1	1	1	1	2	1	1	1	2
Oktibbeha:											
OhB2	2	1	1	1	1	4	4	1	1	1	4
OkB2	1	1	1	1	1	4	4	1	1	1	4
OoC2	3	2	1	1	1	4	4	1	1	1	4
OoD2	3	2	2	2	1	4	4	1	1	1	4
Ora:											
OrA	1	1	1	1	1	4	4	1	1	1	4
OrB2	1	1	1	1	1	4	4	1	1	1	4
OrC2	2	2	1	1	1	4	4	1	1	1	4
Rumford:											
RfB	2	1	1	1	1	4	4	3	1	1	4
Ruston:											
RoE	4	4	2	2	1	4	4	3	3	1	4
RsA	1	1	1	1	1	4	4	2	1	1	4
RsB	1	1	1	1	1	4	4	2	1	1	4
RsC2	2	2	1	1	1	4	4	2	1	1	4
RsD2	3	2	1	1	1	4	4	2	2	1	4
RuB	1	1	1	1	1	4	4	3	1	1	4
Savannah:											
SaA	1	1	1	1	1	4	4	1	1	1	3
SaB	1	1	1	1	1	4	4	1	1	1	4
SaC2	2	2	1	1	1	4	4	1	1	1	4
Sawyer:											
SeA	1	1	1	1	1	3	3	1	1	1	3
Sequatchie:											
SfA	1	1	1	1	1	4	4	3	1	1	4

TABLE 4.—*Suitability of soils for elements of wildlife habitats and for kinds of wildlife*—Continued

Soil series and map symbols	Wildlife habitat elements								Kinds of wildlife		
	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood plants	Coniferous plants	Wetland food and cover plants	Shallow water developments	Excavated ponds	Openland wildlife	Woodland wildlife	Wetland wildlife
Shubuta:											
SgC3	3	3	2	2	2	4	4	2	2	1	4
ShA	2	1	1	1	1	2	2	1	1	1	3
ShB2	1	1	1	1	1	4	4	2	1	1	4
ShC2	2	2	1	1	1	4	4	2	1	1	4
SmD2	3	2	2	2	1	4	4	2	2	1	4
SmD3	4	3	2	2	2	4	4	2	3	1	4
SnE (For ratings of Boswell soil in mapping units SmD2 and SmD3, refer to Boswell series in this table and for ratings of Falaya and Magnolia soils in unit SnE, refer to Falaya and Magnolia series, respectively.)	4	4	2	2	1	4	4	3	4	1	4
Stough:											
St	2	2	3	1	2	1	1	1	1	1	2
Sumter:											
SuB2	1	1	1	2	[1]1	4	4	1	1	3	4
SuC2	2	1	1	2	[1]1	4	4	1	2	3	4
SuD2	4	4	2	2	[1]2	4	4	1	2	3	4
SwB2	2	1	1	2	[1]1	4	4	1	2	3	4
SwE2	4	4	2	2	[1]2	4	4	1	3	3	4
Trinity:											
Tr	1	1	2	1	[1]1	2	2	1	1	1	2
Troup:											
TuE	4	4	2	2	1	4	4	3	3	1	4
Vaiden:											
VaA	2	2	2	1	1	1	1	1	1	2	2
VaB2	1	1	1	1	1	4	4	1	1	2	4
VaC2	2	1	1	1	1	4	4	1	2	2	4
Wagram:											
WaB	2	2	1	1	1	4	4	3	1	1	4
WaC	3	2	1	1	1	4	4	3	2	1	4

[1] Pine trees are not suited to these alkaline soils.

Engineering Uses of the Soils[5]

Some soil properties are of special interest to engineers because they affect the construction and maintenance of roads, airports, and pipelines, the foundations of buildings, facilities for storing water, structures for controlling erosion, drainage systems, and systems for disposing of sewage. Among the properties most important to the engineers are permeability to water, shear strength, compaction characteristics, soil drainage, shrink-swell characteristics, grain size, plasticity, and soil reaction. Also important are depth to water table, flooding hazard, depth to bedrock or to sand and gravel, and relief. Such information is made available in this section. Engineers can use it to—

1. Make studies that will aid in selecting and developing sites for industries, business, residences, and recreational areas.
2. Make estimates of the engineering properties of soils for use in the planning of agricultural drainage systems, waterways, farm ponds, irrigation systems, terraces and diversions, and other structures for conserving soil and water.
3. Make preliminary evaluations of soil and ground conditions that will aid in selecting locations for highways, airports, pipelines, cables, and sewage disposal fields and in planning more detailed surveys of the soils at the selected locations.
4. Locate probable sources of sand, gravel, and other materials for use in construction.
5. Correlate performance of engineering struc-

[5] By MARLYN F. HESTER.

tures with the soil mapping units and thus develop information for overall planning that will be useful in designing and maintaining the structures.

6. Determine the suitability of the soils for cross-country movement of vehicles and of construction equipment.
7. Supplement information obtained from other published maps, reports, and aerial photographs for the purpose of making maps and reports that can be used readily by engineers.
8. Develop other preliminary estimates for construction purposes pertinent to the particular area.

It should be emphasized that the interpretations made in this soil survey are not a substitute for the sampling and testing needed at a site chosen for a specific engineering work that involves heavy loads or at a site where excavations are to be deeper than the depths of the layers here reported. Nevertheless, by using this survey, an engineer can select and concentrate on those soil units most important for the proposed kind of construction. In this way he can reduce the number of soil samples taken for laboratory testing and complete an adequate soil investigation at minimum cost.

The soil mapping units shown on the maps in this survey may include small areas of a different soil material. These included soils may be as much as 2 acres in size. They are too small to be mapped separately and generally are not significant to the farming in the area but may be important in engineering planning.

Information of value in planning engineering work is given throughout the text, particularly in the sections "Descriptions of the Soils" and "Formation and Classification of Soils."

Some of the terms used by the scientist may be unfamiliar to the engineer, and some words—for example, soil, clay, silt, and sand—may have special meaning in soil science. These and other special terms used in the soil survey are defined in the Glossary at the back of this survey. Most of the information about engineering is given in tables 5, 6, and 7.

Engineering Classification Systems

Agricultural scientists of the United States Department of Agriculture classify soils according to texture. In some ways this system of naming textural classes is comparable to the systems most commonly used by engineers for classifying soils; that is, the system of American Association of State Highway officials (AASHO) and the Unified system.

Most highway engineers classify soil materials in accordance with the system approved by the American Association of State Highway Officials (*1*). In this system soil materials are classified in seven principal groups. The groups range from A–1 (gravelly soils having high bearing capacity, the best soils for subgrade), to A–7 (clayey soils having low strength when wet, the poorest soils for subgrade). Within each group the relative engineering value of the soil material is indicated by a group index number. Group index numbers range from 0 for the best material to 20 for the poorest. The group index number is shown in parentheses following the soil group symbol in table 5.

Some engineers prefer to use the Unified soil classification system (*12*). In this system soil materials are identified as coarse grained, eight classes; fine grained, six classes; and highly organic. The last column in table 5 gives the classification of the tested soils according to the Unified system.

Engineering Test Data

Soil samples from 11 important series in Greene County were tested by standard procedures to help evaluate the soils for engineering purposes. The samples were taken from 20 locations, and selected layers of each soil were sampled at a depth of less than 6 feet. The test data, therefore, may not be adequate for estimating the characteristics of soil material where a deep cut has to be made. Tests were made for moisture-density relationships, grain-size distribution, liquid limit, and plasticity index. The results of the tests and the classification of each sample, according to both the AASHO and Unified systems, are given in table 5.

The engineering classifications in table 5 are based on data obtained by mechanical analysis and by tests to determine liquid limits and plastic limits. The mechanical analysis was made by combined sieve and hydrometer methods.

In the *moisture density*, or compaction test, a sample of the soil material is compacted several times with a constant compactive effort, each time at a successively higher moisture content. The density of the compacted material increases as the moisture content increases until the optimum moisture content is reached. After that the density decreases with increase in moisture content. The highest density obtained in the compaction test is termed "maximum density." Moisture-density data are important in construction, for as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

The results of the mechanical analysis may be used to determine the relative proportions of the different size particles that make up the soil sample. The percentage of fine-grained material, obtained by the hydrometer method, which generally is used by engineers, should not be used in determining textural classes of soils.

The tests to determine liquid limit and plastic limit measure the effect of water on consistence of the soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a semisolid to a plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state.

The *plastic limit* is the moisture content at which the soil material passes from a semisolid to a plastic state. The *liquid limit* is the moisture content at which the soil material passes from a plastic to a liquid state. The *plasticity index* is the numerical difference between the liquid limit and plastic limit. It indicates

the range in moisture content within which a soil material is in a plastic condition.

Engineering Properties

In table 6 the soil series of the county and the map symbols for mapping units are listed, and the depth to a seasonal high water table is given. The estimated classification according to the AASHO and Unified classification systems is shown for each important layer. This table also lists the USDA texture, the percentage of material passing sieves of various sizes, and some characteristics of soil material significant to engineers. Depth to bedrock is not given in the table, because it is more than 5 feet in most soils of the county. Hard Selma chalk, however, is at a depth of 1 to 2 feet in Binnsville soils and at a depth of 2 to 5 feet in Oktibbeha, Sumter, and Watsonia soils.

Depth to the seasonal high water table is based on field observation. The depth from surface is for a modal profile and may vary slightly in other profiles.

USDA texture was estimated on the basis of field examinations and available laboratory data. The soils in any series may vary slightly in texture. Thus in places soil texture is likely to be slightly different than that shown in table 6.

Permeability of the soil as it occurs in place was estimated. It is the estimated rate that water moves downward through undisturbed soil material. Considered in the estimates were soil structure, soil consistency, and porosity, as well as observations made in the field.

Available water capacity, given in inches per inch of soil depth, refers to the approximate amount of capillary water in the soil when the soil is wet to field capacity. When the soil is air dry, this same amount of water wets the soil material to a depth of 1 inch without deeper percolation. Data are needed on representative soils from undisturbed soil samples or from field measurements if reliable estimates are to be made.

Reaction as shown in the table is the estimated range in pH values for each major horizon as determined in the field. It indicates the acidity or alkalinity of the soils. A pH of 7, for example, indicates a neutral soil, a lower pH value indicates acidity, and a higher value indicates alkalinity.

Dispersion refers to the degree and the rate at which the soil aggregates disintegrate when saturated with water.

The shrink-swell potential refers to the change in volume of the soil that results from a change in moisture content. It is estimated on the basis of the amount and type of clay in the soil layers. For example, the soil material from the B horizon of Vaiden silty clay is high in montmorillonite clay, and it therefore is very sticky when wet and extensive shrinkage cracks develop as it dries. This soil consequently has a very high shrink-swell potential. On the other hand, Lakeland fine sand is structureless and nonplastic and contains very little clay. It therefore has low shrink-swell potential. In general, soils classified as A–7 and CH have high shrink-swell potential. Clean sands and gravels and those having a small amount of nonplastic to slightly plastic fines have low shrink-swell potential, as does most other nonplastic to slightly plastic soil material.

Engineering Interpretations

Table 7 rates the soils in Greene County according to their suitability as a source of topsoil and road fill. It also lists features that affect use of the soils as sites for highways and for agricultural engineering. The information is based partly on estimates. It is also based on data obtained by testing soils from this county and on data for similar soils from other counties.

The ratings given for suitability as a source of topsoil indicate if the material is suitable for growth of plants on embankments, on slopes, and in ditches along highways. Except for soils that have a surface layer of silty clay or clay, most of the soils in the county are rated fair or good as a source of topsoil.

Most soils in this county are not suitable as a source of sand and gravel. The Cahaba, Lakeland, Rumford, and Sequatchie soils, however, are a fair source of sand. In addition, some areas of Angie and Ruston soils are underlain by poorly graded sand and gravel at a depth of 4 to 6 feet.

In rating the suitability of the soils as a source of road fill, the highly plastic, fine-textured soils that have a high content of silt and clay, and that are highly erodible and have high shrink-swell potential, were rated as poor. The moderately fine textured soils that have a medium amount of clay were rated as fair, and the medium-textured and coarse-textured soils that have a small amount of clay were rated as good.

Some of the soil features that need to be considered in locating a highway are depth to bedrock and the water table, the hazards of flooding and erosion, and shrink-swell potential.

Most soils in the county have a perched water table during part of the year. This results in a decrease in the bearing capacity of the foundation soil below the pavement and causes deterioration of the pavement. Where the soils have a fragipan or where permeable material is underlain by impermeable material, seepage along the sides of cuts causes slumping or sliding of the overlying material. In low, wet areas where the soil material is high in organic matter, undercutting and backfilling are needed to provide a more stable foundation.

The subsoil of Boswell and Oktibbeha soils, and of other soils high in expanding lattice clays, is hazardous when used for road fill material. It has low shear strength, and when wet, the material is likely to slide and cause the pavement to deteriorate.

The highly plastic soils in the Blackland Prairie part of the county generally make poor fill material because of their low shear strength. Also, these soils are a hazard if used in construction because of their high shrink-swell potential (fig. 19). A detailed investigation should be made at the site being considered if these soils are used in engineering works of improvement. Also, a high degree of construction control should be maintained.

TABLE 5.—*Engineering*

[Tests performed by the Alabama Highway Department in accordance with standard

Soil name and location	Parent material	Alabama report number S64Ala-32-	Depth from surface	Moisture-density data[1]	
				Maximum dry density	Optimum moisture
			Inches	*Lb. per cu. ft.*	*Percent*
Catalpa clay:					
8.4 miles S. of Eutaw on Meadowbrook Farm (modal).	Clayey alluvium.	29–2	4–33	95	25
		29–4	39–72	88	30
Dulac silt loam:					
⅛ mile N. of Marengo County line and ⅛ mi. W. of U.S. Highway 43 (modal).	Fine-textured Coastal Plain alluvium.	30–1	0–6	105	16
		30–3	8–19	102	21
		30–6	40–72	105	15
Falaya fine sandy loam:					
2.9 miles E. of Clinton on Alabama Highway 14 and 150 yards S. of road (modal).	Recent general alluvium.	35–5	45–68	101	19
Kipling loam:					
4.5 miles N. of Clinton on Alabama Highway 14 (modal).	Thick beds of acid clay over Selma chalk.	34–1	0–4	116	13
		34–4	21–39	104	20
		34–7	56–65	109	19
Magnolia fine sandy loam:					
2 miles SW. of Pleasant Ridge (modal).	Thick unconsolidated beds of sandy clay loam to sandy clay marine sediment.	4–1	0–6	122	11
		4–3	13–38	109	18
		4–5	66–75	115	15
Myatt fine sandy loam:					
1 mile SW. of Mantua (modal).	Old general alluvium washed from Coastal Plain uplands.	43–1	0–5	111	13
		43–2	5–21	111	15
		43–5	60–80	102	22
4¾ miles NE. of Forkland (finer textured substratum than modal).	Old general alluvium washed from Coastal Plain uplands.	42–3	2–7	109	15
		42–4	7–18	110	14
		42–6	30–72	105	17
Oktibbeha clay:					
5 miles SW. of Eutaw on B.B.A. Rogers Farm (modal).	Thin beds of acid clay over Selma chalk or soft limetsone.	12–1	0–4	94	24
		12–4	20–40	89	31
		12–6	50–72	99	20
2.2 miles NE. of Boligee, then 2.4 miles S. of U.S. Highway 11 (shallower to Selma chalk than modal).	Thin beds of acid clay over Selma chalk or soft limestone.	28–1	0–3	102	21
		28–3	12–24	89	30
		28–5	30–60	100	17
Savannah fine sandy loam:					
½ mile S. of Forkland (modal).	Unconsolidated beds of acid sand, silt, and clay of the Coastal Plain.	9–1	0–8	116	11
		9–3	11–17	116	14
		9–6	26–33	114	14
		9–9	60–72	114	16
Sumter silty clay:					
1 mile W. of junction of Dollarhide Road and U.S. Highway 43 (modal).	Soft limestone or Selma chalk.	7–1	0–6	94	23
		7–3	9–18	99	25
		7–6	34–72	96	23
Sumter silty clay loam:					
2 miles S. of West Alabama Stockyards (shallower to Selma chalk than modal).	Soft limestone or Selma chalk.	37–1	0–5	99	20
		37–2	5–17	100	20
		37–3	17–30+	97	19
Vaiden silty clay:					
3.1 miles S. of West Alabama Stockyards (modal).	Thick beds of acid clay over Selma chalk.	36–1	0–3	87	27
		36–4	13–31	94	26
		36–5	31–52	93	26

[1] Based on AASHO Designation: T 99–57, Method A (/).

[2] Mechanical analyses according to the AASHO Designation T 88–57 (/). Results by this procedure frequently may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure the fine material is analyzed by the hydrometer method, and the various gain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette

test data

procedures of the American Association of State Highway Officials (AASHO) (/)

Mechanical analysis[2]				Liquid limit	Plasticity index	Classification	
Percentage passing sieve—			Percentage smaller than—			AASHO	Unified[3]
No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.005 mm.				
100	99	96	75	54	30	A–7–6(19)	CH
100	99	97	85	74	49	A–7–6(20)	CH
100	99	90	40	27	4	A–4(8)	ML–CL
100	99	96	63	45	20	A–7–6(13)	ML–CL
100	99	92	43	33	12	A–6(9)	CL
100	99	93	50	34	12	A–6(9)	ML–CL
100	95	55	23	20	4	A–4(4)	ML–CL
100	96	75	52	43	23	A–7–6(14)	CL
100	96	40	33	31	13	A–6(2)	SC
100	98	44	15	14	0	A–4(2)	SM
100	98	64	45	33	18	A–6(9)	CL
100	98	50	37	30	16	A–6(5)	SC
100	99	43	18	21	1	A–4(2)	SM
100	99	50	29	26	5	A–4(3)	SM–SC
100	99	73	48	42	24	A–7–6(14)	CL
100	99	67	34	21	2	A–4(6)	ML
100	99	70	40	21	5	A–4(7)	ML–CL
100	99	77	56	36	18	A–6(11)	CL
100	97	87	47	41	12	A–7–6(9)	ML
100	99	97	81	63	31	A–7–5(20)	MH–CH
100	99	93	80	48	27	A–7–6(17)	CL
100	97	81	50	43	25	A–7–6(15)	CL
100	99	96	84	84	56	A–7–6–(20)	CH
100	99	95	86	48	26	A–7–6(16)	CL
100	97	52	14	14	0	A–4(3)	ML
100	98	71	39	26	11	A–6(8)	CL
100	98	61	33	23	9	A–4(5)	CL
100	99	57	33	23	1	A–4(4)	ML
[4] 99	98	87	63	45	16	A–7–6(11)	ML
100	99	95	82	53	29	A–7–6(18)	CH
100	99	85	69	53	32	A–7–6(19)	CH
100	98	85	65	42	17	A–7–6(11)	ML–CL
100	99	93	80	44	20	A–7–6(13)	CL
100	99	95	86	41	17	A–7–6(11)	ML–CL
100	95	89	60	55	24	A–7–5(16)	MH–CH
100	98	94	75	56	34	A–7–6(19)	CH
100	98	95	80	66	42	A–7–6(20)	CH

method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are not suitable for use in naming textural classes for soils.

[3] SCS and BPR have agreed to consider that all soils having plasticity indexes within two points from A-line are to be given borderline classification. Examples of borderline classification obtained by this use are MH–CH, ML–CL, and SM–SC.

[4] 100 percent passing 1-inch sieve.

TABLE 6.—*Estimated*

[Not included in this table because its characteristics are too variable to be classified,

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	Classification		
			Dominant USDA texture	Unified	AASHO
	Feet	*Inches*			
Angie:					
AgA, AgB, As	0.5–1.5	0–6	Fine sandy loam	SM	A–4
		6–36	Silty clay	CL	A–7–5
		36–72	Clay	CH	A–7–6
(For properties of Leaf soil in mapping unit As, refer to Leaf series in this table.)					
AfB, AfC2, AnD3	2–3	0–5	Fine sandy loam	SM	A–4
		5–20	Clay loam	CL	A–6
		20–72	Clay	CH or CL	A–7–6
Bibb:					
Bb	0–1	0–32	Silt loam, loam	ML–CL	A–4
		32–50	Sandy loam	SM	A–4
Binnsville:					
BcC	>6	0–12	Clay	CH	A–7–6
		12	Limestone		
Boswell:					
BeC3, BoB2, BoC2	>6	0–7	Fine sandy loam	SM	A–4
		7–45	Clay	CH	A–7–6
		45–72	Clay	CH	A–7–6
Cahaba:					
CaB	4	0–10	Fine sandy loam	SM	A–4
		10–30	Loam, sandy clay loam	ML	A–6
		30–50	Fine sandy loam	SM	A–4
Catalpa:					
Cc	1.5	0–72	Clay	CH	A–7–6
Chastain:					
Ch	0–1	0–60	Clay	CL–CH	A–7–6
Dulac:					
DuA	1–2	0–6	Silt loam	ML–CL	A–4
		6–40	Silty clay loam	ML–CL	A–7–6
		40–72	Silty clay loam	CL	A–6
Eutaw:					
Eu	0–1	0–60	Clay	CH	A–7–6
		60–72	Clay	CH	A–7–6
Falaya:					
Fa	0.5–1.5	0–46	Loam	ML–CL	A–4
		46–72	Clay loam	ML, CL	A–6, A–4
Forestdale:					
Fo	0–1	0–6	Fine sandy loam	ML	A–4
		6–42	Clay	CH	A–6
		42–72	Clay	CH	A–7–6
Garner:					
Ga	0–1	0–72	Clay	CH	A–7–6
Kipling:					
KlA, KlB2, KlC2, KlD2	1–2	0–4	Loam	ML–CL	A–4
		4–48	Clay	CL, CH	A–7–6
		48–65	Sandy clay loam	SC	A–6
Lakeland:					
LaB	5	0–32	Fine sand	SP	A–2–4
		32–72	Sand	SP	A–2

engineering properties

is the land type Gullied land (Gu). > = greater than and < = less than]

Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
No. 4	No. 10	No. 200	*Inches per hour*	*Inches per inch of soil*	*pH*	
98–100	95–100	40–50	0.63–2.0	0.1–0.15	5.1–5.5	Low.
98–100	95–100	80–90	<0.2	0.1–0.15	4.5–5.5	High.
98–100	95–100	85–95	<0.2	0.1–0.15	4.5–5.5	High.
98–100	95–100	40–50	0.63–2.0	0.1–0.15	5.1–5.5	Low.
98–100	95–100	70–80	0.06–0.2	0.1–0.15	4.5–5.0	Moderate.
98–100	95–100	90–100	0.06–0.2	0.1–0.15	4.5–5.0	High.
98–100	95–100	50–60	0.63–2.0	0.1–0.15	4.5–5.5	Low.
98–100	95–100	40–50	0.63–2.0	0.1–0.15	4.5–5.0	Low.
98–100	95–100	90–100	<0.2	0.1–0.15	7.4–8.4	High.
95–100	95–100	40–50	0.63–2.0	0.1–0.15	5.1–5.5	Low.
95–100	90–100	80–90	0.06–0.20	0.1–0.15	4.5–5.0	High.
98–100	95–100	85–95	0.06–0.20	0.1–0.15	<4.5	High.
98–100	95–100	40–50	2.0–6.3	0.1–0.15	5.1–5.5	Low.
98–100	95–100	65–75	0.63–2.0	0.1–0.15	5.1–5.5	Low.
98–100	95–100	40–50	2.0–6.3	0.08–0.13	5.1–5.5	Low
98–100	98–100	90–100	<0.2	0.13–0.18	6.6–8.4	High.
98–100	98–100	85–100	<0.2	0.1–0.15	5.6–6.5	High.
98–100	95–100	85–95	0.63–2.0	0.15–0.20	4.5–5.5	Low.
98–100	95–100	90–100	<0.2	0.1–0.15	4.5–5.5	High.
98–100	95–100	90–100	<0.2	0.1–0.15	4.5–5.5	High.
98–100	98–100	86–98	<0.06	0.1–0.15	4.5–5.0	High.
98–100	98–100	86–98	<0.06	0.1–0.15	6.6–8.4	High.
98–100	95–100	60–70	0.63–6.3	0.15–0.2	4.5–5.5	Low.
98–100	95–100	50–100	0.63–2.0	0.15–0.2	4.5–5.5	Low.
98–100	95–100	60–70	0.63–2.0	0.1–0.15	4.5–5.0	Low.
98–100	95–100	80–95	<0.2	0.1–0.15	4.5–5.5	Moderate to high.
98–100	95–100	85–95	<0.2	0.1–0.15	4.5–5.0	High.
98–100	98–100	90–100	<0.2	0.13–0.18	6.6–8.4	High.
98–100	95–100	50–60	0.2–0.63	0.1–0.15	4.5–5.5	Low.
98–100	95–100	70–80	<0.2	0.1–0.15	4.5–5.5	High.
98–100	95–100	40–50	<0.2	0.1–0.15	7.4–8.4	High to moderate.
95–100	95–100	20–30	>6.3	0.05–0.1	4.5–5.5	Low.
95–100	95–100	15–25	>6.3	0.05–0.1	4.5–5.5	Low.

TABLE 6.—*Estimated*

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	Classification		
			Dominant USDA texture	Unified	AASHO
	Feet	*Inches*			
Leaf:					
Le, Lf	0–1	0–9	Silt loam	ML–CL	A–4
(For properties of Angie soil in mapping unit Lf, refer to Angie series in this table.)		9–72	Silty clay	CL	A–7–6
Leeper:					
Lp	0.5–1.5	0–72	Clay	CH	A–7–6
Lucy	>6	0–24	Loamy sand	SM	A–2
(Mapped only in a complex with soils of the Troup series.)		24–60	Sandy clay loam, fine sandy loam	SM, ML	A–4
Macon:					
MaD3, McA, McB2, McC2	>6	0–9	Fine sandy loam	SM	A–4
		9–50	Clay loam	CL	A–6
		50–75	Sandy clay	SC, CL	A–6
Magnolia:					
MgA, MgB2, MgC2, MgD2, MnC3	>6	0–8	Fine sandy loam	SM	A–2–4, A–4
		8–55	Sandy clay loam to clay	CL, SC	A–6
		55–70	Sandy clay loam	ML–CL, SM, SC	A–6, A–4
Marietta:					
Mr	1.5–2	0–42	Sandy clay loam	ML–CL	A–4
(For properties of Leeper soils in this mapping unit, refer to Leeper series in this table.)		42–72	Sandy clay	SC	A–6
Mashulaville:					
Ms	0–1	0–9	Fine sandy loam	SM	A–4
		9–32	Loam	CL	A–6
		32–80	Clay loam	CL	A–6
Myatt:					
My	0–1	0–5	Fine sandy loam	SM, ML	A–4
		5–54	Sandy clay loam	SM–SC, CL	A–4
		54–80	Clay loam and sandy clay loam	CL, ML	A–7–6, A–6
Ochlockonee:					
Oc, Oe	2.5–4	0–52	Fine sandy loam	SM	A–2–4
		52–72	Sandy loam	SM	A–2
Oktibbeha:					
OhB2, OkB2, OoC2, OoD2	6	0–4	Clay	ML, CL	A–4, A–7–6
		4–50	Clay	MH, CH	A–7–6
		50	Clay	CL	A–7–6
Ora:					
OrA, OrB2, OrC2	2–3	0–5	Fine sandy loam	SM	A–4
		5–26	Clay loam	ML–CL	A–6
		26–72	Clay loam	CL	A–6
Rumford:					
RfB	>6	0–7	Sandy loam	SM	A–2
		7–38	Fine sandy loam	SM	A–2–4
		38–70	Loamy sand	SM	A–2
Ruston:					
RoE, RsA, RsB, RsC2, RsD2, RuB	>6	0–16	Fine sandy loam	SM	A–2–4
		16–60	Sandy clay loam	ML–CL	A–4
		60–108	Fine sandy loam	SC to SM	A–4

engineering properties—Continued

Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
No. 4	No. 10	No. 200				
			Inches per hour	*Inches per inch of soil*	*pH*	
98–100	95–100	80–90	0.2–0.63	0.15–0.2	4.5–5.0	Low.
98–100	98–100	90–100	<0.2	0.1–0.15	4.5–5.0	High.
98–100	98–100	90–100	<0.2	0.1–0.15	6.6–8.4	High.
95–100	90–100	15–25	>6.3	0.05–0.1	4.5–5.5	Low.
95–100	90–100	50–60	0.63–6.3	0.1–0.15	4.5–5.5	Low.
98–100	90–100	40–50	0.63–2.0	0.1–0.15	4.5–5.5	Low.
98–100	95–100	55–65	0.2–0.63	0.1–0.15	5.5–6.0	Moderate.
95–100	90–100	45–55	0.2–0.63	0.1–0.15	4.5–5.5	Moderate.
95–100	90–100	25–45	0.2–2.0	0.1–0.15	4.5–6.0	Low.
98–100	95–100	50–70	0.63–2.0	0.1–0.15	4.5–5.5	Low to moderate.
98–100	95–100	50–65	0.63–2.0	0.1–0.15	4.5–5.5	Low.
98–100	95–100	50–60	0.63–2.0	1.12–0.17	6.6–8.4	Low.
98–100	95–100	40–50	0.2–0.63	0.1–0.15	6.6–8.4	Moderate.
98–100	95–100	40–50	0.63–2.0	0.1–0.15	4.5–5.5	Low.
98–100	95–100	65–75	0.20–0.63	0.1–0.15	4.5–5.5	Low.
98–100	95–100	70–80	<0.2	0.1–0.15	4.5–5.0	Moderate.
98–100	95–100	40–70	0.63–2.0	0.1–1.5	4.5–5.5	Low.
98–100	95–100	40–70	0.06–0.63	0.1–1.5	4.5–5.5	Low.
98–100	95–100	70–80	0.06–0.63	0.1–0.15	4.5–5.5	Moderate.
98–100	95–100	30–50	2.0–6.3	0.1–0.15	4.5–5.5	Low.
98–100	95–100	20–30	>6.3	0.1–0.15	4.5–5.5	Low.
98–100	98–100	80–95	<0.2	0.1–0.15	4.5–6.0	High.
98–100	98–100	95–100	<0.2	0.1–0.15	4.5–6.0	High.
98–100	98–100	85–95	<0.2	0.1–0.15	6.6–8.4	High.
98–100	95–100	36–45	2.0–6.3	0.1–0.15	4.5–5.5	Low.
98–100	95–100	65–75	0.63–2.0	0.1–0.15	4.5–5.0	Low.
98–100	95–100	70–80	0.2–0.63	0.1–0.15	4.5–5.0	Moderate.
98–100	95–100	20–30	2.0–6.3	0.05–0.1	4.5–5.5	Low.
98–100	95–100	25–35	2.0–6.3	0.1–0.15	4.5–5.5	Low.
98–100	95–100	15–25	>6.3	0.05–0.1	4.5–5.5	Low.
98–100	95–100	25–35	2.0–6.3	0.01–0.15	4.5–5.5	Low.
98–100	95–100	50–60	0.63–2.0	0.1–0.15	4.5–5.5	Low.
98–100	95–100	36–45	2.0–6.3	0.1–0.15	4.5–5.5	Low.

TABLE 6.—*Estimated*

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	Classification		
			Dominant USDA texture	Unified	AASHO
	Feet	*Inches*			
Savannah:					
SaA, SaB, SaC2	2–3	0–8	Fine sandy loam	ML, SM	A–4, A–2
		8–23	Loam	CL	A–6
		23–45	Loam	CL	A–4
		45–72	Sandy clay loam	ML, SC	A–4
Sawyer:					
SeA	2–3	0–9	Fine sandy loam	ML	A–4
		9–26	Loam	CL	A–6
		26–60	Silty clay	CL, CH	A–7–6
Sequatchie:					
SfA	>6	0–15	Sandy loam	SM	A–2–4
		15–48	Fine sandy loam	SM	A–4
		48–72	Loamy sand	SM	A–2
Shubuta:					
SgC3, ShA, ShB2, ShC2, SmD2, SmD3, SnE (For properties of Boswell soils in mapping units SmD2, and SmD3, refer to Boswell series in this table, and for properties of Falaya and Magnolia soils in unit SnE, refer to Falaya and Magnolia series, respectively.)	>6	0–9	Fine sandy loam	SM	A–2–4
		9–36	Silty clay	MH	A–7–5
		36–72	Sandy clay	SM–CL	A–4 to A–6
Stough:					
St	0.5–1.5	0–8	Sandy loam	SM	A–2–4
		8–37	Fine sandy loam	SM	A–4
		37–72	Sandy clay loam	SC	A–4
Sumter:					
SuB2, SuC2, SuD2,SwB2, SwE2 (For properties of Watsonia soils in mapping units SwB2, and SwE2, refer to Watsonia series in this table.)	>6	0–6	Silty clay	ML, CL	A–7–6
		6–34	Clay	CH, CL	A–7–6
		34–72	Soft Selma chalk	CH, CL	A–7–6
Trinity:					
Tr	1–2	0–72	Clay	CH	A–7–6
Troup:					
TuE (For properties of Lucy soils in this mapping unit, refer to Lucy series in this table.)	>6	0–60	Loamy sand	SM	A–2
		60–80	Sandy loam	SM	A–2–4
Vaiden:					
VaA, VaB2, VaC2	1–2	0–3	Silty clay	MH–CH	A–7–5
		3–52	Clay	CH	A–7–6
		52–70	Clay	CH	A–7–6
Wagram:					
WaB, WaC	>6	0–30	Loamy fine sand	SM	A–2
		30–72	Sandy clay loam	SM, ML	A–4
Watsonia (Mapped only in complexes with soils of the Sumter series.)	>6	0–16	Clay	CH	A–7–6
		16	Selma chalk	CL	A–7–6

engineering properties—Continued

Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
No. 4	No. 10	No. 200	*Inches per hour*	*Inches per inch of soil*	*pH*	
98–100	95–100	30–55	2.0–6.3	0.1–0.15	4.5–6.0	Low.
98–100	95–100	65–75	0.63–2.0	0.1–0.15	4.5–6.0	Low.
98–100	95–100	50–65	0.06–2.0	0.1–0.15	4.5–5.5	Low.
98–100	95–100	45–60	0.20–0.63	0.1–0.15	4.5–5.5	Low.
98–100	95–100	50–60	0.63–2.0	0.1–0.15	4.5–5.5	Low.
98–100	95–100	65–75	0.63–2.0	0.1–0.15	4.5–5.5	Moderate.
98–100	95–100	80–90	0.06–2.0	0.1–0.15	4.5 5.5	High.
95–100	95–100	20–30	2.0–6.3	0.1–0.12	4.5–5.5	Low.
95–100	95–100	40–50	2.0–6.3	0.1–0.15	4.5–5.5	Low.
95–100	95–100	20–30	>6.3	0.05–0.1	4.5–5.5	Low.
98–100	95–100	20–30	0.63–2.0	0.1–0.15	4.5–5.5	Low.
98–100	95–100	70–90	0.06–0.20	0.1–0.15	4.5–5.5	High.
95–100	90–100	36–80	0.2–0.63	0.05–0.15	4.5–5.5	Moderate.
98–100	95–100	30–45	0.63–2.0	0.1–0.15	5.0–5.5	Low.
98–100	95–100	40–50	0.63–2.0	0.1–0.15	4.5–5.5	Low.
98–100	95–100	40–50	0.20–0.63	0.1–0.15	4.5–5.5	Low.
98–100	95–100	85–95	<0.2	0.1–0.15	7.4–8.4	High.
98–100	95–100	90–100	<0.2	0.1–0.15	7.4–8.4	High.
98–100	95–100	80–95	<0.2	0.1–0.15	7.4–8.4	High.
98–100	98–100	90–100	<0.2	0.15–0.2	6.6–8.4	High.
95–100	90–100	15–25	>6.3	0.05–0.1	4.5–5.5	Low.
98–100	90–100	25–35	2.0–6.3	0.1–0.15	4.5–5.5	Low.
98–100	95–100	85–95	<0.2	0.1–0.15	4.5–5.5	High.
98–100	98–100	90–100	<0.2	0.1–0.15	4.5–5.5	High.
98–100	95–100	80–95	<0.2	0.1–0.15	6.6–8.4	High.
95–100	90–100	15–25	>6.3	0.05–0.1	4.5–5.5	Low.
95–100	90–100	45–55	2.0–6.3	0.1–0.15	4.5–5.5	Low.
98–100	98–100	95–100	<0.2	0.1–0.15	4.5–8.4	High.
98–100	98–100	85–95	<0.2	0.1–0.15	7.4–8.4	High.

TABLE 7.—*Engineering*

[The land type Gullied land (Gu) is not included in this table, because

Soil series and map symbols	Suitability as source of—		Soil features affecting—	
	Topsoil	Road fill	Highway location	Farm ponds: Reservoir area
Angie:				
AgA, AgB, As (For interpretations of Leaf soils in mapping unit As, refer to Leaf series in this table.)	Fair: Surface layer..	Poor	Flooding; high water table; plastic soil.	Slow seepage rate
AfB, AfC2, AnD3	Fair: Surface layer..	Poor	All features favorable.	Slow seepage rate
Bibb:				
Bb	Fair: High water table.	Fair	High water table; frequent flooding.	Slow seepage rate; high water table.
Binnsville:				
BcC	Poor	Poor	Selma chalk at a depth of 6 to 12 inches.	Slow seepage rate; shallow to Selma chalk.
Boswell:				
BeC3, BoB2, BoC2	Fair: Surface layer..	Poor	Highly plastic soil material; unstable slopes.	Slow seepage rate
Cahaba:[1]				
CaB	Good: Surface layer.	Good	Water table at a depth of 4 feet; infrequent flooding.	Moderate to rapid seepage rate.
Catalpa:				
Cc	Poor	Poor	Flooding; highly plastic soil material.	Very slow seepage rate.
Chastain:				
Ch	Poor	Poor	High water table; flooding; plastic soil.	Very slow seepage rate.
Dulac:				
DuA	Good: Surface layer.	Poor	Occasional flooding; water table at a depth of 2 to 5 feet.	Slow seepage rate
Eutaw:				
Eu	Poor	Poor	High water table; high shrink-swell potential; plastic soil.	Very slow seepage rate.
Falaya:				
Fa	Fair: Top 12 inches .	Poor	Water table at a depth of 6 to 18 inches; frequent flooding.	Moderate seepage rate.

interpretations

the characteristics are too variable to be classified]

Soil features affecting—Continued					Limitations for septic tank filter fields
Farm ponds—Continued: Embankment	Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
Low strength and stability.	Flooding; high water table; slow permeability.	Moderate intake rate; slow permeability.	Not needed	Not needed	Severe: Flooding; high water table; slow permeability.
Low strength and stability.	Not needed	Slow permeability; moderately well drained.	Highly erodible; soil properties favorable.	Highly erodible; difficult to establish vegetative cover.	Severe: Slow permeability.
Moderate strength and stability.	High water table; moderately permeable; surface drainage needed.	High water table; irrigation questionable.	Not needed	Not needed	Severe: Flooding; high water table.
High shrink-swell potential; low strength and stability.	Not needed	Poor agricultural soil; slow intake rate; irrigation questionable.	Highly erodible; shallow to Selma chalk.	Highly erodible; depth to Selma chalk is between 6 and 12 inches.	Severe: Shallow to Selma chalk; very slowly permeable.
Low strength and stability; soil cracks when dry.	Not needed	Highly erodible; slow permeability; poor agricultural soil; 2 to 12 percent slopes.	Highly erodible	Highly erodible; difficult to establish vegetative cover.	Severe: Slow permeability.
High strength and stability.	Not needed	0 to 3 percent slopes; moderate intake rate; moderate to rapid permeability.	Soil porperties favorable.	Moderately erodible	Moderate: Water table at a depth of 4 feet; infrequent flooding.
Low strength and stability; high shrink-swell potential.	Frequent flooding; slow permeability.	Very slow intake rate.	Not needed	Not needed	Severe: Frequent flooding; slow permeability.
Low strength and stability.	High water table; slow permeability; flooding.	High water table; slow intake rate.	Not needed	Not needed	Severe: Frequent flooding; high water table; slow permeability.
Low strength and stability.	Not needed	Slow permeability; moderate intake rate.	Not needed	Sod is easy to establish; some shaping needed.	Severe: Slow permeability; occasional flooding.
Low strength and stability; high shrink-swell potential.	Very slow permeability; high water table.	Slow intake rate; very slow permeability; low productivity.	Not needed	Soil difficult to work; difficult to establish vegetative cover.	Severe: Very slow permeability; high water table.
Moderate strength and stability.	Frequent flooding; water table at a depth of 6 to 18 inches.	On 2 percent slopes; moderate intake rate and permeability.	Not needed	Sod is easy to establish.	Severe: Water table at a depth of 6 to 18 inches; frequent flooding; moderate permeability.

TABLE 7.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features affecting—	
	Topsoil	Road fill	Highway location	Farm ponds: Reservoir area
Forestdale: Fo	Fair: Surface layer	Poor	High water table; high shrink-swell potential; plastic soil.	Slow seepage rate
Garner: Ga	Poor	Poor	Flooding; high shrink-swell potential; plastic soil.	Slow seepage rate
Kipling: KlA, KlB2, KlC2, KlD2	Fair: Surface layer	Poor	High shrink-swell potential; plastic soil; erodible.	Slow seepage rate
Lakeland:[2] LaB	Fair	Good	Occasional flooding; water table at a depth of 5 feet.	Rapid seepage rate
Leaf: Le; Lf (For interpretations of Angie soil in mapping unit Lf, refer to Angie series in this table.)	Fair: Surface layer	Poor	Flooding; high water table.	Slow seepage rate
Leeper: Lp	Poor	Poor	Flooding; very high shrink-swell potential; plastic soil.	Slow seepage rate
Lucy:[1] (Mapped only in a complex with soils of the Troup series.)	Fair	Good	All features favorable.	Rapid seepage rate
Macon: MaD3, McA, McB2, McC2	Good: Surface layer	Fair	All features favorable.	Slow seepage rate
Magnolia: MgA, MgB2, MgC2, MgD2, MnC3	Fair: Surface layer	Good	No important limitations.	Moderate seepage rate.
Marietta: Mr (For interpretations of Leeper soils in this mapping unit, refer to Leeper series in this table.)	Poor	Fair	Flooding; water table at a depth of 1.5 to 2 feet.	Slow seepage rate

interpretations—Continued

Soil features affecting—Continued					Limitations for septic tank filter fields
Farm ponds—Continued: Embankment	Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
Low strength and stability; high shrink-swell potential.	High water table; slow permeability.	Moderate infiltration and slow permeability.	Not needed	Not needed	Severe: High water table; slow permeability.
High shrink-swell potentail; low strength and stability; cracks when dry.	Flooding; high water table; very slow permeability.	Slow intake rate; very slow permeability.	Not needed	Not needed	Severe: Flooding; very slow permeability.
Low strength and stability; high shrink-swell potential.	Surface drainage needed in level areas; slow permeability.	Moderate intake rate; slow permeability; highly erodible.	Shallow to plastic clay.	Highly erodible; difficult to work.	Severe: Water table at a depth of 6 to 18 inches; slow permeability.
High strength and stability; rapid seepage rate.	Not needed	Low available water capacity; rapid intake rate; frequent applications of water needed.	Unstable soil	Unstable soil; highly erodible.	Moderate: Rapid permeability; occasional flooding.
Low strength and stability.	High water table; slow permeability; outlets difficult to find.	Poorly drained; moderate intake rate; slow permeability.	Not needed	Not needed	Severe: Flooding; high water table; slow permeability.
Low strength and stability; high shrink-swell potentail; cracks when dry.	Slow permeability; flooding.	Slow infiltration and permeability; somewhat poorly drained; flooding.	Not needed	Not needed	Severe: Flooding; slow permeability; water table at 6 to 18 inches.
High strength and stability.	Not needed	8 to 25 percent slopes; rapid intake rate; rapid permeability; low available water capacity.	Unstable soil	Unstable soil	Slight: 0 to 5 percent slopes. Moderate: 5 to 10 percent slopes. Severe: > 10 percent slopes.
Moderate strength and stability.	Not needed	Moderate intake rate; medium water-holding capacity.	Moderately erodible	Moderately erodible; little shaping needed; vegetation easy to establish.	Moderate: Permeability and slopes up to 10 percent. Severe: Slopes > 10 percent.
High strength and stability.	Not needed	0 to 8 percent slopes; moderate intake rate; medium water-holding capacity.	Moderately erodible; soil properties favorable.	Moderately erodible; sod easy to establish; little shaping needed.	Slight: 0 to 5 percent slopes. Moderate: 5 to 10 percent clopes. Severe: > 10 percent slopes.
Moderate strength and stability.	Frequent flooding; water table at depth of 1.5 to 2 feet.	0 to 2 percent slopes; moderate intake rate and permeability; frequent flooding.	Not needed	Sod easy to establish	Severe: Water table at a depth of 1.5 to 2 feet; frequent flooding; moderate permeability.

TABLE 7.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features affecting—	
	Topsoil	Road fill	Highway location	Farm ponds: Reservoir area
Mashulaville: Ms	Poor	Fair	High water table; water ponds on the soil.	Slow seepage rate
Myatt: My	Fair: Surface layer; high water table.	Fair	High water table; flooding.	Slow seepage rate
Ochlockonee: Oc, Oe	Good: Top 2 to 3 feet.	Good	Frequent flooding	Moderate seepage rate.
Oktibbeha: OhB2, OkB2, OoC2, OoD2	Poor	Poor	High shrink-swell potential; very plastic; highly erodible.	Slow seepage rate
Ora: OrA, OrB2, OrC2	Good: Surface layer.	Good	Seepage in cuts made above the fragipan.	High seepage rate
Rumford: RfB	Good: Surface layer.	Good	All features favorable.	Rapid seepage rate
Ruston: RoE, RsA, RsB, RsC2, RsD2, RuB	Good: Surface layer.	Good	All features favorable.	Moderate seepage rate.
Savannah: SaA, SaB, SaC2	Good: Surface layer.	Good	Seepage in cuts made above fragipan.	Slow seepage rate
Sawyer: SeA	Good: Surface layer.	Fair to poor	Occasional flooding; seasonal high water table at a depth of 2 feet.	Slow seepage rate

interpretations—Continued

Soil features affecting—Continued					Limitations for septic tank filter fields
Farm ponds—Continued: Embankment	Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
Moderate strength and stability.	Seasonally high water table; outlets difficult to locate; fragipan at a depth of 12 to 20 inches; moderately slow permeability.	Poorly drained; high water table; moderately slow permeability; moderate intake rate.	Not needed.....	Not needed.....	Severe: High water table; moderately slow permeability.
Moderate strength and stability.	High water table; outlets difficult to locate.	Poorly drained; flooding; high water table; moderate intake rate.	Not needed.....	Not needed.....	Severe: High water table; flooding; slow permeability.
Moderate strength and stability.	Not needed; frequent flooding.	0 to 2 percent slopes; moderate to rapid permeability; moderately rapid intake rate.	Not needed.....	Not needed.....	Severe: Frequent flooding.
Low strength and stability; high shrink-swell potential; cracks when dry.	Not needed.....	Moderate to slow intake rate; slow to very slow permeability.	Soil very difficult to work; highly erodible.	Highly erodible; sod is difficult to establish.	Severe: Slow to very slow permeability.
High strength and stability.	Not needed.....	0 to 8 percent slopes; medium water-holding capacity; moderate intake rate and permeability.	Moderately erodible; soil properties favorable.	Moderately erodible; fragipan at a depth of 24 to 30 inches; little shaping needed; vegetation easy to establish.	Moderate: Fragipan at a depth of 24 to 30 inches; moderate permeability.
High strength and stability.	Not needed.....	Rapid intake rate and rapid permeability; low water-holding capacity.	Moderately erodible; soil properties favorable.	Moderately erodible..	Slight.
High strength and stability.	Not needed.....	Rapid intake rate; moderate permeability; moderate water-holding capacity.	Moderately erodible; soil properties favorable.	Moderately erodible; little shaping needed; sod easy to establish.	Slight: 0 to 5 percent slopes. Moderate: 5 to 10 percent slopes. Severe: > 10 percent slopes.
High strength and stability.	Not needed.....	Moderate intake rate; moderate permeability to pan, slow in pan.	Moderately erodible; soil properties favorable.	Moderately erodible; fragipan at 20 to 30 inches; little shaping needed; sod easy to establish.	Severe: Moderate permeability to pan, slow in pan; seasonal perched high water table.
Low strength and stability	Not needed.....	Moderate intake rate; moderate permeability to fine-textured layer, then slow; 0 to 2 percent slopes.	0 to 2 percent slopes; not needed.	Not needed.....	Severe: Occasional flooding; moderate permeability to a depth of 2 feet, then slow.

TABLE 7.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features affecting—	
	Topsoil	Road fill	Highway location	Farm ponds: Reservoir area
Sequatchie: SfA	Good: Surface layer.	Good	No important limitations.	Rapid seepage rate
Shubuta: SgC3, ShA, ShB2, ShC2, SmD2, SmD3, SnE. (For interpretations of Boswell soils in mapping units SmD2 and SmD3, refer to Boswell series in this table; and for interpretations of Falaya and Magnolia soils in unit SnE, refer to Falaya and Magnolia series, respectively.)	Fair: Surface layer.	Fair to poor	Seepage water in cuts; susceptible to sliding.	Slow seepage rate
Stough: St	Fair: Surface layer.	Fair to good	High water table	Moderate seepage rate.
Sumter: SuB2, SuC2, SuD2, SwB2, SwE2, (For interpretations of Watsonia soils in mapping units SwB2 and SwE2, refer to Watsonia series in this table.)	Poor	Poor	High shrink-swell potential; plastic soil; highly erodible.	Slow seepage rate
Trinity: Tr	Poor	Poor	Very high shrink-swell potential; plastic soil; seepage water accumulates.	Slow seepage rate
Troup:[1] TuE (For interpretations of Lucy soils in this mapping unit, refer to Lucy series in this table.)	Poor	Good	Slopes, unstable	Rapid seepage rate
Vaiden: VaA, VaB2, VaC2	Poor	Poor	High shrink-swell potential; plastic soil; highly erodible.	Slow seepage rate
Wagram: WaB, WaC	Fair to a depth of 20 to 40 inches.	Good	All features favorable.	Rapid seepage rate
Watsonia (Mapped only in complexes with soils of the Sumter series.)	Poor	Poor	High shrink-swell potential; plastic soil; highly erodible; Selma chalk at a depth of 10 to 20 inches.	Slow seepage rate

[1] Some areas are a fair source of sand at a depth below 3 or 4 feet.

interpretations—Continued

Soil features affecting—Continued					Limitations for septic tank filter fields
Farm ponds—Continued: Embankment	Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
High strength and stability.	Not needed	Low water-holding capacity; rapid intake rate.	Not needed; 0 to 2 percent slopes.	Not needed	Slight.
Low strength and stability.	Not needed	Moderate to slow permeability; moderate intake rate.	Highly erodible; soil properties favorable.	Highly erodible; sod is difficult to establish.	Moderate to severe: Moderate to slow permeability.
High strength and stability.	High water table: fragipan at a depth of 12 to 24 inches.	0 to 2 percent slopes; high water table; somewhat poorly drained.	Not needed	Not needed	Severe: High water table; fragipan at a depth of 12 to 24 inches.
Low strength and stability; high shrink-swell potential.	Not needed	Slow intake rate; slow permeability; 1 to 12 percent slopes.	Highly erodible; difficult to work.	Highly erodible; difficult to work.	Severe: Selma chalk at a depth of 20 to 48 inches; slow permeability
High shrink-swell potential; low strength and stability; cracks when dry.	Slow to very slow infiltration and permeability.	Slow to very slow intake rate and permeability.	Not needed	Not needed	Severe: Slow to very slow permeability.
High strength and stability; loamy sand; seepage occurs in places.	Not needed	8 to 15 percent slopes; very low available water capacity.	Unstable soil	Unstable soil	Slight: 0 to 5 percent slopes. Moderate: 5 to 10 percent slopes. Severe: > 10 percent slopes.
Low strength and stability; high shrink-swell potential.	Surface drainage needed in level areas; slow to very slow permeability.	Slow to very slow intake rate and permeability.	Highly erodible; soil difficult to work.	Soil difficult to work; highly erodible.	Severe: Slow to very slow permeability.
High strength and stability; loamy sand; seepage occurs in places.	Not needed	Rapid intake rate; rapid permeability; low water-holding capacity.	Unstable soil	Unstable soil	Slight: 0 to 5 percent slopes. Moderate: 5 to 10 percent slopes.
Low strength and stability; high shrink-swell potential.	Not needed	Slow intake rate and permeability; low fertility.	Highly erodible; soil very difficult to work; shallow to to Selma chalk.	Highly erodible; soil very difficult to work; shallow to Selma chalk.	Severe: Selma chalk at a depth of 10 to 20 inches; slow permeability.

[2] Fair source of sand.

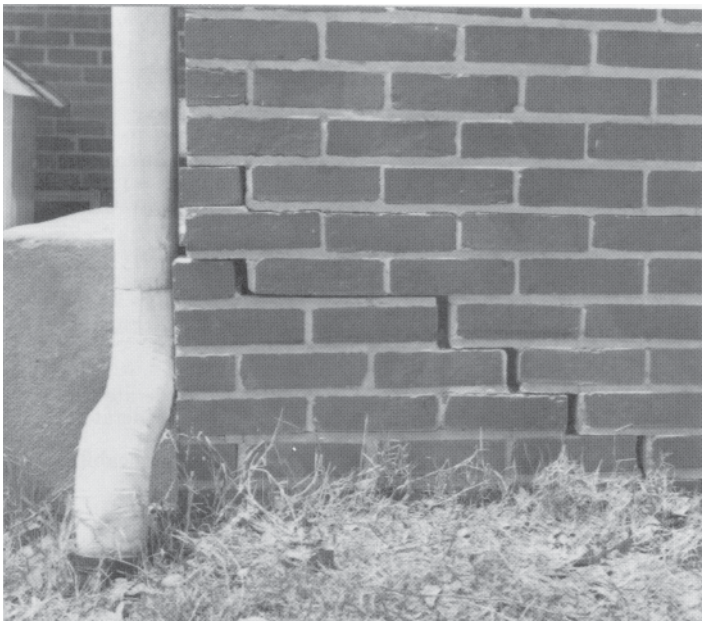

Figure 19.—**High shrink-swell potential has caused the foundation of this building on Oktibbeha clay, 1 to 3 percent slopes, eroded, to crack and pull apart.**

In the northern part of the county, the soils are underlain by highly stratified material. A detailed investigation therefore must be made at any site being considered for engineering construction. The soil material is extremely variable in texture. It consists of highly permeable material over or under slowly permeable material. On low stream terraces and on first bottoms, the soils have a high organic-matter content, have a perched water table, and are subject to flooding. If these soils are used for major construction purposes, careful study of the site is needed.

The soils in the communities of Forkland, Lizzieville, Pleasant Ridge, Tishabee, and West Greene generally make good construction material. If sound engineering procedures and good construction practices are followed, no serious problems should arise in the use of these soils for engineering purposes.

The major engineering practices used in this county to protect and improve the soils are the building of farm ponds, providing drainage, and use of terraces. Waterways are also constructed in some areas. If one of these practices is planned, the information in tables 6 and 7 will be helpful to the farmer. In addition, a local representative of the Soil Conservation District should be consulted.

In table 7 the soils are rated *slight, moderate,* or *severe,* according to the degree of their limitations for use as septic tank filter fields. Among features that affect the suitability of a specific site for filter fields are slopes, drainage, depth to the water table, and frequency of flooding. In general, soils that have a high water table and are poorly drained or that have slow permeability are severely limited for use as filter fields.

Formation and Classification of Soils

In this section the factors that affected the formation of the soils in Greene County are discussed. Then the current system of classification is explained and the soil series are placed in higher categories. The soil series in the county, including a profile representative of each series, are described in the section "Descriptions of the Soils."

Formation of Soils

Soil is the product of the interaction of parent material, climate, relief, plant and animal life, and time. The relative importance of these factors differs from place to place. Sometimes one factor is more important, and sometimes another. The effect of any one of the soil-forming factors is modified to some degree by all of the others. The five factors of soil formation are discussed in the paragraphs that follow.

Parent material.—Parent material is the unconsolidated mass from which a soil forms. It is largely responsible for the chemical and mineralogical composition of soils which often determines the effectiveness of the weathering and in some instances partly controls the kind of vegetation that grows.

The parent material of soils in Greene County is of four main kinds: (1) Material weathered from Selma chalk, (2) acid clay deposited over Selma chalk, (3) material weathered from unconsolidated beds of sand, silt, and clay of the Coastal Plain, and (4) material transported by water or gravity and laid down as unconsolidated deposits of sand, silt, or clay.

The soils on uplands in the Blackland Prairie part of the county formed in material weathered from Selma chalk or in acid clay deposited over Selma chalk. These soils are fine textured and are very plastic. They are acid and alkaline and are slowly permeable.

The soils on uplands in the northern part of the county formed in material weathered from unconsolidated beds of sand, silt, and clay of the Coastal Plain. This material is extremely variable and highly stratified and ranges from sand to clay in texture. Examples of soils formed in this material are those of the Boswell, Magnolia, and Rumford series.

The soils on stream terraces and first bottoms formed in material transported by water and laid down as unconsolidated deposits of sand, silt, or clay. Some of this material came from nearby uplands, and some came from a great distance. This alluvial material is variable in texture and reaction. Thus soils formed in alluvium range from sand to clay in texture, and from acid to alkaline in reaction.

Climate.—Greene County has a moist, temperate climate. Rainfall is abundant. It amounts to about 53 inches a year, and it is well distributed throughout the year. Summers are long and hot. Winters are fairly short and mild, but short cold spells are not uncommon. The soils are frozen to a shallow depth for only short periods. The climate is uniform throughout the county, and differences among the soils therefore are not because of the climate.

Relief.—Relief influences soil formation through its effect on runoff and erosion, movement of water within the soil, plant cover, and to some extent, soil temperature. Greene County ranges from nearly level to steep. As the slope increases, runoff increases in intensity, less water is absorbed, leaching is decreased, and the hazard of erosion becomes greater.

Because runoff is more rapid on steep slopes than on level ones, steep soils erode more rapidly than level ones. In the Shubuta series, for example, the steep soils on hillsides are not quite so thick as those on the smoother ridgetops.

Relief also has affected the soils on the low stream terraces through its influence on drainage. For example, Angie and Leaf soils formed in similar parent material on low terraces. Angie soils, on the crest of low ridges, are somewhat poorly drained to moderately well drained and have a yellowish-red to yellowish-brown subsoil that is mottled with gray in the lower part. In contrast, Leaf soils, in low valleylike areas, are level, are poorly drained, have a high water table, and have a gray subsoil mottled with brown.

Plant and animal life.—Trees, grasses, earthworms, micro-organisms, and other forms of plant and animal life on and in the soil contribute to the formation of soils. Plants supply organic matter, and their roots form channels through which air and percolating water move. Animals continuously mix the soil material. Organisms are active in the decay of organic matter, the fixing of nitrogen, and the weathering of rock.

The native vegetation on the well-drained, well-developed soils in the county was a forest of hardwoods and of such softwoods as pines. On the less well drained, weakly developed alkaline soils in the Blackland Prairie, the original vegetation was chiefly grasses but included some cedars. The leaves of deciduous trees supply more organic matter to the soils than those of coniferous trees. They also generally contain a larger amount of bases than those of coniferous trees and therefore return a larger amount of bases and phosphorus to the soil. Grasses supply large amounts of organic matter to the soil. For this reason, soils that formed chiefly under grasses generally are darker colored than soils that formed under trees.

In Greene County the soils on uplands and terraces that formed under trees have a highly leached A horizon and a well-developed, clay-enriched B horizon that has moderate and strong structure. The alkaline soils in the Blackland Prairie that formed under grasses are weakly developed. They lack a highly leached A horizon and a clay-enriched B horizon.

Time.—Time is required for the formation of soils that have distinct horizons. The length of time needed for the development of a profile depends on many factors, one of which is the kind of parent material. Fine-textured parent material develops into a soil more slowly than coarse-textured parent material. Generally less time is needed for a soil to develop in a humid, warm region where the vegetation is luxuriant than in a dry or cold region where the vegetation is scanty.

The soils in Greene County range from young soils that have little or no profile development to old soils that have a well-developed profile. Ochlockonee soils are examples of young soils. These soils formed in alluvium on first bottoms. The soil material has been in place for only a short time, and the soil-forming factors have not changed it enough to form a profile that has well-defined, genetically related horizons. Cahaba soils are examples of older soils. These soils have a well-developed profile that has genetically related horizons. They formed in parent material similar to that of Ochlockonee soils. Cahaba soils, however, have a leached A horizon and a clay-enriched sandy clay loam B horizon. The soil material in their profile bears little resemblance to the original parent material.

Classification of Soils

Soils are classified so that we can more easily remember their significant characteristics. Classification enables us to assemble knowledge about the soils, to see their relationship to one another and to the whole environment, and to develop principles that help us to understand their behavior and their response to manipulation. First through classification, and then through use of soil maps, we can apply our knowledge of soils to specific fields and other tracts of land.

Thus in classification, soils are placed in narrow categories that are used in detailed soil surveys so that knowledge about the soils can be organized and used in managing farms, fields, and woodland; in developing rural areas; in engineering work; and in many other ways. Soils are placed in broad classes to facilitate study and comparison in large areas, such as countries and continents.

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*2*) and later revised (*5*). The system currently used was adopted for general use by the National Cooperative Soil Survey in 1965. It is under continual study (*4, 9*). Therefore, readers interested in developments of the current system should search the latest literature available. The soil series of Greene County are placed in some categories of the current system in table 8.

The current system of classification has six categories. Beginning with the broadest, these categories are order, suborder, great group, subgroup, family, and series. In this system the criteria used as a basis for classification are soil properties that are observable and measurable. The properties are chosen, however, so that the soils of similar origin are grouped together. The classes of the current system are briefly defined in the paragraphs that follow.

ORDERS. Ten soil orders are recognized. They are Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols, Alfisols, Ultisols, Oxisols, and Histosols. The properties used to differentiate these soil orders are those that tend to give broad climatic groupings of soils. Two exceptions, the Entisols and Histosols, occur in many different kinds of climate. The six orders in Greene County are Alfisols, Entisols, Inceptisols, Mollisols, Ultisols, and Vertisols.

TABLE 8.—*Soil series classified according to the current system of classification*

Series	Family	Subgroup	Order
Angie	Clayey, mixed, thermic	Aquic Paleudults	Ultisols.
Bibb	Coarse, loamy, siliceous, acid, thermic	Typic Haplaquents	Entisols.
Binnsville	Clayey, mixed, thermic, shallow	Typic Rendolls	Mollisols.
Boswell	Fine, mixed, thermic	Vertic Paleudalfs	Alfisols.
Cahaba	Fine-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
Catalpa	Fine, mixed, thermic	Aquic Fluventic Hapludolls	Mollisols.
Chastain	Fine, kaolinitic, acid, thermic	Fluventic Haplaquepts	Inceptisols.
Dulac	Fine-silty, mixed, thermic	Typic Fradiudalfs	Alfisols.
Eutaw	Very fine, montmorillonitic, thermic	Entic Pelluderts	Vertisols.
Falaya	Coarse-silty, mixed, acid, thermic	Aeric Fluventic Haplaquepts	Inceptisols.
Forestdale	Fine, montmorillonitic, thermic	Typic Ochraqualfs	Alfisols.
Garner	Fine, montmorillonitic, thermic	Entic Pelluderts	Vertisols.
Kipling	Fine, montmorillonitic, thermic	Vertic Hapludalfs	Alfisols.
Lakeland	Silicious, thermic, coated	Typic Quartzipsamments	Entisols.
Leaf	Clayey, mixed, thermic	Typic Albaquults	Ultisols.
Leeper	Fine, montmorillonitic, nonacid, thermic	Chromudertic Haplaquepts	Inceptisols.
Lucy	Loamy, siliceous, thermic	Arenic Paleudults	Ultisols.
Macon	Fine-loamy, mixed, thermic	Typic Paleudalfs	Alfisols.
Magnolia[1]	Clayey, kaolinitic, thermic	Rhodic Paleudults	Ultisols.
Marietta	Fine-loamy, mixed, thermic (siliceous)	Aquic Fluventic Eutrochrepts	Inceptisols.
Mashulaville	Coarse-loamy, siliceous, thermic	Typic Fragiaquults	Ultisols.
Myatt	Fine-loamy, siliceous, thermic	Typic Ochraquults	Ultisols.
Ochlockonee	Coarse-loamy, siliceous, acid, thermic	Typic Udifluvents	Entisols.
Oktibbeha	Very fine, montmorillonitic, thermic	Vertic Hapludalfs	Alfisols.
Ora	Fine-loamy, mixed, thermic	Typic Fragidults	Ultisols.
Rumford	Coarse-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
Ruston	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Savannah	Fine-loamy, siliceous, thermic	Typic Fragiudults	Ultisols.
Sawyer	Fine-silty over clayey, mixed, thermic	Aquic Paleudults	Ultisols.
Sequatchie	Coarse-loamy, siliceous, thermic	Humic Hapludults	Ultisols.
Shubuta	Clayey, mixed, thermic	Typic Paleudults	Ultisols.
Stough	Coarse-loamy, siliceous, thermic	Aquic Fragiudults	Ultisols.
Sumter	Fine-carbonatic, thermic	Randollic Eutrochrepts	Inceptisols.
Trinity	Fine, montmorillonitic, (calcareous), thermic	Vertic Haplaquolls	Mollisols.
Troup	Loamy, siliceous, thermic	Grossarenic Paleudults	Ultisols.
Vaiden	Very fine, montmorillonitic, thermic	Aquentic Chromuderts	Vertisols.
Wagram	Loamy, siliceous, thermic	Arenic Paleudults	Ultisols.
Watsonia	Clayey, montmorillonitic, thermic, shallow	Vertic Eutrochrepts	Inceptisols.

[1] These soils are taxadjuncts to the Magnolia series because they have moist chromas of more than 4 in the upper 40 inches of the argillic horizon.

Alfisols formed mostly under trees, but some have formed under grass. They have a base saturation of more than 35 percent. The base saturation increases with increasing depth.

Entisols are recent mineral soils that do not have genetic horizons or have only the beginning of such horizons.

Inceptisols generally form on young, but not recent, land surfaces. These soils have weakly developed or incipient horizons.

Mollisols have formed mostly under grass. They have a thick, friable, dark-colored surface layer. Base saturation is more than 50 percent.

Ultisols have a clay-enriched B horizon that has less than 35 percent base saturation, and the base saturation decreases with depth.

Vertisols are clayey soils that crack, shrink, and swell in all seasons and that have wide deep cracks during dry periods.

SUBORDERS. Each order is subdivided into groups (suborders) that are based mostly on soil characteristics that seem to produce classes having the greatest similarity from the standpoint of their genesis. Suborders narrow the broad climatic range of soils that are in the orders.

Soil characteristics used to separate suborders mainly reflect either the presence or absence of waterlogging or soil differences produced through the effects of climate or vegetation. The names of suborders have two syllables. The last syllable indicates the order. An example is Psamments (Psamm, meaning sandy, and ent, from Entisol).

GREAT GROUPS. Soil suborders are separated into great groups on the basis of uniformity in the kinds and sequence of major soil horizons and other features. The horizons used as a basis for distinguishing between great groups are those in which (1) clay, iron, or humus have accumulated; (2) a pan has formed that interferes with growth of roots, movement of water, or both; or (3) a thick, dark-colored surface horizon has formed. The other features used commonly are the self-mulching properties of clay, temperature of the soil, major differences in chemical composition (mainly the bases calcium, magnesium, sodium, and potassium), or the dark-red or dark-brown colors associated with soils formed in material weathered from basic rocks.

Names of great groups have three or four syllables. They are made by adding a prefix to the name of the suborder. An example is Quartzipsamments (Quartzi, meaning high quartz content; psamm for sandy; and ent from Entisol).

SUBGROUPS. Great soil groups are subdivided into subgroups. One of these represents the control, or typic, segment of the group. Other subgroups have properties of the group but also have one or more properties of another group, suborder, or order, and these are called intergrades. Subgroups may also be established for soils having properties that intergrade outside the range of any other great group, suborder, or order. The names of subgroups are formed by placing one or more adjectives before the name of the great group. An example is Typic Quartzipsamments (a typical Quartzipsamment).

FAMILIES. Each subgroup is divided into families, primarily on the basis of properties that are important to the growth of plants or to the behavior of soils used for engineering. The main properties considered are texture, mineralogy, reaction, soil temperature, permeability, thickness of horizons, and consistence. The names of families consist of a series of adjectives that precede the name of a subgroup. The adjectives used are the class names for texture, mineralogy, and so on. An example is the siliceous, thermic, acid family of Typic Quartzipsamments.

SERIES. The series consists of a group of soils that formed from a particular kind of parent material and that have genetic horizons that, except for texture of the surface layer, are similar in differentiating characteristics and in arrangement in the profile. Among these characteristics are color, structure, reaction, consistence, and mineralogical and chemical composition.

General Nature of the County

In this section facts are given about the relief, drainage, and water supply of the county. Then the farming and the climate are discussed.

The general slope of the county is southward. Elevation ranges from about 50 feet above sea level, near the confluence of the Black Warrior and Tombigbee Rivers, to about 315 feet above sea level, near Union. In most places the county is 100 to 250 feet above sea level.

The Sipsey, Tombigbee, and Black Warrior Rivers are the major streams in the county. The Sipsey River empties into the Tombigbee in the northwestern part of the county. The Tombigbee and Black Warrior Rivers flow in a general southerly direction and come together in the southern part of the county. Trussells, Brush, Taylor, and Boligee are some of the larger creeks, and they flow southwestward and empty into the Tombigbee River. Other watercourses are the Needham, Buck, Sims, and Minters Creeks, which flow southeastward and empty into the Black Warrior River.

The water supply is adequate for domestic use in all parts of the county. Most of the small streams dry up late in summer and in fall. Domestic water is obtained from drilled wells. Artesian wells are common throughout the Prairie part of the county and on the stream terraces. Ponds have been built on many farms to furnish water for livestock and for fishing, and about 522 farm ponds are in the county.

Farming

According to the U.S. Bureau of the Census, 1,370 farms were reported in the county in 1964. Of these, 382 were operated by full owners, 252 by part owners, 733 by tenants, and 3 by farm managers.

Cotton and corn are the principal crops grown in this county, though soybeans have been planted in places. Cotton is the chief cash crop. In recent years the acreage in cotton has decreased slightly. Production has almost doubled, however, through use of better management practices, increased use of fertilizer, and the growing of improved varieties.

About 40 percent of the farm income in the county comes from the sale of livestock and livestock products. In 1964, 29,499 cattle and calves were reported on the farms in the county.

About 65 percent of the county, or 264,000 acres, is woodland. Large quantities of lumber and pulpwood are sold each year.

In 1964, 59.4 percent of the county, or 242,005 acres, was classified as land in farms. Crops were harvested from about 15 percent of the farmland, and about 32 percent of the farmland was pastured.

Climate[6]

Greene County has a temperate climate. Rainfall is abundant and generally is well distributed throughout the year.

Summers are quite long. Warm to hot weather begins in May and often continues through all of September. Few breaks in the heat occur in midsummer, which is marked by frequent thundershowers. Thundershowers are the main source of moisture and occur on an average of about 1 day in 3 in June, July, and August, but they occur most often in July. Temperatures of 90° F. or higher are recorded on an average of about 88 times a year. On 1 day each month in summer, temperatures of 100° or higher are likely.

Fall is a transition season. The summerlike weather early in September changes to Indian summer in October and then to prewinter cold spells, which begin to be felt in November. Fall generally is the most pleasant season. Rainfall generally is light and infrequent, skies are sunny during the day and clear at night, the humidity is low, and extremes in temperature are rare.

In winter frequent shifts occur between mild air that has been warmed and moistened over the Gulf of Mexico and dry, cold air moving southward from Canada. Much cloudiness and precipitation result. Most of the precipitation comes as rain, though small amounts of snow fall at times. Measurable rain of 0.01 inch or more can be expected to fall on an average of 32

[6] By C. C. WOODEN, State climatologist.

days in winter. Freezing temperatures occur on an average of 42 days a year and are most frequent in January. Severe cold weather is rare, and even on the coldest day the temperature seldom remains below 32 throughout the day.

Spring is the most changeable season. In March the days are frequently cold, rainy, and windy, but by May they are sunny, warm, and pleasant. Severe local thunderstorms and tornadoes are most likely to occur in spring. Occasionally freezing weather occurs late in March, and at times the temperature rises to the 90's during the day in May.

Precipitation generally is well distributed throughout the year, but wet seasons and droughts of varying intensity occur from time to time. March is the wettest month, and October is the driest. Slightly more than 1 day in 4 has precipitation of 0.01 inch or more. In an average year 1 day out of 5 has 0.10 inch or more of rain.

Table 9 shows, by months, the average daily maximum temperature, the average daily minimum temperature, and the average precipitation. The probabilities of the last low temperatures in spring and of the first low temperatures in fall are given in table 10. The

TABLE 9.—*Temperature and precipitation data*

[All data from Greensboro, Hale County, Alabama, 1946–65]

Month	Temperature				Precipitation			
	Average daily maximum	Average daily minimum	Two years in 10 will have at least 4 days with—		Average monthly total	One year in 10 will have—		Average snowfall
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—	
	°F.	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*	*Inches*
January	58	37	74	19	5.06	2.6	8.3	0.5
February	63	40	79	20	5.56	2.8	10.3	.3
March	69	44	84	30	6.77	4 0	11.4	.3
April	78	53	86	38	5.30	2.5	9.2	(1)
May	81	61	93	50	3.89	1.5	6.6	0
June	86	68	97	60	3.72	1.4	6.9	0
July	90	70	98	66	5.10	2.0	8.6	0
August	93	70	99	63	3.21	.5	6.7	0
September	88	65	98	53	3.39	.2	6.6	0
October	79	54	90	37	2.39	.5	6.2	0
November	68	43	80	25	3.76	1.6	6.6	(1)
December	61	38	74	22	5.00	2.4	12.9	.2
Year	78	54	[2]100	[3]14	53.15	45.0	64.2	1.3

[1] Trace (less than 0.05 inch).
[2] Average annual highest maximum.
[3] Average annual lowest minimum.

TABLE 10.—*Probabilities of last low temperature in spring and first low temperature in fall*

[All data from Greensboro, Hale County, Alabama]

Probability	Dates for given probability and temperature						
	16°F. or lower	20°F. or lower	24°F. or lower	28°F. or lower	32°F. or lower	36°F. or lower	40°F. or lower
Spring:							
1 year in 10 later than	January 19	February 9	March 3	March 22	April 13	April 16	April 21
1 year in 4 later than	January 16	February 5	February 22	March 15	March 29	April 13	April 19
1 year in 3 later than	January 14	February 2	February 21	March 14	March 22	April 11	April 17
2 years in 3 later than	January 11	January 23	January 29	February 19	March 10	March 29	April 11
3 years in 4 later than	January 10	January 18	January 28	February 16	March 8	March 24	April 6
9 years in 10 later than	January 7	January 12	January 20	February 7	February 28	March 16	March 28
Fall:							
1 year in 10 earlier than	December 10	December 11	November 23	November 8	October 28	October 23	October 15
1 year in 4 earlier than	December 21	December 14	November 29	November 13	November 2	October 29	October 19
1 year in 3 earlier than	December 23	December 17	December 3	November 17	November 5	November 1	October 22
2 years in 3 earlier than	December 26	December 22	December 15	December 2	November 14	November 9	November 3
3 years in 4 earlier than	December 27	December 23	December 17	December 9	November 17	November 11	November 7
9 years in 10 earlier than	December 29	December 28	December 27	December 19	November 24	November 15	November 11

data in these tables are from Greensboro, which is in Hale County, but they are considered representative of the climate in Greene County.

Greene County is subject to droughts that range from mild to severe. Drought is defined as a period of time, generally of weeks or months, when the supply of moisture available to plants is less than expected. According to the drought index developed by Palmer (*3*), the severe drought of 1954 was the worst experienced in the county since 1931. Less severe droughts that could affect crop yields, but not cause total crop failure, occur on an average of about 2 months each year.

Wind, humidity, and sunshine records are not available for Greene County. Records from Tuscaloosa, which are representative of Greene County, however, show that the prevailing winds are from the north and west in winter and have a velocity of 10 miles per hour and are from the south in spring and have a velocity of 7 miles per hour. Prevailing winds are from the east in summer and from the north in fall. Their velocity is 5 miles per hour. The average humidity for the year is 72 percent. At noon the average humidity ranges from near 50 percent in May and October to 60 percent in January. The sun shines for about 59 percent of the daylight hours. The percentage ranges, on the average, from a minimum of 49 percent in January to a maximum of 70 percent in October.

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Glossary

Acidity, soil. (See Reaction, soil)

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates such as crumbs, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali soil. Generally, a high alkaline soil. Specifically, an alkali soil has so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that the growth of most crop plants is low from this cause.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity. The capacity of a soil to hold water in a form available to plants. Amount of moisture held in soil between field capacity, or about one-third atmosphere of tension, and the wilting coefficient, or about 15 atmospheres of tension.

Calcareous soil. A soil containing enough calcium carbonate (often with magnesium carbonate) to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid.

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.

Colluvium. Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Drainage, soil. Refers to the conditions of frequency and duration of periods of saturation or partial saturation that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time, and in Podzolic soils commonly have mottlings below 6 to 16 inches, in the lower A horizon and in the B and C horizons.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Erosion. The wearing away of the land surface by wind (sandblast), running water, and other geological agents.

Fertility, soil. The quality of a soil that enables it to provide compounds, in adequate amounts and in proper balance, for the growth of specified plants, when other growth factors such as light, moisture, temperature, and the physical condition of the soil are favorable.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic matter and clay but is rich in silt or very fine sand. The layer is seemingly cemented. When dry, it is hard or very hard and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Infiltration. The downward entry of water into the immediate surface of the soils or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Leached soil. A soil in which most of the soluble materials have been removed from the entire profile or have been removed from one part of the profile and have accumulated in another part.

Lime. Chemically, lime is calcium oxide (CaO), but as the term is commonly used it is also calcium carbonate ($CaCO_3$) and calcium hydroxide ($Ca(OH)_2$). Agricultural lime refers to ground limestone, hydrated lime, or burned lime, with or without magnesium minerals. Basic slag, oystershells, and marl also contain calcium.

Loam. Soil having approximately equal amounts of sand, silt, and clay.

Mottled. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. 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 these: *fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse,* more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Parent material (soil). The horizon of weathered rock or partly weathered soil material from which soil has formed; horizon C in the soil profile.

Permeability. The quality of a soil horizon that enables water or air to move through it. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderately rapid, rapid, and very rapid.*

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline	9.1 and higher

Sand. Individual rock or mineral fragments in soils having diameters ranging from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that 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.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. 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 (1) *single grain* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. Technically the part of the soil below the solum.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea. Stream terraces are frequently called second bottoms, as contrasted to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

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."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

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