United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with the Alabama Agricultural Experiment Station and the Alabama Soil and Water Conservation Committee

# Soil Survey of Wilcox County, Alabama

Interim Publication—September 1998

# How to Use This Soil Survey

### General Soil Map

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

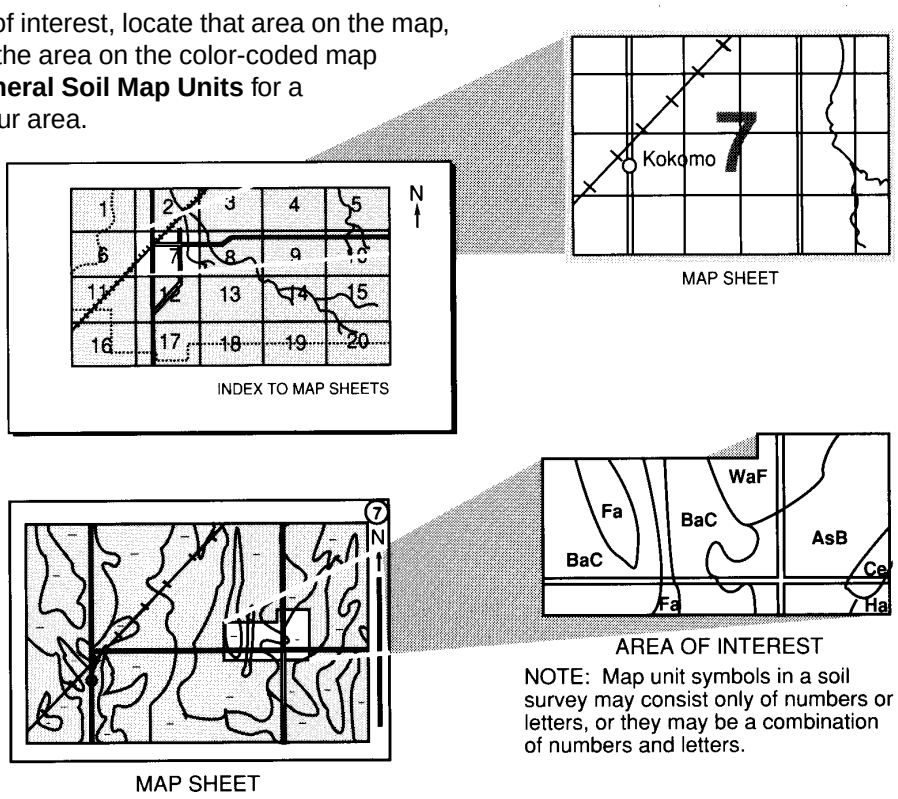
To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

### Detailed Soil Maps

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

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

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




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

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

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

Major fieldwork for this soil survey was completed in 1994. Soil names and descriptions were approved in 1997. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1994. This survey was made cooperatively by the Natural Resources Conservation Service and the Alabama Agricultural Experiment Station, the Alabama Cooperative Extension System, the Alabama Soil and Water Conservation Committee, the Alabama Department of Agriculture and Industries, and the Wilcox County Commission. The survey is part of the technical assistance furnished to the Wilcox County Soil and Water Conservation District.

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

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**Cover: The Alabama River, which meanders through the central and western parts of Wilcox County. The river is navigable throughout the county and provides excellent opportunities for boating, fishing, swimming, and water skiing. The soils on the flood plains and terraces along the river provide habitat for many species of wildlife and are highly productive as cropland, pastureland, hayland, and woodland.**

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

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# Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations that affect various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

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

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

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# Soil Survey of
# Wilcox County, Alabama

By Gregory R. Brannon

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United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
the Alabama Agricultural Experiment Station, the Alabama Cooperative Extension System, the Alabama Soil and Water Conservation Committee, the Alabama Department of Agriculture and Industries, and the Wilcox County Commission

WILCOX COUNTY is in the southwestern part of Alabama (fig. 1). It is bordered on the north by Dallas County, on the east by Lowndes and Butler Counties, on the west by Clarke and Marengo Counties, and on the south by Monroe County. Camden, the county seat, is near the center of the county. It is about 65 miles southwest of Montgomery and is about 100 miles northeast of Mobile. The total area of the county is 582,690 acres, or about 910 square miles. About 565,210 acres consists of land areas and small areas of water. About 17,480 acres consists of large areas of water in the form of lakes and rivers.

Wilcox County is mostly rural, and it had a population of 13,568 in 1990 *(22)*. The largest communities in the county are Camden, Alberta, Catherine, Canton Bend, Coy, Pine Hill, Millers Ferry, Lower Peach Tree, and Snow Hill.

Most of the acreage in the county is used as woodland; however, a significant acreage is used for cultivated crops, pasture, and hay. The timber industry is the main economic enterprise in the county. It includes not only the growing and harvesting of timber for lumber and paper but also factories for producing lumber, paper, plywood, and veneers.

Wilcox County is comprised of four distinct physiographic regions—the Blackland Prairie, the Coastal Plain uplands, low terraces and flood plains, and high terraces. Elevation ranges from about 50 feet above sea level along the Alabama River to about 450 feet near Fatama in the south-central part of the county.

The Blackland Prairie makes up about 150,000 acres in the northern part of the county. It is used mostly for woodland and pasture. A small acreage is used for cultivated crops. The landscape in this physiographic region ranges from broad, nearly level and gently sloping ridgetops in the northwestern part of the county to areas of highly dissected, hilly topography in the northern and northeastern parts. The soils range from shallow to very deep, formed in materials weathered from soft limestone (chalk) and clayey sediments, and are dominantly clayey. They range from very strongly acid to moderately alkaline and from well drained to poorly drained.

The Coastal Plain uplands are in the southern parts of the county. Most areas are used for woodland. A small acreage is used for pasture, hay, and cultivated crops. The landscape in this physiographic region ranges from broad, nearly level ridgetops to areas of highly dissected, hilly topography. The soils range from shallow to very deep; formed in unconsolidated loamy and clayey sediments, claystone, or shale; and range from loamy to clayey. They are acid and generally are well drained or moderately well drained.

The low terraces and associated flood plains make up about 120,000 acres in the county, mostly along the Alabama River. Many areas on the terraces are used for cultivated crops, pasture, or hay, and a significant acreage is used for woodland. Most areas on the flood plains are hardwood forests. The landscape in this physiographic region consists of low terraces and flood plains that have little relief. The soils are very deep;

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

formed in sandy, loamy, and clayey alluvium; and range from sandy to clayey. They are acid and range from well drained to poorly drained. Most areas are subject to flooding.

The high terraces make up about 40,000 acres along the Alabama River and its major tributaries. Most areas are used for cultivated crops, pasture, hay, or woodland. The landscape consists of broad, nearly level and gently sloping ridgetops and plateaus and moderately steep and steep side slopes. The soils are very deep, formed in stratified loamy to clayey alluvium, and are loamy, gravelly, or clayey. They are acid and generally are well drained or moderately well drained.

This soil survey updates an earlier survey of Wilcox County published in 1938 *(13)*. It provides additional information and larger maps, which show the soils in greater detail.

# General Nature of the County

This section gives general information about the county. It describes climate, early history, agriculture, transportation facilities, water resources, and mineral resources.

## Climate

Wilcox County has long, hot summers because moist tropical air from the Gulf of Mexico persistently covers the area. Winters are cool and fairly short. A rare cold wave lingers for 1 or 2 days. Precipitation is fairly heavy throughout the year, and prolonged droughts are rare. Summer precipitation, mainly in the form of afternoon thunderstorms, is adequate for the growth of all locally grown crops in most years.

Severe local storms, including tornadoes, strike occasionally in or near the county. They are short in duration and cause variable and spotty damage. Every few years in summer or fall, a tropical depression or a remnant of a hurricane that has moved inland causes extremely heavy rains for 1 to 3 days.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Camden, Alabama, in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 47 degrees F and the average daily minimum temperature is 35 degrees. The lowest temperature on record, which occurred on January 21, 1985, is 0 degrees. In summer, the average temperature is 79 degrees and the average daily maximum temperature is 91 degrees. The highest recorded temperature, which occurred on July 8, 1977, is 104 degrees.

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

The total annual precipitation is about 56 inches. Of this, about 29 inches, or 52 percent, usually falls in April through October. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through October is less than 13 inches. The heaviest 1-day rainfall during the period of record was 9.2 inches on December 10, 1961. Thunderstorms occur on about 59 days each year, and most occur in July.

The average seasonal snowfall is about 0.4 inch. The greatest snow depth at any one time during the period of record was 6 inches. On the average, less than 1 day of the year has at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 56 percent. Humidity is higher at night, and the average at dawn is about 86 percent. The sun shines 63 percent of the time possible in summer and 51 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 8.3 miles per hour, in March.

## Early History

Wilcox County was created by an act of the Alabama legislature on December 13, 1819, from parts of Dallas and Monroe Counties. It was named in honor of Lieutenant Joseph M. Wilcox.

Archaeological evidence indicates that the area was occupied by Native Americans in both prehistoric and historic periods and that the early Native American towns had substantial communications with the first Europeans that came to the area. By the end of the Creek Wars in 1814, European immigrants had begun to replace the Native Americans in communities along the Alabama River. Early settlers came from Virginia, North Carolina, South Carolina, and Georgia. They lived along Beaver Creek, near Yellow Bluff, near Sunny South at Clifton Ferry and Arlington, and near the mouth of Pursley Creek. Early occupations included raising livestock, farming, and logging *(13)*.

## Agriculture

Agriculture has always been an important part of the economy of Wilcox County. The early agricultural activities were mainly the production of subsistence crops, mainly corn, wheat, oats, potatoes, and vegetables. A few hogs, goats, cattle, horses, and mules were pastured on open range. Cotton soon became the main cash crop and was grown on many of the well drained soils in the county. The production of cotton continued to increase until it was restricted by the appearance of the cotton boll weevil in about 1914. In 1909, approximately 107,000 acres was planted to cotton *(13)*. The total acreage of all cultivated crops in the county had decreased to about 6,100 acres by 1990 *(1)*.

The arrival of the cotton boll weevil had an important effect on agriculture. The decrease in cotton production resulting from the insect was so severe that farmers were forced to diversify their crops. The acreage of other crops, such as corn, sweet potatoes, peanuts, hay, and pasture plants, greatly increased. The increase in the acreage used for corn, hay, and pasture enabled farmers to raise and feed more cattle, and the production of beef cattle increased greatly. Currently, the main cultivated crops are cotton, corn, soybeans, grain sorghum, and wheat.

In recent years, the acreage used for cultivated crops has gradually decreased and the acreage used for pasture and pine woodland has increased. Timber and associated products are the most important agricultural resources in the county. About 75 percent of the land in the county is woodland, about 24 percent is used for pasture and hay, and about 1 percent is used for cultivated crops *(1, 16, 18)*. The production of beef cattle is also important.

## Transportation Facilities

Wilcox County has 214 miles of State highways, 245 miles of hard-surfaced county roads, and 316 miles of county-maintained gravel roads *(11)*. Alabama Highway 10 is the principal east-west highway. Alabama Highways 5 and 41 are the primary north-south routes. From Camden, Alabama Highway 265 runs south and Alabama Highway 28 runs east and northwest. Numerous other hard-surfaced State and county roads provide access throughout the county.

The county is served by two railroads, which provide freight service to Camden. Daily passenger and parcel service is provided by major bus services. The Camden Municipal Airport serves small, private and commercial aircraft. The Alabama River is navigable its entire length in Wilcox County. It provides access south to the Gulf of Mexico via the Port of Mobile and north to the Tennessee-Tombigbee Waterway.

## Water Resources

Wilcox County has a large amount of surface water suitable for domestic and recreational uses. The Alabama River, which flows through the central part of the county, has a drainage area of about 21,000 square miles and is the largest potential source of surface water. It has an average flow of 19.8 billion gallons per day where it leaves the county near the southwest corner *(2)*. Other potential large surface-water supplies are Cedar, Pine Barren, and Beaver Creeks. The William “Bill” Dannelly Reservoir, which was created by damming the Alabama River at Millers Ferry, is the largest lake in Wilcox County. It provides hydroelectric power, water for irrigation, and opportunities for boating, fishing, and hunting. Numerous small lakes

and ponds provide water for livestock and recreational uses.

Ground water is the source of most of the water for domestic and industrial uses in Wilcox County. The principal aquifers are sand beds in the Eutaw, Ripley, and Nanafalia Formations. In most parts of the county, sufficient water for domestic uses can generally be obtained from aquifers at a depth of less than 600 feet *(2)*. Ground water in Wilcox County ranges from soft to very hard, depending on the composition of the aquifer, the distance from recharge areas, the length of time the water has been in contact with the aquifer, and the overall pattern of ground water circulation.

### Mineral Resources

Economically important minerals in Wilcox County include clay, sand, gravel, lignite, and limestone. Clay is abundant throughout the county. It can be used in blends for ceramic products, as an absorbent for grease, or as a carrier for fertilizer. It is generally not suitable as the main ingredient for ceramic products because of its plasticity. Terrace and alluvial deposits of sand and gravel occur throughout the central part of the county in areas adjacent to the Alabama River and in the Nanafalia Formation. The sand and gravel are suitable for use as construction aggregate. Extensive deposits of lignite are in the southwestern part of the county. This resource has not yet been exploited. Limestone that has potential value as agricultural limestone or as light duty aggregate is in the northeastern part of the county *(2)*.

## How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

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

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

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

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled

from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

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

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

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined. Map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. In the legend for the detailed soil maps, narrowly defined units are indicated by symbols in which the first letter is a capital and the second is lowercase. For broadly defined units, the first and second letters are capitals.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

## Soil Survey Procedures

The general procedures followed in making this survey are described in the National Soil Survey Handbook of the Natural Resources Conservation Service *(23)*. The soil survey of Wilcox County, published in 1938, and “Geology and ground-water resources of Wilcox County, Alabama” were among the references used *(10, 13)*.

Before the field work began, preliminary boundaries of landforms were plotted stereoscopically on high altitude aerial photographs. U.S. Geological Survey topographic maps and aerial photographs were studied to relate land and image features.

Traverses were made on foot and by vehicle, at variable intervals, depending on the complexity of the soil landscape and geology. Soil examinations along the traverses were made at variable intervals, depending on the landscape and soil pattern *(8, 12)*. Observations of landforms, uprooted trees, vegetation, roadbanks, and animal burrows were made continuously without regard to spacing. Soil boundaries were determined on the basis of soil examinations, observations, and photo interpretation. The soil material was examined with the aid of a spade, a hand auger, or a truck-mounted probe to a depth of 5 feet or more. The pedons described as typical were observed and studied in excavations.

Samples for chemical and physical analyses and engineering test data were taken from the site of the typical pedon of some of the major soils in the survey area. The analyses were made by the Agronomy and Soils Clay Mineralogy Laboratory, Auburn University, Auburn, Alabama; the National Soil Survey Laboratory, Lincoln, Nebraska; and the Alabama Department of Highways and Transportation, Montgomery, Alabama. The results of some of the analyses are published in this soil survey report. Unpublished analyses and the laboratory procedures can be obtained from the laboratories.

Orthophotography base maps at a scale of 1:24,000 were used for mapping of soil and surface drainage in the field. Cultural features were transferred from U.S. Geological Survey 7.5-minute series topographic maps and were recorded from visual observations. Soil mapping, drainage patterns, and cultural features recorded on base maps were then transferred to half-tone film positives by cartographic technicians prior to the final map finishing process.

# General Soil Map Units

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

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

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

Each map unit is rated for *cultivated crops, pasture and hay, woodland,* and *urban uses*. Cultivated crops are those grown extensively in the survey area. Pasture and hay refer to improved, locally grown grasses and legumes. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Table 4 summarizes the suitability and limitations of the general soil map units.

The boundaries of the general soil map units in Wilcox County were matched, where possible, with those of the previously completed surveys of Butler, Dallas, Marengo, and Monroe Counties. In a few areas, however, the lines do not join and the names of the map units differ. These differences result mainly because of changes in soil series concepts, differences in map unit design, and changes in soil patterns near survey area boundaries.

## 1. Urbo-Mooreville-Una

*Dominantly level to gently undulating, somewhat poorly drained, moderately well drained, and poorly drained soils that have a clayey surface layer and subsoil or a loamy surface layer and subsoil; on flood plains*

### *Setting*

*Location in the survey area:* Parallel to the Alabama River
*Landscape:* Coastal Plain
*Landform:* Flood plains (fig. 2)
*Landform position:* Urbo—intermediate positions on low ridges; Mooreville—high, convex parts of low ridges; Una—low positions between ridges (swales or sloughs)
*Slope range:* 0 to 3 percent

### *Composition*

*Percent of the survey area:* 5
Urbo soils: 35 percent
Mooreville soils: 25 percent
Una soils: 25 percent
Minor soils: 15 percent, including Annemaine, Bigbee, Cahaba, Canton Bend, Chrysler, Lenoir, and Riverview

### *Soil Characteristics*

**Urbo**

*Surface layer:* Brown silty clay loam
*Subsoil:* Upper part—dark brown silty clay that has brownish and grayish mottles; next part—grayish brown clay that has brownish mottles; lower part—light brownish gray clay and silty clay having brownish mottles
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Seasonal high water table:* Perched, at a depth of 1.0 to 2.0 feet from December to April
*Slope range:* 0 to 1 percent
*Parent material:* Clayey alluvium

**Mooreville**

*Surface layer:* Very dark grayish brown and dark brown loam
*Subsoil:* Upper part—dark yellowish brown clay loam that has grayish and brownish mottles; next part—

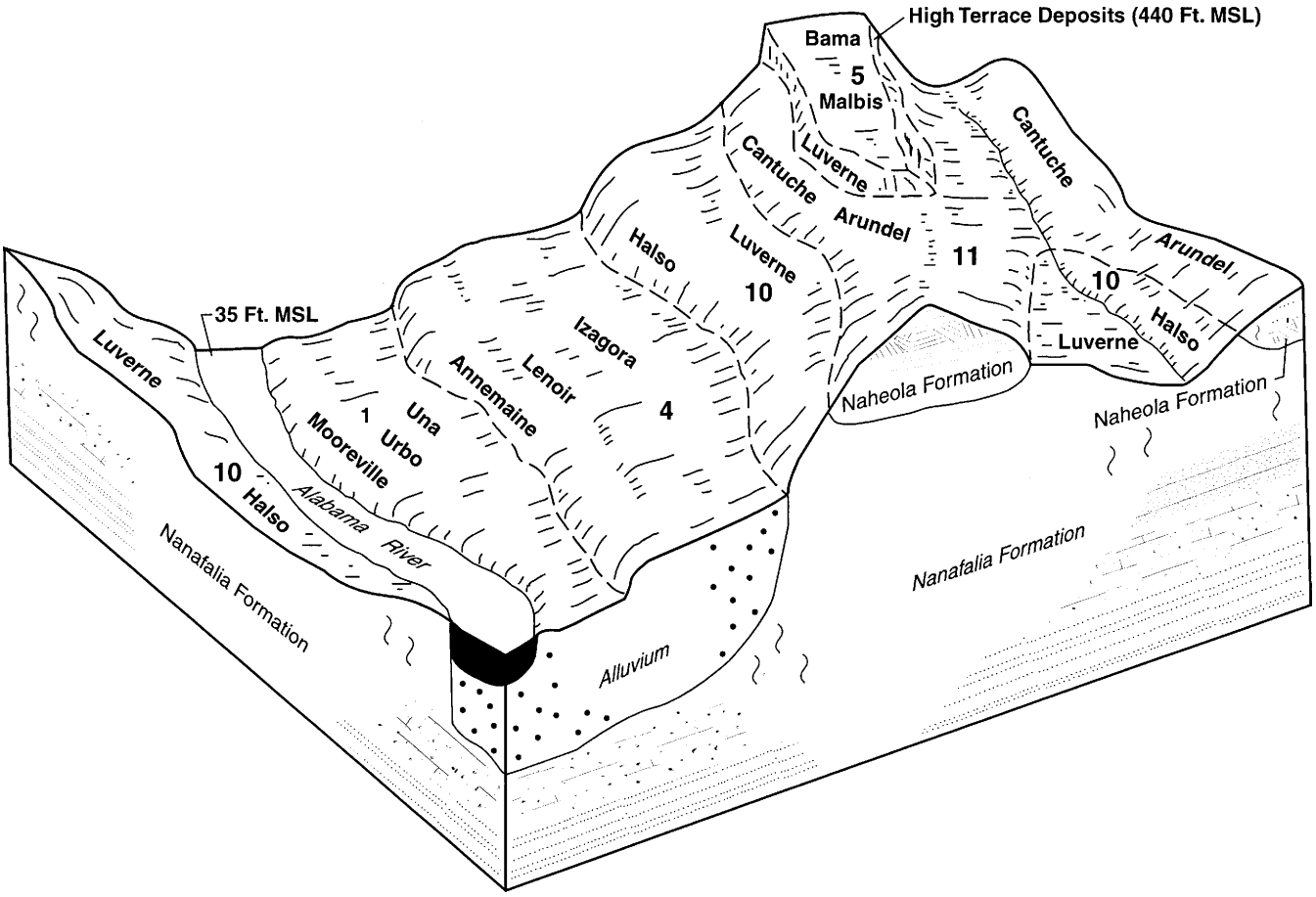


**Figure 2.—Generalized soil-geomorphic patterns and landscape relationships in the Urbo-Mooreville-Una, Annemaine-Izagora-Lenoir, Luverne-Halso, Arundel-Cantuche, and Bama-Malbis-Luverne general soil map units along the Alabama River in the central part of Wilcox County.**

yellowish brown clay loam that has brownish and grayish mottles; lower part—mottled grayish, brownish, and reddish sandy clay loam
*Substratum:* Mottled brownish, grayish, and yellowish sandy loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* Apparent, at a depth of 1.5 to 3.0 feet from January to April
*Slope range:* 0 to 3 percent
*Parent material:* Stratified loamy and sandy alluvium

### Una

*Surface layer:* Dark grayish brown silty clay loam
*Subsoil:* Upper part—light brownish gray silty clay that has brownish mottles; lower part—gray silty clay and clay having brownish mottles
*Depth class:* Very deep
*Drainage class:* Poorly drained
*Seasonal high water table:* Perched, from 2.0 feet above the surface to a depth of 0.5 foot from December to April
*Slope range:* 0 to 1 percent
*Parent material:* Clayey alluvium

### Minor soils

- The moderately well drained Annemaine and Chrysler, well drained Cahaba and Canton Bend, and somewhat poorly drained Lenoir soils on low terraces
- The excessively drained Bigbee and well drained Riverview soils on high parts of natural levees

## *Use and Management*

**Major Uses:** Woodland, wildlife habitat, and pasture

### Cropland

*Management concerns:* Flooding and wetness

**Pasture and hayland**

*Management concerns:* Flooding and wetness

**Woodland**

*Management concerns:* Competition from undesirable plants, restricted use of equipment, and seedling mortality

**Urban development**

*Management concerns:* Flooding and wetness

## 2. Sucarnoochee-Congaree

*Dominantly level, somewhat poorly drained and moderately well drained soils that have a clayey surface layer and subsoil or a loamy surface layer and substratum; on flood plains*

### *Setting*

*Location in the survey area:* Eastern part
*Landscape:* Blackland Prairie
*Landform:* Flood plains (fig. 3)
*Landform position:* Sucarnoochee—slightly convex to concave slopes at low elevations; Congaree—convex slopes on high parts of natural levees
*Slope range:* 0 to 2 percent

### *Composition*

*Percent of the survey area:* 4
Sucarnoochee soils: 85 percent
Congaree soils: 10 percent
Minor soils: 5 percent, including Freest, Houlka, Kinston, Mantachie, Mooreville, Searcy, and poorly drained, clayey soils

### *Soil Characteristics*

**Sucarnoochee**

*Surface layer:* Dark grayish brown silty clay loam
*Next layer:* Dark grayish brown clay that has brownish mottles
*Subsoil:* Upper part—dark grayish brown clay that has

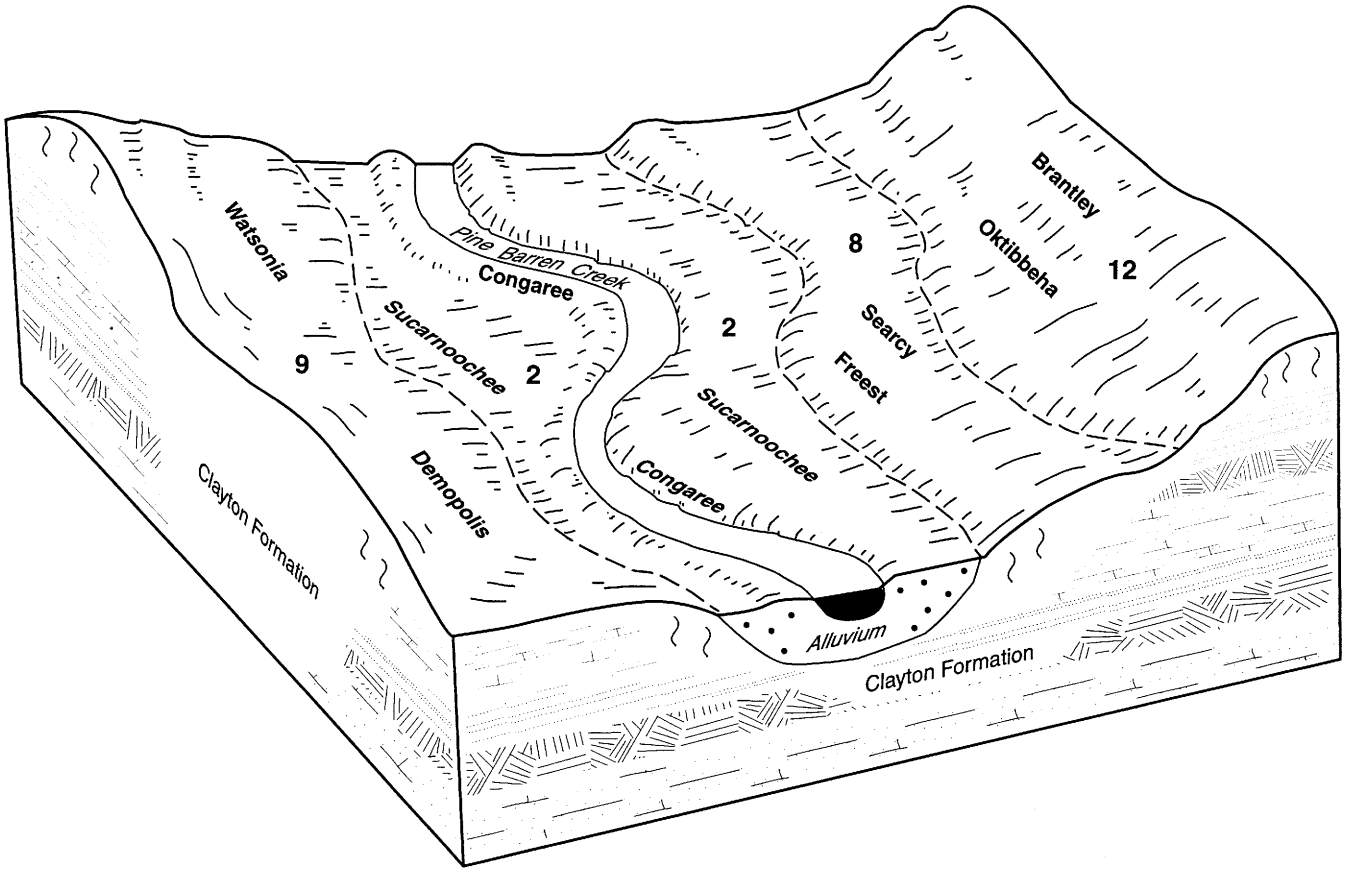


**Figure 3.—Generalized soil-geomorphic patterns and landscape relationships in the Sucarnoochee-Congaree, Searcy-Freest, Demopolis-Watsonia, and Oktibbeha-Brantley general soil map units along Pine Barren Creek in the eastern part of Wilcox County.**

brownish mottles; lower part—mottled grayish, brownish, and yellowish clay
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Seasonal high water table:* Perched, at a depth of 0.5 foot to 1.5 feet from January to April
*Slope range:* 0 to 1 percent
*Parent material:* Alkaline, clayey alluvium

**Congaree**

*Surface layer:* Brown fine sandy loam
*Substratum:* Upper part—dark yellowish brown silty clay loam; next part—brown loam and yellowish brown fine sandy loam; lower part—strong brown fine sandy loam that has brownish and grayish mottles
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* Apparent, at a depth of 2.5 to 4.0 feet from January to April
*Slope range:* 0 to 2 percent
*Parent material:* Loamy alluvium

**Minor soils**

- The moderately well drained, loamy Freest soils on low terraces
- The poorly drained Kinston soils in low areas on narrow flood plains
- Poorly drained, clayey soils in small depressions
- The loamy Mantachie and Mooreville soils in intermediate positions on natural levees
- The moderately well drained Searcy soils on side slopes

### *Use and Management*

**Major Uses:** Woodland, wildlife habitat, and pasture

**Cropland**

*Management concerns:* Flooding, wetness, and poor tilth

**Pasture and hayland**

*Management concerns:* Flooding and wetness

**Woodland**

*Management concerns:* Competition from undesirable plants, restricted use of equipment, and seedling mortality

**Urban development**

*Management concerns:* Flooding and wetness

## 3. Mantachie-Kinston-Izagora

*Dominantly level and nearly level, somewhat poorly drained, poorly drained, and moderately well drained soils that have a loamy surface layer and subsoil or a loamy substratum; on flood plains and low terraces*

### *Setting*

*Location in the survey area:* Western, central, and eastern parts
*Landscape:* Coastal Plain
*Landform:* Flood plains and low terraces
*Landform position:* Mantachie—intermediate positions of flood plains on slightly convex slopes; Kinston—low positions of flood plains that have flat to concave slopes; Izagora—slightly convex slopes on low terraces
*Slope range:* 0 to 2 percent

### *Composition*

*Percent of the survey area:* 4
Mantachie soils: 40 percent
Kinston soils: 25 percent
Izagora soils: 20 percent
Minor soils: 15 percent, including Cahaba, Freest, Mooreville, and Una

### *Soil Characteristics*

**Mantachie**

*Surface layer:* Dark brown loam and dark yellowish brown sandy loam
*Subsoil:* Upper part—mottled grayish and brownish sandy clay loam and sandy loam; lower part—light brownish gray sandy clay loam and sandy loam having yellowish mottles
*Substratum:* grayish brown and gray sandy loam that has reddish and brownish mottles
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Seasonal high water table:* Apparent, at a depth of 1.0 to 1.5 feet from December to April
*Slope range:* 0 to 1 percent
*Parent material:* Stratified loamy alluvium

**Kinston**

*Surface layer:* Dark grayish brown silt loam
*Substratum:* Upper part—light brownish gray loam that has brownish mottles; next part—gray sandy clay loam that has brownish mottles; lower part—gray clay loam that has brownish and olive mottles
*Depth class:* Very deep
*Drainage class:* Poorly drained
*Seasonal high water table:* Apparent, at the surface to

a depth of 1.0 foot from December through April
*Slope range:* 0 to 1 percent
*Parent material:* Stratified loamy and sandy alluvium

**Izagora**

*Surface layer:* Dark yellowish brown and dark grayish brown fine sandy loam
*Subsoil:* Upper part—yellowish brown loam; next part—yellowish brown loam and clay loam having reddish and grayish mottles; lower part—mottled brownish, grayish, yellowish, and reddish clay and clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* Perched, at a depth of 2.0 to 3.0 feet from January to April
*Slope range:* 0 to 2 percent
*Parent material:* Loamy and clayey alluvium

**Minor soils**

- The well drained Cahaba and moderately well drained Freest soils on low terraces
- The moderately well drained Mooreville soils on high parts of natural levees
- The poorly drained Una soils in depressions

### *Use and Management*

**Major Uses:** Woodland and wildlife habitat

**Cropland**

*Management concerns:* Flooding and wetness

**Pasture and hayland**

*Management concerns:* Flooding and wetness

**Woodland**

*Management concerns:* Competition from undesirable plants, restricted use of equipment, and seedling mortality

**Urban development**

*Management concerns:* Flooding, wetness, and low strength

## 4. Annemaine-Izagora-Lenoir

*Dominantly nearly level and gently sloping, moderately well drained and somewhat poorly drained soils that have a loamy surface layer and a clayey or loamy subsoil; on low terraces*

### *Setting*

*Location in the survey area:* Parallel to the Alabama River
*Landscape:* Coastal Plain
*Landform:* Low terraces
*Landform position:* Annemaine—nearly level and gently sloping, slightly convex slopes; Izagora—nearly level, slightly convex slopes; Lenoir—flat to concave slopes at low elevations
*Slope range:* 0 to 5 percent

### *Composition*

*Percent of the survey area:* 10
Annemaine soils: 35 percent
Izagora soils: 25 percent
Lenoir soils: 20 percent
Minor soils: 20 percent, including Bigbee, Cahaba, Canton Bend, Chrysler, Una, and Urbo

### *Soil Characteristics*

**Annemaine**

*Surface layer:* Brown fine sandy loam
*Subsoil:* Upper part—yellowish red silty clay; next part—strong brown clay that has brownish, reddish, and grayish mottles; lower part—mottled brownish, reddish, and grayish sandy clay
*Substratum:* Mottled reddish, brownish, and grayish sandy clay loam and sandy loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* Apparent, at a depth of 1.5 to 2.5 feet from January to April
*Slope range:* 0 to 5 percent
*Parent material:* Stratified clayey and loamy alluvium

**Izagora**

*Surface layer:* Dark yellowish brown and dark grayish brown fine sandy loam
*Subsoil:* Upper part—yellowish brown loam; next part—yellowish brown loam and clay loam having reddish and grayish mottles; lower part—mottled brownish, grayish, reddish, and yellowish clay and clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* Perched, at a depth of 2.0 to 3.0 feet from January to April
*Slope range:* 0 to 2 percent
*Parent material:* Loamy and clayey alluvium

**Lenoir**

*Surface layer:* Dark grayish brown silt loam
*Subsoil:* Upper part—mottled grayish and brownish silty clay loam; next part—light brownish gray silty clay that has brownish mottles; lower part—gray clay that has brownish mottles

*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Seasonal high water table:* Apparent, at a depth of 1.0 to 2.5 feet from December to April
*Slope range:* 0 to 1 percent
*Parent material:* Clayey alluvium

**Minor soils**

- The sandy Bigbee soils on the slightly higher, more convex parts of terraces
- The well drained, loamy Cahaba, well drained, clayey Canton Bend, and moderately well drained, clayey Chrysler soils in convex positions on low terraces
- The poorly drained, clayey Una soils in old oxbows, sloughs, and other shallow depressions
- The somewhat poorly drained, clayey Urbo soils on flood plains

### *Use and Management*

**Major Uses:** Cultivated crops, pasture, hayland, and woodland

**Cropland**

*Management concerns:* Annemaine—flooding, wetness, and erodibility in steeper areas; Izagora and Lenoir—flooding and wetness

**Pasture and hayland**

*Management concerns:* Flooding and wetness

**Woodland**

*Management concerns:* Competition from undesirable plants and restricted use of equipment

**Urban development**

*Management concerns:* Annemaine and Lenoir—flooding, wetness, restricted permeability, and shrink-swell potential; Izagora—flooding, wetness, restricted permeability, and low strength

## 5. Bama-Malbis-Luverne

*Dominantly nearly level to steep, well drained and moderately well drained soils that have a loamy surface layer and a loamy or clayey subsoil; on high terraces*

### *Setting*

*Location in the survey area:* Central part
*Landscape:* Coastal Plain
*Landform:* High terraces
*Landform position:* Bama and Malbis—broad, nearly level ridgetops and gently sloping side slopes; Luverne—gently sloping to strongly sloping side slopes
*Slope range:* 0 to 35 percent

### *Composition*

*Percent of the survey area:* 12
Bama soils: 35 percent
Malbis soils: 25 percent
Luverne soils: 20 percent
Minor soils: 20 percent, including Escambia, Kinston, Lucedale, Mantachie, Mooreville, Saffell, and Smithdale

### *Soil Characteristics*

**Bama**

*Surface layer:* Brown fine sandy loam
*Subsoil:* Red sandy clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 0 to 5 percent
*Parent material:* Loamy sediments

**Malbis**

*Surface layer:* Brown silt loam
*Subsoil:* Upper part—yellowish brown loam; next part—yellowish brown sandy clay loam that has reddish, brownish, and grayish mottles; lower part—mottled brownish, reddish, and grayish clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* Perched, at a depth of 2.5 to 4.0 feet from January to April
*Slope range:* 0 to 8 percent
*Parent material:* Loamy sediments

**Luverne**

*Surface layer:* Brown fine sandy loam
*Subsoil:* Upper part—red clay; next part—yellowish red clay; lower part—yellowish red clay that has brownish mottles
*Substratum:* Stratified sandy clay loam, sandy loam, and sandy clay
*Depth class:* Very deep
*Drainage class:* Well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 5 to 35 percent
*Parent material:* Stratified clayey and loamy sediments

**Minor soils**

- The somewhat poorly drained Escambia soils in flat to slightly concave positions
- The poorly drained Kinston, somewhat poorly drained

Mantachie, and moderately well drained Mooreville soils on narrow flood plains
• The dark reddish brown Lucedale soils on broad ridgetops at the higher elevations
• Scattered areas of the loamy-skeletal Saffell and loamy Smithdale soils on side slopes

### *Use and Management*

**Major Uses:** Cultivated crops, pasture, hayland, and homesites

**Cropland**

*Management concerns:* Erodibility, low fertility, and slope in the steeper areas

**Pasture and hayland**

*Management concerns:* Low fertility and slope in the steeper areas

**Woodland**

*Management concerns:* No significant limitations

**Urban development**

*Management concerns:* Bama—no significant limitations; Malbis—restricted permeability and wetness; Luverne—restricted permeability, shrink-swell potential, and slope in the steeper areas

## 6. Wilcox

*Dominantly nearly level to strongly sloping, somewhat poorly drained soils that have a clayey surface layer and subsoil; on uplands*

### *Setting*

*Location in the survey area:* Northwestern part
*Landscape:* Coastal Plain
*Landform:* Uplands
*Landform position:* Smooth, nearly level and gently sloping ridgetops and gently sloping to strongly sloping side slopes
*Slope range:* 1 to 15 percent

### *Composition*

*Percent of the survey area:* 2
Wilcox soils: 80 percent
Minor soils: 20 percent, including Halso, Houlka, Kinston, Luverne, Oktibbeha, and Vaiden

### *Soil Characteristics*

**Wilcox**

*Surface layer:* Brown clay
*Subsoil:* Upper part—yellowish red clay that has grayish and brownish mottles; lower part—mottled reddish, grayish, and brownish clay
*Substratum:* Light brownish gray and grayish brown shale
*Depth class:* Deep
*Drainage class:* Somewhat poorly drained
*Seasonal high water table:* Perched, at a depth of 1.5 to 3.0 feet from January to April
*Slope range:* 1 to 15 percent
*Parent material:* Acid, clayey sediments and the underlying shale

**Minor soils**

• The moderately well drained Halso and well drained Luverne soils on the slightly higher, more convex parts of ridgetops
• The somewhat poorly drained Houlka and poorly drained Kinston soils on flood plains
• The moderately well drained Oktibbeha and somewhat poorly drained Vaiden soils on ridgetops at the lower elevations

### *Use and Management*

**Major Uses:** Woodland and wildlife habitat

**Cropland**

*Management concerns:* Wetness, poor tilth, and erodibility

**Pasture and hayland**

*Management concerns:* Wetness

**Woodland**

*Management concerns:* Competition from undesirable plants, restricted use of equipment, and seedling mortality

**Urban development**

*Management concerns:* Slope, wetness, restricted permeability, and shrink-swell potential

## 7. Vaiden-Sucarnoochee-Oktibbeha

*Dominantly level to moderately steep, somewhat poorly drained and moderately well drained soils that have a clayey surface layer and subsoil; on uplands and flood plains*

### *Setting*

*Location in the survey area:* Northwestern part
*Landscape:* Blackland Prairie
*Landform:* Vaiden and Oktibbeha—uplands; Sucarnoochee—flood plains

*Landform position:* Vaiden—broad, nearly level ridgetops and smooth, gently sloping side slopes; Sucarnoochee—level and nearly level, flat to slightly concave slopes; Oktibbeha—gently sloping ridgetops and moderately sloping to moderately steep side slopes
*Slope range:* 0 to 25 percent

### *Composition*

*Percent of the survey area:* 3
Vaiden soils: 50 percent
Sucarnoochee soils: 20 percent
Oktibbeha soils: 15 percent
Minor soils: 15 percent, including Brantley, Freest, Searcy, and Sumter

### *Soil Characteristics*

**Vaiden**

*Surface layer:* Brown silty clay
*Subsoil:* Upper part—mottled grayish, brownish, and reddish clay; lower part—mottled olive, brownish, and grayish clay that has soft masses of calcium carbonate
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Seasonal high water table:* Perched, at a depth of 1.0 to 2.0 feet from January to April
*Slope range:* 0 to 5 percent
*Parent material:* Acid, clayey sediments and the underlying alkaline clay or soft limestone (chalk)

**Sucarnoochee**

*Surface layer:* Dark grayish brown silty clay loam
*Next layer:* Dark grayish brown clay
*Subsoil:* Upper part—dark grayish brown clay that has brownish mottles; lower part—mottled grayish, brownish, and yellowish clay
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Seasonal high water table:* Perched, at a depth of 0.5 foot to 1.5 feet from January to April
*Slope range:* 0 to 1 percent
*Parent material:* Alkaline, clayey alluvium

**Oktibbeha**

*Surface layer:* Brown clay loam
*Subsoil:* Upper part—red clay that has brownish mottles; next part—mottled brownish, reddish, and grayish clay; lower part—light olive brown clay that has grayish and brownish mottles and soft masses of calcium carbonate
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 1 to 25 percent
*Parent material:* Acid, clayey sediments and the underlying alkaline clay or soft limestone

**Minor soils**

- The well drained Brantley soils on narrow ridges and on upper parts of slopes
- The loamy Freest soils on terraces
- The moderately well drained Searcy soils on toe slopes
- The moderately deep Sumter soils on side slopes and knolls

### *Use and Management*

**Major Uses:** Cultivated crops, pasture, and hayland

**Cropland**

*Management concerns:* Vaiden—wetness and poor tilth; Sucarnoochee—flooding, wetness, and poor tilth; Oktibbeha—erodibility, poor tilth, and slope in the steeper areas

**Pasture and hayland**

*Management concerns:* Vaiden—wetness; Sucarnoochee—flooding and wetness; Oktibbeha—slight limitations

**Woodland**

*Management concerns:* Competition from undesirable plants, restricted use of equipment, and seedling mortality

**Urban development**

*Management concerns:* Vaiden—wetness, restricted permeability, and shrink-swell potential; Sucarnoochee—flooding, wetness, restricted permeability, and shrink-swell potential; Oktibbeha—slope, restricted permeability, and shrink-swell potential

## 8. Searcy-Freest

*Dominantly nearly level and gently sloping, moderately well drained soils that have a loamy surface layer and a clayey or loamy subsoil; on uplands and stream terraces*

### *Setting*

*Location in the survey area:* Central part
*Landscape:* Blackland Prairie
*Landform:* Uplands and stream terraces
*Landform position:* Searcy—narrow, nearly level and gently sloping ridgetops, toe slopes, and side

slopes; Freest—broad, nearly level ridgetops and gently sloping side slopes on stream terraces
*Slope range:* 0 to 5 percent

### *Composition*

*Percent of the survey area:* 2
Searcy soils: 50 percent
Freest soils: 30 percent
Minor soils: 20 percent, including Brantley, Houlka, Kinston, Kipling, Oktibbeha, and Sucarnoochee

### *Soil Characteristics*

**Searcy**

*Surface layer:* Brown sandy clay loam
*Subsoil:* Upper part—yellowish red clay; next part—yellowish red clay that has grayish and brownish mottles; lower part—mottled brownish, grayish, and reddish clay
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* Perched, at a depth of 2.0 to 3.5 feet from January to April
*Slope range:* 2 to 5 percent
*Parent material:* Clayey marine sediments

**Freest**

*Surface layer:* Brown fine sandy loam
*Subsurface layer:* Brown fine sandy loam
*Subsoil:* Upper part—yellowish brown sandy clay loam; next part—mottled brownish, grayish, and yellowish clay loam; lower part—mottled brownish, grayish, reddish, and yellowish clay
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* Perched, at a depth of 1.5 to 2.5 feet from January to April
*Slope range:* 0 to 5 percent
*Parent material:* Loamy and clayey sediments

**Minor soils**

- The well drained, clayey Brantley soils on the higher parts of ridges
- The somewhat poorly drained Houlka and Sucarnoochee soils and poorly drained Kinston soils on narrow flood plains
- Scattered areas of the somewhat poorly drained Kipling and moderately well drained Oktibbeha soils on side slopes

### *Use and Management*

**Major Uses:** Cultivated crops, pasture, hayland, and woodland

**Cropland**

*Management concerns:* Searcy—poor tilth and erodibility; Freest—erodibility and wetness

**Pasture and hayland**

*Management concerns:* No significant limitations

**Woodland**

*Management concerns:* No significant limitations

**Urban development**

*Management concerns:* Restricted permeability, wetness, and shrink-swell potential

## 9. Demopolis-Watsonia

*Dominantly gently sloping to moderately steep, well drained, shallow soils that have a loamy surface layer and substratum or a clayey surface layer and subsoil; on uplands*

### *Setting*

*Location in the survey area:* Eastern part
*Landscape:* Blackland Prairie
*Landform:* Uplands
*Landform position:* Narrow, convex ridgetops; knolls; and short side slopes
*Slope range:* 2 to 25 percent

### *Composition*

*Percent of the survey area:* 6
Demopolis soils: 50 percent
Watsonia soils: 25 percent
Minor soils: 25 percent, including Brantley, Kipling, Oktibbeha, Sucarnoochee, and Sumter

### *Soil Characteristics*

**Demopolis**

*Surface layer:* Dark grayish brown silty clay loam
*Substratum:* Olive silty clay loam that has many fragments of chalk and concretions of calcium carbonate
*Bedrock layer:* Soft limestone (chalk)
*Depth class:* Shallow
*Drainage class:* Well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 0 to 25 percent
*Parent material:* Alkaline, loamy residuum derived from soft limestone (chalk)

**Watsonia**

*Surface layer:* Brown clay

*Subsoil:* Upper part—red clay; lower part—light olive brown clay that has common soft masses of calcium carbonate
*Bedrock layer:* Soft limestone (chalk)
*Depth class:* Shallow
*Drainage class:* Well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 2 to 8 percent
*Parent material:* Clayey sediments and the underlying soft limestone (chalk)

**Minor soils**

- The acid, very deep Brantley and Oktibbeha soils on the lower parts of side slopes
- The somewhat poorly drained, acid Kipling soils on the lower, smoother ridgetops and on toe slopes
- The somewhat poorly drained Sucarnoochee soils on narrow flood plains
- Scattered areas of the moderately deep Sumter soils

### *Use and Management*

**Major Uses:** Pasture, woodland, and cultivated crops

**Cropland**

*Management concerns:* Demopolis—slope, erodibility, depth to rock, and droughtiness; Watsonia—erodibility, depth to rock, and poor tilth

**Pasture and hayland**

*Management concerns:* Depth to rock and droughtiness

**Woodland**

*Management concerns:* Restricted use of equipment, seedling mortality, and erodibility

**Urban development**

*Management concerns:* Demopolis—depth to rock, slope, and restricted permeability; Watsonia—depth to rock, restricted permeability, and shrink-swell potential

## 10. Luverne-Halso

*Dominantly gently sloping to steep, well drained and moderately well drained soils that have a loamy surface layer and a clayey subsoil; on uplands*

### *Setting*

*Location in the survey area:* Western, central, and southeastern parts
*Landscape:* Coastal Plain
*Landform:* Uplands
*Landform position:* Gently sloping, narrow to broad ridgetops and moderately sloping to steep side slopes
*Slope range:* 2 to 35 percent

### *Composition*

*Percent of the survey area:* 31
Luverne soils: 60 percent
Halso soils: 20 percent
Minor soils: 20 percent, including Arundel, Boykin, Cantuche, Kinston, Mantachie, Saffell, and Smithdale

### *Soil Characteristics*

**Luverne**

*Surface layer:* Brown fine sandy loam
*Subsurface layer:* Brown loamy sand
*Subsoil:* Upper part—yellowish red clay; lower part—yellowish red clay that has brownish mottles
*Substratum:* Stratified yellowish red sandy clay loam and yellowish brown fine sandy loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 2 to 35 percent
*Parent material:* Stratified clayey and loamy marine sediments

**Halso**

*Surface layer:* Brown silt loam
*Subsurface layer:* Yellowish red clay loam
*Subsoil:* Upper part—red clay that has brownish, reddish, and grayish mottles; next part—red clay that has grayish mottles; lower part—light olive brown clay that has brownish and grayish mottles
*Substratum:* Upper part—stratified clayey shale and light yellowish brown clay loam; lower part—grayish brown clayey shale
*Depth class:* Deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 2 to 15 percent
*Parent material:* Clayey sediments and the underlying shale

**Minor soils**

- The moderately deep Arundel and shallow Cantuche soils on high ridges
- The sandy Boykin soils on high parts of ridgetops
- The poorly drained Kinston and somewhat poorly drained Mantachie soils on narrow flood plains
- Scattered areas of the loamy-skeletal Saffell soils and loamy Smithdale soils on side slopes

### *Use and Management*

**Major Uses:** Woodland, wildlife habitat, and pasture

**Cropland**

*Management concerns:* Erodibility, low fertility, and slope in the steeper areas

**Pasture and hayland**

*Management concerns:* Low fertility and slope in the steeper areas

**Woodland**

*Management concerns:* Competition from undesirable plants, erodibility, and restricted use of equipment

**Urban development**

*Management concerns:* Restricted permeability, shrink-swell potential, and slope

## 11. Arundel-Cantuche

*Dominantly gently sloping to steep, moderately deep soils that have a loamy surface layer and a clayey subsoil and shallow soils that have a loamy surface layer and a loamy-skeletal substratum; on uplands*

### *Setting*

*Location in the survey area:* South-central part
*Landscape:* Coastal Plain
*Landform:* Uplands
*Landform position:* Narrow, gently sloping ridgetops and moderately sloping to steep side slopes
*Slope range:* 2 to 35 percent

### *Composition*

*Percent of the survey area:* 5
Arundel soils: 50 percent
Cantuche soils: 25 percent
Minor soils: 25 percent, including Boykin, Halso, Kinston, Luverne, Mantachie, and Smithdale

### *Soil Characteristics*

**Arundel**

*Surface layer:* Brown loam
*Subsoil:* Upper part—red and yellowish red clay loam; lower part—mottled brownish, reddish, and grayish silty clay
*Substratum:* Yellowish brown silty clay that has grayish, reddish, and brownish mottles
*Bedrock layer:* Weathered siltstone or claystone
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 2 to 35 percent
*Parent material:* Clayey sediments and the underlying siltstone or claystone

**Cantuche**

*Surface layer:* Very dark grayish brown very channery silt loam
*Substratum:* Brown very channery silt loam
*Bedrock layer:* Weathered siltstone or claystone
*Depth class:* Shallow
*Drainage class:* Well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 2 to 35 percent
*Parent material:* Loamy residuum derived from siltstone or claystone

**Minor soils**

- The sandy Boykin soils on high knolls
- The poorly drained Kinston and somewhat poorly drained Mantachie soils on narrow flood plains
- The very deep Luverne and Smithdale soils on high ridgetops and on the upper parts of slopes
- The deep, clayey Halso soils on the lower parts of slopes

### *Use and Management*

**Major Uses:** Woodland, pasture, and wildlife habitat

**Cropland**

*Management concerns:* Erodibility, droughtiness, and slope in the steeper areas

**Pasture and hayland**

*Management concerns:* Low fertility, droughtiness, and slope in the steeper areas

**Woodland**

*Management concerns:* Competition from undesirable plants, erodibility, restricted use of equipment, and seedling mortality

**Urban development**

*Management concerns:* Arundel—slope, restricted permeability, shrink-swell potential, and depth to rock; Cantuche—depth to rock, slope, small stones, and restricted permeability

## 12. Oktibbeha-Brantley

*Dominantly gently sloping to steep, moderately well drained and well drained soils that have a loamy or clayey surface layer and a clayey subsoil; on uplands*

### *Setting*

*Location in the survey area:* Northern part
*Landscape:* Blackland Prairie
*Landform:* Uplands
*Landform position:* Oktibbeha—broad ridgetops and lower parts of side slopes; Brantley—narrow ridgetops and middle and upper parts of side slopes
*Slope range:* 1 to 35 percent

### *Composition*

*Percent of the survey area:* 16
Oktibbeha soils: 45 percent
Brantley soils: 30 percent
Minor soils: 25 percent, including Congaree, Kinston, Kipling, Luverne, Smithdale, Sucarnoochee, and Sumter

### *Soil Characteristics*

**Oktibbeha**

*Surface layer:* Brown clay loam
*Subsoil:* Upper part—red clay that has brownish mottles; next part—mottled reddish, grayish, and brownish clay; lower part—light olive brown clay that has grayish and brownish mottles and soft masses and concretions of calcium carbonate
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 1 to 25 percent
*Parent material:* Acid, clayey sediments and the underlying alkaline clay or soft limestone (chalk)

**Brantley**

*Surface layer:* Brown sandy clay loam
*Subsurface layer:* Yellowish red sandy clay loam
*Subsoil:* Upper part—strong brown sandy clay; next part—dark yellowish brown sandy clay loam that has brownish mottles; lower part—yellowish brown sandy clay loam that has brownish mottles
*Substratum:* Yellowish brown fine sandy loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Seasonal high water table:* More than 6.0 feet deep
*Slope range:* 1 to 35 percent
*Parent material:* Clayey and loamy marine sediments

**Minor soils**

- The moderately well drained Congaree, poorly drained Kinston, and somewhat poorly drained Sucarnoochee soils on narrow flood plains
- The somewhat poorly drained Kipling soils on low ridges and toe slopes
- The loamy Smithdale and clayey Luverne soils on high parts of ridgetops and on side slopes
- The moderately deep, alkaline Sumter soils on narrow ridges

### *Use and Management*

**Major Uses:** Woodland and wildlife habitat

**Cropland**

*Management concerns:* Erodibility, poor tilth, and slope

**Pasture and hayland**

*Management concerns:* Erodibility and slope

**Woodland**

*Management concerns:* Competition from undesirable plants, restricted use of equipment, seedling mortality, and erodibility

**Urban development**

*Management concerns:* Slope, restricted permeability, and shrink-swell potential

# Detailed Soil Map Units

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

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Bama fine sandy loam, 0 to 2 percent slopes, is a phase of the Bama series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Saffell-Smithdale-Luverne complex, 8 to 35 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Mooreville, Mantachie, and Kinston soils, 0 to 1 percent slopes, frequently flooded, is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits is an example.

Table 5 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The "Glossary" defines many of the terms used in describing the soils or miscellaneous areas.

## Soil Descriptions

### AnA—Annemaine fine sandy loam, 0 to 2 percent slopes, occasionally flooded

This very deep, moderately well drained soil is on low terraces that parallel the Alabama River and other large streams throughout the county. Slopes are generally long and smooth. Individual areas generally are oblong. They range from 10 to about 300 acres in size.

Typically, the surface layer is brown fine sandy loam about 6 inches thick. The subsoil extends to a depth of 43 inches. It is yellowish red silty clay in the upper part; strong brown clay that has brownish, reddish, and grayish mottles in the next part; and sandy clay that is mottled in shades of brown, red, and gray in the lower part. The substratum, to a depth of 65 inches, is mottled reddish, brownish, and grayish sandy clay loam and sandy loam.

Important properties of the Annemaine soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 1.5 to 2.5 feet from January to April
*Shrink-swell potential:* Moderate
*Flooding:* Occasional, for brief periods from December to April

Included in mapping are a few small areas of Cahaba, Chrysler, Izagora, and Una soils. Cahaba and Izagora soils are in slightly higher, more convex landscape positions than the Annemaine soil. They are loamy throughout. Chrysler soils are in positions similar to those of the Annemaine soil and do not have a significant decrease in clay content within a depth of 60 inches. The poorly drained Una soils are in small depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland.

This map unit is well suited to cultivated crops. The main management concerns are the occasional flooding and the wetness. The planting of early-season crops may be delayed in some years because of the flooding. The surface layer is friable and easy to keep in good tilth. It can be worked over a wide range of moisture content. Shallow ditches can help to remove excess surface water. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay. Wetness and the occasional flooding are the main management concerns. Suitable pasture plants are bermudagrass, tall fescue, and bahiagrass. Excess surface water can be removed by shallow ditches. Deferring or restricting grazing during very wet periods helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, yellow-poplar, sweetgum, willow oak, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, blackberry, Alabama supplejack, panicums, longleaf uniola, poison ivy, sweetgum, willow oak, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting activities should be planned for

seasons when the soil is dry. Plant competition reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation or prescribed burning.

This map unit is poorly suited to most urban uses. The main management concerns are the flooding and wetness. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding. The moderate shrink-swell potential and low strength are limitations on sites for local roads and streets.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIw. The woodland ordination symbol is 9W.

## AnB—Annemaine fine sandy loam, 2 to 5 percent slopes, occasionally flooded

This very deep, moderately well drained soil is on side slopes of low terraces that parallel the Alabama River. Slopes generally are long and smooth, but some are short and complex. Individual areas are generally long and narrow. They range from 10 to about 300 acres in size.

Typically, the surface layer is brown fine sandy loam about 5 inches thick. The subsurface layer is light yellowish brown fine sandy loam to a depth of 9 inches. The subsoil extends to a depth of 49 inches. It is yellowish red clay in the upper part; yellowish red clay that has brownish, reddish, and grayish mottles in the next part; and sandy clay loam that is mottled in shades of red, brown, and gray in the lower part. The substratum extends to a depth of 90 inches. It is sandy clay loam that is mottled in shades of gray, brown, and red in the upper part and is strong brown fine sandy loam that has yellowish, reddish, and grayish mottles in the lower part.

Important properties of the Annemaine soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 1.5 to 2.5 feet from January to April
*Shrink-swell potential:* Moderate
*Flooding:* Occasional, for brief periods from December to April

Included in mapping are a few small areas of Cahaba, Chrysler, Izagora, Lenoir, and Una soils. Cahaba and Izagora soils are in slightly higher, more convex landscape positions than the Annemaine soil. They are loamy throughout. Chrysler soils are in positions similar to those of the Annemaine soil and do not have a significant decrease in clay content within a depth of 60 inches. The somewhat poorly drained Lenoir soils are in narrow swales. The poorly drained Una soils are in narrow drainageways and in small depressions. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A significant acreage is used for woodland and wildlife habitat.

This map unit is well suited to cultivated crops. The main management concerns are the occasional flooding and a moderate hazard of erosion. The planting of early-season crops may be delayed in some years because of the flooding. Using a resource management system that includes terraces and diversions, stripcropping, contour tillage, no-till planting, and crop residue management helps to control erosion, reduces the runoff rate, and increases the infiltration of rainfall. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay. Wetness and the occasional flooding are the main management concerns. Suitable pasture plants are bermudagrass, tall fescue, and bahiagrass. Deferring or restricting grazing during very wet periods helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, yellow-poplar, sweetgum, willow oak, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, blackberry, Alabama supplejack, panicums, longleaf uniola, poison ivy, sweetgum, willow oak, and water oak.

This map unit has moderate limitations affecting

timber management. The main management concerns are the restricted use of equipment and plant competition. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting activities should be planned for seasons when the soil is dry. Plant competition reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation or prescribed burning.

This map unit is poorly suited to most urban uses. The main management concerns are the flooding and wetness. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding. The moderate shrink-swell potential and low strength are limitations on sites for local roads and streets.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIIe. The woodland ordination symbol is 9W.

## ArC—Arundel-Cantuche complex, 2 to 8 percent slopes

This map unit consists of the moderately deep, well drained Arundel soil and the shallow, well drained Cantuche soil. It is on narrow ridges on uplands of the Coastal Plain. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Arundel soil makes up about 60 percent of the map unit, and the Cantuche soil makes up about 25 percent. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 10 to 400 acres in size.

The Arundel soil is on the smoother parts of ridgetops and in saddles between small knolls. Typically, the surface layer is brown loam about 3 inches thick. The subsoil extends to a depth of 27 inches. It is red and yellowish red clay in the upper part and is silty clay that is mottled in shades of brown, red, and gray in the lower part. The substratum, to a depth of 34 inches, is yellowish brown silty clay that has mottles in shades of gray, red, and brown. The next layer, to a depth of 80 inches, is weathered siltstone or claystone.

Important properties of the Arundel soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* 20 to 40 inches
*Root zone:* 20 to 40 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* High
*Flooding:* None

The Cantuche soil is on the crests of ridges and on small knolls. Typically, the surface layer is very dark grayish brown very channery silt loam about 4 inches thick. The substratum, to a depth of 10 inches, is brown very channery silt loam. The next layer, to a depth of 80 inches, is weathered siltstone or claystone.

Important properties of the Cantuche soil—

*Permeability:* Very slow
*Available water capacity:* Low
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* 10 to 20 inches
*Root zone:* 10 to 20 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Halso, Luverne, and Smithdale soils. Halso soils are on the lower parts of slopes and are underlain by shale bedrock at a depth of 40 to 60 inches. Luverne and Smithdale soils are on high knolls and on the upper parts of slopes. They do not have bedrock within a depth of 80 inches. Also included are small areas of stony or bouldery soils, typically on the ridge crests and on points of ridges. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few small areas are used for pasture.

This map unit is poorly suited to cultivated crops. The main management concerns are a severe hazard of erosion, the low available water capacity, and the shallow depth to bedrock in areas of the Cantuche soil.

This map unit is poorly suited to pasture and hay. Droughtiness and a severe hazard of erosion are the main management concerns. Proper stocking rates,

pasture rotation, and restricted grazing during very wet or very dry periods help to keep the soils in good condition.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85 in areas of the Arundel soil and 80 in areas of the Cantuche soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year in areas of the Arundel soil and 1.8 cords per acre per year in areas of the Cantuche soil. The understory vegetation consists mainly of huckleberry, waxmyrtle, greenbrier, little bluestem, panicums, flowering dogwood, blackberry, sumac, red maple, sweetgum, and water oak.

This map unit generally has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment, seedling mortality, and plant competition. The low strength of the Arundel soil restricts the use of equipment to periods when the soils are dry. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soils and helps to maintain productivity. The low available water capacity results in increased seedling mortality in areas of the Cantuche soil. Increasing the number of trees planted helps to compensate for this limitation. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has moderate and severe limitations affecting building sites. It has severe limitations affecting local roads and streets and most kinds of sanitary facilities. The main management concerns are the depth to bedrock, the very slow permeability, and the high shrink-swell potential in areas of the Arundel soil. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Septic tank absorption fields do not function during rainy periods because of the very slow permeability. An alternate system should be used to dispose of sewage properly.

The Arundel soil has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. The Cantuche soil has poor potential for openland wildlife habitat and very poor potential for woodland and wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The Arundel soil is in capability subclass IVe, and the Cantuche soil is in capability subclass VIIs. The woodland ordination symbol is 8C in areas of the Arundel soil and 8D in areas of the Cantuche soil.

## ArF—Arundel-Cantuche complex, 8 to 35 percent slopes

This map unit consists of the moderately deep, well drained Arundel soil and the shallow, well drained Cantuche soil on hillsides and narrow ridges in the uplands of the Coastal Plain. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Arundel soil makes up about 60 percent of the map unit, and the Cantuche soil makes up about 30 percent. Slopes generally are short and complex. Individual areas are generally narrow and irregular in shape. They range from 10 to 600 acres in size.

The Arundel soil is generally on the middle and lower parts of slopes. Typically, the surface layer is brown silt loam about 3 inches thick. The subsoil is clay and extends to a depth of 33 inches. It is red in the upper part and is red and has brownish and grayish mottles in the lower part. The substratum, to a depth of 80 inches, is weathered siltstone or claystone.

Important properties of the Arundel soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* 20 to 40 inches
*Root zone:* 20 to 40 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* High
*Flooding:* None

The Cantuche soil is on the upper parts of slopes and on narrow ridgetops. Typically, the surface layer is very dark grayish brown very channery loam about 4 inches thick. The substratum is brown extremely channery loam to a depth of 10 inches. The next layer, to a depth of 80 inches, is weathered siltstone or claystone.

Important properties of the Cantuche soil—

*Permeability:* Very slow
*Available water capacity:* Low
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* 10 to 20 inches
*Root zone:* 10 to 20 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Halso, Kinston, Luverne, and Smithdale soils. Also included are areas of rock outcrop and small areas that have many stones, boulders, and cobbles on the surface. Halso, Luverne, and Smithdale soils are in landscape positions similar to those of the Arundel soil. Halso soils are underlain by shale bedrock at a depth of 40 to 60 inches. Luverne and Smithdale soils do not have bedrock within a depth of 80 inches. The poorly drained Kinston soils are in narrow drainageways. Included areas make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few small areas are used for pasture.

This map unit is not suited to cultivated crops, mainly because the slopes are too steep and the hazard of erosion is too severe. The irregular slope, the low fertility, the low available water capacity in areas of the Cantuche soil, and the scattered areas of rock outcrop are also management concerns.

This map unit is poorly suited to pasture and hay. The main management concerns are the slope, the low fertility, and a severe hazard of erosion. The steeper areas are best suited to native grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, longleaf pine, southern red oak, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85 in areas of the Arundel soil and 80 in areas of Cantuche soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year in areas of the Arundel soil and 1.8 cords per acre per year in areas of the Cantuche soil. The understory vegetation consists mainly of huckleberry, waxmyrtle, greenbrier, little bluestem, panicums, southern red oak, flowering dogwood, blackberry, sumac, red maple, sweetgum, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, including rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. The slope restricts the use of equipment. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Cable yarding systems are safer and damage the soils less. The moderate seedling mortality rate can be compensated for by increasing the number of trees planted. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, most kinds of sanitary facilities, and local roads and streets. The main management concerns are the slope, the depth to bedrock, the high shrink-swell potential in areas of the Arundel soil, and the very slow permeability.

The Arundel soil has good potential for woodland wildlife habitat, fair potential for openland wildlife habitat, and very poor potential for wetland wildlife habitat. The Cantuche soil has poor potential for openland wildlife habitat and very poor potential for woodland and wetland wildlife habitat. Habitat for wildlife can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The subclass is VIIe. The woodland ordination symbol is 8R.

## BaA—Bama fine sandy loam, 0 to 2 percent slopes

This very deep, well drained soil is on broad ridgetops of high stream terraces. Slopes are long and smooth. Individual areas generally are broad. They range from 10 to more than 500 acres in size.

Typically, the surface layer is brown fine sandy loam about 5 inches thick. The subsoil, to a depth of 65 inches, is red sandy clay loam.

Important properties of the Bama soil—

*Permeability:* Moderate
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Lucedale, Malbis, and Smithdale soils. Lucedale soils are in slightly higher landscape positions than the Bama soil. They have dark red colors throughout the subsoil. Malbis soils are in slightly lower positions than the Bama soil and have brownish colors in the subsoil. Smithdale soils are in positions similar to those of the Bama soil. They have a significant decrease in clay content in the lower part of the subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used as sites for homes, and a few areas are wooded.

This map unit is well suited to cultivated crops. It has few limitations affecting this use. Low fertility, however, is a management concern. The surface layer is friable and easy to keep in good tilth. It can be tilled over a wide range of moisture content without becoming cloddy. Using conservation practices, such as cover crops, minimum tillage, and returning all crop residue to the soil or regularly adding other organic matter, improves fertility and helps to maintain tilth and the content of organic matter. Most crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has no significant limitations affecting these uses. Low fertility, however, is a management concern. Coastal bermudagrass and bahiagrass are the most commonly grown grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of little bluestem, yellow jessamine, longleaf uniola, huckleberry, flowering dogwood, and greenbrier.

This map unit has few limitations affecting the production of timber. Plant competition is a minor management concern. Using proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, and trees.

This map unit is well suited to most urban uses. It has no significant management concerns affecting most of these uses.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for woodland wildlife can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability class is I. The woodland ordination symbol is 9A.

## BaB—Bama fine sandy loam, 2 to 5 percent slopes

This very deep, well drained soil is on narrow ridgetops and on the upper parts of side slopes of high stream terraces. Slopes are generally long and smooth. Individual areas are irregular in shape. They range from 10 to 500 acres in size.

Typically, the surface layer is dark yellowish brown fine sandy loam about 9 inches thick. The subsoil, to a depth of 65 inches, is yellowish red sandy clay loam.

Important properties of the Bama soil—

*Permeability:* Moderate
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Luverne, Malbis, and Smithdale soils. Malbis soils are in landscape positions similar to those of the Bama soil. They have a brownish subsoil. Luverne and Smithdale soils are in slightly lower positions than the Bama soil. Luverne soils have clayey subsoil layers. Smithdale soils have a significant decease in clay content in the lower part of the subsoil. Also included

**Figure 4.—Soybeans in an area of Bama fine sandy loam, 2 to 5 percent slopes, which is prime farmland. This soil is well suited to cultivated crops, such as cotton, corn, and soybeans. Erosion is minimized by sowing these soybeans directly into the stubble remaining after a crop of wheat was harvested.**

in mapping are a few small areas of soils that have a slope of more than 5 percent. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used as sites for homes, and a few areas are wooded.

This map unit is well suited to cultivated crops (fig. 4). The main management concerns are the low fertility and a moderate hazard of erosion. Gullies form readily in areas that have a concentrated flow of water on the surface. Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to additions of lime and fertilizer.

This map unit is well suited to pasture and hay (fig. 5). The main management concerns are the low fertility and a moderate hazard of erosion. Coastal bermudagrass and bahiagrass are the most commonly grown grasses. Tillage should be on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the

site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of little bluestem, panicums, sumac, yellow jessamine, huckleberry, greenbrier, and flowering dogwood.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is well suited to most urban uses. It has no significant limitations affecting these uses.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIe. The woodland ordination symbol is 9A.

## BeB—Beatrice silt loam, 1 to 5 percent slopes

This very deep, moderately well drained soil is on broad ridgetops in the uplands in the southern part of

**Figure 5.—Freshly mown coastal bermudagrass hay in an area of Bama fine sandy loam, 2 to 5 percent slopes. This well drained soil is well suited to hay and pasture.**

the county. Slopes are generally long and smooth. Individual areas are irregular in shape. They range from 10 to 50 acres in size.

Typically, the surface layer is brown silt loam about 5 inches thick. The subsoil is clay and extends to a depth of 50 inches. In the upper part, it is yellowish red and has brownish and grayish mottles. In the next part, it is mottled in shades of red and gray. In the lower part, it is light brownish gray and has reddish and brownish mottles. The substratum, to a depth of 80 inches, is stratified light brownish gray and olive yellow clayey shale.

Important properties of the Beatrice soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* High
*Flooding:* None

Included in mapping are a few small areas of Halso and Luverne soils. These included soils are on the slightly higher knolls. Halso soils have a root restricting layer of shale at a depth of 40 to 60 inches. Luverne soils have mixed clay mineralogy. Included soils make up about 10 percent of mapped areas. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for pasture and hay.

This map unit is suited to cultivated crops. The main management concerns are the low fertility, poor tilth, and a moderate hazard of erosion. Measures that help to control erosion include early-fall seeding, minimum tillage, terraces, diversions, grassed waterways, and cover crops. Tillage should be on the contour or across the slope. Maintaining crop residue on or near the surface helps to control runoff and maintain tilth and the content of organic matter. Most crops respond well to systematic applications of fertilizer and lime.

This map unit is well suited to pasture and hay. Bahiagrass and coastal bermudagrass are the most commonly grown grasses. The main management concerns are the low fertility and a hazard of erosion. The seedbed should be prepared on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, water oak, and sweetgum. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of muscadine grape, poison ivy, longleaf uniola, yellow jessamine, blackberry, panicums, waxmyrtle, hawthorns, huckleberry, sweetgum, water oak, and flowering dogwood.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. Low strength restricts the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the very slow permeability, the high shrink-swell potential, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Support beams should be used to maintain the stability of the cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Special design is needed for roads and streets to compensate for the low strength and instability of the subsoil. Septic tank absorption fields do not function properly during rainy periods because of the very slow permeability. An alternative method is needed to dispose of sewage properly.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIIe. The woodland ordination symbol is 9C.

## BeC2—Beatrice silt loam, 5 to 10 percent slopes, eroded

This very deep, moderately well drained soil is on side slopes in the uplands in the southern part of the county. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Some areas have a few rills and gullies. Slopes generally are long and smooth, but some are short and complex. Individual areas are irregular in shape. They range from 10 to 50 acres in size.

Typically, the surface layer is brown silt loam about 2 inches thick. The subsoil is clay and extends to a depth of 55 inches. It is yellowish red in the upper part, is yellowish red and has grayish and brownish mottles in the next part, and is mottled in shades of yellow, red, brown, and gray in the lower part. The substratum, to a depth of 80 inches, is light olive gray clayey shale.

Important properties of the Beatrice soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* High
*Flooding:* None

Included in mapping are a few small areas of Halso, Kinston, and Luverne soils. Halso and Luverne soils are on the slightly higher knolls and on the upper parts of slopes. Halso soils have a root restricting layer of shale at a depth of 40 to 60 inches. Luverne soils have mixed clay mineralogy. The poorly drained Kinston soils are in narrow drainageways. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for pasture or hay.

This map unit is poorly suited to most cultivated crops. The main management concerns are the low fertility and a severe hazard of erosion. Measures that help to control further erosion include early-fall seeding, minimum tillage, terraces, diversions, and grassed waterways. Tillage should be on the contour or across the slope. Maintaining crop residue on or near the surface helps to control runoff and maintain tilth and the content of organic matter. Most crops respond well to systematic applications of fertilizer and lime.

This map unit is well suited to pasture and hay. Bahiagrass and coastal bermudagrass are the most commonly grown grasses. The main management concerns are the low fertility and a hazard of erosion. The seedbed should be prepared on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of muscadine grape, poison ivy, yellow jessamine, waxmyrtle, flowering dogwood, longleaf uniola, panicums, sweetgum, and water oak.

This map unit generally has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. Low strength restricts the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth. Exposing the surface by removing ground cover increases the hazard of further erosion, including rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding.

This map unit is poorly suited to most urban uses. It has moderate and severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the high shrink-swell potential, the very slow permeability, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Support beams should be used to maintain the stability of the cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Special design is needed for roads and streets to compensate for the low strength and instability of the subsoil. Septic tank absorption fields do not function

properly because of the very slow permeability. An alternate method is needed to dispose of sewage properly.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IVe. The woodland ordination symbol is 9C.

## BgB—Bigbee sand, 0 to 5 percent slopes, occasionally flooded

This very deep, excessively drained soil is on low stream terraces and natural levees adjacent to the Alabama River and other large streams. Slopes are generally long and smooth. Individual areas are oblong. They range from 10 to 600 acres in size.

Typically, the surface layer is brown sand about 4 inches thick. The substratum, to a depth of 90 inches, is also sand. It is yellowish brown in the upper part and brownish yellow in the lower part.

Important properties of the Bigbee soil—

*Permeability:* Rapid
*Available water capacity:* Low
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 3.5 to 6.0 feet from January to April
*Shrink-swell potential:* Low
*Flooding:* Occasional, for brief periods from December to April

Included in mapping are a few small areas of Annemaine, Cahaba, Riverview, and Urbo soils. Annemaine soils are in the slightly lower positions on the low terraces and are clayey in the upper part of the subsoil. Cahaba and Riverview soils are in landscape positions similar to those of the Bigbee soil. Cahaba soils have a reddish, loamy subsoil. Riverview soils have a brownish, loamy subsoil. Urbo soils are in drainageways and are clayey throughout the surface layer and subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for pasture and woodland. A few areas are used for cultivated crops, hay, or homesites.

This map unit is suited to cultivated crops. The low fertility, the low available water capacity, and the occasional flooding are the main management concerns. The planting of early-season crops may be delayed in some years because of the flooding. If this soil is used for row crops, conservation tillage, crop rotation, and cover crops help to conserve moisture and control runoff and erosion. Irrigation can prevent crop damage and increase productivity in most years. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to conserve moisture and maintain tilth and the content of organic matter. Crops respond well to applications of lime and frequent, light applications of fertilizer.

This map unit is well suited to pasture and hay. Droughtiness and the occasional flooding are the main management concerns. Suitable pasture plants are bahiagrass and coastal bermudagrass. The leaching of plant nutrients is a management concern. Split applications of nitrogen fertilizer help to maintain the productivity of grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine (fig. 6). Other species that commonly grow in areas of this map unit include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 75. The average annual growth of well stocked, even aged, unmanaged stands of loblolly pine at 25 years of age is 1.6 cords per acre per year. The understory vegetation consists mainly of huckleberry, greenbrier, pricklypear cactus, blackberry, common persimmon, blackjack oak, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and the seedling mortality rate. The sandy texture restricts the use of wheeled equipment, especially when the soil is very dry. Harvesting activities should be planned for seasons when the soil is moist. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites and most kinds of sanitary facilities and has moderate limitations affecting local roads and streets. The main management concerns are the sandy texture, seepage,

**Figure 6.—An area of Bigbee sand, 0 to 5 percent slopes, occasionally flooded. This sandy soil is well suited to longleaf pine and pasture. This area is managed for timber production and cattle grazing.**

wetness, and the hazard of flooding. Buildings can be constructed on pilings or on well-compacted fill above the expected level of flooding. Septic tank absorption fields may not function properly during rainy periods because of the seasonal high water table. Increasing the size of the absorption field or constructing the absorption field on a raised bed helps to overcome this limitation.

This map unit has fair potential for openland wildlife habitat, poor potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIIs. The woodland ordination symbol is 7S.

## BrB—Brantley fine sandy loam, 2 to 5 percent slopes

This very deep, well drained soil is on narrow ridgetops in the uplands in the transition area between the Blackland Prairie and the Coastal Plain. Slopes

commonly are long and smooth, but some are short and complex. Individual areas are irregular in shape. They range from 10 to 300 acres in size.

Typically, the surface layer is brown fine sandy loam about 5 inches thick. The subsurface layer is yellowish brown fine sandy loam to a depth of 10 inches. The subsoil extends to a depth of 52 inches. It is yellowish red clay in the upper part, yellowish red clay that has brownish mottles in the next part, and red sandy clay in the lower part. The substratum, to a depth of 70 inches, is yellowish red sandy loam.

Important properties of the Brantley soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Moderate
*Flooding:* None

Included in mapping are a few small areas of Searcy and Smithdale soils. Searcy soils are in landscape positions similar to those of the Brantley soil. They have grayish mottles in the upper part of the subsoil. Smithdale soils are on the slightly higher knolls and are loamy throughout. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for cultivated crops, pasture, hay, or homesites.

This map unit is suited to cultivated crops. The main management concerns are the low fertility and a severe hazard of erosion. Terraces, contour farming, minimum tillage, and cover crops reduce the runoff rate and help to control erosion. Using a sod-based rotation system and incorporating crop residue into the soil increase the content of organic matter and improve tilth. Crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has few limitations affecting these uses. Erosion is a hazard if the surface is left bare during the establishment of pasture. Tillage should be on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, flowering dogwood, winged elm, redbud, waxmyrtle, little bluestem, huckleberry, American beautyberry, muscadine grape, and panicums.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. The low strength of the clayey subsoil restricts the use of equipment when the soil is wet. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is suited to most urban uses. It has moderate limitations affecting building sites and severe limitations affecting local roads and streets and most kinds of sanitary facilities. The main management concerns are the slow permeability, the moderate shrink-swell potential, and low strength on sites for local roads and streets. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Septic tank absorption fields do not function properly during rainy periods because of the slow permeability. An alternative method is needed to dispose of sewage properly.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIIe. The woodland ordination symbol is 9C.

## BtF2—Brantley sandy clay loam, 15 to 35 percent slopes, eroded

This very deep, well drained soil is on side slopes and toe slopes in the uplands in the transition area between the Blackland Prairie and the Coastal Plain. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In places, all of the original surface layer has been removed. Most areas have few or common rills and shallow gullies. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 10 to 1,500 acres in size.

Typically, the surface layer is brown sandy clay loam about 5 inches thick. The subsurface layer, to a depth of 8 inches, is yellowish red sandy clay loam. The subsoil extends to a depth of 53 inches. It is strong brown sandy clay in the upper part, dark yellowish brown sandy clay loam that has brownish mottles in the next part, and yellowish brown sandy clay loam that has brownish mottles in the lower part. The substratum, to a depth of 65 inches, is yellowish brown fine sandy loam that has brownish mottles. In a few places, the surface layer is loam or sandy loam.

Important properties of the Brantley soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Moderate
*Flooding:* None

Included in mapping are a few small areas of Kinston, Oktibbeha, and Searcy soils. The poorly drained Kinston soils are on narrow flood plains. Oktibbeha and Searcy soils are on the lower parts of slopes. Oktibbeha soils have a higher content of clay throughout the subsoil than the Brantley soil. Searcy soils are moderately well drained and have a thicker combined surface layer and subsoil than the Brantley soil. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for pasture.

This map unit is unsuited to most cultivated crops. The complex topography and the strongly sloping to steep slopes are severe limitations affecting the use of equipment. Erosion is a severe hazard. Gullies form readily in areas that have a concentrated flow of water on the surface.

This map unit is poorly suited to pasture and hay. The complex slope and a severe hazard of erosion are the main management concerns. The use of equipment is limited by the sloping, complex topography and in some places by deep gullies. Tillage should be on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of little bluestem, panicums, greenbrier, poison ivy, huckleberry, muscadine grape, waxmyrtle, redbud, and flowering dogwood.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, and plant competition. Exposing the surface by removing ground cover increases the hazard of further erosion, including rill and gully erosion. Roads, landings, and skid trails can be protected against further erosion by constructing diversions, mulching, and seeding. The slope and deep gullies restrict the use of equipment. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Management activities should be planned for seasons when the soil is dry. Plant competition reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the slope, the moderate shrink-swell potential, the slow permeability, and low strength on sites for roads and streets. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. Access roads can be designed so that surface runoff is controlled and cut slopes are stabilized. Roads should also be designed to offset the limited ability of the soil to support a load. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low

shrink-swell potential. Septic tank absorption fields may not function properly because of the slow permeability. An alternative method is needed to dispose of sewage properly.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is VIIe. The woodland ordination symbol is 8R.

## CaA—Cahaba fine sandy loam, 0 to 2 percent slopes, rarely flooded

This very deep, well drained soil is on low terraces that parallel the Alabama River and other large streams throughout the county. Flooding is rare, but it can occur under unusual weather conditions. Slopes generally are long and smooth. Individual areas are oblong. They range from 10 to 500 acres in size.

Typically, the surface layer is brown fine sandy loam about 9 inches thick. The subsoil, to a depth of 53 inches, is red sandy clay loam. The substratum, to a depth of 90 inches, is yellowish red and reddish yellow sandy loam.

Important properties of the Cahaba soil—

*Permeability:* Moderate in the upper part of the subsoil and moderately rapid in the lower part
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* Rare

Included in mapping are a few small areas of Annemaine, Bigbee, Canton Bend, Izagora, and Una soils. Annemaine, Canton Bend, and Izagora soils are in slightly lower, more concave landscape positions than the Cahaba soil. Annemaine and Canton Bend soils are clayey in the upper part of the subsoil. Izagora soils have a brownish subsoil. Bigbee soils are in slightly higher positions than the Cahaba soil and are sandy throughout. The poorly drained Una soils are in small depressions and are clayey throughout. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland, and some areas are used as homesites.

This map unit is well suited to cultivated crops. It has few limitations affecting this use. Low fertility, however, is a management concern. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has few limitations affecting these uses. Suitable pasture plants are coastal bermudagrass and bahiagrass. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, yellow-poplar, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 95. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.5 cords per acre per year. The understory vegetation consists mainly of greenbrier, little bluestem, panicums, American holly, longleaf uniola, sweetgum, and red maple.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is poorly suited to most urban uses. The hazard of flooding is severe and difficult to overcome. If this soil is used as a homesite, the building should be constructed on elevated, well-compacted fill material to minimize damage from floodwater.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can

increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability class is I. The woodland ordination symbol is 10A.

## CbA—Canton Bend loam, 0 to 2 percent slopes, occasionally flooded

This very deep, well drained soil is on low terraces that parallel the Alabama River and other large streams throughout the county. Slopes are generally long and smooth. Individual areas generally are oblong. They range from 10 to about 300 acres in size.

Typically, the surface layer is brown loam about 8 inches thick. The subsoil is clay loam and extends to a depth of 48 inches. It is yellowish red in the upper part and strong brown in the lower part. The substratum, to a depth of 65 inches, is strong brown sandy clay loam.

Important properties of the Canton Bend soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Moderate
*Flooding:* Occasional, for brief periods from December to April

Included in mapping are a few small areas of Annemaine, Cahaba, Izagora, and Una soils. Annemaine soils are in landscape positions similar to those of the Canton Bend soil and are moderately well drained. Cahaba and Izagora soils are in slightly higher, more convex positions than the Canton Bend soil. They are loamy throughout. The poorly drained Una soils are in small depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland.

This map unit is well suited to cultivated crops. The main limitation is the occasional flooding. The planting of early-season crops may be delayed in some years because of the flooding. The surface layer is friable and easy to keep in good tilth. It can be worked over a wide range of moisture content. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay. The occasional flooding is the main management concern. Suitable pasture plants are bermudagrass, tall fescue, and bahiagrass. Deferring or restricting grazing during very wet periods helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, yellow-poplar, sweetgum, willow oak, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, blackberry, Alabama supplejack, panicums, longleaf uniola, poison ivy, sweetgum, willow oak, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting activities should be planned for seasons when the soil is dry. Plant competition reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation or prescribed burning.

This map unit is poorly suited to most urban uses. The main limitation is the flooding. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding. The moderate shrink-swell potential and low strength are limitations on sites for local roads and streets.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIw. The woodland ordination symbol is 9A.

## ChA—Chrysler loam, 0 to 2 percent slopes, occasionally flooded

This very deep, moderately well drained soil is on low terraces that parallel the Alabama River and other large streams throughout the county. Slopes are generally long and smooth. Individual areas generally are oblong. They range from 10 to about 200 acres in size.

Typically, the surface layer is brown loam about 5 inches thick. The subsoil is clay and extends to a depth of 65 inches. In the upper part, it is dark brown and yellowish red. In the next part, it is yellowish red and has brownish, reddish, and grayish mottles. In the lower part, it is mottled in shades of brown, red, and gray.

Important properties of the Chrysler soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 1.5 to 3.0 feet from January to April
*Shrink-swell potential:* Moderate
*Flooding:* Occasional, for brief periods from December to April

Included in mapping are a few small areas of Annemaine, Cahaba, Izagora, and Una soils. Annemaine soils are in landscape positions similar to those of the Chrysler soil and have a significant decrease in clay content within a depth of 60 inches. Cahaba and Izagora soils are in slightly higher, more convex positions than the Chrysler soil. They are loamy throughout. The poorly drained Una soils are in small depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for cultivated crops, pasture, or hay.

This map unit is well suited to cultivated crops. The main management concerns are the occasional flooding and the wetness. The planting of early-season crops may be delayed in some years because of the flooding. The surface layer is friable and easy to keep in good tilth. It can be worked over a wide range of moisture content. Shallow ditches can help to remove excess surface water. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay. Wetness and the occasional flooding are the main management concerns. Suitable pasture plants are bermudagrass, tall fescue, and bahiagrass. Excess surface water can be removed by shallow ditches. Deferring or restricting grazing during very wet periods helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, yellow-poplar, sweetgum, willow oak, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, blackberry, Alabama supplejack, panicums, longleaf uniola, poison ivy, sweetgum, willow oak, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting activities should be planned for seasons when the soil is dry. Plant competition reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation or prescribed burning.

This map unit is poorly suited to most urban uses. The main management concerns are the flooding and wetness. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding. The moderate shrink-swell potential and low strength are limitations on sites for local roads and streets.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIw. The woodland ordination symbol is 9W.

## CoA—Congaree fine sandy loam, 0 to 2 percent slopes, frequently flooded

This very deep, moderately well drained soil is on flood plains along streams in the north-central and northeastern parts of the county. It is subject to flooding for brief periods several times each year, usually in winter and spring. Individual areas are generally long and narrow. They range from 5 to 200 acres in size.

Typically, the surface layer is brown fine sandy loam about 4 inches thick. The substratum extends to a depth of 70 inches. In the upper part, it is dark yellowish brown silty clay loam that has thin strata of brownish loam. In the next part, it is dark brown loam and yellowish brown fine sandy loam. In the lower part, it is strong brown fine sandy loam that has brownish and grayish mottles.

Important properties of the Congaree soil—

*Permeability:* Moderate
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 2.5 to 4.0 feet from December to April
*Shrink-swell potential:* Low
*Flooding:* Frequent, for brief periods from December to April

Included in mapping are a few small areas of Bigbee, Kinston, and Sucarnoochee soils. Bigbee soils are in slightly higher landscape positions than the Congaree soil and are sandy throughout. The poorly drained Kinston and somewhat poorly drained Sucarnoochee soils are in small depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops or pasture. A few small areas are used for woodland.

This map unit is suited to cultivated crops. The flooding is the main hazard. It occurs mainly in late winter and early spring, but it can occur throughout the year. Although crops can be grown in most years, the flooding delays planting or damages crops in some years. Crops and drainage ditches may be damaged or destroyed due to scouring and deposition by fast-flowing flood waters.

This map unit is suited to pasture and hay. The main management concern is the frequent flooding. Cattle and other livestock need to be moved to higher areas during flood periods. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine and hardwoods. Species other than loblolly pine that commonly grow in areas of this map unit include sweetgum, yellow-poplar, cherrybark oak, water oak, willow oak, American sycamore, hackberry, eastern cottonwood, and green ash. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of carpetgrass, longleaf uniola, panicums, blackberry, dwarf palmetto, red maple, Alabama supplejack, green ash, and winged elm.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. The seasonal high water table and the flooding restrict the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control subsequent growth.

This map unit is not suited to most urban uses. The main hazard is the frequent flooding. Buildings can be constructed on pilings or well-compacted fill to elevate them above the expected level of flooding.

This map unit has good potential for openland and woodland wildlife habitat and fair potential for wetland wildlife habitat. Habitat for openland and woodland wildlife can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIIw. The woodland ordination symbol is 9A.

## DwC—Demopolis-Watsonia complex, 2 to 8 percent slopes

This map unit consists of the shallow, well drained Demopolis and Watsonia soils. It is on narrow ridgetops

and side slopes in the uplands of the Blackland Prairie. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Demopolis soil makes up about 65 percent of the map unit, and the Watsonia soil makes up about 20 percent. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 10 to 400 acres in size.

The Demopolis soil is on the more convex parts of ridgetops and on the upper parts of side slopes. Typically, the surface layer is dark grayish brown silty clay loam about 7 inches thick. The substratum, to a depth of 17 inches, is olive silty clay loam that has many fragments of chalk and concretions of calcium carbonate. The next layer, to a depth of 60 inches, is light gray soft limestone (chalk).

Important properties of the Demopolis soil—

*Permeability:* Very slow
*Available water capacity:* Low
*Organic matter content:* Medium
*Natural fertility:* High
*Depth to bedrock:* 10 to 20 inches
*Root zone:* 10 to 20 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

The Watsonia soil is on the smoother, less convex parts of ridgetops. Typically, the surface layer is brown clay about 3 inches thick. The subsoil is clay and extends to a depth of 18 inches. It is red in the upper part and is light olive brown and has common soft masses of calcium carbonate in the lower part. The substratum, to a depth of 80 inches, is pale olive soft limestone (chalk).

Important properties of the Watsonia soil—

*Permeability:* Very slow
*Available water capacity:* Low
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* 10 to 20 inches
*Root zone:* 10 to 20 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* High
*Flooding:* None

Included in mapping are a few small areas of Brantley, Oktibbeha, and Sumter soils. Also included are areas of rock outcrop and areas of soils that have a cobbly or stony surface layer. Brantley and Oktibbeha soils are on the lower parts of slopes. They are acid in the upper part of the subsoil and do not have bedrock within a depth of 60 inches. Sumter soils are in landscape positions similar to those of the Demopolis soil. They have chalk bedrock at a depth of 20 to 40 inches. Included areas make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland, wildlife habitat, or pasture.

This map unit is not suited to cultivated crops. The main management concerns are the low available water capacity, the shallow depth to bedrock, poor tilth, and a severe hazard of erosion.

This map unit is poorly suited to pasture and hay. The droughtiness and a severe hazard of erosion are the main management concerns. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet periods help to keep the soils in good condition.

Areas of the Demopolis soil are suited to eastern redcedar. The Demopolis soil is not suited to pine trees because of alkalinity. On the basis of a 50-year site curve, the site index in areas of the Demopolis soil is 40 for eastern redcedar. The average annual growth of well stocked, even-aged, unmanaged stands of eastern redcedar at 40 years of age is 140 board feet per acre per year. Areas of the Watsonia soil are suited to loblolly pine. On the basis of a 50-year site curve, the site index in areas of the Watsonia soil is 75 for loblolly pine. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.6 cords per acre per year. The understory vegetation consists mainly of greenbrier, panicums, broomsedge bluestem, MaCartney rose, blackberry, poison ivy, honeysuckle, sumac, winged elm, and flowering dogwood.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, including rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction and increases the hazard of erosion. Harvesting activities should be planned for the drier periods. The high seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. It

has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the depth to bedrock, the very slow permeability, and the high shrink-swell potential in areas of the Watsonia soil.

This map unit has poor potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability class is VIs. The woodland ordination symbol is 3D in areas of the Demopolis soil and 7D in areas of the Watsonia soil.

## EsA—Escambia fine sandy loam, 0 to 2 percent slopes

This very deep, somewhat poorly drained soil is in low areas of broad interstream divides and on toe slopes. Slopes are long and smooth. Individual areas are generally broad. They range from 10 to 300 acres in size.

Typically, the surface layer is very dark grayish brown fine sandy loam about 6 inches thick. The subsurface layer is fine sandy loam and extends to a depth of 14 inches. It is grayish brown in the upper part and light brownish gray in the lower part. The subsoil extends to a depth of 65 inches. In the upper part, it is light yellowish brown loam that has brownish, reddish, and grayish mottles. In the lower part, it is sandy clay loam that is mottled in shades of brown and gray.

Important properties of the Escambia soil—

*Permeability:* Moderate
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 1.5 to 2.5 feet from December to April
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Kinston, Malbis, and Poarch soils. The poorly drained Kinston soils are in narrow drainageways. The well drained Malbis and moderately well drained Poarch soils are in slightly higher, more convex landscape positions than the Escambia soil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few small areas are used for pasture or hay.

This map unit is suited to cultivated crops. The main management concerns are the low fertility and wetness. Planting may be delayed in the spring because of the wetness. Shallow ditches can help to remove excess water from the surface. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter.

This map unit is suited to pasture and hay. Wetness is the main limitation. Grasses that are tolerant of wet conditions should be selected. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, slash pine, sweetgum, water oak, and willow oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of longleaf uniola, panicums, poison ivy, American holly, waxmyrtle, huckleberry, blackgum, and little bluestem.

This map unit generally has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. Harvesting activities should be planned for seasons when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation, herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. Wetness is a severe limitation affecting building sites, local roads and streets, and most kinds of sanitary facilities. Because of the seasonal high water table during winter and spring, a drainage system is needed for buildings. A deep drainage system can help to lower the water table. Septic tank absorption fields do not function properly during rainy periods because of the wetness. Increasing the size of the absorption field or

constructing the absorption field on a raised bed helps to compensate for this limitation.

This map unit has good potential for openland and woodland wildlife habitat and fair potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIw. The woodland ordination symbol is 10W.

## FrA—Freest fine sandy loam, 0 to 2 percent slopes

This very deep, moderately well drained soil is on stream terraces and toe slopes of the Blackland Prairie. Slopes are generally long and smooth. Individual areas generally are oblong. They range from 10 to 300 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 3 inches thick. The subsurface layer, to a depth of 9 inches, is brown fine sandy loam. The subsoil extends to a depth of 65 inches. In the upper part, it is yellowish brown sandy clay loam. In the next part, it is clay loam that is mottled in shades of red, yellow, gray, and brown. In the lower part, it is clay that is mottled in shades of yellow, gray, and red.

Important properties of the Freest soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 1.5 to 2.5 feet from January to April
*Shrink-swell potential:* Moderate
*Flooding:* None

Included in mapping are a few small areas of Kipling and Searcy soils. These included soils are in slightly higher landscape positions than the Freest soil and have a clayey subsoil. Kipling soils are somewhat poorly drained. Also included are a few small areas of poorly drained soils in shallow depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland and homesites.

This map unit is well suited to cultivated crops. The main management concern is wetness, which may delay planting of early-season crops in some years. Shallow ditches can help to remove excess surface water, and a subsurface drainage system can help to lower the water table. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter help improve and maintain tilth and the content of organic matter. Crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. Wetness is a management concern in late winter and early spring. Shallow ditches can help to remove excess surface water. Coastal bermudagrass and bahiagrass are the most commonly grown grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 95. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.5 cords per acre per year. The understory vegetation consists mainly of little bluestem, flowering dogwood, waxmyrtle, greenbrier, yellow jessamine, panicums, oak, and hickory.

This map unit has few limitations affecting the production of timber. Soil compaction and plant competition are minor management concerns. Harvesting during the drier periods helps to prevent compaction. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control initial plant competition and facilitate mechanical planting.

This map unit is suited to most urban uses. It has moderate limitations affecting building sites and local roads and streets and has severe limitations affecting most kinds of sanitary facilities. The main management concerns are wetness, the moderate shrink-swell potential, and the slow permeability. A subsurface drainage system can help to lower the water table. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Septic tank absorption fields do not function

properly during rainy periods because of the wetness and the slow permeability. Enlarging the size of the absorption field helps to overcome these limitations.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Leaving undisturbed areas of vegetation around cropland and pasture provides food and rest areas that improve habitat for openland wildlife, such as red fox, rabbit, quail, and songbirds.

The capability subclass is IIw. The woodland ordination symbol is 9A.

## FrB—Freest fine sandy loam, 2 to 5 percent slopes

This very deep, moderately well drained soil is on side slopes of stream terraces and on toe slopes of the Blackland Prairie. Slopes are generally long and smooth. Individual areas generally are irregular in shape. They range from 10 to 200 acres in size.

Typically, the surface layer is brown fine sandy loam about 4 inches thick. The subsurface layer, to a depth of 10 inches, is yellowish brown fine sandy loam. The subsoil extends to a depth of 65 inches. It is yellowish brown sandy clay loam in the upper part; yellowish brown and light yellowish brown clay loam that has reddish, brownish, and grayish mottles in the next part; and clay that is mottled in shades of gray, brown, and red in the lower part.

Important properties of the Freest soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 1.5 to 2.5 feet from January to April
*Shrink-swell potential:* Moderate
*Flooding:* None

Included in mapping are a few small areas of Brantley, Houlka, and Searcy soils. Brantley and Searcy soils are on the lower parts of slopes and are clayey in the upper part of the subsoil. Houlka soils are in narrow drainageways and are clayey throughout. Also included are small areas of poorly drained soils in shallow depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland and homesites.

This map unit is well suited to cultivated crops. The main management concerns are wetness and a moderate hazard of erosion. The wetness may delay planting of early-season crops in some years. Shallow ditches can help to remove excess surface water, and a subsurface drainage system can help to lower the water table. Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter help improve and maintain tilth and the content of organic matter. Crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. Wetness is a management concern in late winter and early spring. Shallow ditches can help to remove excess surface water. Coastal bermudagrass and bahiagrass are the most commonly grown grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 95. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.5 cords per acre per year. The understory vegetation consists mainly of little bluestem, flowering dogwood, waxmyrtle, greenbrier, yellow jessamine, panicums, oak, and hickory.

This map unit has few limitations affecting the production of timber. Soil compaction and plant competition are minor management concerns. Harvesting during the drier periods helps to prevent compaction. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control initial plant competition and facilitate mechanical planting.

This map unit is suited to most urban uses. It has moderate limitations affecting building sites and local roads and streets and has severe limitations affecting most kinds of sanitary facilities. The main management

concerns are wetness, the moderate shrink-swell potential, and the slow permeability. A subsurface drainage system can help to lower the water table. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the slow permeability. Enlarging the size of the absorption field helps to overcome these limitations.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Leaving undisturbed areas of vegetation around cropland and pasture provides food and rest areas that improve habitat for openland wildlife, such as red fox, rabbit, quail, and songbirds.

The capability subclass is IIe. The woodland ordination symbol is 9A.

## HaB—Halso silt loam, 2 to 5 percent slopes

This deep, moderately well drained soil is on narrow to broad ridgetops in the uplands. Slopes are generally long and smooth. Individual areas generally are irregular in shape. They range from 10 to 300 acres in size.

Typically, the surface layer is brown silt loam about 2 inches thick. The subsurface layer, to a depth of 6 inches, is yellowish red clay loam. The subsoil is clay and extends to a depth of 36 inches. In the upper part, it is dark red and has brownish, reddish, and grayish mottles. In the next part, it is red and has grayish mottles. In the lower part, it is light olive brown and has brownish and grayish mottles. The substratum extends to a depth of 80 inches. It is stratified clayey shale and light yellowish brown clay loam in the upper part and is grayish brown clayey shale in the lower part.

Important properties of the Halso soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* 40 to 60 inches
*Root zone:* 40 to 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* High
*Flooding:* None

Included in mapping are a few small areas of Luverne and Smithdale soils. These included soils are in slightly higher landscape positions than the Halso soil. Luverne soils do not have bedrock within a depth of 80 inches. Smithdale soils are loamy throughout. Included soils make up about 15 percent of mapped areas. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for pasture and hay.

This map unit is suited to cultivated crops. The main management concerns are the low fertility, poor tilth, and a moderate hazard of erosion. Measures that help to control erosion include early-fall seeding, minimum tillage, terraces, diversions, grassed waterways, and cover crops. Tillage should be on the contour or across the slope. Maintaining crop residue on or near the surface helps to control runoff and maintains tilth and the content of organic matter. Most crops respond well to systematic applications of fertilizer and lime.

This map unit is well suited to pasture and hay. Bahiagrass and coastal bermudagrass are the most commonly grown grasses. The main management concerns are the low fertility and a hazard of erosion. The seedbed should be prepared on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of greenbrier, flowering dogwood, waxmyrtle, poison ivy, yellow jessamine, little bluestem, longleaf uniola, huckleberry, sweetgum, water oak, muscadine grape, and panicums.

This map unit generally has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. Low strength restricts the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site

preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the very slow permeability, the high shrink-swell potential, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Support beams should be used to maintain the stability of cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Septic tank absorption fields do not function properly during rainy periods because of the very slow permeability. An alternative method is needed to dispose of sewage properly.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIIe. The woodland ordination symbol is 8C.

## HbD2—Halso loam, 5 to 15 percent slopes, eroded

This deep, moderately well drained soil is on side slopes in the uplands. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Some areas have a few rills and gullies. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 10 to 500 acres in size.

Typically, the surface layer is brown loam about 4 inches thick. The subsoil is clay and extends to a depth of 44 inches. It is red in the upper part and is mottled in shades of gray, red, yellow, and brown in the lower part. The substratum, to a depth of 80 inches, is light brownish gray clayey shale.

Important properties of the Halso soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* 40 to 60 inches
*Root zone:* 40 to 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* High
*Flooding:* None

Included in mapping are a few small areas of Kinston, Luverne, and Smithdale soils. Luverne and Smithdale soils are on the upper parts of slopes and do not have shale bedrock within a depth of 60 inches. Also, Smithdale soils are loamy throughout. The poorly drained Kinston soils are in drainageways. Also included are small outcrops of soft limestone in some of the steeper areas. Included areas make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for pasture or hay.

This map unit is not suited to most cultivated crops. The main management concerns are the complex slopes, the low fertility, and a severe hazard of erosion. Measures that help to control erosion include early-fall seeding, minimum tillage, terraces, diversions, and grassed waterways. Tillage should be on the contour or across the slope. Maintaining crop residue on or near the surface helps to control runoff and maintain tilth and the content of organic matter. Most crops respond well to systematic applications of fertilizer and lime.

This map unit is suited to pasture and hay. Bahiagrass and coastal bermudagrass are the most commonly grown grasses. The main management concerns are the low fertility, the complex slopes, and a hazard of erosion. The seedbed should be prepared on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of muscadine grape, poison ivy, yellow jessamine, flowering dogwood, waxmyrtle, longleaf uniola, panicums, sweetgum, and water oak.

This map unit generally has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. Low strength restricts the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-

pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth. Exposing the surface by removing ground cover increases the hazard of further erosion, including rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the slope, the high shrink-swell potential, the very slow permeability, and low strength on sites for roads and streets. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. Access roads can be designed so that surface runoff is controlled and cut slopes are stabilized. If excavations are made, the cutbanks cave easily. Support beams should be used to maintain the stability of the cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Special design is needed for roads and streets to compensate for the low strength and instability of the subsoil. Septic tank absorption fields do not function properly because of the very slow permeability. An alternate method is needed to dispose of sewage properly.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is VIIe. The woodland ordination symbol is 8C.

## HoA—Houlka silty clay loam, 0 to 1 percent slopes, frequently flooded

This very deep, somewhat poorly drained soil is on flood plains along large streams. It is subject to flooding for brief periods several times each year. Individual areas are generally long and narrow. They range from 10 to 300 acres in size.

Typically, the surface layer is dark grayish brown silty clay loam about 6 inches thick. The subsoil extends to a depth of 65 inches. It is clay that is mottled in shades of gray, yellow, and brown in the upper part and is light brownish gray clay and silty clay having brownish and reddish mottles in the lower part.

Important properties of the Houlka soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 1.0 to 2.0 feet from December to April
*Shrink-swell potential:* High
*Flooding:* Frequent, for brief periods from December to April

Included in mapping are a few small areas of Freest, Mooreville, Kinston, and Una soils. Freest soils are on low knolls and terrace remnants. They are moderately well drained and have a loamy subsoil. The moderately well drained Mooreville soils are on high parts of natural levees that are adjacent to the stream channel. They are loamy throughout. The poorly drained Kinston and Una soils are in shallow depressions and swales. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for pasture or woodland. A few small areas are used for hay or cultivated crops.

This map unit is poorly suited to cultivated crops. The flooding and wetness are the main management concerns. Tillage and planting may be delayed in spring, and crops may be damaged by the flooding in late spring and early summer. Although the flooding could be controlled by a system of levees and pumps, installing such a system commonly is impractical. Shallow ditches can help to remove water from the surface.

This map unit is poorly suited to pasture and hay because of the frequent flooding and the wetness. Grasses that are tolerant of the wetness and the flooding should be selected. Common bermudagrass is suitable. Deferred grazing during wet periods helps to keep the pasture in good condition. A drainage system can help to remove excess water from the surface.

This map unit is well suited to loblolly pine, sweetgum, water oak, and other hardwoods. Other species that commonly grow in areas of this map unit

include slash pine, green ash, American sycamore, cherrybark oak, and Nuttall oak. On the basis of a 50-year site curve, the site index for water oak is 95. The average annual growth of well stocked, even-aged, unmanaged stands of water oak at 30 years of age is 1.0 cord per acre per year. The understory vegetation consists mainly of switchcane, honeylocust, poison ivy, winged elm, hackberry, blackberry, osageorange, and panicums.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment, the seedling mortality rate, and plant competition. The seasonal high water table, the flooding, and the low strength of the subsoil restrict the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness and the clayey texture of the surface layer. It can be reduced by planting on beds or increasing the number of trees planted. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. The flooding, wetness, the very slow permeability, the high shrink-swell potential, and low strength on sites for local roads and streets are severe limitations. Buildings can be constructed on pilings or on well-compacted fill material to elevate them above the expected level of flooding.

This map unit has good potential for woodland wildlife habitat and fair potential for openland and wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IVw. The woodland ordination symbol is 6W.

## IaA—Izagora fine sandy loam, 0 to 2 percent slopes, occasionally flooded

This very deep, moderately well drained soil is on low terraces that parallel the Alabama River and other large streams throughout the county. Slopes are generally long and smooth. Individual areas generally are oblong. They range from 10 to about 200 acres in size.

Typically, the surface layer is fine sandy loam to a depth of 11 inches. It is dark yellowish brown in the upper part and is mixed dark grayish brown and dark yellowish brown in the lower part. The subsoil extends to a depth of 91 inches. It is yellowish brown loam in the upper part, yellowish brown loam and clay loam having reddish and grayish mottles in the next part, and clay and clay loam mottled in shades of brown, yellow, gray, and red in the lower part.

Important properties of the Izagora soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 2.0 to 3.0 feet from January to April
*Shrink-swell potential:* Moderate
*Flooding:* Occasional, for brief periods from December to April

Included in mapping are a few small areas of Annemaine, Cahaba, Kinston, and Una soils. Annemaine soils are in slightly lower landscape positions than the Izagora soil. They are reddish and clayey in the upper part of the subsoil. Cahaba soils are in the slightly higher, more convex positions and have a reddish subsoil. The poorly drained Kinston and Una soils are in narrow drainageways and small depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland or pasture. A few areas are used for cultivated crops or hay.

This map unit is well suited to cultivated crops. The main management concerns are wetness and the occasional flooding. The planting of early-season crops may be delayed in some years because of the flooding. The surface layer is friable and easy to keep in good tilth. It can be worked over a wide range of moisture content. Shallow ditches can help to remove excess surface water. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay.

Wetness and the occasional flooding are the main management concerns. Suitable pasture plants are bermudagrass and bahiagrass. Excess surface water can be removed by shallow ditches. Deferring or restricting grazing during very wet periods helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine and hardwoods. Species other than loblolly pine that commonly grow in areas of this map unit include longleaf pine, yellow-poplar, sweetgum, cherrybark oak, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 95. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.5 cords per acre per year. The understory vegetation consists mainly of greenbrier, Alabama supplejack, switchcane, blackberry, panicums, longleaf uniola, poison ivy, sweetgum, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting activities should be planned for seasons when the soil is dry. Plant competition reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation or prescribed burning.

This map unit is poorly suited to most urban uses. The main management concerns are the flooding and wetness. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding. Septic tank absorption fields may not function properly because of the slow permeability and the seasonal high water table. Enlarging the size of the absorption field or using an alternative method of waste disposal helps to overcome these limitations.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIw. The woodland ordination symbol is 10W.

## IjB—Izagora-Jedburg complex, gently undulating, occasionally flooded

This map unit consists of the very deep, moderately well drained Izagora and somewhat poorly drained Jedburg soils on low terraces that parallel the Alabama River. These soils are subject to occasional flooding, usually in late winter and early spring. They occur as areas so intricately intermingled that it was not possible to separate them at the scale selected for mapping. The Izagora soil makes up about 65 percent of the map unit, and the Jedburg soil makes up about 25 percent. Most mapped areas are oblong, but some are broad. Mapped areas range from 10 to 500 acres in size.

The moderately well drained Izagora soils are on convex, low ridges. Typically, the surface layer is brown fine sandy loam about 6 inches thick. The subsurface layer, to a depth of 9 inches, is light yellowish brown fine sandy loam. The subsoil is clay loam and extends to a depth of 80 inches. In the upper part, it is brownish yellow. In the next part, it is brownish yellow and has brownish and grayish mottles. In the lower part, it is olive yellow and has brownish and grayish mottles.

Important properties of the Izagora soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 2.0 to 3.0 feet from January to April
*Shrink-swell potential:* Moderate
*Flooding:* Occasional, for brief periods from December to April

The somewhat poorly drained Jedburg soils are in flat to concave swales. Typically, the surface layer is very dark gray fine sandy loam about 4 inches thick. The subsurface layer, to a depth of 8 inches, is light yellowish brown fine sandy loam. The subsoil extends to a depth of 80 inches. In the upper part, it is loam that is mottled in shades of gray and brown. In the next part, it is clay loam that is mottled in shades of brown, gray, and red. In the lower part, it is light gray clay loam that has brownish and reddish mottles.

Important properties of the Jedburg soil—

*Permeability:* Moderately slow
*Available water capacity:* High
*Organic matter content:* Low

*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 0.5 foot to 1.5 feet from December to April
*Shrink-swell potential:* Low
*Flooding:* Occasional, for brief periods from December to April

Included in mapping are a few small areas of Annemaine, Cahaba, Lenoir, and Una soils. Annemaine and Cahaba soils are in slightly higher, more convex landscape positions than the Izagora and Jedburg soils. Annemaine soils have a reddish, clayey subsoil. Cahaba soils have a reddish, loamy subsoil. Lenoir soils are in positions similar to those of the Jedburg soil and have a clayey subsoil. The poorly drained Una soils are in slightly lower, more concave positions than the Jedburg soil and are ponded for significant periods. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few small areas are used for cultivated crops, pasture, or hay.

This map unit is suited to cultivated crops, pasture, and hay. Wetness and the occasional flooding are the main management concerns. If cultivated crops are grown, a surface drainage system and protection from flooding are needed. If areas are used for pasture or hay, grasses that tolerate wet soil conditions should be selected. Common bermudagrass is suitable.

This map unit is well suited to loblolly pine and hardwoods. Species other than loblolly pine that commonly grow in areas of this map unit include sweetgum, yellow-poplar, water oak, cherrybark oak, and green ash. On the basis of a 50-year site curve, the site index for loblolly pine is 95 in areas of the Izagora soil and 85 in areas of the Jedburg soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.5 cords per acre per year in areas of the Izagora soil and 2.1 cords per acre per year in areas of the Jedburg soil. The understory vegetation consists mainly of red maple, water oak, green ash, sweetgum, longleaf uniola, panicums, switchcane, waxmyrtle, greenbrier, poison ivy, and blackberry.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. The seasonal high water table and the flooding restrict the use of equipment to periods when the soils are dry. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soils and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has moderate and severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are wetness and the occasional flooding. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has fair potential for wetland wildlife habitat and good potential for openland and woodland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Habitat for wetland wildlife can be improved by constructing or maintaining shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIw in areas of the Izagora soil and IIIw in areas of the Jedburg soil. The woodland ordination symbol is 10W in areas of Izagora soil and 8W in areas of the Jedburg soil.

## KpD2—Kipling silty clay loam, 5 to 12 percent slopes, eroded

This very deep, somewhat poorly drained soil is on side slopes in the uplands of the Blackland Prairie. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In places, all of the original surface layer has been removed. Some areas have a few rills and shallow gullies. Slopes are generally long and smooth. Individual areas are irregular in shape. They range from 10 to 500 acres in size.

Typically, the surface layer is dark yellowish brown silty clay loam about 4 inches thick. The subsoil is silty clay and extends to a depth of 85 inches. In the upper part, it is yellowish brown and has brownish, grayish, and reddish mottles. In the next part, it is light yellowish brown and has brownish, yellowish, and grayish mottles. In the lower part, it is mottled in shades of brown, gray, olive, and yellow. It has soft masses and concretions of calcium carbonate in the lower part.

Important properties of the Kipling soil—

*Permeability:* Very slow
*Available water capacity:* Moderate

*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 1.5 to 3.0 feet from January to April
*Shrink-swell potential:* High
*Flooding:* None

Included in mapping are a few small areas of Oktibbeha and Vaiden soils. Oktibbeha soils are on convex slopes and are reddish in the upper part of the subsoil. Vaiden soils are on the lower parts of slopes. They have a higher content of clay in the subsoil than the Kipling soil. Also included are small areas of poorly drained soils in narrow drainageways. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for pasture or hay.

This map unit is poorly suited to most cultivated crops. The main management concerns are poor tilth and a hazard of erosion. Erosion is a severe hazard if this soil is cultivated. This soil can be worked only within a narrow range of moisture content and becomes cloddy if worked when too wet or too dry. Conservation tillage, strip cropping, contour farming, and cover crops reduce the runoff rate and help to control further erosion. Returning all crop residue to the soil improves tilth, reduces crusting, and increases the available water capacity.

This map unit is suited to pasture and hay. Tall fescuegrass, dallisgrass, and bahiagrass are the most commonly grown grasses. The seedbed should be prepared on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of panicums, blackberry, greenbrier, poison ivy, winged elm, and hawthorns.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment, the seedling mortality rate, and plant competition. The clayey texture of the surface layer and the subsoil restricts the use of equipment, especially during rainy periods. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting and management activities should be planned for seasons when the soil is dry. Planting rates can be increased to compensate for the high rate of seedling mortality. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the high shrink-swell potential, the slope, the slow permeability, wetness, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Support beams should be used to maintain the stability of cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Special design is needed for roads and streets to compensate for the low strength and instability of the subsoil. Septic tank absorption fields do not function properly because of the very slow permeability and the seasonal high water table. An alternate method is needed to dispose of sewage properly.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is VIe. The woodland ordination symbol is 8C.

## LbA—Lenoir silt loam, 0 to 1 percent slopes, occasionally flooded

This very deep, somewhat poorly drained soil is on low terraces that parallel the Alabama River. It is subject to occasional flooding, usually in late winter and early spring. Slopes are generally long and smooth.

Most mapped areas are oblong, but some are broad. Mapped areas range from 10 to 600 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 3 inches thick. The subsoil extends to a depth of 65 inches. In the upper part, it is silty clay loam that is mottled in shades of gray and brown. In the next part, it is light brownish gray silty clay that has brownish mottles. In the lower part, it is gray clay that has brownish mottles.

Important properties of the Lenoir soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Medium
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 1.0 foot to 2.5 feet from December to April
*Shrink-swell potential:* Moderate
*Flooding:* Occasional, for brief periods from December to April

Included in mapping are a few small areas of Cahaba, Chrysler, Izagora, and Una soils. The well drained Cahaba and moderately well drained Chrysler and Izagora soils are in slightly higher, more convex landscape positions than the Lenoir soil. Cahaba and Izagora soils have a loamy subsoil. Chrysler soils have reddish colors in the subsoil. The poorly drained Una soils are in slightly lower, more concave positions than the Lenoir soil and are ponded for significant periods. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few small areas are used for cultivated crops, pasture, or hay.

This map unit is suited to cultivated crops, pasture, and hay. Wetness and the occasional flooding are the main management concerns. If cultivated crops are grown, a surface drainage system and protection from flooding are needed. If areas are used for pasture or hay, grasses that tolerate wet soil conditions should be selected. Common bermudagrass is suitable.

This map unit is well suited to loblolly pine and hardwoods. Species other than loblolly pine that commonly grow in areas of this map unit include sweetgum, water oak, and green ash. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of red maple, water oak, green ash, sweetgum, panicums, waxmyrtle, switchcane, greenbrier, poison ivy, and blackberry.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. The seasonal high water table and the flooding restrict the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are wetness and the occasional flooding. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has fair potential for openland and wetland wildlife habitat and good potential for woodland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Habitat for wetland wildlife can be improved by constructing or maintaining shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IVw. The woodland ordination symbol is 8W.

## LdA—Lucedale loam, 0 to 2 percent slopes

This very deep, well drained soil is on broad ridgetops of high stream terraces. Slopes are long and smooth. Individual areas are generally broad or oblong. They range from 10 to 600 acres in size.

Typically, the surface layer is dark reddish brown loam about 7 inches thick. The subsoil extends to a depth of 80 inches. It is dark reddish brown sandy clay loam in the upper part, dark red clay loam in the next part, and dark red sandy clay loam in the lower part.

Important properties of the Lucedale soil—

*Permeability:* Moderate
*Available water capacity:* High
*Organic matter content:* Low

*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Bama and Smithdale soils. These included soils do not have dark red colors throughout the subsoil. Bama soils are in landscape positions similar to those of the Lucedale soil. Smithdale soils are on the lower parts of slopes. Also included are a few small areas of poorly drained soils in shallow depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this soil are used for cultivated crops, pasture, or hay. A few areas are used for homesites, and a few areas are wooded.

This soil is well suited to cultivated crops. It has few limitations affecting this use. Low fertility, however, is a management concern. The surface layer is friable and easy to keep in good tilth. It can be tilled over a wide range of moisture content without becoming cloddy. Using conservation practices, such as cover crops, minimum tillage, and returning all crop residue to the soil or regularly adding other organic matter, improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to systematic applications of lime and fertilizer.

This soil is well suited to pasture and hay. It has no significant limitations affecting these uses. Low fertility, however, is a management concern. Coastal bermudagrass and bahiagrass are the most commonly grown grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This soil is well suited to loblolly pine. Other species that commonly grow in areas of this soil include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of little bluestem, yellow jessamine, panicums, poison ivy, greenbrier, flowering dogwood, and sweetgum.

This soil has few limitations affecting the production of timber. Plant competition is a minor management concern. Using proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, and trees.

This soil is well suited to most urban uses. It has no significant management concerns for most uses.

This soil has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability class is I. The woodland ordination symbol is 9A.

## LvB—Luverne fine sandy loam, 2 to 5 percent slopes

This very deep, well drained soil is on narrow ridgetops in the uplands. Slopes are long and smooth. Individual areas are irregular in shape. They range from 10 to 400 acres in size.

Typically, the surface layer is brown fine sandy loam about 3 inches thick. The subsoil is clay and extends to a depth of 32 inches. It is red in the upper part, yellowish red in the next part, and yellowish red and has brownish mottles in the lower part. The substratum, to a depth of 65 inches, is stratified sandy clay loam, sandy loam, and sandy clay.

Important properties of the Luverne soil—

*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Moderate
*Flooding:* None

Included in mapping are a few small areas of Boykin, Halso, and Smithdale soils. Boykin and Smithdale soils are in slightly higher landscape positions than the Luverne soil. Boykin soils have thick sandy surface and subsurface layers. Smithdale soils are loamy throughout. Halso soils are in saddles and are underlain by shale at a depth of 40 to 60 inches. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for cultivated crops, pasture, hay, or homesites.

This map unit is suited to cultivated crops. The main

management concerns are the low fertility and a severe hazard of erosion. Terraces, contour farming, minimum tillage, and cover crops reduce the runoff rate and help to control erosion. Using a sod-based rotation system and incorporating crop residue into the soil increase the content of organic matter and improve tilth. Crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has few limitations affecting these uses. Erosion is a hazard if the surface is left bare during the establishment of pasture. Tillage should be on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, flowering dogwood, waxmyrtle, little bluestem, huckleberry, American beautyberry, muscadine grape, and panicums.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. The low strength of the clayey subsoil restricts the use of equipment when the soil is wet. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is suited to most urban uses. It has moderate limitations affecting building sites and severe limitations affecting local roads and streets and most kinds of sanitary facilities. The main management concerns are the moderately slow permeability, the moderate shrink-swell potential, and low strength on sites for local roads and streets. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Septic tank absorption fields do not function properly during rainy periods because of the moderately slow permeability. An alternative method is needed to dispose of sewage properly.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIIe. The woodland ordination symbol is 9C.

## LvD2—Luverne fine sandy loam, 5 to 15 percent slopes, eroded

This very deep, well drained soil is on narrow ridgetops and on side slopes in the uplands. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Some areas have a few rills and gullies. Slopes generally are short and complex, but some are long and smooth. Individual areas are irregular in shape. They range from 10 to 500 acres in size.

Typically, the surface layer is dark yellowish brown fine sandy loam about 6 inches thick. The subsoil is clay and extends to a depth of 41 inches. In the upper part, it is yellowish red. In the next part, it is yellowish red and strong brown. In the lower part, it is mottled in shades of yellow, brown, red, and gray. The substratum, to a depth of 70 inches, is stratified clay, sandy clay loam, and sandy loam.

Important properties of the Luverne soil—

*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Moderate
*Flooding:* None

Included in mapping are a few small areas of Boykin, Halso, Kinston, and Smithdale soils. Boykin soils are on the upper parts of slopes. They have thick sandy surface and subsurface layers. Halso soils are on the lower parts of slopes and are underlain by shale at a depth of 40 to 60 inches. The poorly drained Kinston soils are in narrow drainageways. Smithdale

soils are in landscape positions similar to those of the Luverne soil. They are loamy throughout. Included soils make up about 15 percent of mapped areas. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture and hay.

This map unit is poorly suited to cultivated crops. The main management concerns are the low fertility, poor tilth, and a severe hazard of erosion. Terraces, contour farming, minimum tillage, and cover crops reduce the runoff rate and help to control further erosion. Installing drop-inlet structures in grassed waterways helps to prevent gullying. Using a sod-based rotation system and incorporating crop residue into the soil increase the content of organic matter and improve tilth. Most crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. Erosion is a hazard if the surface is left bare during the establishment of pasture. Tillage should be on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, flowering dogwood, little bluestem, huckleberry, American beautyberry, yellow jessamine, waxmyrtle, muscadine grape, sweetgum, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and plant competition. The low strength of the clayey subsoil restricts the use of equipment, especially when the soil is wet. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is suited to most urban uses. It has moderate limitations affecting building sites and severe limitations affecting local roads and streets and most kinds of sanitary facilities. The main management concerns are the slope, the moderate shrink-swell potential, the moderately slow permeability, and low strength on sites for roads and streets. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. Access roads can be designed so that surface runoff is controlled and cut-slopes are stabilized. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. Roads and streets should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields may not function properly because of the moderately slow permeability. Enlarging the size of the absorption field or using an alternative method of waste disposal helps to overcome this limitation.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is VIe. The woodland ordination symbol is 9C.

## LvF—Luverne fine sandy loam, 15 to 35 percent slopes

This very deep, well drained soil is on side slopes in highly dissected uplands. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 10 to 1,500 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 2 inches thick. The subsurface layer is brown loamy sand to a depth of 8 inches. The subsoil is yellowish red clay and extends to a depth of 41 inches. It has brownish mottles in the lower part. The substratum, to a depth of 65 inches, is stratified yellowish red sandy clay loam and yellowish brown fine sandy loam.

Important properties of the Luverne soil—

*Permeability:* Moderately slow
*Available water capacity:* Moderate

*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Moderate
*Flooding:* None

Included in mapping are a few small areas of Boykin, Kinston, Halso, Saffell, and Smithdale soils. Boykin, Saffell, and Smithdale soils generally are on the upper parts of slopes. Boykin soils have thick sandy surface and subsurface layers. Smithdale soils are loamy throughout. Saffell soils have a high content of gravel in the surface layer and subsoil. Halso soils are on the lower parts of slopes and are underlain by shale at a depth of 40 to 60 inches. The poorly drained Kinston soils are on narrow flood plains. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture.

This map unit is not suited to cultivated crops, mainly because the slopes are too steep and the hazard of erosion is too severe. The irregular slope and the low fertility are also management concerns.

This map unit is poorly suited to pasture and hay. The main management concerns are the slope, the low fertility, and a severe hazard of erosion. The more steeply sloping areas are best suited to native grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison oak, little bluestem, honeysuckle, waxmyrtle, muscadine grape, American beautyberry, red maple, yellow jessamine, huckleberry, and flowering dogwood.

This map unit has moderate limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, including rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. The slope restricts the use of equipment. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Cable yarding systems are safer and damage the soil less. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It is generally not suitable as a site for buildings because of the slope. Other limitations include the moderately slow permeability, the moderate shrink-swell potential, and low strength.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is VIIe. The woodland ordination symbol is 9R.

## MaA—Malbis silt loam, 0 to 2 percent slopes

This very deep, well drained soil is on broad ridgetops of high stream terraces. Slopes are generally long and smooth. Individual areas are generally broad. They range from 10 to 200 acres in size.

Typically, the surface layer is brown silt loam about 12 inches thick. The subsoil extends to a depth of 72 inches. It is yellowish brown loam in the upper part; yellowish brown sandy clay loam that has reddish, brownish, and grayish mottles and plinthite in the next part; and clay loam that is mottled in shades of brown, red, and gray in the lower part.

Important properties of the Malbis soil—

*Permeability:* Moderately slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 2.5 to 4.0 feet from January to April

*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Bama and Luverne soils. Bama soils are on the slightly higher, more convex knolls. They have a reddish subsoil that does not have significant accumulations of plinthite. Luverne soils are on the lower parts of slopes and are clayey in the upper part of the subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for pecan orchards, woodland, or homesites.

This map unit is well suited to cultivated crops. It has few limitations affecting this use. Low fertility is a management concern. The surface layer is friable and easy to keep in good tilth. It can be tilled over a wide range of moisture content without becoming cloddy. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter help improve and maintain tilth and the content of organic matter. Crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has few limitations affecting these uses. Coastal bermudagrass and bahiagrass are the most commonly grown grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 95. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.5 cords per acre per year. The understory vegetation consists mainly of little bluestem, flowering dogwood, poison ivy, greenbrier, yellow jessamine, panicums, sweetgum, oak, and hickory.

This map unit has few limitations affecting the production of timber. Soil compaction and plant competition are minor management concerns. Harvesting during the drier periods helps to prevent compaction. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control initial plant competition and facilitate mechanical planting.

This map unit is well suited to most urban uses. It has moderate limitations affecting building sites, slight limitations affecting local roads and streets, and severe limitations affecting most kinds of sanitary facilities. The main management concerns are wetness and the moderately slow permeability. A subsurface drainage system can help to lower the water table. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the moderately slow permeability. Enlarging the size of the absorption field helps to overcome these limitations.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Leaving undisturbed areas of vegetation around cropland and pasture provides food and rest areas that improve habitat for openland wildlife, such as red fox, rabbit, quail, and songbirds.

The capability class is I. The woodland ordination symbol is 10A.

## MbB—Malbis fine sandy loam, 2 to 5 percent slopes

This very deep, well drained soil is on side slopes of high stream terraces. Slopes are generally long and smooth. Individual areas are irregular in shape. They range from 10 to 300 acres in size.

Typically, the surface layer is brown fine sandy loam about 7 inches thick. The subsoil extends to a depth of 70 inches. It is yellowish brown loam in the upper part; sandy clay loam that is mottled in shades of yellow, brown, red, and gray in the next part; and clay loam that is mottled in shades of yellow, brown, red, and gray in the lower part.

Important properties of the Malbis soil—

*Permeability:* Moderately slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 2.5 to 4.0 feet from January to April
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Bama, Kinston, Luverne, and Poarch soils. Bama and Poarch

**Figure 7.—An area of Malbis fine sandy loam, 2 to 5 percent slopes. This well managed stand of bahiagrass provides excellent forage for cattle.**

soils are in landscape positions similar to those of the Malbis soil. Bama soils have a reddish subsoil that does not have significant accumulations of plinthite. Poarch soils have less clay in the upper part of the subsoil than the Malbis soil. The poorly drained Kinston soils are in narrow drainageways. Luverne soils are on the lower parts of slopes and are clayey in the upper part of the subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland and homesites.

This map unit is well suited to cultivated crops. The main management concerns are the low fertility and a moderate hazard of erosion. Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter help improve and maintain tilth and the content of organic matter. Crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has few limitations affecting these uses. Coastal bermudagrass and bahiagrass are the most commonly grown grasses (fig. 7). Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and

water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 95. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.5 cords per acre per year. The understory vegetation consists mainly of little bluestem, flowering dogwood, poison ivy, greenbrier, yellow jessamine, panicums, oak, and hickory.

This map unit has few limitations affecting the production of timber. Soil compaction and plant competition are minor management concerns. Harvesting during the drier periods helps to prevent compaction. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control initial plant competition and facilitate mechanical planting.

This map unit is well suited to most urban uses. It has moderate limitations affecting building sites, slight limitations affecting local roads and streets, and severe limitations affecting most kinds of sanitary facilities. The main management concerns are wetness and the moderately slow permeability. A subsurface drainage system can help to lower the water table. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the moderately slow permeability. Enlarging the size of the absorption field helps to overcome these limitations.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Leaving undisturbed areas of vegetation around cropland and pasture provides food and rest areas that improve habitat for openland wildlife, such as red fox, rabbit, quail, and songbirds.

The capability subclass is IIe. The woodland ordination symbol is 10A.

## MbC—Malbis fine sandy loam, 5 to 8 percent slopes

This very deep, well drained soil is on side slopes of high stream terraces. Slopes generally are short and complex. Individual areas are generally long and narrow. They range from 10 to 150 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsoil extends to a depth of 66 inches. It is yellowish brown sandy clay loam in the upper part and clay loam that is mottled in shades of red, gray, brown, and yellow in the lower part.

Important properties of the Malbis soil—

*Permeability:* Moderately slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 2.5 to 4.0 feet from January to April
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Kinston, Luverne, and Smithdale soils. The poorly drained Kinston soils are in narrow drainageways. Luverne and Smithdale soils are on the lower parts of slopes. Luverne soils have a clayey subsoil. Smithdale soils have a reddish subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. Many small areas are used for woodland.

This map unit is suited to cultivated crops. The main management concerns are the low fertility, a severe hazard of erosion, and the short, complex slopes. Terraces, contour farming, minimum tillage, and cover crops reduce the runoff rate and help to control erosion. Using a sod-based rotation system and incorporating crop residue into the soil increase the content of organic matter and improve tilth. Installing drop-inlet structures in grassed waterways helps to prevent gullying. Crops respond well to systematic applications of fertilizer and lime.

This map unit is well suited to pasture and hay. Bahiagrass and coastal bermudagrass are the most commonly grown grasses. The main management concerns are the low fertility and a severe hazard of erosion. The seedbed should be prepared on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase production of forage.

This map unit is well suited to loblolly pine and slash pine. Other species that commonly grow in areas of this map unit include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 95. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.5 cords per acre

per year. The understory vegetation consists mainly of little bluestem, flowering dogwood, poison ivy, greenbrier, yellow jessamine, blackberry, panicums, oak, and hickory.

This map unit has few limitations affecting woodland management. Soil compaction and plant competition are minor management concerns. Harvesting during the drier periods helps to prevent soil compaction. Carefully managed reforestation helps to control competition from undesirable understory plants. Proper site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting. Conservation practices that help to control erosion are needed. Roads and landings can be protected from erosion by constructing diversions and by seeding cuts and fills.

This map unit is suited to most urban uses. It has moderate limitations affecting building sites, slight limitations affecting local roads and streets, and severe limitations affecting most kinds of sanitary facilities. The main management concerns are the slope, wetness, and the moderately slow permeability. A subsurface drainage system can help to lower the water table. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the moderately slow permeability. Enlarging the size of the absorption field helps to overcome these limitations. Absorption lines should be constructed on the contour.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Leaving undisturbed areas of vegetation around cropland and pasture provides food and rest areas that improve habitat for openland wildlife, such as red fox, rabbit, quail, and songbirds.

The capability subclass is IIIe. The woodland ordination symbol is 10A.

## MKA—Mooreville, Mantachie, and Kinston soils, 0 to 1 percent slopes, frequently flooded

This map unit consists of the very deep, moderately well drained Mooreville soil, the somewhat poorly drained Mantachie soil, and the poorly drained Kinston soil on flood plains. These soils are subject to flooding for brief periods several times each year. The composition of this map unit varies, but the mapping was sufficiently controlled to evaluate the soils for the expected uses. Some areas mainly consist of a single soil, and others contain all three soils in varied proportions. Individual areas generally are long and narrow. They range from 10 to 800 acres in size.

The Mooreville soil makes up about 35 percent of the map unit. It is on the higher, more convex parts of the flood plain. Typically, the surface layer is brown silt loam about 4 inches thick. The subsoil extends to a depth of 44 inches. It is yellowish brown loam that has grayish mottles in the upper part; sandy clay loam that is mottled in shades of gray, brown, and yellow in the next part; and light brownish gray sandy clay loam that has brownish mottles in the lower part. The substratum, to a depth of 70 inches, is gray sandy clay loam that has brownish mottles.

Important properties of the Mooreville soil—

*Permeability:* Moderate
*Available water capacity:* High
*Organic matter content:* Medium
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 1.5 to 3.0 feet from January to April
*Shrink-swell potential:* Moderate
*Flooding:* Frequent, for brief periods from December to April

The Mantachie soil makes up about 30 percent of the map unit. It is in smooth, slightly convex landscape positions at intermediate elevations on the flood plain. Typically, the surface layer is about 6 inches of dark brown loam and dark yellowish brown sandy loam. The subsoil extends to a depth of 51 inches. In the upper part, it is sandy loam that is mottled in shades of gray and brown. In the lower part, it is light brownish gray sandy clay loam and sandy loam having yellowish mottles. The substratum, to a depth of 68 inches, is grayish brown and gray sandy loam that has reddish and brownish mottles.

Important properties of the Mantachie soil—

*Permeability:* Moderate
*Available water capacity:* High
*Organic matter content:* Medium
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 1.0 to 1.5 feet from December to April

*Shrink-swell potential:* Low
*Flooding:* Frequent, for brief periods from December to April

The Kinston soil makes up about 25 percent of the map unit. It is in flat to concave landscape positions, generally at the lowest elevations on the flood plain. Typically, the surface layer is dark grayish brown silt loam about 3 inches thick. The substratum extends to a depth of 70 inches. In the upper part, it is light brownish gray loam that has brownish mottles. In the next part, it is gray sandy clay loam that has brownish mottles. In the lower part, it is gray clay loam that has brownish and olive mottles.

Important properties of the Kinston soil—

*Permeability:* Moderate
*Available water capacity:* High
*Organic matter content:* Medium
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at the surface to a depth of 1.0 foot from December to June
*Shrink-swell potential:* Low
*Flooding:* Frequent, for brief periods from December to April

Included in mapping are a few small areas of Bigbee, Cahaba, and Izagora soils. The excessively drained Bigbee soils are on high parts of natural levees adjacent to stream channels and are sandy throughout. The well drained Cahaba soils and the moderately well drained Izagora soils are on low knolls or remnants of terraces at the slightly higher elevations. They are not subject to the frequent flooding. Also included are small areas of very poorly drained soils in depressions that are subject to ponding. The included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are wooded and are used for wildlife habitat. A few areas are used for pasture, hay, or cultivated crops.

This map unit is poorly suited to most cultivated crops. The frequent flooding and the wetness are the main management concerns. If cultivated crops are grown, a surface drainage system and protection from flooding are needed.

This map unit is poorly suited to pasture and hay because of the frequent flooding and the wetness. If areas are used for pasture or hay, grasses that tolerate the wet soil conditions should be selected. Common bermudagrass is suitable. Shallow ditches can help to remove excess water from the surface.

This map unit is suited to loblolly pine and hardwoods. Species other than loblolly pine that commonly grow in areas of this map unit include American sycamore, eastern cottonwood, yellow-poplar, cherrybark oak, water oak, green ash, and sweetgum. On the basis of a 50-year site curve, the site index for loblolly pine is 100 in areas of the Mooreville and Mantachie soils. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.6 cords per acre per year. On the basis of a 50-year site curve, the site index for water oak is 90 in areas of the Kinston soil. The average annual growth of well stocked, even-aged, unmanaged stands of water oak at 30 years of age is 1.0 cord per acre per year. The understory vegetation consists mainly of sweetgum, blackgum, Alabama supplejack, panicums, sweetbay, green ash, and red maple.

This map unit has severe limitations affecting timber management. The main management concerns are the restricted use of equipment, the seedling mortality rate, and plant competition. The seasonal high water table and the flooding restrict the use of equipment to periods when the soils are dry. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soils and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness. It can be reduced by planting on beds or compensated for by increasing the number of trees planted. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is not suited to most urban uses. The flooding and wetness are severe limitations affecting most uses. Buildings can be constructed on pilings or on well-compacted fill to elevate them above the expected level of flooding.

The Mooreville and Mantachie soils have fair potential for openland wildlife habitat and good potential for woodland wildlife habitat. The Kinston soil has poor potential for openland and woodland wildlife habitat. The potential for wetland wildlife habitat is fair in areas of the Mantachie and Kinston soils and poor in areas of the Mooreville soil. Habitat for openland and woodland wildlife can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is Vw. The woodland ordination symbol is 10W in areas of the Mooreville

and Mantachie soils and 8W in areas of the Kinston soil.

## OkB—Oktibbeha clay loam, 1 to 5 percent slopes

This very deep, moderately well drained soil is on ridgetops in the uplands of the Blackland Prairie. Slopes are generally long and smooth. Individual areas are irregular in shape. They range from 10 to 150 acres in size.

Typically, the surface layer is brown clay loam about 3 inches thick. The subsoil is clay and extends to a depth of 70 inches. In the upper part, it is red and has brownish mottles. In the next part, it is mottled in shades of brown, red, and gray. In the lower part, it is light olive brown and has grayish and brownish mottles. It has soft masses and concretions of calcium carbonate in the lower part.

Important properties of the Oktibbeha soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Very high
*Flooding:* None

Included in mapping are a few small areas of Brantley, Searcy, Sumter, and Watsonia soils. Brantley and Searcy soils are on slightly higher knolls and have a lower content of clay in the subsoil than the Oktibbeha soil. Sumter soils are in higher or lower landscape positions than the Oktibbeha soil and are alkaline throughout. Watsonia soils are in positions similar to those of the Oktibbeha soil and are shallow over bedrock. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for cultivated crops, hay, or pasture.

This map unit is suited to most cultivated crops. The main management concerns are poor tilth and a hazard of erosion. Erosion is a severe hazard if this soil is cultivated. This soil can be worked only within a narrow range of moisture content and becomes cloddy if worked when too wet or too dry. Conservation tillage, contour farming, cover crops, and stripcropping reduce the runoff rate and help to control erosion. Returning all crop residue to the soil improves tilth, reduces crusting, and increases the available water capacity.

This map unit is well suited to pasture and hay. Tall fescuegrass, dallisgrass, and Johnsongrass are the most commonly grown grasses. The seedbed should be prepared on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, eastern redcedar, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of panicums, blackberry, greenbrier, poison ivy, hawthorns, and post oak.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment, the seedling mortality rate, and plant competition. The clayey texture of the surface layer and the subsoil restricts the use of equipment, especially during rainy periods. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting and management activities should be planned for seasons when the soil is dry. Planting rates can be increased to compensate for the high rate of seedling mortality. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the very high shrink-swell potential, the very slow permeability, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Support beams should be used to maintain the stability of the cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Special design is needed for roads and streets to compensate for the low strength and instability of the subsoil. Septic tank absorption fields do not function properly because of the very slow

permeability. An alternate method is needed to dispose of sewage properly.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIIe. The woodland ordination symbol is 9C.

## OtE2—Oktibbeha-Brantley complex, 5 to 25 percent slopes, eroded

This map unit consists of the very deep, moderately well drained Oktibbeha soil and the well drained Brantley soil. It is on side slopes and narrow ridgetops in the uplands of the Blackland Prairie. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In places, all of the original surface layer has been removed. Most areas have a few rills and shallow gullies. The Oktibbeha soil makes up about 65 percent of the map unit, and the Brantley soil makes up about 20 percent. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 25 to 500 acres in size.

The Oktibbeha soil generally is on the middle and lower parts of slopes. Typically, the surface layer is brown clay loam about 4 inches thick. The subsoil is clay and extends to a depth of 80 inches. It is yellowish red in the upper part; is mottled in shades of red, yellow, brown, and gray in the next part; and is light olive brown and has grayish mottles in the lower part.

Important properties of the Oktibbeha soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Very high
*Flooding:* None

The Brantley soil is generally on the upper parts of slopes and on narrow ridges. Typically, the surface layer is dark yellowish brown fine sandy loam about 3 inches thick. The subsoil is sandy clay and extends to a depth of 48 inches. It is yellowish red in the upper part and is yellowish red and has brownish mottles in the lower part. The substratum, to a depth of 70 inches, is stratified yellowish, reddish, and brownish fine sandy loam, sandy loam, and sandy clay loam.

Important properties of the Brantley soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Moderate
*Flooding:* None

Included in mapping are a few small areas of Demopolis, Kinston, Luverne, Sumter, and Watsonia soils. Demopolis, Sumter, and Watsonia soils are on crests of narrow ridges. Demopolis soils are shallow over bedrock and are alkaline throughout. Sumter soils are moderately deep over bedrock and are alkaline throughout. Watsonia soils are shallow over bedrock. The poorly drained Kinston soils are on narrow flood plains. Luverne soils are on high knolls and do not have alkaline materials within a depth of 80 inches. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture or hay.

This map unit is not suited to cultivated crops, mainly because the slopes are too steep and the hazard of erosion is too severe. The irregular slope is also a management concern.

This map unit is poorly suited to pasture and hay. The main management concerns are the slope and a severe hazard of erosion. The more steeply sloping areas are best suited to native grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, longleaf pine, eastern redcedar, sweetgum, and water oak. On the basis of a 50-year

site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, little bluestem, waxmyrtle, muscadine grape, American beautyberry, yellow jessamine, blackberry, redbud, eastern redcedar, sweetgum, water oak, and flowering dogwood.

This map unit has moderate limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, and plant competition. Exposing the surface by removing ground cover increases the hazard of further erosion, including rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. The slope restricts the use of equipment. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Cable yarding systems are safer and damage the soils less. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It is generally not suitable as a site for buildings because of the slope. Other limitations include the very slow and slow permeability, the shrink-swell potential, and low strength.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is VIIe. The woodland ordination symbol is 9R.

## Pt—Pits

This map unit consists of open excavations from which the original soil and underlying material have been removed for use at another location. Pits are scattered throughout the county, but are primarily in the Coastal Plain area. Individual areas are generally rectangular in shape. They range from 2 to 150 acres in size.

In the uplands, this map unit is mainly in areas where Bama, Boykin, Lucedale, Luverne, Saffell, and Smithdale soils have been removed to a depth of 5 to 25 feet. In these areas, this map unit has been used as a source of construction material for highways and foundations and as a source of fill material. On low stream terraces, this map unit is mainly in areas where Bigbee, Cahaba, and Izagora soils have been removed to a depth of 5 to 15 feet. In these areas, this map unit has been used as a source of sand and gravel.

Included in mapping are a few small areas of undisturbed soils along the edges of mapped areas, areas that are ponded for long periods of time, and areas of abandoned pits. The abandoned areas consist of pits and of spoil banks that are 10 to 25 feet high. The surface of these areas generally is a mixture of coarse sand and gravel. Reaction is extremely acid or very strongly acid.

Most areas of this map unit do not support vegetation. A few low-quality trees and sparse stands of grass are in some of the abandoned pits. This map unit is unsuited to most uses. Extensive reclamation efforts are required to make areas suitable as cropland, pasture, woodland, or a site for urban development. Onsite investigation and testing are needed to determine the suitability of this unit for any uses.

The capability subclass is VIIIs. This map unit has not been assigned a woodland ordination symbol.

## PvA—Poarch fine sandy loam, 0 to 2 percent slopes

This very deep, moderately well drained soil is on broad ridgetops of high stream terraces. Slopes are generally long and smooth. Individual areas are generally broad. They range from 10 to 200 acres in size.

Typically, the surface layer is brown fine sandy loam about 4 inches thick. The subsurface layer, to a depth of 8 inches, is light yellowish brown loamy fine sand. The subsoil extends to a depth of 65 inches. It is light olive brown loam in the upper part; loam that is mottled in shades of brown, red, and gray in the next part; and sandy clay loam that is mottled in shades of brown and gray in the lower part. It has nodular plinthite in shades of brown and red in the middle and lower parts.

Important properties of the Poarch soil—

*Permeability:* Moderately slow
*Available water capacity:* Moderate

*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 2.5 to 5.0 feet from January to April
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Bama, Escambia, and Malbis soils. Bama soils are on slightly higher, more convex knolls than the Poarch soil. They have a reddish subsoil that does not have significant accumulations of plinthite. Escambia soils are in slightly lower, more concave landscape positions than the Poarch soil and are somewhat poorly drained. Malbis soils are in positions similar to those of the Poarch soil and have a higher content of clay in the upper part of the subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland and homesites.

This map unit is well suited to cultivated crops. It has few limitations affecting this use. Low fertility and droughtiness, however, are management concerns. The surface layer is friable and easy to keep in good tilth. It can be tilled over a wide range of moisture content without becoming cloddy. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter help improve and maintain tilth and the content of organic matter. Crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has few limitations affecting these uses. Coastal bermudagrass and bahiagrass are the most commonly grown grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of little bluestem, flowering dogwood, poison ivy, greenbrier, yellow jessamine, panicums, sweetgum, oak, and hickory.

This map unit has few limitations affecting the production of timber. Soil compaction and plant competition are minor management concerns. Harvesting during the drier periods helps to prevent compaction. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control initial plant competition and facilitate mechanical planting.

This map unit is well suited to most urban uses. It has moderate limitations affecting building sites, slight limitations affecting local roads and streets, and severe limitations affecting most kinds of sanitary facilities. The main management concerns are wetness and the moderately slow permeability. A subsurface drainage system can help to lower the water table. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the moderately slow permeability. Enlarging the size of the absorption field helps to overcome these limitations.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Leaving undisturbed areas of vegetation around cropland and pasture provides food and rest areas that improve habitat for openland wildlife, such as red fox, rabbit, quail, and songbirds.

The capability class is I. The woodland ordination symbol is 9A.

## RvA—Riverview fine sandy loam, 0 to 2 percent slopes, occasionally flooded

This very deep, well drained soil is on high parts of natural levees adjacent to the Alabama River. It is subject to occasional flooding, usually in spring. Slopes are long and smooth. Individual areas are generally long and narrow. They range from 10 to 300 acres in size.

Typically, the surface layer is brown fine sandy loam about 8 inches thick. The subsoil extends to a depth of 48 inches. It is dark yellowish brown fine sandy loam in the upper part and brown loam that has brownish and grayish mottles in the lower part. The substratum, to a depth of 70 inches, is dark yellowish brown sandy loam that has brownish mottles.

Important properties of the Riverview soil—

*Permeability:* Moderate
*Available water capacity:* High

*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 3.0 to 5.0 feet from January to April
*Shrink-swell potential:* Low
*Flooding:* Occasional, for brief periods from December to April

Included in mapping are a few small areas of Bigbee, Mooreville, Una, and Urbo soils. Bigbee soils are on small knolls at slightly higher elevations than the Riverview soil and are sandy throughout. Mooreville soils are in slightly lower, less convex landscape positions than the Riverview soil and have grayish mottles in the upper part of the subsoil. The poorly drained Una and somewhat poorly drained Urbo soils are in small depressions and narrow drainageways. They are clayey throughout. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of the Riverview soil are used for cultivated crops, pasture, or hay. A few areas are used for woodland.

This map unit is well suited to cultivated crops. The main hazard is the occasional flooding. The planting of early-season crops may be delayed in some years because of the flooding. Conservation tillage, cover crops in winter, a crop residue management system, and a crop rotation that includes grasses and legumes increase the available water capacity, decrease crusting, and improve fertility. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay. The occasional flooding is the main management concern. Proper stocking rates, pasture rotation, and restricted grazing during very wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine and hardwoods. Species other than loblolly pine that commonly grow in areas of this map unit include yellow-poplar, pecan, sweetgum, water oak, American sycamore, and green ash. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, Alabama supplejack, muscadine grape, red maple, sweetgum, and water oak.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control this competition. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is poorly suited to most urban uses. The flooding is the main hazard. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Habitat for openland wildlife can be improved by planting seed-producing grasses and shrubs along the edges of fields and pastures.

The capability subclass is IIw. The woodland ordination symbol is 11A.

## SaF—Saffell-Smithdale-Luverne complex, 8 to 35 percent slopes

This map unit consists of very deep, well drained Saffell, Smithdale, and Luverne soils. It is on side slopes and narrow ridges in highly dissected uplands. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Saffell soil makes up about 35 percent of the unit, the Smithdale soil makes up about 30 percent, and the Luverne soil makes up about 20 percent. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 200 to 800 acres in size.

The Saffell soil generally is on the upper parts of slopes. Typically, the surface layer is brown gravelly sandy loam about 5 inches thick. The subsurface layer is yellowish brown gravelly sandy loam to a depth of 11 inches. The subsoil extends to a depth of 49 inches. It is yellowish red very gravelly sandy clay loam in the upper part and red extremely gravelly sandy loam in the lower part. The substratum, to a depth of 80 inches, is yellowish red and red extremely gravelly loamy sand.

Important properties of the Saffell soil—

*Permeability:* Moderate
*Available water capacity:* Low
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches

*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

The Smithdale soil is generally on the middle parts of slopes and on narrow ridges. Typically, the surface layer is brown sandy loam about 5 inches thick. The subsurface layer is strong brown loamy sand to a depth of 14 inches. The subsoil, to a depth of 60 inches, is red sandy clay loam. The substratum, to a depth of 80 inches, is red loamy sand.

Important properties of the Smithdale soil—

*Permeability:* Moderate in the subsoil; moderately rapid in the substratum
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

The Luverne soil is generally on the lower parts of slopes. Typically, the surface layer is dark yellowish brown sandy loam about 4 inches thick. The subsurface layer is brown loamy sand to a depth of 14 inches. The subsoil extends to a depth of 47 inches. It is red sandy clay in the upper part and red sandy clay loam that has brownish mottles in the lower part. The substratum, to a depth of 65 inches, is thinly stratified red and yellowish brown sandy clay loam and sandy loam.

Important properties of the Luverne soil—

*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Moderate
*Flooding:* None

Included in mapping are a few small areas of Boykin, Halso, Kinston, and Oktibbeha soils. Boykin soils are on the upper parts of slopes and have thick sandy surface and subsurface layers. Halso and Oktibbeha soils are in landscape positions similar to those of the Luverne soil. Halso soils have shale bedrock at a depth of 40 to 60 inches. Oktibbeha soils commonly have alkaline materials within a depth of 60 inches. The poorly drained Kinston soils are on narrow flood plains. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture.

This map unit is not suited to cultivated crops, mainly because the slopes are too steep and the hazard of erosion is too severe. The irregular slope, droughtiness in areas of the Saffell soil, and the low fertility are also management concern.

This map unit is poorly suited to pasture and hay. The main management concerns are the slope, the low fertility, droughtiness in areas of the Saffell soil, and a severe hazard of erosion. The more steeply sloping areas are best suited to native grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 70 in areas of the Saffell soil, 85 in areas of the Smithdale soil, and 90 in areas of the Luverne soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.4 cords per acre per year in areas of the Saffell soil, 2.1 cords per acre per year in areas of the Smithdale soil, and 2.2 cords per acre per year in areas of the Luverne soil. The understory vegetation consists mainly of greenbrier, poison oak, little bluestem, brackenfern, waxmyrtle, muscadine grape, American beautyberry, red maple, sweetgum, huckleberry, and flowering dogwood.

This map unit has moderate limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, including rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. The slope restricts the use of equipment, especially when the soils are wet. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Cable yarding systems are safer and damage the soils less. The moderate rate of seedling mortality in areas of the Saffell soil is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site

preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It generally is not suitable as a site for buildings because of the slope. Other management concerns include the gravelly texture of the Saffell soil and the moderately slow permeability, the moderate shrink-swell potential, and low strength of the Luverne soil.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is VIIe. The woodland ordination symbol is 6R in areas of the Saffell soil, 8R in areas of the Smithdale soil, and 9R in areas of the Luverne soil.

## SeB2—Searcy sandy clay loam, 2 to 5 percent slopes, eroded

This very deep, moderately well drained soil is on narrow ridgetops, side slopes, and toe slopes in the transition area between the Blackland Prairie and the Coastal Plain. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Most areas have a few rills and gullies. Slopes generally are short and complex, but some are long and smooth. Individual areas are irregular in shape. They range from 10 to 200 acres in size.

Typically, the surface layer is brown sandy clay loam about 4 inches thick. The subsoil is clay and extends to a depth of 65 inches. It is yellowish red in the upper part, yellowish red and has grayish and brownish mottles in the next part, and mottled in shades of brown, gray, and red in the lower part.

Important properties of the Searcy soil—

*Permeability:* Slow
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 2.0 to 3.5 feet from January to April
*Shrink-swell potential:* Moderate
*Flooding:* None

Included in mapping are a few small areas of Brantley, Freest, and Oktibbeha soils. Also included are small areas of severely eroded soils. Brantley soils are in landscape positions similar to those of the Searcy soil. They are well drained and have a thinner surface layer and subsoil than the Searcy soil. Freest soils are on the slightly higher knolls. They are loamy in the upper part of the subsoil. Oktibbeha soils are on the lower parts of slopes. They commonly have alkaline materials in the lower part of the subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for pasture or hay. A few areas are used for woodland.

This map unit is suited to cultivated crops. The main management concerns are the low fertility, poor tilth, and a severe hazard of erosion. The surface layer is friable, but it is difficult to keep in good tilth where cultivation has mixed some of the clayey subsoil into the plow layer. Terraces, contour farming, minimum tillage, and cover crops reduce the runoff rate and help to control further erosion. Installing drop-inlet structures in grassed waterways helps to prevent gullying. Using a sod-based rotation system and incorporating crop residue into the soil increase the content of organic matter and improve tilth. Most crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. Erosion is a hazard if the surface is left bare during the establishment of pasture. Tillage should be on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 105. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.9 cords per acre per year. The understory vegetation consists mainly of little bluestem, panicums, greenbrier, poison ivy, huckleberry, muscadine grape, waxmyrtle, and flowering dogwood.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment, the seedling

mortality rate, and plant competition. The clayey texture of the surface layer and subsoil restricts the use of equipment, especially when the soil is wet. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The moderate rate of seedling mortality is caused by the clayey texture of the surface layer. It can be compensated for by increasing the number of trees planted. Planting on raised beds or subsoiling increases the rate of seedling survival. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has moderate limitations affecting building sites and severe limitations affecting local roads and streets and most kinds of sanitary facilities. The main management concerns are the moderate shrink-swell potential, the slow permeability, wetness, and low strength on sites for roads and streets. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. Roads and streets should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields may not function properly because of the slow permeability and the seasonal high water table. Enlarging the size of the absorption field or using an alternative method of waste disposal helps to overcome these limitations.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIIe. The woodland ordination symbol is 12C.

## SmB—Smithdale-Boykin complex, 2 to 5 percent slopes

This map unit consists of very deep, well drained Smithdale and Boykin soils. It is on narrow to broad ridgetops in the uplands. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Smithdale soil makes up about 50 percent of the map unit, and the Boykin soil makes up about 40 percent. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 10 to 500 acres in size.

The Smithdale soil generally is on the crests of ridges. Typically, the surface layer is brown loamy sand about 5 inches thick. The subsurface layer, to a depth of 15 inches, is loamy sand. It is yellowish brown in the upper part and light yellowish brown in the lower part. The subsoil, to a depth of 42 inches, is yellowish red sandy clay loam. The substratum, to a depth of 65 inches, is stratified yellowish red sandy loam and sandy clay loam.

Important properties of the Smithdale soil—

*Permeability:* Moderate
*Available water capacity:* High
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

The Boykin soil is generally on the lower parts of ridgetops and on shoulder slopes. Typically, the surface layer is brown loamy sand about 4 inches thick. The subsurface layer, to a depth of 25 inches, is loamy sand. It is strong brown in the upper part and light brown in the lower part. The subsoil, to a depth of 65 inches, is yellowish red sandy clay loam.

Important properties of the Boykin soil—

*Permeability:* Moderate
*Available water capacity:* Low
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are small areas of Bama, Luverne, and Malbis soils. Bama and Malbis soils are in landscape positions similar to those of the Smithdale soil. Bama soils do not have a thick sandy surface layer and the clay content in the subsoil does not decrease significantly within a depth of 60 inches. Malbis soils have a significant content of plinthite in

the subsoil and do not have a thick sandy surface layer. Luverne soils are in saddles and have a clayey subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for pasture or hay. A few small areas are used for cultivated crops, woodland, or homesites.

This map unit is suited to cultivated crops. The main management concerns are the low available water capacity in areas of the Boykin soil, the low fertility, and a moderate hazard of erosion. Conservation tillage, contour farming, field borders, and cover crops reduce the runoff rate and help to control erosion. Returning crop residue to the soils helps to maintain tilth and increases the available water capacity. Irrigation can prevent crop damage and increase productivity in most years. Most crops respond well to applications of lime and frequent, light applications of fertilizer.

This map unit is well suited to pasture and hay. Suitable pasture plants are coastal bermudagrass and bahiagrass. The main management concerns are the low fertility and the low available water capacity in areas of the Boykin soil. The leaching of plant nutrients is also a management concern. Frequent, light applications of nitrogen are necessary to maintain the productivity of the grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of little bluestem, panicums, greenbrier, huckleberry, pricklypear, muscadine grape, poison oak, brackenfern, yellow jessamine, blackberry, flowering dogwood, and common persimmon.

This map unit has moderate limitations affecting timber management. The main management concerns are the restricted use of equipment and the seedling mortality rate in areas of the Boykin soil and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soils are very dry. Harvesting activities should be planned for seasons when the soils are moist. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is well suited to most urban uses. It has no significant limitations affecting these uses. The sandy texture of the Boykin soil and low fertility are management concerns. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. The low available water capacity and the low natural fertility are limitations affecting the improvement of habitat for wildlife. Habitat for wildlife can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIe in areas of Smithdale soil and IIs in areas of the Boykin soil. The woodland ordination symbol is 9A in areas of the Smithdale soil and 8S in areas of the Boykin soil.

## SnA—Sucarnoochee silty clay loam, 0 to 1 percent slopes, frequently flooded

This very deep, somewhat poorly drained soil is on flood plains along streams in the Blackland Prairie. It is subject to flooding for brief periods several times each year. Individual areas are generally long and narrow. They range from 10 to 800 acres in size.

Typically, the surface layer is dark grayish brown silty clay loam about 9 inches thick. The subsurface layer, to a depth of 15 inches, is dark grayish brown clay. The subsoil is clay and extends to a depth of 65 inches. In the upper part, it is dark grayish brown and has brownish mottles. In the lower part, it is mottled in shades of gray, brown, and yellow.

Important properties of the Sucarnoochee soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Medium
*Natural fertility:* High
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 0.5 foot to 1.5 feet from January to April
*Shrink-swell potential:* High
*Flooding:* Frequent, for brief periods from December to April

Included in mapping are a few small areas of Congaree, Houlka, Kipling, and Vaiden soils. Congaree soils are on high parts of natural levees adjacent to stream channels and are loamy throughout. Houlka soils are in slightly higher landscape positions than the Sucarnoochee soil and are acid in the upper part of the subsoil. Kipling and Vaiden soils are in the slightly higher positions at the edges of mapped areas. They are acid in the upper part of the subsoil. Also included are small areas of poorly drained soils in slight depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for pasture or hay. A few areas are used for cultivated crops or woodland.

This map unit is poorly suited to cultivated crops. The flooding and wetness are the main management concerns. Tillage and planting may be delayed in spring, and crops may be damaged by flooding in late spring and early summer. Although the flooding could be controlled by a system of levees and pumps, installing such a system commonly is impractical. Shallow ditches can help to remove water from the surface.

This map unit is suited to pasture and hay. The frequent flooding and the wetness are management concerns. Grasses that are tolerant of the wetness and the flooding should be selected. Deferred grazing during wet periods helps to keep the pasture in good condition. A drainage system can help to remove excess water from the surface.

This map unit is well suited to cherrybark oak, sweetgum, water oak, and other hardwoods. It is generally not suited to pine trees because it is alkaline within a depth of 20 inches. Other species that commonly grow in areas of this map unit include green ash, American sycamore, willow oak, and yellow-poplar. On the basis of a 50-year site curve, the site index for water oak is 90. The average annual growth of well stocked, even-aged, unmanaged stands of water oak at 30 years of age is 1.0 cord per acre per year. The understory vegetation consists mainly of switchcane, honey locust, poison ivy, winged elm, sweetgum, sugarberry, green ash, blackberry, osageorange, and panicums.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment, the seedling mortality rate, and plant competition. The seasonal high water table, the flooding, and the low strength of the subsoil restrict the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness and the clayey texture of the surface layer. It can be reduced by planting on beds or increasing the number of trees planted. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. The flooding, wetness, the very slow permeability, the high shrink-swell potential, and low strength on sites for local roads and streets are severe limitations. If buildings are constructed in areas of this map unit, they should be constructed on pilings or on well-compacted fill material to elevate them above the expected level of flooding.

This map unit has good potential for woodland wildlife habitat and fair potential for openland and wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IVw. The woodland ordination symbol is 6W.

## SpE2—Sumter-Demopolis complex, 8 to 25 percent slopes, eroded

This map unit consists of the moderately deep, well drained Sumter soil and the shallow, well drained Demopolis soil. It is on side slopes and narrow ridgetops in the uplands of the Blackland Prairie. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Sumter soil makes up about 60 percent of the map unit, and the Demopolis soil makes up about 30 percent. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 10 to 400 acres in size.

The Sumter soils are on the middle and lower parts of side slopes. Typically, the surface layer is very dark grayish brown silty clay loam about 6 inches thick. The subsoil, to a depth of 31 inches, is light yellowish brown silty clay that has common nodules and soft masses of calcium carbonate. The substratum, to a depth of 65 inches, is soft limestone (chalk).

Important properties of the Sumter soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Medium
*Natural fertility:* High
*Depth to bedrock:* 20 to 40 inches
*Root zone:* 20 to 40 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Moderate
*Flooding:* None

The Demopolis soil is on narrow ridgetops and on the upper parts of side slopes. Typically, the surface layer is brown silty clay loam about 7 inches thick. The substratum, to a depth of 13 inches, is grayish brown clay loam that has many fragments of soft limestone (chalk) and concretions of calcium carbonate. The next layer, to a depth of 65 inches, is soft limestone (chalk).

Important properties of the Demopolis soil—

*Permeability:* Very slow
*Available water capacity:* Low
*Organic matter content:* Medium
*Natural fertility:* High
*Depth to bedrock:* 10 to 20 inches
*Root zone:* 10 to 20 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Low
*Flooding:* None

Included in mapping are a few small areas of Kipling, Oktibbeha, and Watsonia soils. Also included are areas of chalk outcrop and areas of Gullied land. The somewhat poorly drained Kipling soils are on the lower parts of slopes. They are acid in the upper part of the subsoil and are very deep over bedrock. Oktibbeha and Watsonia soils are on the upper parts of slopes. They are acid in the upper part of the subsoil. Included areas make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for pasture or woodland and wildlife habitat.

This map unit is poorly suited to cultivated crops. The main management concerns are the slope, the low available water capacity, the shallow depth to bedrock, poor tilth, and a severe hazard of erosion.

This map unit is poorly suited to pasture and hay. The slope, droughtiness, and a severe hazard of erosion are the main management concerns. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet periods help to keep the soil in good condition.

This map unit is suited to eastern redcedar. It is not suited to pine trees because it is alkaline to the surface. On the basis of a 50-year site curve, the site index for eastern redcedar is 40. The average annual growth of well stocked, even-aged, unmanaged stands of eastern redcedar at 40 years of age is 140 board feet per acre per year. The understory vegetation consists mainly of greenbrier, panicums, Johnsongrass, broomsedge bluestem, MaCartney rose, blackberry, poison ivy, sumac, and winged elm.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of further erosion, including rill and gully erosion. Roads, landings, and skid trails can be protected against erosion by constructing diversions, mulching, and seeding. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction and increases the hazard of erosion. Harvesting activities should be planned for the drier periods. The high seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition reduces the growth of trees and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the slope, the depth to bedrock, the very slow permeability, and the shrink-swell potential.

The Sumter soil has fair potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. The Demopolis soil has poor potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Habitat for openland wildlife can be improved by planting grasses and shrubs in small areas around cropland and pasture and by leaving these areas undisturbed.

The capability subclass is VIIe. The woodland ordination symbol is 3R.

## SuE3—Sumter-Gullied land complex, 8 to 25 percent slopes, severely eroded

This map unit consists of the moderately deep, well drained Sumter soil and areas of Gullied land on uplands of the Blackland Prairie. The Sumter soils and areas of Gullied land are so closely intermingled that

they could not be mapped separately at the scale selected for mapping. The Sumter soils make up about 50 percent of the map unit, and areas of Gullied land makes up about 40 percent. Individual areas are irregular in shape. They range from 5 to 50 acres in size.

The Sumter soil is on narrow ridges between gullies and on the edges of mapped areas. Typically, the surface layer is dark grayish brown silty clay about 7 inches thick. The subsoil is silty clay and extends to a depth of 30 inches. It is light olive brown in the upper part and is light yellowish brown and has olive mottles in the lower part. The substratum, to a depth of 36 inches, is light olive gray silty clay that has common fragments of soft limestone (chalk) and many soft masses of calcium carbonate. The next layer, to a depth of 80 inches, is soft limestone (chalk).

Important properties of the Sumter soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Medium
*Natural fertility:* High
*Depth to bedrock:* 20 to 40 inches
*Root zone:* 20 to 40 inches
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Moderate
*Flooding:* None

Gullied land is a miscellaneous land type consisting of a network of shallow to deep gullies separated by narrow areas of soil or rock outcrop. The gullies have cut into and exposed the underlying soft limestone (chalk) bedrock. In most areas, the gullies cannot be crossed with farm implements. Most areas of Gullied land support little or no vegetation, except on the narrow areas of soil between the gullies.

Included in mapping are a few small areas of Demopolis and Watsonia soils. Also included are areas of chalk outcrop. Demopolis and Watsonia soils are in landscape positions similar to those of the Sumter soil. Demopolis and Watsonia soils are shallow over bedrock. Also, Watsonia soils are clayey and are acid in the upper part of the subsoil. Included areas make up about 10 percent of the map unit. Individual areas generally are less than 0.5 acre in size.

Most areas of this map unit are idle and support sparse vegetation, which consists primarily of eastern redcedar, broomsedge bluestem, threeawns, panicums, and miscellaneous forbs (fig. 8).

This map unit is not suited to most agricultural and urban uses and is poorly suited to woodland. Areas of the Sumter soil cannot be easily managed for any use because of the limited size of the areas and the intermingled areas of Gullied land. Areas of this map unit require extensive cutting and filling to make them suitable for most uses. Onsite investigation and testing are needed to determine the suitability of this unit for any use.

The capability subclass is VIIe in areas of the Sumter soil and VIIIs in areas of the Gullied land. The woodland ordination symbol is 3R in areas of the Sumter soil. The Gullied land has not been assigned a woodland ordination symbol.

## UbC—Udorthents-Urban land complex, 0 to 8 percent slopes

This map unit consists of very deep Udorthents and areas of Urban land on low terraces and uplands, primarily along the Alabama River. The areas of Udorthents and Urban land are so closely intermingled that they could not be mapped separately at the scale selected for mapping. The Udorthents make up about 60 percent of the map unit, and the Urban land makes up about 30 percent. Individual areas are rectangular in shape. They range from 5 to 150 acres in size.

Udorthents consist of earthen materials that have been dredged from the Alabama River or that have been so modified by construction activities that the original soil components are no longer recognizable. The original soils were altered by cutting and filling, shaping and grading, and compacting. In some areas, the Udorthents consist of materials hauled in from other sources. The Udorthents are highly variable within a short distance and may be clayey, loamy, sandy, or stratified with various textures. Fragments of concrete, wood, metal, and other debris from construction activities commonly are mixed into the Udorthents.

Important properties of the Udorthents—

*Permeability:* Variable
*Available water capacity:* Variable
*Organic matter content:* Very low
*Natural fertility:* Low
*Depth to bedrock:* More than 60 inches
*Root zone:* Variable
*Seasonal high water table:* More than 6.0 feet deep
*Shrink-swell potential:* Variable
*Flooding:* None to rare

Urban land consists of areas that are covered by sidewalks, patios, driveways, parking lots, streets, playgrounds, and buildings.

Included in mapping are a few small areas of Annemaine, Bama, Bigbee, Riverview, Smithdale, Una, and Urbo soils. These soils are on the edges of mapped areas and have identifiable soil horizons. Also

**Figure 8.—An area of Sumter-Gullied land complex, 8 to 25 percent slopes, severely eroded. Grasses and eastern redcedar provide cover for wildlife and protection from erosion in areas of Sumter soils between gullies. The Gullied land supports little or no vegetation.**

included, near Yellow Bluff, are three areas of organic debris from a local paper mill. Each of these areas is several acres in size. The debris is fibrous and is slightly alkaline or moderately alkaline. Included areas make up about 10 percent of the map unit. Individual areas generally are less than 2 acres in size.

Areas of the Udorthents cannot be easily managed for crops, pasture, timber, or wildlife habitat because of the limited size of the areas, the areas of Urban land, and the variability in soil properties. Onsite investigation and testing are needed to determine the suitability of this unit for any uses.

This map unit has not been assigned a capability subclass or a woodland ordination symbol.

## UnA—Una silty clay, ponded

This very deep, poorly drained soil is in old oxbows, swales, and other shallow depressions on the flood plains along the Alabama River and on low terraces. Slopes are smooth and concave. Most areas are subject to frequent flooding and are ponded for several months in most years. Individual areas vary in shape from circular to long and narrow. They range from 5 to 500 acres in size.

Typically, the surface layer is very dark gray and dark gray silty clay about 6 inches thick. The subsoil extends to a depth of 65 inches. It is gray silty clay that has brownish mottles in the upper part and gray clay that has olive and brownish mottles in the lower part.

Important properties of the Una soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Medium
*Natural fertility:* High
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, from 2.0 feet

above the surface to a depth of 0.5 foot from December to June
*Shrink-swell potential:* High
*Flooding:* Frequent, for long periods from December to April

Included in mapping are a few small areas of Urbo soils. The somewhat poorly drained Urbo soils are in slightly higher, more convex landscape positions than the Una soil. Also included are a few small areas of poorly drained loamy soils. Included soils make up about 5 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat.

This map unit is not suited to cultivated crops, pasture, or hay. Wetness, the ponding, and the flooding are severe limitations affecting these uses.

This map unit is suited to the production of water tupelo and baldcypress. Other species that commonly grow in areas of this map unit include overcup oak, water hickory, black willow, red maple, sweetgum, and swamp tupelo. On the basis of a 50-year site curve, the site index for water tupelo is 65. The average annual growth of fully stocked, even-aged, unmanaged stands of water tupelo at 30 years of age is 0.5 cord per acre per year. The understory vegetation, which is usually sparse, consists mainly of sweetbay, black alder, red maple, greenbrier, and dwarf palmetto.

The main management concerns are the restricted use of equipment, the seedling mortality rate, and plant competition. The seasonal high water table, the flooding, and the ponding restrict the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness. It can be compensated for by planting on beds or increasing the number of trees planted. Plant competition can prevent adequate natural or artificial reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is not suited to most urban uses. The ponding, wetness, and the frequent flooding are severe limitations affecting most uses. If buildings and roads are constructed in areas of this map unit, they should be constructed on well-compacted fill to elevate them above the expected level of flooding.

This map unit has very poor potential for openland and woodland wildlife habitat and good potential for wetland wildlife habitat. Habitat for openland and woodland wildlife can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Habitat for wetland wildlife can be improved by providing more open water areas for waterfowl and furbearers and by planting mast producing trees.

The capability subclass is VIIw. The woodland ordination symbol is 4W.

## UuB—Urbo-Mooreville-Una complex, gently undulating, frequently flooded

This map unit consists of the very deep, somewhat poorly drained Urbo soils, the moderately well drained Mooreville soils, and the poorly drained Una soils on the flood plains along the Alabama River. These soils are subject to flooding for brief periods in most years, generally in late winter or in spring. The soils are so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Urbo soil makes up about 40 percent of the map unit, the Mooreville soil makes up about 30 percent, and the Una soil makes up about 20 percent. Slopes are short and smooth and range from 0 to 3 percent. Individual areas generally are broad. They range from 50 to more than 1,500 acres in size.

The somewhat poorly drained Urbo soil is in flat to slightly concave areas, generally in low to intermediate positions on low ridges. Typically, the surface layer is brown silty clay loam about 3 inches thick. The subsoil extends to a depth of 65 inches. In the upper part, it is dark brown silty clay that has grayish mottles. In the next part, it is grayish brown clay that has brownish mottles. In the lower part, it is light brownish gray clay and silty clay having brownish mottles.

Important properties of the Urbo soil—

*Permeability:* Very slow
*Available water capacity:* High
*Organic matter content:* Medium
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 1.0 to 2.0 feet from December to April
*Shrink-swell potential:* High
*Flooding:* Frequent, for brief periods from December to June

The moderately well drained Mooreville soil is in high, convex positions on low ridges. Typically, the surface layer is very dark grayish brown and brown loam about 9 inches thick. The subsoil extends to a depth of 49 inches. It is dark yellowish brown clay loam

in the upper part, yellowish brown clay loam that has brownish and grayish mottles in the next part, and sandy clay loam that is mottled in shades of yellow, brown, red, and gray in the lower part. The substratum, to a depth of 65 inches, is sandy loam that is mottled in shades of yellow, brown, and gray.

Important properties of the Mooreville soil—

*Permeability:* Moderate
*Available water capacity:* High
*Organic matter content:* Medium
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Apparent, at a depth of 1.5 to 3.0 feet from January to April
*Shrink-swell potential:* Moderate
*Flooding:* Frequent, for brief periods from December to April

The poorly drained Una soil is in swales, sloughs, and other depressional areas at the lowest elevation on the flood plain. Typically, the surface layer is dark grayish brown silty clay loam about 4 inches thick. The subsoil extends to a depth of 65 inches. In the upper part, it is light brownish gray silty clay that has brownish mottles. In the lower part, it is gray silty clay and clay having brownish mottles.

Important properties of the Una soil—

*Permeability:* Very slow
*Available water capacity:* High
*Organic matter content:* Medium
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, from 2.0 feet above the surface to a depth of 0.5 foot from December to April
*Shrink-swell potential:* High
*Flooding:* Frequent, for long periods from December to April

Included in mapping are a few small areas of Annemaine, Cahaba, Chrysler, and Riverview soils. Annemaine, Cahaba, and Chrysler soils are on low knolls or remnants of terraces. They have reddish colors in the subsoil. Riverview soils are in landscape positions similar to those of the Mooreville soil. They do not have low-chroma mottles in the upper part of the subsoil. The included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are wooded and are used for wildlife habitat. A few areas are used for pasture, hay, or cultivated crops.

This map unit is not suited to most cultivated crops. The frequent flooding and the wetness are the main management concerns. If cultivated crops are grown, a surface drainage system and protection from flooding are needed.

This map unit is poorly suited to pasture and hay because of the frequent flooding and the wetness. If areas are used for pasture or hay, grasses that tolerate the wet soil conditions should be selected. Common bermudagrass is suitable. Shallow ditches can help to remove excess water from the surface.

This map unit is suited to loblolly pine and hardwoods. Species other than loblolly pine that commonly grow in areas of this map unit include American sycamore, yellow-poplar, Nuttall oak, overcup oak, cherrybark oak, water oak, green ash, and sweetgum. On the basis of a 50-year site curve, the site index for loblolly pine is 95 in areas of the Urbo soil and 100 in areas of the Mooreville soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.5 cords per acre per year in areas of the Urbo soil and 2.7 cords per acre per year in areas of the Mooreville soil. On the basis of a 50-year site curve, the site index for water tupelo is 65 in areas of the Una soil. The average annual growth of well stocked, even-aged, unmanaged stands of water tupelo at 30 years of age is 0.5 cord per acre per year. The understory vegetation consists mainly of muscadine grape, Alabama supplejack, greenbrier, poison ivy, longleaf uniola, switchcane, sweetgum, blackgum, water oak, sweetbay, green ash, and red maple.

This map unit has severe limitations affecting timber management. The main management concerns are the restricted use of equipment, the seedling mortality rate, and plant competition. The seasonal high water table and the flooding restrict the use of equipment to periods when the soils are dry. Using standard wheeled and tracked equipment when the soils are wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soils and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness. It can be reduced by planting on raised beds, or it can be compensated for by increasing the number of trees planted. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is not suited to most urban uses. The

flooding and wetness are severe limitations affecting most uses. Buildings can be constructed on pilings or on well-compacted fill to elevate them above the expected level of flooding.

The Urbo and Mooreville soils have fair potential for openland wildlife habitat and good potential for woodland wildlife habitat. The Una soil has poor potential for openland and woodland wildlife habitat. The potential for wetland wildlife habitat is fair in areas of the Urbo and Una soils and poor in areas of the Mooreville soil. Habitat for openland and woodland wildlife can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is Vw. The woodland ordination symbol is 10W in areas of the Urbo soil, 12W in areas of the Mooreville soil, and 4W in areas of the Una soil.

## VaA—Vaiden silty clay, 0 to 1 percent slopes

This very deep, somewhat poorly drained soil is in flat or slightly convex landscape positions on broad ridgetops in the uplands of the Blackland Prairie. Slopes are long and smooth. Individual areas are generally broad and oblong. They range from 10 to 1,000 acres in size.

Typically, the surface layer is brown silty clay about 5 inches thick. The subsoil is clay and extends to a depth of 70 inches. It is mottled in shades of gray, brown, and red in the upper part and in shades of olive, brown, and gray in the lower part. It has soft masses and concretions of calcium carbonate in the lower part.

Important properties of the Vaiden soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 1.0 to 2.0 feet from January to April
*Shrink-swell potential:* Very high
*Flooding:* None

Included in mapping are a few small areas of Kipling and Oktibbeha soils. Also included are poorly drained soils in small depressions. Kipling soils are in landscape positions similar to those of the Vaiden soil and have less clay in the subsoil. Oktibbeha soils are in slightly higher, more convex positions than the Vaiden soil. They are reddish in the upper part of the subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for pasture or hay. A few areas are used for cultivated crops, woodland, or homesites.

This map unit is suited to most cultivated crops. The main management concerns are wetness and poor tilth. The wetness delays planting and tillage activities in most years. Shallow ditches can help to remove excess surface water. This soil can be worked only within a narrow range of moisture content and becomes cloddy if tilled when too wet or too dry. Returning all crop residue to the soil improves tilth, reduces crusting, and increases the available water capacity and the rate of water infiltration.

This map unit is well suited to pasture and hay. Tall fescue, dallisgrass, and bahiagrass are the most commonly grown grasses. Wetness is the main management concern. Shallow ditches can help to remove excess surface water. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, sweetgum, post oak, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 80. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.8 cords per acre per year. The understory vegetation consists mainly of panicums, blackberry, greenbrier, poison ivy, and hawthorns.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment, the seedling mortality rate, and plant competition. The clayey texture of the surface layer and the subsoil restricts the use of equipment, especially during rainy periods. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting and management activities should be planned for seasons when the soil is dry. The high seedling mortality rate is due to wetness and the clayey textures. Planting seedlings on raised beds and increasing the number of seedlings planted helps to compensate for the high rate of seedling mortality. Plant competition reduces the growth of trees and can

prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the very high shrink-swell potential, the very slow permeability, wetness, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Support beams should be used to maintain the stability of the cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Special design is needed for roads and streets to compensate for the instability of the subsoil. Septic tank absorption fields do not function properly because of the very slow permeability and the seasonal high water table. An alternate method is needed to dispose of sewage properly.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIIw. The woodland ordination symbol is 8C.

## VaB—Vaiden silty clay, 1 to 5 percent slopes

This very deep, somewhat poorly drained soil is on side slopes in the uplands of the Blackland Prairie. Slopes are generally long and smooth. Individual areas generally are irregular in shape. They range from 10 to 600 acres in size.

Typically, the surface layer is very dark grayish brown silty clay about 4 inches thick. The subsoil is clay and extends to a depth of 80 inches. In the upper part, it is yellowish brown and has brownish, reddish, and grayish mottles. In the next part, it is light brownish gray and has brownish and reddish mottles. In the lower part, it is light olive brown and has brownish and grayish mottles. It has soft masses and concretions of calcium carbonate in the lower part.

Important properties of the Vaiden soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Medium
*Natural fertility:* Medium
*Depth to bedrock:* More than 60 inches
*Root zone:* More than 60 inches
*Seasonal high water table:* Perched, at a depth of 1.0 to 2.0 feet from January to April
*Shrink-swell potential:* Very high
*Flooding:* None

Included in mapping are a few small areas of Kipling, Oktibbeha, and Sucarnoochee soils. Kipling soils are in landscape positions similar to those of the Vaiden soil and have less clay in the subsoil. Oktibbeha soils are on the more convex slopes and are reddish in the upper part of the subsoil. Sucarnoochee soils are on narrow flood plains. They are alkaline in the upper part of the subsoil and are subject to frequent flooding. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for pasture or hay. A few areas are used for cultivated crops, woodland, or homesites.

This map unit is suited to most cultivated crops. The main management concerns are poor tilth, wetness, and a hazard of erosion. Erosion is a moderate hazard if this soil is cultivated. This soil can be worked only within a narrow range of moisture content and becomes cloddy if tilled when too wet or too dry. Conservation tillage, strip cropping, contour farming, and cover crops reduce the runoff rate and help to control erosion. Returning all crop residue to the soil improves tilth, reduces crusting, and increases the available water capacity.

This map unit is well suited to pasture and hay. Tall fescue, dallisgrass, and bahiagrass are the most commonly grown grasses. The seedbed should be prepared on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine (fig. 9). Other species that commonly grow in areas of this map unit include shortleaf pine, sweetgum, post oak, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 80. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.8 cords

**Figure 9.—This well managed stand of loblolly pine is in an area of Vaiden silty clay, 1 to 5 percent slopes. This area is managed for timber production and woodland wildlife habitat.**

per acre per year. The understory vegetation consists mainly of panicums, blackberry, greenbrier, poison ivy, hawthorns, and sweetgum.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment, the seedling mortality rate, and plant competition. The clayey texture of the surface layer and the subsoil restricts the use of equipment, especially during rainy periods. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting and management activities should be planned for seasons when the soil is dry. Planting rates can be increased to compensate for the high rate of seedling mortality. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the very high shrink-swell potential, the very slow permeability, wetness, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and

swelling. Special design is needed for roads and streets to compensate for the instability of the subsoil. Septic tank absorption fields do not function properly because of the very slow permeability and the seasonal high water table. An alternate method is needed to dispose of sewage properly.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIIe. The woodland ordination symbol is 8C.

## WcB—Wilcox clay, 1 to 5 percent slopes

This deep, somewhat poorly drained soil is on narrow to broad ridgetops in the uplands. Slopes are generally long and smooth. Individual areas generally are oblong. They range from 10 to 800 acres in size.

Typically, the surface layer is brown clay about 4 inches thick. The subsoil is clay and extends to a depth of 52 inches. In the upper part, it is yellowish red and has grayish and brownish mottles. In the lower part, it is mottled in shades of red, gray, and brown. The substratum, to a depth of 80 inches, is light brownish gray and grayish brown shale.

Important properties of the Wilcox soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* 40 to 60 inches
*Root zone:* 40 to 60 inches
*Seasonal high water table:* Perched, at a depth of 1.5 to 3.0 feet from January to April
*Shrink-swell potential:* Very high
*Flooding:* None

Included in mapping are a few small areas of Halso and Luverne soils. These soils are on the higher knolls. They have less clay in the subsoil than the Wilcox soil. Also included are small areas of poorly drained soils in slight depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for cultivated crops or pasture.

This map unit is suited to most cultivated crops. The main management concerns are poor tilth, wetness, and a hazard of erosion. Erosion is a moderate hazard if this soil is cultivated. This soil can be worked only within a narrow range of moisture content and becomes cloddy if tilled when too wet or too dry. Conservation tillage, strip cropping, contour farming, and cover crops reduce the runoff rate and help to control erosion. Returning all crop residue to the soil improves tilth, reduces crusting, and increases the available water capacity.

This map unit is suited to pasture and hay. Tall fescue, dallisgrass, and bahiagrass are the most commonly grown grasses. The seedbed should be prepared on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, sweetgum, post oak, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of panicums, blackberry, greenbrier, poison ivy, waxmyrtle, post oak, and hawthorns.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment, the seedling mortality rate, and plant competition. The clayey texture of the surface layer and the subsoil restricts the use of equipment, especially during rainy periods. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting and management activities should be planned for seasons when the soil is dry. Planting rates can be increased to compensate for the high rate of seedling mortality. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It

has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the very high shrink-swell potential, the very slow permeability, wetness, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Support beams should be used to maintain the stability of cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Special design is needed for roads and streets to compensate for the instability of the subsoil. Septic tank absorption fields do not function properly because of the very slow permeability and the seasonal high water table. An alternate method is needed to dispose of sewage properly.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is IIIe. The woodland ordination symbol is 9C.

## WcD2—Wilcox clay, 5 to 15 percent slopes, eroded

This deep, somewhat poorly drained soil is on side slopes and narrow ridgetops in the uplands. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Most areas have a few rills and gullies. Slopes generally are short and complex, but some are long and smooth. Individual areas are irregular in shape. They range from 20 to 1,200 acres in size.

Typically, the surface layer is brown clay about 3 inches thick. The subsoil is clay and extends to a depth of 46 inches. In the upper part, it is yellowish red and has grayish, yellowish, and brownish mottles. In the next part, it is mottled in shades of red, brown, and gray. In the lower part, it is light brownish gray and has reddish and brownish mottles. The substratum, to a depth of 85 inches, is very dark gray and gray shale.

Important properties of the Wilcox soil—

*Permeability:* Very slow
*Available water capacity:* Moderate
*Organic matter content:* Low
*Natural fertility:* Low
*Depth to bedrock:* 40 to 60 inches
*Root zone:* 40 to 60 inches
*Seasonal high water table:* Perched, at a depth of 1.5 to 3.0 feet from January to April
*Shrink-swell potential:* Very high
*Flooding:* None

Included in mapping are a few small areas of Halso, Houlka, Kinston, and Luverne soils. Halso and Luverne soils are on the upper parts of slopes and on narrow ridgetops. They have less clay in the subsoil than the Wilcox soil. Houlka and Kinston soils are on narrow flood plains and are subject to frequent flooding. They are dominantly grayish. Included soils make up about 10 percent of mapped areas. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture and hay.

This map unit is poorly suited to cultivated crops. The main management concerns are the low fertility, poor tilth, and a severe hazard of further erosion. Terraces, contour farming, minimum tillage, and cover crops reduce the runoff rate and help to control further erosion. Installing drop-inlet structures in grassed waterways helps to prevent gullying. Using a sod-based rotation system and incorporating crop residue into the soil increase the content of organic matter and improve tilth. Most crops respond well to systematic applications of lime and fertilizer.

This map unit is suited to pasture and hay. Erosion is a hazard if the surface is left bare during the establishment of pasture. Tillage should be on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, post oak, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, flowering dogwood, little bluestem, huckleberry, American

beautyberry, yellow jessamine, waxmyrtle, muscadine grape, sweetgum, and water oak.

This map unit has moderate and severe limitations affecting timber management. The main management concerns are the restricted use of equipment, seedling mortality, and plant competition. The low strength of the clayey subsoil restricts the use of equipment, especially when the soil is wet. Using standard wheeled and tracked equipment when the soil is wet results in rutting and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The moderate rate of seedling mortality is caused by the clayey texture of the surface layer. It can be compensated for by increasing the number of trees planted. Plant competition reduces the growth of trees and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can be used to control the subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the very high shrink-swell potential, the very slow permeability, and low strength on sites for roads and streets. If excavations are made, the cutbanks cave easily. Support beams should be used to maintain the stability of the cutbanks. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. Roads and streets should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields may not function properly because of the moderately slow permeability. Enlarging the size of the absorption field or using an alternative method of waste disposal helps to overcome this limitation.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of oak trees and suitable understory plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water areas for waterfowl and furbearers.

The capability subclass is VIe. The woodland ordination symbol is 9C.

# Prime Farmland

In this section, prime farmland is defined and the soils in Wilcox County that are considered prime farmland are listed. Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 8 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 149,400 acres, or about 26 percent of the total area in Wilcox County, meets the soil requirements for prime farmland. Scattered areas of this land are throughout the county. Most areas, however, are adjacent to the Alabama River. They are mainly in the Annemaine-Izagora-Lenoir and Bama-Malbis-Luverne general soil map units, which are described under the heading "General Soil Map Units." About 6,100 acres is used for cultivated crops.

The map units in the survey area that are considered prime farmland are listed at the end of this section. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 5. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

The map units that meet the requirements for prime farmland are:

| | |
|---|---|
| AnA | Annemaine fine sandy loam, 0 to 2 percent slopes, occasionally flooded |
| AnB | Annemaine fine sandy loam, 2 to 5 percent slopes, occasionally flooded |
| BaA | Bama fine sandy loam, 0 to 2 percent slopes |
| BaB | Bama fine sandy loam, 2 to 5 percent slopes |
| BeB | Beatrice silt loam, 1 to 5 percent slopes |
| BrB | Brantley fine sandy loam, 2 to 5 percent slopes |
| CaA | Cahaba fine sandy loam, 0 to 2 percent slopes, rarely flooded |
| CbA | Canton Bend loam, 0 to 2 percent slopes, occasionally flooded |
| ChA | Chrysler loam, 0 to 2 percent slopes, occasionally flooded |
| EsA | Escambia fine sandy loam, 0 to 2 percent slopes |
| FrA | Freest fine sandy loam, 0 to 2 percent slopes |
| FrB | Freest fine sandy loam, 2 to 5 percent slopes |
| HaB | Halso silt loam, 2 to 5 percent slopes |
| IaA | Izagora fine sandy loam, 0 to 2 percent slopes, occasionally flooded |
| LdA | Lucedale loam, 0 to 2 percent slopes |
| LvB | Luverne fine sandy loam, 2 to 5 percent slopes |
| MaA | Malbis silt loam, 0 to 2 percent slopes |
| MbB | Malbis fine sandy loam, 2 to 5 percent slopes |
| MbC | Malbis fine sandy loam, 5 to 8 percent slopes |
| OkB | Oktibbeha clay loam, 1 to 5 percent slopes |

PvA Poarch fine sandy loam, 0 to 2 percent slopes
RvA Riverview fine sandy loam, 0 to 2 percent slopes, occasionally flooded
SeB2 Searcy sandy clay loam, 2 to 5 percent slopes, eroded
VaA Vaiden silty clay, 0 to 1 percent slopes
VaB Vaiden silty clay, 1 to 5 percent slopes
WcB Wilcox clay, 1 to 5 percent slopes

# Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

## Crops and Pasture

Kenneth M. Rogers, conservation agronomist, Natural Resources Conservation Service, helped to prepare this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed for each soil, the system of land capability classification used by the Natural Resources Conservation Service is explained, and the crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension System.

In 1994, approximately 6,100 acres of cultivated crops and 130,000 acres of pasture were in Wilcox County *(1)*. The total acreage used for cultivated crops and pasture has been decreasing slightly for several years. The trend is toward the conversion of marginal cropland to woodland.

The potential in Wilcox County for increased production of food and fiber is good. About 120,000 acres that is currently being used for pasture and woodland is potentially good cropland. Yields can be increased in cultivated areas if the most current technology is applied. This soil survey can help land users make sound land management decisions and facilitate the application of crop production technology.

The field crops that are suited to the soils and climate in Wilcox County include many crops that are not commonly grown because of economic considerations. Corn, cotton, and soybeans are the main row crops. Vegetable crops, fruit, and similar crops can be grown if economic conditions are favorable. Wheat, rye, and oats are the only close-growing crops planted for grain production, although barley, canola, and triticale can be grown. The specialty crops grown in the county include sweet corn, peas, okra, melons, and alfalfa. Many of the soils in the survey area, including Annemaine, Bama, Bigbee, Boykin, Cahaba, Canton Bend, Chrysler, Izagora, Lucedale, Malbis, and Smithdale soils, are well suited to specialty crops. If economic conditions are favorable, a large acreage of these crops can be grown. Pecans, peaches, and blueberries are the only orchard crops that are grown commercially in the

county. Information regarding specialty crops can be obtained from the local office of the Cooperative Extension System or the Natural Resources Conservation Service.

Erosion is a major management concern on about one-half of the cropland and three-fourths of the pastureland in Wilcox County. In areas where the slope is more than two percent, erosion is a potential hazard. Bama, Cahaba, Freest, Luverne, Malbis, Smithdale, and Vaiden soils are examples of sloping soils that are cultivated and are subject to erosion.

Erosion can reduce productivity and result in the pollution of streams. Productivity is reduced as the surface layer erodes and more of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Brantley, Kipling, Luverne, Oktibbeha, Searcy, and Sumter soils, and on soils that are shallow over bedrock, such as Demopolis and Watsonia soils. Controlling erosion on farmland minimizes the pollution of streams and improves the quality of water for municipal uses, for recreational uses, and for fish and wildlife.

Erosion control practices provide a protective plant cover, increase the rate of water infiltration, and help to control runoff. A cropping system that keeps plant cover and crop residue on the surface for extended periods can hold soil losses to amounts that do not reduce the productive capacity of the soils. Including grasses and legumes in the cropping system helps to control erosion and improves tilth for the crops that follow in the rotation. The legumes also increase the nitrogen levels in the soils.

Applying a system of conservation tillage and leaving crop residue on the surface increase the rate of water infiltration and help to control runoff and erosion. Using a no-till method of planting reduces the hazard of erosion. This practice is suitable on most of the soils in the county.

Terraces and diversions help to control runoff and erosion. They are most practical on very deep, well drained soils that have uniform slopes, such as Bama, Luverne, Malbis, and Smithdale soils. Soils of the Blackland Prairie, such as Kipling, Oktibbeha, Sumter, and Vaiden soils, are generally poorly suited to terraces because of the very slow rate of water infiltration. Buffer strips are effective for minimizing erosion in areas of these soils. Grassed waterways or underground outlets are essential in areas where terraces and diversions are installed. Diversions can be used to intercept surface runoff from hilly uplands and to divert the water around the fields to vegetated disposal areas.

Contour farming is a very effective method of erosion control in cultivated areas when used in conjunction with a water-disposal system. It is best suited to soils that have smooth, uniform slopes, such as Bama, Lucedale, Luverne, Malbis, Searcy, and Vaiden soils.

Soil blowing can be a management concern in early spring on some soils in the uplands, especially if the soils are dry and are not protected by a plant cover. The hazard of erosion generally is highest after the seedbed has been prepared, after planting, and when the plants are small. Tillage methods that leave crop residue on the surface reduce the hazard of soil blowing. Conventional planting practices should include an implement that scratches the surface, leaving a rough, irregular pattern. Also, strips of close-growing crops are effective as windbreaks. If possible, seedbed preparation should be delayed until after March, which generally is windy. Additional information regarding the design of erosion-control practices is available at the local office of the Natural Resources Conservation Service.

Wilcox County has an adequate amount of rainfall for the commonly grown crops. Prolonged periods of drought are rare, but the distribution of rainfall during spring and summer generally results in droughty periods during the growing season in most years. Irrigation may be needed during these periods to reduce plant stress. Most of the soils that are commonly used for cultivated crops are suitable for irrigation; however, the amount of water applied should be regulated to prevent excessive runoff. Some soils, such as Annemaine, Chrysler, Halso, Luverne, Oktibbeha, Searcy, and Vaiden soils, have a slow or very slow rate of water infiltration that limits their suitability for irrigation.

In Wilcox County, most of the soils that are used for crops and that are on terraces and uplands in the Coastal Plain have a surface layer of sandy loam that is light in color and has a low content of organic matter. Regular additions of crop residue, manure, and other organic material can improve the soil structure and minimize crusting, thus improving the rate of water infiltration. Most of the soils that are used for crops in the Blackland Prairie area have a clayey surface layer that has a medium content of organic matter. Regular additions of crop residue, manure, and other organic material can also improve the structure of these soils.

The use of heavy equipment during tillage results in compaction in most soils. The compacted layers, called plow pans or traffic pans, are generally at a depth of 4 to 10 inches. They restrict the rate of water infiltration and limit the growth of plant roots. Soils that

readily develop traffic pans include Bama, Cahaba, Izagora, Lucedale, Luverne, Malbis, and Smithdale soils.

Tilth is an important factor affecting plant growth. It influences the rate of water infiltration into the soil. Soils considered to have good tilth have granular structure and many pores in the surface layer. The factors that most modify tilth are tillage and erosion. Soils of the Blackland Prairie, including Kipling, Houlka, Oktibbeha, Sucarnoochee, and Vaiden soils, generally have poor tilth because of the high content of clay in the surface layer. They become cloddy if plowed when too wet or too dry.

In Wilcox County, natural fertility is low in most of the soils on terraces and in uplands of the Coastal Plain and is high or medium in most of the soils of the Blackland Prairie. Applications of agricultural limestone are needed to neutralize acidity in most of the soils of the Coastal Plain and on terraces and in some of the soils of the Blackland Prairie. The crops commonly grown in the county respond well to applications of lime and fertilizer. The levels of available phosphorus and potash are generally low in most of the soils; however, some fields may have a buildup of phosphorus or potassium because of past applications of commercial fertilizer. Therefore, all applications of lime and fertilizer should be based on the results of a soil test. Leaching is a concern in areas of sandy soils, such as Bigbee and Boykin soils. Higher levels of nitrogen, applied in split applications, should be used on these soils. The Cooperative Extension System can help in the determination of the kinds and amounts of fertilizer and lime to apply.

Wetness is a management concern in areas of Escambia, Houlka, Jedburg, Kinston, Lenoir, Mantachie, Sucarnoochee, Una, and Urbo soils. A drainage system can minimize the harmful effects of excessive wetness. Flooding during the growing season is also a concern in areas of some of these soils. In some years, it delays planting dates and damages crops.

Tall fescue, bahiagrass, dallisgrass, Johnsongrass, and hybrid bermudagrass are the main perennial grasses grown for pasture and hay in Wilcox County. Rye, ryegrass, oats, and wheat are grown as annual cool-season grass forage. Millet, sorghum, and hybrid forage sorghums provide most of the annual warm-season grass forage. These annuals are generally grown for temporary grazing or hay in areas otherwise commonly used for cropland. Arrowleaf clover, ball clover, crimson clover, and other cool-season forage legumes are suitable for most of the soils in the county, especially if agricultural limestone is applied in proper amounts. Alfalfa, a warm-season legume, is suitable for well drained soils, such as Bama, Cahaba, Lucedale, and Smithdale soils of the Coastal Plain and Sumter soils of the Blackland Prairie.

Several management practices are needed in areas that are used for pasture and hay production. These practices include proper stocking rates, weed control, proper applications of fertilizer, rotation grazing, and scattering of animal droppings. Overgrazing, insufficient fertilizer, and acid soils can result in weak plants and poor stands that are quickly infested with weeds. Maintaining a dense cover of desired pasture species can prevent weeds from becoming established.

### Yields per Acre

The average yields per acre that can be expected of the principal crops and pasture plants under a high level of management are shown in tables 6 and 7. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in table 6.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation

Service or of the Cooperative Extension System can provide information about the management and productivity of the soils for those crops.

### Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

*Capability classes*, the broadest groups, are designated by numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

*Capability subclasses* are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the 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 very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

*Capability units* are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 and IIIe-6.

The capability classification of each map unit is given in the section “Detailed Soil Map Units” and in table 6.

## Landscaping and Gardening

Kenneth M. Rogers, conservation agronomist, Natural Resources Conservation Service, helped to prepare this section.

The soils in residential areas are used primarily as sites for homes, driveways, and streets. Remaining areas of each lot are commonly used for lawns, which enhance the appearance of the homes; as gardens for vegetables or flowers and shrubs; as orchards for fruits and nuts; for recreational uses; as habitat for animals and birds; for trees, which provide shade and promote energy conservation; for vegetation and structures designed to abate noise, enhance privacy, and provide protection from the wind; and for septic tank absorption fields. Because the outdoor areas are used for several purposes, careful planning and a good understanding of the soils are important.

This section contains general soil-related information for landscaping and gardening. Other information may be obtained from the local office of the Cooperative Extension System, the Natural Resources Conservation Service, or private businesses that provide landscaping and related services. The amount of soil information needed for use in some areas is beyond the scope of this survey and is more detailed than that provided at the map scale used. Onsite investigation is needed.

Most of the soils in the residential areas in Wilcox County have been disturbed to some degree during construction of houses, streets, driveways, and utility

service. This construction involved cutting and filling, grading, and excavating. As a result, soil properties are more variable and less predictable than in undisturbed areas. Onsite examination is necessary in planning land uses for soils in disturbed areas.

Some of the poorest soils for plant growth are clayey soils that have had the surface layer removed during grading. Arundel, Halso, Luverne, Oktibbeha, Searcy, Vaiden, and Wilcox soils are examples of clayey soils. The exposed dense, firm subsoil restricts root penetration, absorbs little rainfall, and results in excessive runoff. Incorporating organic matter into the soil improves tilth and the rate of water infiltration and provides a more desirable rooting medium. Areas that are subject to intensive foot traffic should be covered with gravel or a mulch, such as pine bark or wood chips.

Some soils, such as Escambia, Jedburg, and Lenoir soils, are wet. The wetness limits the selection of plants to those that are tolerant of a high moisture content in the soil. Several methods can be used to minimize the effects of the wetness. Installing underground tile drains can lower the water table in permeable soils. Bedding the surface layer of slowly permeable soils, such as Lenoir soils, helps to provide a satisfactory root zone for some plants.

Some soils, such as Congaree, Mantachie, Mooreville, and Riverview soils, are on flood plains. Most plants used for gardening and landscaping can be grown on these soils, but consideration should be given to the effects of floodwater. Surface drainage is a management concern because urban uses commonly result in increased rates of surface runoff, which increase the frequency and severity of flooding. Advice and assistance regarding drainage problems can be obtained from the Natural Resources Conservation Service, municipal and county engineering departments, and private engineering companies.

Sandy soils, such as Bigbee and Boykin soils, are droughty, have low fertility, and have a low content of organic matter. Droughtiness limits the selection of plants that can be grown unless irrigation is provided. Additions of organic matter increase the available water capacity and help to retain nutrients in the root zone. Supplemental watering and split applications of plant nutrients are recommended. Using a mulch, such as pine bark, wood chips, or pine straw, or incorporating peat moss or well-decomposed manure into the soil provides a more desirable medium for plant growth.

Natural fertility is low in most of the soils in Wilcox County. Most of the soils, with the exception of some in the Blackland Prairie area, are strongly acid or very strongly acid. Additions of ground limestone are needed to neutralize the acidity of most of the soils. The original surface layer contains the most plant nutrients and the most favorable pH for most plants. In many areas, the fertility of the surface layer has been improved by applications of lime and fertilizer. If the surface layer is removed during construction, the remaining soil is very acid and low in available plant nutrients. Also, some nutrients are unavailable for plant growth in acid soil conditions. Disturbed soils generally need larger amounts of lime and fertilizer, which should be applied according to the results of soil tests and the type of plants grown. Information on sampling for soil testing can be obtained from the Cooperative Extension System, the Natural Resources Conservation Service, and local nurseries.

In the following paragraphs, some of the plants that are used in landscaping and gardening and some management relationships between the plants and the soils are described. Information in this section should be supplemented by consultations with specialists at the Cooperative Extension System, the Natural Resources Conservation Service, and private landscaping and gardening businesses.

The grasses used for landscaping in Wilcox County are mainly vegetatively propagated species, such as zoysiagrass, hybrid bermudagrass, St. Augustine grass, and centipede grass, and seeded species, such as common bermudagrass and centipede grass. The grasses commonly used for short-term cover include ryegrass, rye, wheat, sudangrass, and millet.

The vegetatively propagated plants are usually planted as sprigs, plugs, or sod. Additions of topsoil may be needed before planting in some areas. Also, lime and fertilizer should be applied and incorporated into the soil. The plants should be placed in close contact with the soil, and the plantings should be watered to ensure the establishment of the root system. St. Augustine grass, centipede grass, and certain strains of zoysiagrass are moderately shade tolerant. St. Augustine grass and zoysiagrass normally require more maintenance than centipede grass. The strains of hybrid bermudagrass are fast growing, but they are not as tolerant of shade as St. Augustine grass, centipede grass, or zoysiagrass.

Common perennial grasses that are established by seeding include common bermudagrass and centipede grass. Lime and fertilizer should be applied and incorporated into the soil before seeding. Proper planting depth is important when grasses are established from seed.

Short-term vegetative cover is used to protect the soil at construction sites or to provide cover between the planting seasons of the desired grass species. The most commonly used grasses for short-term cover are

ryegrass for cool seasons and sudangrass or millet for warm seasons. These species are annuals and die after the growing season. Periodic applications of lime and fertilizer are needed for all types of grasses. The kinds and amounts of lime and fertilizer to apply should be based on the results of soil tests.

Vines can be used to provide vegetative cover in moderately shaded areas and in steep areas that cannot be mowed. English ivy and periwinkle can be used for ground cover or on walls and fences. All of these plants are propagated vegetatively, usually from potted plants or sprigs.

Mulches can be used for ground cover in areas where traffic is too heavy for grass cover, in areas where shrubs and flowers are desired with additional ground cover, and in densely shaded areas. Mulches provide effective ground cover. They also provide immediate cover for erosion control in areas where live vegetation is not desired. Effective mulches include pine straw, small-grain straw, hay, composted grass clippings, wood chips, pine bark, gravel, and several manufactured materials. The type of mulch to use depends to some extent on the hazard of erosion. Mulches also can be used to conserve soil moisture and control weeds around trees, shrubs, and flowers.

Shrubs are used primarily to enhance the appearance of homesites. They also can be used to control traffic. They can be effective in dissipating the energy from raindrops and from runoff from roofs. Most native and adapted species add variety to residential settings. The effects of acidity and fertility levels vary greatly between shrub types.

Vegetable and flower gardens are important to many individuals and businesses. However, the soils in areas where homes and businesses are established may not be suited to vegetables and flowers. Soils that have been disturbed by construction may not be productive unless topsoil is applied. Soils that have slopes of more than 8 percent have poor potential for vegetable gardening because of the hazard of erosion if the soils are tilled. Generally, steeper soils have a thinner surface layer. Flower gardening is possible in steeper areas, however, if mulches are used to help control erosion.

Incorporating composted tree leaves and grass clippings into the soil improves fertility, tilth, and moisture content. Additional information regarding vegetable crops is included under the heading “Crops and Pasture.”

Most garden plants grow best in soils that have a pH level between 5.5 and 6.5 and that have a high fertility level. Applying too much fertilizer or using fertilizers with the wrong combination of plant nutrients can be avoided by soil testing, which is the only effective method of determining how much and what type of fertilizer to apply. Information regarding soil testing can be obtained from the local office of the Cooperative Extension System, the Natural Resources Conservation Service, or from retail fertilizer businesses.

Trees are important in homesite landscaping. Information regarding the relationships between soils and trees is available in the section “Woodland Management and Productivity.” Special assistance regarding urban forestry can be obtained from the Alabama Forestry Commission.

## Woodland Management and Productivity

Jerry L. Johnson, forester, Natural Resources Conservation Service, helped to prepare this section.

Commercial woodland makes up 425,000 acres, or about 75 percent of the total land area in Wilcox County. This acreage increased by about 33,000 acres from 1982 to 1990, primarily because of the conversion of cropland and pasture to woodland *(17, 18)*. Private landowners own about 60 percent of the woodland
in the county, the forest industry and private corporations own about 36 percent, and the State, county, and Federal governments own the remaining 4 percent *(18)*.

The forest types in Wilcox County include 5,700 acres of longleaf-slash pine, 183,500 acres of loblolly-shortleaf pine, 103,200 acres of oak-pine, 97,500 acres of oak-hickory, and 57,600 acres of oak-gum-cypress. The county has about 160,500 acres of sawtimber, 86,000 acres of poletimber, and 195,000 acres of seedlings and saplings *(18)*.

Most of the soils in the Coastal Plain and the acid soils in the Blackland Prairie have a site index of 80 or more for loblolly pine. The alkaline soils in the Blackland Prairie, such as Demopolis, Sucarnoochee, and Sumter soils, are not suited to pines. Because of long periods of ponding, the Una soils are also unsuited to pine trees. The county has about 110,000 acres of flood plains that are frequently flooded and are suited to bottomland hardwoods. Most of the soils in these areas have a site index of 85 or more for water oak.

Table 8 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce in a pure stand under natural conditions. The number 1 indicates low potential productivity; 2 or 3, moderate; 4 or 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *W*, excess water in or on the soil; *D*, restricted rooting depth; *C*, clay in the upper part of the soil; and *S*, sandy texture. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, W, D, C, and S.

In the table, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

*Erosion hazard* is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

*Equipment limitation* reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

*Seedling mortality* refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

*Plant competition* ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *volume* number. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. The estimates of the productivity of the soils in the survey area are based on data acquired in the county and on published data *(5, 6, 7, 15)*.

The *volume*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cords per acre per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is

**Figure 10.—Boat ramps and piers, such as these constructed and maintained by the U.S. Army Corps of Engineers, provide public access to the William "Bill" Dannelly Reservoir and the Alabama River.**

the most common species on the soil and is the one that determines the ordination class.

*Trees to plant* are those that are suitable for commercial wood production.

## Recreation

In Wilcox County, vast areas of woodlands and fields, the Alabama River, and William "Bill" Dannelly Reservoir offer many recreational opportunities. Hunting, fishing, boating, and camping are popular in the county and make an important contribution to the local economy.

Managed woodlands in the county support a large and healthy population of white-tailed deer, wild turkey, and small game. Fallow deer were imported to the county in 1925. In 1935, a number of these deer escaped and a wild population, which still exists, became established. A few areas of public land are open to hunting in the county, and many landowners lease hunting rights to their lands. Hunting leases and fees for daily hunting rights generate extra income for many landowners.

The Alabama River and William "Bill" Dannelly Reservoir provide excellent opportunities for boating, fishing, swimming, water skiing, and other water sports. The reservoir attracts many migrating waterfowl and affords opportunities for many duck hunters. Also, numerous fishing tournaments are held annually on the reservoir. Access to the Alabama River and the reservoir is provided by the U.S. Army Corps of Engineers, the Alabama Department of Natural Resources, and individuals at a number of sites (fig. 10).

The number of camping, hiking, and swimming facilities is somewhat limited in the county. Camping facilities are at Roland Cooper State Park, East Bank Park, and Chilatchee Park. Hiking trails are at Roland

Cooper State Park and Gullets Bluff Park. Swimming areas are at East Bank Park and Bridgeport Park. Picnic facilities are more numerous and can be found at Bridgeport Park, Chilatchee Park, East Bank Park, Gees Bend Park, Gullets Bluff Park, and Roland Cooper State Park. Roland Cooper State Park also has a nine hole golf course and rental cabins.

The soils of the survey area are rated in table 9 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

*Camp areas* require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

*Picnic areas* are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

*Playgrounds* require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

*Paths and trails* for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

*Golf fairways* are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

## Wildlife Habitat

Tommy Counts, wildlife biologist, Natural Resources Conservation Service, helped to prepare this section.

Wilcox County is dominantly a rural area that has suitable habitat for many kinds of wildlife. The county is about 75 percent woodland and is interspersed with areas of cultivated crops, pasture, and hay.

The common species of wild game in the county are eastern wild turkey, bobwhite quail, white-tailed deer, eastern cottontail rabbit, mourning dove, Canada geese, and ducks.

The nongame wildlife species in the county include armadillos, snakes, egrets, herons, crows, blackbirds, hawks, owls, and songbirds, such as cardinals, robins, thrushes, bluejays, meadowlarks, mockingbirds, sparrows, woodpeckers, vireos, and warblers.

In upland areas, the woodland generally consists of loblolly pine or mixed pine and hardwoods. On the flood plains along streams and rivers, the woodland consists of bottom land hardwoods. The forest types and their associated plant communities are of major importance to wildlife. Many of these woodland areas are managed primarily to provide habitat for various

**Figure 11.—A shallow pond in an area of Una silty clay, ponded, that provides valuable habitat for wetland wildlife and nesting areas for wood ducks, herons, and egrets. The swelling and enlargement of the lower part of the trunk of these swamp tupelo and baldcypress trees are adaptations that help the trees tolerate the ponding and wetness.**

species of wildlife, such as the bobwhite quail, white-tailed deer, and turkey. Management practices that benefit wildlife—including prescribed burning, creating or maintaining openings in the woodland, and thinning stands—are common throughout the county.

Areas of cultivated crops, hay, and pasture are commonly interspersed with the woodland. The open areas are very important to many species of wildlife. The areas of cropland are primarily used for agricultural commodities, such as soybeans, corn, and cotton. The pasture and hayland generally are used for perennial grasses, such as bahiagrass, bermudagrass, tall fescue, and Johnsongrass.

Wetlands are used by many kinds of wildlife. Many of the furbearers and wading birds depend almost exclusively on these areas. Natural depressions and areas of saturated soils along creeks and rivers, bodies of open water, and beaver ponds make up most of the wetland areas in the county (fig. 11). They occur mostly along such major streams as Bear, Beaver, Cedar, Chilatchee, Dixon, Gravel, Pine Barren, Prairie, and Red Creeks and in areas adjacent to the Alabama River.

Furbearers in the county include beaver, muskrat, river otter, mink, bobcat, fox, opossum, coyote, raccoon, and skunk. Waterfowl and wading birds are

numerous during certain times of the year in wetland areas, especially near William “Bill” Dannelly Reservoir and backwater areas along the Alabama River.

The wildlife species in Wilcox County that the Federal government has listed as threatened or endangered include the bald eagle, red-cockaded woodpecker, American alligator, and several species of mussels.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

*Grain and seed crops* are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, grain sorghum, sunflower, and millet.

*Grasses and legumes* are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, Johnsongrass, bahiagrass, dallisgrass, lespedeza, clover, and alfalfa.

*Wild herbaceous plants* are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, partridge pea, dewberry, and greenbrier.

*Hardwood trees* and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, yellow-poplar, blackcherry, sweetgum, persimmon, hawthorn, dogwood, hickory, sumac, and huckleberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are pyracantha, autumn olive, and crabapple.

*Coniferous plants* furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, eastern redcedar, and baldcypress.

*Wetland plants* are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, cattails, buttonbush, barnyard grass, pondweed, water shield, rushes, sedges, and reeds.

*Shallow water areas* have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, sloughs, oxbow lakes, waterfowl feeding areas, beaver ponds, and other ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

*Habitat for openland wildlife* consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail, red fox, coyote, armadillo, dove, killdeer, and hawks.

*Habitat for woodland wildlife* consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, bear, bobcat, opossum, and skunk.

*Habitat for wetland wildlife* consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, rails, herons, kingfishers, shore birds, turtles, muskrat, otter, mink, and beaver.

## Aquaculture

H.D. Kelly, biologist, Natural Resources Conservation Service, helped prepare this section.

Aquaculture is the controlled production and harvest of animals or plants grown in or on water. In Wilcox County, catfish farming (channel catfish), and sport fish production (bass and bream) are the most common types of aquaculture. The channel catfish, *Ictulurus punctatus*, can be produced either in cages within ponds or in open ponds. Open pond culture is the only method currently used in the county. The county has more than 1,000 acres of bass and bream ponds and less than 100 acres of catfish ponds. Other species of fish and crustaceans (crawfish) can be produced in ponds, and fish farming could provide additional income for some landowners.

Some of the tables included in this survey can help in the evaluation of potential pond sites. Table 14, for example, lists soil limitations affecting pond reservoir areas and embankments, dikes, and levees. Indications of flooding frequency and water table levels are in table 17. These tables and the detailed soil maps can help in the evaluation of the pond-building and water-retaining potential of a location. Once a possible pond site is selected, additional soil borings should be made.

An understanding of soil characteristics is important in determining the potential of a pond site. The Houlka, Kipling, Oktibbeha, Searcy, Sucarnoochee, Sumter, and Vaiden soils of the Blackland Prairie and the Halso, Luverne, and Wilcox soils of the Coastal Plain are generally suited to pond construction (fig. 12).

The construction of buildings and the accessibility of the area are important considerations in evaluating a pond site. Depending on the size and planned use of the site, a road system may need to be planned to accommodate harvest trucks. Large trucks are used in commercial operations. Feed trucks and similar equipment also require suitable access to the fish farm. If the farm is planned for fingerling production, a hatchery building will probably be on the site. Other buildings may be needed to store equipment or feed. Table 11 gives soil limitations affecting roads and building sites.

The quality of water in a pond is influenced by the soil. Several variables of water quality affect the production of fish. Total alkalinity, for example, is directly influenced by the soil. Total alkalinity values ranging from 30 to 150 parts per million are preferred. Fish production can be acceptable in ponds that have a low alkalinity level—less than 20 parts per million—provided that the fish are well fed. Other complicating factors, however, affect fish production when alkalinity values are below 20 parts per million. The application of agricultural lime can commonly prevent production problems associated with low alkalinity values.

The soil in pond basins should be analyzed before the basins are limed and filled with water. The amount of lime needed should be based on the results of the analysis, and the lime should be applied before the ponds are filled with water. Thereafter, annual applications of lime, even in ponds full of water, should range from 20 to 25 percent of the original application to maintain desirable levels of alkalinity. The importance of proper alkalinity levels cannot be overemphasized. Some of the soils that are suitable for pond sites in the county require applications of lime. Ponds constructed within the watershed of the Blackland Prairie generally do not require additional lime.

The source and amount of water to be used should also be considered when evaluating a site for a pond or fish farm. For example, if runoff water is to be used, the watershed should be evaluated. Technical assistance regarding site and production problems is available from the local office of the Natural Resources Conservation Service or the Cooperative Extension System.

## Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the

**Figure 12.—A recently constructed farm pond in an area of Oktibbeha clay loam, 1 to 5 percent slopes. Oktibbeha soils are well suited as sites for ponds and lakes.**

most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

*Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.*

*The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.*

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential,

available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the "Glossary."

### Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

*Shallow excavations* are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

*Dwellings* and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

*Local roads and streets* have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

*Lawns and landscaping* require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

### Sanitary Facilities

Table 12 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the

limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

*Septic tank absorption fields* are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

*Sewage lagoons* are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope and bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

*Sanitary landfills* are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

*Daily cover for landfill* is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as the final cover

for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

## Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

*Roadfill* is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

*Sand* and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale, chalk, and siltstone, are not considered to be sand and gravel.

*Topsoil* is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15

percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

**Water Management**

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

*Pond reservoir areas* hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

*Embankments, dikes, and levees* are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

*Drainage* is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

*Irrigation* is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

*Terraces and diversions* are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

*Grassed waterways* are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

# Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 20.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

## Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

*Depth* to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading “Soil Series and Their Morphology.”

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the “Glossary.”

*Classification* of the soils is determined according to the Unified soil classification system *(4)* and the system adopted by the American Association of State Highway and Transportation Officials *(3)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 20.

*Rock fragments* 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

*Liquid limit* and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

## Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Clay* as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

*Moist bulk density* is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

*Permeability* refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

*Available water capacity* refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

*Soil reaction* is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

*Shrink-swell potential* is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent;

*moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, greater than 9 percent.

*Erosion factor K* indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

*Organic matter* is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

## Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

*Hydrologic soil groups* are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

*Flooding*, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

*High water table* (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated

zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are the depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

*Depth to bedrock* is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

*Risk of corrosion* pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

## Physical and Chemical Analyses of Selected Soils

The results of physical analyses of several typical pedons in the survey area are given in table 18 and the results of chemical analyses in table 19. The data are for soils sampled at carefully selected sites. Unless otherwise indicated, the pedons are typical of the series. They are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Agronomy and Soils Clay Mineralogy Laboratory, Auburn University, Auburn, Alabama, and the National Soil Survey Laboratory, Natural Resources Conservation Service, Lincoln, Nebraska.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(8, 19)*.

*Sand*—(0.05-2.0 mm fraction) weight percentages of material less than 2 mm (3A1).

*Silt*—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).

*Clay*—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).

*Extractable cations*—ammonium acetate pH 7.0, atomic absorption; calcium (6N2e), magnesium (6O2d), sodium (6P2b), potassium (6Q2b).

*Extractable bases*—method of Hajek, Adams, and Cope *(8)*.

*Extractable acidity*—method of Hajek, Adams, and Cope *(8)*.

*Cation-exchange capacity*—sum of cations (5A3a).

*Base saturation*—method of Hajek, Adams, and Cope *(8)*.

*Reaction (pH)*—1:1 water dilution (8C1f).

## Engineering Index Test Data

Table 20 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. Some of the pedons are representative of the series described in the section "Soil Series and

Their Morphology." The soil samples were tested by the Alabama Highway Department, Bureau of Materials and Tests, Montgomery, Alabama.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); and Moisture density—T 99 (AASHTO), D 698 (ASTM).

# Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(14, 21)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 21 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizonation, plus *udult*, the suborder of the Ultisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, siliceous, semiactive, thermic Typic Hapludults.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The Cahaba series is an example of fine-loamy, siliceous, semiactive, thermic Typic Hapludults.

## Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(20)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(14)* and in “Keys to Soil Taxonomy” *(21)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section “Detailed Soil Map Units.”

### Annemaine Series

The Annemaine series consists of very deep, moderately well drained soils that formed in stratified clayey and loamy alluvium. These soils are on low terraces along the Alabama River and other large streams and are subject to occasional flooding. Slopes range from 0 to 5 percent. These soils are fine, mixed, semiactive, thermic Aquic Hapludults.

Annemaine soils are commonly associated on the landscape with Cahaba, Canton Bend, Chrysler, Izagora, and Lenoir soils. Cahaba soils are in the slightly higher positions on the low terraces and are fine-loamy. Canton Bend and Chrysler soils are in positions similar to those of the Annemaine soils. Canton Bend soils are well drained and are Hapludalfs. Chrysler soils do not have a significant decrease in clay content within a depth of 60 inches. Izagora soils are in the slightly lower positions on the low terraces and are fine-loamy. The somewhat poorly drained Lenoir soils are in the slightly lower, more concave positions on the low terraces.

Typical pedon of Annemaine fine sandy loam, 2 to 5 percent slopes, occasionally flooded; about 5 miles northwest of Camden at the Lower Coastal Plain Experiment Station, 1,500 feet east of the Alabama River and 0.5 mile north of a gravel road, 1,400 feet south and 3,800 feet west of the northeast corner of sec. 29, T. 13 N., R. 7 E.

Ap—0 to 5 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

E—5 to 9 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak coarse subangular blocky structure; very friable; many fine and medium roots; very strongly acid; clear smooth boundary.

Bt1—9 to 16 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; common fine roots and pores; few faint clay films on faces of peds and in pores; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bt2—16 to 37 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; few fine and medium roots; common faint clay films on faces of peds; few fine flakes of mica; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) masses of iron accumulation; common fine prominent light gray (10YR 6/1) iron depletions; very strongly acid; gradual wavy boundary.

BC—37 to 49 inches; 30 percent dark red (2.5YR 3/6), 30 percent strong brown (7.5YR 5/6), 20 percent light gray (10YR 6/1), and 20 percent light yellowish brown (10YR 6/4) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; common fine flakes of mica; areas of dark red, strong brown, and yellowish brown are masses of iron accumulation; areas of light gray are iron depletions; very strongly acid; gradual wavy boundary.

C1—49 to 74 inches; 30 percent light gray (10YR 6/1), 30 percent strong brown (7.5YR 5/6), 20 percent dark red (2.5YR 3/6), and 20 percent light yellowish brown (10YR 6/4) sandy clay loam; massive; firm; many fine flakes of mica; areas of strong brown, dark red, and yellowish brown are masses of iron accumulation; areas of light gray are iron depletions; very strongly acid; gradual wavy boundary.

C2—74 to 90 inches; strong brown (7.5YR 5/6) fine sandy loam; massive; many fine flakes of mica; many medium distinct brownish yellow (10YR 6/6) and dark red (2.5YR 3/6) masses of iron accumulation; many medium distinct light gray (10YR 6/1) iron depletions; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction ranges from very strongly acid to slightly acid in the A and E horizons and is very strongly acid or strongly acid in the B and C horizons.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4. It is sandy loam, fine sandy loam, or silt loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It has few to many redoximorphic depletions in shades of gray and few to many redoximorphic accumulations in shades of brown, yellow, and red. The texture is silty clay loam, clay loam, silty clay, or clay.

The BC horizon, if it occurs, has the same range in hue, value, and chroma as the Bt horizon; or it has no dominant matrix color and is multicolored in shades of red, brown, yellow, and gray. It is sandy clay loam, loam, or clay loam.

The C horizon has hue of 2.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8; or it has no dominant matrix color and is multicolored in shades of brown, yellow, red, and gray. It is sandy loam, fine sandy loam, loam, or sandy clay loam. It commonly has thin strata of finer- and coarser-textured materials. Some pedons have a 2C horizon, which has a texture of loamy sand or sand, below a depth of 50 inches.

## Arundel Series

The Arundel series consists of moderately deep, well drained soils on ridgetops and side slopes of the uplands in the central and southern parts of the county. These soils formed in clayey sediments that are underlain by level-bedded siltstone or claystone (buhrstone). Slopes range from 2 to 35 percent. These soils are fine, smectitic, thermic Typic Hapludults.

Arundel soils are commonly associated on the landscape with Cantuche, Halso, and Luverne soils.

Cantuche soils are in positions similar to those of the Arundel soils and are shallow over bedrock. Halso and Luverne soils are in positions similar to those of the Arundel soils but generally are at lower elevations. Halso soils have shale bedrock at a depth of 40 to 60 inches. Luverne soils do not have bedrock within a depth of 80 inches.

Typical pedon of Arundel silt loam, in an area of Arundel-Cantuche complex, 8 to 35 percent slopes; about 3.75 miles east-southeast of Dry Forks, 2,200 feet west and 2,000 feet north of the southeast corner of sec. 30, T. 11 N., R. 8 E.

Ap—0 to 3 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine and medium roots and common coarse roots; about 10 percent gravel-sized fragments of soft siltstone; strongly acid; abrupt wavy boundary.

Bt1—3 to 22 inches; red (2.5YR 4/6) clay; moderate medium subangular and angular blocky structure; firm; common medium and coarse roots and few fine roots; few faint clay films on faces of peds; about 10 percent gravel-sized fragments of soft siltstone; very strongly acid; gradual wavy boundary.

Bt2—22 to 33 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; firm; few medium and coarse roots; common faint clay films on faces of peds; about 10 percent gravel- and cobble-sized fragments of soft siltstone; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; common fine distinct light gray (10YR 7/2) iron depletions; the masses of iron accumulation and the iron depletions are relic redoximorphic features; very strongly acid; gradual wavy boundary.

Cr—33 to 80 inches; weathered siltstone bedrock; massive; level-bedded; distinct brownish yellow (10YR 6/6) and yellowish brown (10YR 5/6) stains on surfaces in fractures; can be cut with difficulty with hand tools; very strongly acid.

The thickness of the solum and the depth to bedrock range from 20 to 40 inches. Reaction is very strongly acid or strongly acid throughout.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is silt loam or loam. The content of pararock fragments of siltstone or claystone (buhrstone) ranges from 5 to 10 percent, by volume.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. Redoximorphic features, if they occur, are assumed to be relic. They are in shades of red, yellow, brown, or gray. The texture is silty clay, clay, or clay loam. The content of pararock fragments ranges from 5 to 10 percent, by volume.

**Figure 13.—A profile of a Bama soil, which formed in thick deposits of loamy fluvial sediments. Bama soils are very deep, loamy, and have a red or yellowish red subsoil.**

The BC and C horizons, if they occur, have hue of 10YR, value of 5 or 6, and chroma of 4 to 6. Redoximorphic features, if they occur, are assumed to be relic. They are in shades of red, brown, yellow, or gray. The texture in the fine-earth fraction is silty clay, clay, or clay loam. In some pedons these horizons have more than 15 percent pararock fragments.

The Cr horizon is level-bedded siltstone or claystone (buhrstone). It is rippable by light machinery and can be cut with hand tools in fresh exposures. In some pedons it has lenses or strata of sandstone or quartzite.

## Bama Series

The Bama series consists of very deep, well drained soils that formed in loamy sediments (fig. 13). These soils are on broad summits and side slopes of high stream terraces. Slopes range from 0 to 5

percent. These soils are fine-loamy, siliceous, subactive, thermic Typic Paleudults.

Bama soils are commonly associated on the landscape with Lucedale, Malbis, and Smithdale soils. Lucedale soils are in positions similar to those of the Bama soils. They have a dark red argillic horizon. Malbis soils are in slightly lower positions than the Bama soils. They have hue of 10YR or yellower in the upper part of the argillic horizon. Smithdale soils are on narrow ridges at higher elevations than the Bama soils or on side slopes at lower elevations. They have an argillic horizon that decreases in clay content by 20 percent or more within a depth of 60 inches.

Typical pedon of Bama fine sandy loam, 0 to 2 percent slopes; about 1.75 miles northwest of Vredenburgh, 150 feet north and 1,500 feet east of the southwest corner of sec. 11, T. 10 N., R. 7 E.

Ap—0 to 5 inches; brown (7.5YR 4/2) fine sandy loam; weak fine granular structure; very friable; common fine roots; moderately acid; abrupt smooth boundary.

Bt1—5 to 42 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—42 to 65 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; about 2 percent quartz pebbles; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. The content of rounded quartz pebbles, 2 to 15 millimeters in diameter, ranges from 0 to 10 percent throughout the solum.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It is sandy loam, fine sandy loam, or loamy fine sand.

The upper part of the Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. The lower part, below a depth of 40 inches, has colors similar to those of the upper part but may also have hue of 2.5YR, value of 3, and chroma of 4 to 6. The texture is sandy clay loam, loam, or clay loam.

## Beatrice Series

The Beatrice series consists of very deep, moderately well drained soils that formed in clayey marine sediments. These soils are on ridgetops and side slopes of the uplands in the southern part of the county. Slopes range from 1 to 10 percent. These soils are very-fine, smectitic, thermic Vertic Hapludults.

Beatrice soils are commonly associated on the landscape with Halso soils. Halso soils are in landscape positions similar to those of the Beatrice soils. They have a paralithic contact consisting of shale bedrock within a depth of 40 to 60 inches.

Typical pedon of Beatrice silt loam, 1 to 5 percent slopes; about 1.6 miles east-northeast of Vredenburgh, 300 feet north and 250 feet west of the southeast corner of sec. 18, T. 10 N., R. 8 E.

Ap—0 to 5 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

Bt1—5 to 16 inches; yellowish red (2.5YR 4/6) clay; moderate medium subangular blocky structure parting to strong fine subangular blocky; firm; many fine and medium roots and common coarse roots; common faint clay films on faces of peds; common fine faint yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Bt2—16 to 25 inches; yellowish red (2.5YR 4/6) clay; moderate medium subangular blocky structure parting to strong fine angular blocky; firm; common medium and coarse roots and few fine roots; common faint clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions and few medium distinct brownish yellow (10YR 6/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Bt3—25 to 38 inches; 35 percent yellowish red (5YR 4/6), 35 percent red (2.5YR 4/6), and 30 percent light brownish gray (10YR 6/2) clay; moderate coarse angular blocky structure parting to moderate fine angular blocky; firm; few medium roots; common faint clay films on faces of peds; areas of yellowish red and red are masses of iron accumulation; areas of light brownish gray are iron depletions; extremely acid; clear wavy boundary.

BC—38 to 50 inches; light brownish gray (10YR 6/2) clay; weak coarse angular blocky structure; firm; common faint clay films on faces of most peds; common medium distinct yellowish brown (10YR 5/6) and few medium distinct yellowish red (5YR 5/6) masses of iron accumulation; common fine distinct light gray (10YR 7/1) iron depletions; extremely acid; clear wavy boundary.

C—50 to 80 inches; stratified light brownish gray (2.5Y 6/2) and olive yellow (2.5Y 6/6) clayey shale; weak thick platy rock structure; firm; olive yellow strata are 2 to 10 millimeters thick; very strongly acid.

The thickness of the solum and the depth to soft, clayey shale range from 40 to 60 inches. Reaction is extremely acid or very strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4.

The Bt horizon has iron depletions that have chroma of 2 or less within the upper 10 to 24 inches. The upper part of the Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. The lower part has the same range in color as the upper part and has common or many redoximorphic features in shades of gray, red, yellow, or brown; or it has no dominant matrix color and is multicolored in shades of red, brown, yellow, and gray.

The BC or CB horizon, if it occurs, has hue of 10YR to 5Y, value of 6 or 7, and chroma of 1 or 2 and has redoximorphic features in shades of red, yellow, or brown; or it has no dominant matrix color and is multicolored in shades of gray, red, yellow, and brown. It is clay, clay loam, or sandy clay loam.

The C horizon has the same range in color as the BC or CB horizon. It is weathered, clayey shale and is commonly thinly bedded or stratified. In most pedons it has thin strata of coarser-textured material.

## Bigbee Series

The Bigbee series consists of very deep, excessively drained soils that formed in thick beds of sandy sediments. These soils are on low terraces and on high parts of natural levees adjacent to major streams throughout the county. They are subject to occasional flooding. Slopes range from 0 to 5 percent. These soils are thermic, coated Typic Quartzipsamments.

Bigbee soils are commonly associated on the landscape with Cahaba, Congaree, and Riverview soils. Cahaba soils are on low stream terraces in positions similar to those of the Bigbee soils and are fine-loamy. Congaree and Riverview soils are in the slightly lower positions on the natural levees and are fine-loamy.

Typical pedon of Bigbee sand, 0 to 5 percent slopes, occasionally flooded; about 0.7 mile east of Prairie Bluff, 200 feet south and 1,700 feet west of the northeast corner of sec. 5, T. 13 N., R. 7 E.

Ap—0 to 4 inches; brown (10YR 4/3) sand; single-grained; loose; many fine and medium roots; moderately acid; abrupt wavy boundary.

C1—4 to 45 inches; yellowish brown (10YR 5/4) sand; single-grained; loose; common medium roots; very strongly acid; gradual wavy boundary.

C2—45 to 90 inches; brownish yellow (10YR 6/6) sand; single-grained; loose; very strongly acid.

The thickness of the sandy sediments is more than 80 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where lime has been applied.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4.

The upper part of the C horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. It is sand, fine sand, or loamy sand.

The lower part of the C horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 6. Redoximorphic features, if they occur, are in shades of brown, yellow, or gray. The number of pockets or streaks of clean sand ranges from none to common. The texture is sand, fine sand, or loamy sand.

## Boykin Series

The Boykin series consists of very deep, well drained soils that formed in sandy and loamy sediments. These soils are on narrow ridgetops in the uplands. Slopes range from 2 to 5 percent. These soils are loamy, siliceous, active, thermic Arenic Paleudults.

Boykin soils are commonly associated on the landscape with Smithdale soils. Smithdale soils are in slightly lower positions than the Boykin soils and do not have a thick sandy epipedon.

Typical pedon of Boykin loamy sand, in an area of Smithdale-Boykin complex, 2 to 5 percent slopes; 0.3 mile southwest of Rehobeth, 230 feet east and 450 feet south of the northwest corner of sec. 16, R. 7 E., T. 14 N.

A—0 to 4 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear wavy boundary.

E1—4 to 8 inches; strong brown (7.5YR 5/6) loamy sand; single-grained; loose; many fine, medium, and coarse roots; very strongly acid; clear wavy boundary.

E2—8 to 25 inches; light brown (10YR 6/4) loamy sand; single-grained; loose; common medium and coarse roots; very strongly acid; abrupt wavy boundary.

Bt1—25 to 58 inches; yellowish red (5YR 5/8) sandy clay loam; weak medium subangular blocky

structure; friable; few fine and medium roots; very strongly acid; gradual wavy boundary.

Bt2—58 to 65 inches; yellowish red (5YR 5/6) sandy clay loam; weak coarse subangular blocky structure; friable; many medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid.

The solum is more than 60 inches thick. The thickness of the sandy epipedon ranges from 20 to 40 inches. Reaction ranges from very strongly acid to moderately acid in the A and E horizons, except in areas that have been limed. The subsoil is very strongly acid or strongly acid.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon has hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 3 to 8. It is loamy sand or loamy fine sand.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. The texture is commonly sandy clay loam, but in some pedons it includes sandy loam in the upper part.

## Brantley Series

The Brantley series consists of very deep, well drained soils that formed in clayey and loamy sediments. These soils are on narrow ridgetops and on side slopes in the northwestern and northeastern parts of the county. Slopes range from 2 to 35 percent. These soils are fine, mixed, active, thermic Ultic Hapludalfs.

Brantley soils are commonly associated on the landscape with Oktibbeha, Searcy, and Sumter soils. Oktibbeha soils are in positions similar to those of the Brantley soils. They are very-fine textured and have smectitic mineralogy. The moderately well drained Searcy soils are on broad ridgetops and on toe slopes. They do not have a significant decrease in clay content within a depth of 60 inches. Sumter soils are in positions similar to those of the Brantley soils but are at lower elevations. They are moderately deep over soft limestone bedrock and are calcareous to the surface.

Typical pedon of Brantley sandy clay loam, 15 to 35 percent slopes, eroded; about 3.6 miles north-northwest of Allenton, 100 feet south and 300 feet east of the northwest corner of sec. 27, T. 12 N., R. 10 E.

A—0 to 5 inches; brown (10YR 4/3) sandy clay loam; weak medium subangular blocky structure; friable; many fine and medium roots; strongly acid; clear wavy boundary.

BA—5 to 8 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; many fine, medium, and coarse roots; common fine flakes of mica; strongly acid; clear wavy boundary.

Bt1—8 to 18 inches; strong brown (7.5YR 4/6) sandy clay; moderate medium subangular blocky structure; firm; common fine and medium roots; common faint clay films on faces of peds; common fine flakes of mica; strongly acid; clear wavy boundary.

Bt2—18 to 25 inches; dark yellowish brown (10YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; common fine and medium roots; common faint clay films on faces of peds; many fine flakes of mica; few medium faint strong brown (7.5YR 5/6) masses of iron accumulation; strongly acid; gradual wavy boundary.

Bt3—25 to 31 inches; dark yellowish brown (10YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; common fine and medium roots; common faint clay films on faces of peds; many fine flakes of mica; strongly acid; gradual wavy boundary.

Bt4—31 to 42 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint clay films on faces of peds; many fine flakes of mica; strongly acid; gradual wavy boundary.

Bt5—42 to 48 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; many fine flakes of mica; common fine faint yellowish brown (10YR 5/4) and few fine faint strong brown (7.5YR 5/6) masses of iron accumulation; strongly acid; clear wavy boundary.

Bt6—48 to 53 inches; yellowish brown (10YR 5/6) sandy clay loam; weak coarse subangular blocky structure; friable; few fine roots; few faint clay films on faces of some peds; many fine flakes of mica; common fine faint yellowish brown (10YR 5/4) and few fine faint brown (7.5YR 5/4) masses of iron accumulation; strongly acid; clear wavy boundary.

C—53 to 65 inches; yellowish brown (10YR 5/6) fine sandy loam; massive; very friable; few medium faint yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) masses of iron accumulation; many fine and medium flakes of mica; strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 7.5YR or 10YR,

value of 3 to 5, and chroma of 2 to 4. It is fine sandy loam or sandy clay loam.

The BA horizon, if it occurs, has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. It is loam, fine sandy loam, or sandy clay loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. It is clay, sandy clay, or clay loam in the upper part and clay loam or sandy clay loam in the lower part.

The BC horizon, if it occurs, has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 8. It is sandy clay loam or clay loam.

The C horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. Redoximorphic features, if they occur, are in shades of yellow, brown, red, or gray. The texture is fine sandy loam, sandy loam, or sandy clay loam.

## Cahaba Series

The Cahaba series consists of very deep, well drained soils that formed in loamy and sandy alluvium. These soils are on low stream terraces and are subject to rare flooding. Slopes range from 0 to 2 percent. These soils are fine-loamy, siliceous, semiactive, thermic Typic Hapludults.

Cahaba soils are commonly associated on the landscape with Annemaine, Bigbee, Canton Bend, Chrysler, and Izagora soils. Annemaine, Canton Bend, and Chrysler soils are in the slightly lower positions on the low terraces and have a clayey argillic horizon. Bigbee soils are in the slightly lower positions on the low terraces and on high parts of natural levees. They are sandy throughout. The moderately well drained Izagora soils are in the slightly lower, less convex positions on the terraces and have hue of 10YR or yellower throughout the subsoil.

Typical pedon of Cahaba fine sandy loam, 0 to 2 percent slopes, rarely flooded; about 5 miles northwest of Camden at the Lower Coastal Plain Experiment Station, 600 feet south of a silo and 100 feet east of a gravel farm road, 2,490 feet north and 1,770 feet west of the southeast corner of sec. 29, T. 13 N., R. 7 E.

Ap1—0 to 5 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; few wormcasts; moderately acid; clear smooth boundary.

Ap2—5 to 9 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; common fine spots of yellowish red (5YR 4/6) sandy loam; strongly acid; clear smooth boundary.

Bt1—9 to 18 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; moderately acid; gradual wavy boundary.

Bt2—18 to 53 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of some peds; very strongly acid; gradual wavy boundary.

C1—53 to 80 inches; yellowish red (5YR 4/6) sandy loam; massive; very friable; few fine roots; common fine flakes of mica; few medium distinct brownish yellow (10YR 6/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

C2—80 to 90 inches; reddish yellow (7.5YR 6/8) sandy loam; massive; very friable; many fine flakes of mica; very strongly acid.

The thickness of the solum ranges from 36 to 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where lime has been applied.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It is sandy clay loam, clay loam, or loam.

The C horizon has hue of 2.5YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. It is sandy loam, fine sandy loam, loamy sand, or sand. In many pedons it has thin strata of finer- and coarser-textured material. In some pedons it has thin strata of gravel below a depth of 40 inches.

## Canton Bend Series

The Canton Bend series consists of very deep, well drained soils that formed in stratified clayey and loamy alluvium. These soils are on low terraces along the Alabama River and other large streams and are subject to occasional flooding. Slopes range from 0 to 2 percent. These soils are fine, mixed, semiactive, thermic Ultic Hapludalfs.

Canton Bend soils are commonly associated on the landscape with Annemaine, Cahaba, Chrysler, and Lenoir soils. Annemaine and Chrysler soils are in positions similar to those of the Canton Bend soils. They are moderately well drained and are Ultisols. Cahaba soils are in slightly higher positions than the Canton Bend soils and are fine-loamy. The somewhat poorly drained Lenoir soils are in the lower, more concave positions on the low terraces.

Typical pedon of Canton Bend loam, 0 to 2 percent

slopes, occasionally flooded; 1.5 miles east-southeast of Yellow Bluff, about 1,500 feet north and 1,800 feet west of the southeast corner of sec. 35, T. 12 N., R. 6 E.

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

Bt1—8 to 16 inches; yellowish red (5YR 4/6) clay loam; weak medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; common distinct brown (10YR 4/3) wormcasts having a texture of loam; common fine flakes of mica; strongly acid; clear wavy boundary.

Bt2—16 to 34 inches; yellowish red (5YR 5/6) clay loam; moderate medium subangular blocky structure; firm; common fine roots; common faint clay films on faces of peds; common fine flakes of mica; strongly acid; gradual wavy boundary.

Bt3—34 to 43 inches; yellowish red (5YR 5/6) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; many fine flakes of mica; common medium distinct strong brown (7.5YR 5/6) and few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; few fine faint pale brown iron depletions; very strongly acid; gradual wavy boundary.

BC—43 to 48 inches; strong brown (7.5YR 5/6) loam; weak coarse subangular blocky structure; friable; few fine roots; many fine flakes of mica; few fine faint yellowish red and yellowish brown masses of iron accumulation; very strongly acid; gradual wavy boundary.

C—48 to 65 inches; strong brown (7.5YR 5/6) sandy clay loam; massive; friable; many fine flakes of mica; few fine faint yellowish red and yellowish brown masses of iron accumulation; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The Bt horizon has hue of 5YR, value of 4 or 5, and chroma of 6 to 8. It has few to many redoximorphic accumulations in shades of red, yellow, and brown. It is silty clay loam, clay loam, clay, or silty clay.

The BC horizon has hue of 7.5YR, value of 4 or 5, and chroma of 6 to 8. It has few to many redoximorphic accumulations in shades of brown, yellow, and red. In some pedons it has no dominant matrix color and is multicolored in shades of brown, red, yellow, and gray. The texture is loam or fine sandy loam.

The C horizon has the same range in color as the BC horizon. It is sandy clay loam, loam, fine sandy loam, or sandy loam.

## Cantuche Series

The Cantuche series consists of shallow, well drained soils that formed in loamy residuum derived from siltstone or claystone (buhrstone). These soils are on narrow ridgetops and on side slopes in the uplands. Slopes range from 2 to 35 percent. These soils are loamy-skeletal, mixed, active, acid, thermic, shallow Typic Udorthents.

Cantuche soils are commonly associated on the landscape with Arundel soils. Arundel soils are in positions similar to those of the Cantuche soils. They are moderately deep over bedrock and have a clayey argillic horizon.

Typical pedon of Cantuche very channery loam, in an area of Arundel-Cantuche complex, 8 to 35 percent slopes; about 3.8 miles southeast of Pebble Hill, 1,600 feet west and 1,800 feet north of the southeast corner of sec. 30, T. 11 N., R. 8 E.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) very channery loam; weak fine granular structure; very friable; many fine, medium, and coarse roots; about 50 percent, by volume, angular fragments of siltstone; strongly acid; clear wavy boundary.

C—4 to 10 inches; brown (10YR 4/3) extremely channery loam; massive; very friable; many fine, medium, and coarse roots; about 65 percent, by volume, angular fragments of siltstone; strongly acid; abrupt irregular boundary.

Cr—10 to 80 inches; siltstone bedrock; massive; very firm; fractured in upper part; can be dug with difficulty with hand tools; very strongly acid.

The depth to siltstone or claystone (buhrstone) bedrock ranges from 10 to 20 inches. Reaction is very strongly acid or strongly acid throughout.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The content of coarse fragments, mostly siltstone channers and flagstones, ranges from 35 to 60 percent, by volume.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. The content of coarse fragments, mostly siltstone channers and flagstones, ranges from 60 to 90 percent. The texture is extremely channery sandy loam or loam.

The Cr horizon is level-bedded siltstone or claystone bedrock. It is rippable by light machinery

and can be dug with difficulty with hand tools. Fractures, if they occur, are more than 4 inches apart.

## Chrysler Series

The Chrysler series consists of very deep, moderately well drained soils that formed in clayey alluvium. These soils are on low terraces along the Alabama River and other large streams and are subject to occasional flooding. Slopes range from 0 to 2 percent. These soils are fine, mixed, semiactive, thermic Aquic Paleudults.

Chrysler soils are commonly associated on the landscape with Annemaine, Cahaba, Canton Bend, Izagora, and Lenoir soils. Annemaine and Canton Bend soils are in positions similar to those of the Chrysler soils. They have a decrease in clay content of 20 percent or more within a depth of 60 inches. Cahaba and Izagora soils are in the slightly higher positions on the low terraces and are fine-loamy. The somewhat poorly drained Lenoir soils are in the slightly lower, more concave positions on the stream terraces.

Typical pedon of Chrysler loam, 0 to 2 percent slopes, occasionally flooded; about 4 miles south-southwest of Coy, about 2,200 feet north and 1,600 feet west of the southeast corner of sec. 15, T. 10 N., R. 6 E.

Ap—0 to 5 inches; brown (10YR 4/3) loam; weak fine granular structure; friable; many fine and medium roots; moderately acid; abrupt smooth boundary.

Bt1—5 to 10 inches; dark brown (7.5YR 4/4) clay; weak medium subangular blocky structure; firm; common fine and medium roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—10 to 18 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; common fine and medium roots; very strongly acid; clear wavy boundary.

Bt3—18 to 23 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; firm; few medium roots; few faint clay films on faces of peds; few fine distinct red (2.5YR 4/6) and brownish yellow (10YR 6/6) masses of iron accumulation; common fine distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid; gradual wavy boundary.

Bt4—23 to 35 inches; 35 percent red (2.5YR 4/6), 35 percent yellowish brown (10YR 5/6), 15 percent light brownish gray (10YR 6/2), and 15 percent pale brown (10YR 6/3) clay; moderate medium angular blocky structure; firm; few medium and fine roots; common faint clay films on faces of peds; areas of red and yellowish brown are masses of iron accumulation; areas of light brownish gray and pale brown are iron depletions; very strongly acid; gradual wavy boundary.

Bt5—35 to 51 inches; 20 percent light brownish gray (10YR 6/2), 20 percent light gray (10YR 7/2), 20 percent yellowish brown (10YR 5/6), 20 percent red (2.5YR 4/8), and 20 percent yellowish red (5YR 5/6) clay; moderate medium angular blocky structure; firm; common faint clay films on faces of peds; areas of yellowish brown, red, and yellowish red are masses of iron accumulation; areas of light brownish gray and light gray are iron depletions; very strongly acid; clear wavy boundary.

Bt6—51 to 65 inches; 35 percent light gray (10YR 7/2), 35 percent light brownish gray (10YR 6/2), 20 percent red (10R 5/8), and 10 percent red (2.5YR 5/6) clay; weak coarse angular blocky structure; firm; common faint clay films on faces of peds; areas of red are masses of iron accumulation; areas of light gray and light brownish gray are iron depletions; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4.

The upper part of the Bt horizon has hue of 2.5YR or 7.5YR, value of 4 to 6, and chroma of 6 to 8. The lower part has hue of 2.5YR to 10YR, value of 4 to 7, and chroma of 4 to 8; or it has no dominant matrix color and is multicolored in shades of red, gray, brown, and yellow. It has common or many redoximorphic accumulations in shades of red, gray, brown, and yellow and common or many redoximorphic depletions in shades of gray. Redoximorphic depletions with chroma of 2 or less are within a depth of 30 inches. The texture of the Bt horizon is clay loam, silty clay loam, silty clay, or clay.

## Congaree Series

The Congaree series consists of very deep, moderately well drained soils that formed in loamy alluvium. These soils are on high parts of flood plains along major streams throughout the county and are subject to frequent flooding. Slopes range from 0 to 2 percent. These soils are fine-loamy, mixed, active, nonacid, thermic Typic Udifluvents.

Congaree soils are commonly associated on the landscape with Bigbee and Sucarnoochee soils. Bigbee soils are in slightly higher positions on natural levees than the Congaree soils and are sandy throughout. The somewhat poorly drained Sucarnoochee soils are in lower positions on the flood plains than the Congaree soils and are clayey throughout.

Typical pedon of Congaree fine sandy loam, 0 to 2 percent slopes, frequently flooded; about 4 miles east of Roland Cooper State Park, 700 feet east and 800 feet north of the southwest corner of sec. 33, T. 13 N., R. 9. E.

Ap—0 to 4 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; many fine and medium roots; common fine flakes of mica; strongly acid; abrupt smooth boundary.

C1—4 to 25 inches; dark yellowish brown (10YR 4/4) silty clay loam; massive; very friable; common fine and medium roots; common thin strata of dark brown (10YR 4/3) and brown (10YR 5/3) loam; common fine flakes of mica; moderately acid; clear wavy boundary.

C2—25 to 37 inches; dark yellowish brown (10YR 4/4) loam; massive; friable; common fine and medium roots; few thin strata of light yellowish brown (10YR 6/4) sand; common fine flakes of mica; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine faint yellowish brown (10YR 5/6) masses of iron accumulation; moderately acid; clear wavy boundary.

C3—37 to 47 inches; yellowish brown (10YR 5/6) fine sandy loam; massive; very friable; few fine and medium roots; common fine flakes of mica; common fine distinct light brownish gray (10YR 6/2) iron depletions; common fine distinct strong brown (7.5YR 5/6) and yellowish red (5YR 5/6) masses of iron accumulation; slightly acid; clear wavy boundary.

C4—47 to 70 inches; strong brown (7.5YR 5/6) fine sandy loam; massive; very friable; few fine roots; many fine flakes of mica; many fine and medium distinct light brownish gray (10YR 6/2) and pale brown (10YR 6/3) iron depletions; slightly acid.

Reaction ranges from very strongly acid to slightly acid throughout.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6.

The C horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. It is silty clay loam, loam, fine sandy loam, or sandy clay loam. In most pedons it has thin strata of finer- or coarser-textured material.

## Demopolis Series

The Demopolis series consists of shallow, well drained soils that formed in loamy residuum derived from soft limestone (chalk). These soils are on narrow ridgetops and on side slopes in uplands of the Blackland Prairie. Slopes range from 1 to 35 percent. These soils are loamy, carbonatic, thermic, shallow Typic Udorthents.

Demopolis soils are commonly associated on the landscape with Sumter and Watsonia soils. Sumter soils are in positions similar to those of the Demopolis soils. They are moderately deep over bedrock. Watsonia soils are in slightly lower positions than the Demopolis soils. They have a clayey subsoil that is acid in the upper part.

Typical pedon of Demopolis silty clay loam, in an area of Demopolis-Watsonia complex, 2 to 8 percent slopes; about 2.1 miles south-southeast of Furman, 1,400 feet south and 1,800 feet east of the northwest corner of sec. 34, T. 12 N., R. 11 E.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silty clay loam; weak fine subangular blocky structure; friable; many fine roots; about 10 percent, by volume, nodules of calcium carbonate; common fragments of soft limestone (chalk); strongly effervescent; moderately alkaline; abrupt smooth boundary.

C—7 to 17 inches; olive gray (5Y 5/2) silty clay loam; massive; friable; few fine roots; common fine and medium concretions of calcium carbonate; many fragments of soft limestone (chalk); violently effervescent; moderately alkaline; clear wavy boundary.

Cr—17 to 80 inches; light gray (2.5Y 7/2) soft limestone (chalk); weak thick platy rock structure; very firm; few fine roots between plates and in fractures; violently effervescent; moderately alkaline.

The depth to soft limestone (chalk) ranges from 10 to 20 inches. Reaction is slightly alkaline or moderately alkaline throughout.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. It has few to many fragments of soft limestone. The content of nodules or concretions of calcium carbonate ranges from 2 to 10 percent.

The C horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2. It is loam, silt loam, clay loam, or silty clay loam. It has common or many fragments of soft limestone.

The Cr horizon is level-bedded, soft limestone (chalk). It has platy rock structure or is massive. It can

be cut with difficulty with hand tools and is rippable by mechanized equipment.

## Escambia Series

The Escambia series consists of very deep, somewhat poorly drained soils that formed in loamy sediments. These soils are in low areas of broad interstream divides and stream terraces. Slopes range from 0 to 2 percent. These soils are coarse-loamy, siliceous, semiactive, thermic Plinthaquic Paleudults.

Escambia soils are commonly associated on the landscape with Malbis and Poarch soils. Malbis and Poarch soils are in slightly higher, more convex positions than the Escambia soils. Malbis soils are well drained and are fine-loamy. Poarch soils are moderately well drained.

Typical pedon of Escambia fine sandy loam, 0 to 2 percent slopes; about 2.3 miles southeast of Rehobeth, 100 feet south and 2,200 feet west of the northeast corner of sec. 27, T. 14 N., R. 7 E.

A—0 to 6 inches; very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; clear wavy boundary.

E1—6 to 11 inches; grayish brown (10YR 5/2) fine sandy loam; weak coarse subangular blocky structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.

E2—11 to 14 inches; light brownish gray (2.5Y 6/2) fine sandy loam; weak coarse subangular blocky structure; very friable; few medium roots; very strongly acid; clear wavy boundary.

Btv1—14 to 38 inches; light yellowish brown (2.5Y 6/4) loam; weak medium subangular blocky structure; very friable; few medium roots; common faint clay films on faces of peds; few uncoated sand grains; about 5 percent nodular plinthite; many fine and medium distinct light olive brown (2.5Y 5/6) and yellowish red (5YR 5/6) masses of iron accumulation; many fine and medium distinct light brownish gray (2.5Y 6/2) iron depletions; very strongly acid; gradual wavy boundary.

Btv2—38 to 65 inches; 30 percent strong brown (7.5YR 5/6), 30 percent light brownish gray (10YR 6/2), 20 percent light yellowish brown (10YR 6/4), and 20 percent yellowish brown (10YR 5/6) sandy clay loam; weak coarse subangular blocky structure; friable; few medium roots; common faint clay films on faces of peds; about 5 percent nodular plinthite; areas of light yellowish brown, strong brown, and yellowish brown are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where lime has been applied. The content of nodular plinthite ranges from 5 to 10 percent in the Btv horizon.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 3. It is fine sandy loam or sandy loam.

The upper part of the Btv horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4. It is fine sandy loam or loam. The lower part has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 6; or it has no dominant matrix color and is multicolored in shades of gray, brown, red, and yellow. It is loam, sandy clay loam, or clay loam.

## Freest Series

The Freest Series consists of very deep, moderately well drained soils that formed in loamy and clayey sediments. These soils are on toe slopes and stream terraces in the northwestern and northeastern parts of the county. Slopes range from 0 to 5 percent. These soils are fine-loamy, siliceous, active, thermic Aquic Paleudalfs.

Freest soils are commonly associated on the landscape with Searcy and Sucarnoochee soils. Searcy soils are in positions similar to those of the Freest soils but are at higher elevations. They have a clayey argillic horizon. The somewhat poorly drained Sucarnoochee soils are on flood plains.

Typical pedon of Freest fine sandy loam, 2 to 5 percent slopes; about 3 miles south of Farmersville, 2,200 feet east and 600 feet south of the northwest corner of sec. 7, T. 12 N., R. 12 E.

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

E—4 to 10 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.

Bt1—10 to 21 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; firm; common fine and medium roots; common faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—21 to 31 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint clay

films on faces of peds; few fine flakes of mica; common medium prominent red (2.5YR 4/6) and common medium distinct light yellowish brown (2.5Y 6/3) masses of iron accumulation; few medium distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid; gradual wavy boundary.

Bt3—31 to 38 inches; light yellowish brown (10YR 6/4) clay loam; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; few fine flakes of mica; many coarse prominent red (2.5YR 4/6) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) and pale brown (10YR 6/3) iron depletions; very strongly acid; gradual wavy boundary.

Bt4—38 to 65 inches; 40 percent light brownish gray (10YR 6/2), 30 percent yellowish brown (10YR 5/6), and 30 percent red (2.5YR 4/6) clay; moderate coarse subangular blocky structure parting to weak medium subangular blocky; firm; common faint clay films on faces of peds; few fine flakes of mica; areas of yellowish brown and red are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It is sandy loam or fine sandy loam.

The upper part of the Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6. The number of redoximorphic accumulations in shades of red, brown, and yellow ranges from none to common. The number of redoximorphic depletions in shades of gray ranges from none to common. The texture is loam, clay loam, or sandy clay loam.

The lower part of the Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6; or it has no dominant matrix color and is multicolored in shades of red, brown, yellow, and gray. It has many or common redoximorphic accumulations in shades of red, brown, and yellow and many or common redoximorphic depletions in shades of gray. The texture is clay loam, silty clay, or clay.

## Halso Series

The Halso series consists of deep, moderately well drained soils that formed in clayey sediments and the underlying shale (fig. 14). These soils are on ridgetops and side slopes in the uplands. Slopes range from 2 to 20 percent. These soils are fine, smectitic, thermic Vertic Hapludults.

**Figure 14.—A profile of a Halso soil, which formed in clayey marine sediments. Halso soils are moderately well drained, clayey, and have shale bedrock that can be dug by hand tools at a depth of 40 to 60 inches.**

Halso soils are commonly associated on the landscape with Arundel, Beatrice, and Luverne soils. These associated soils are in positions similar to those of the Halso soils but are at higher elevations. Arundel soils are moderately deep over bedrock. Beatrice soils are very deep over shale bedrock. Luverne soils have mixed clay mineralogy and do not have bedrock within a depth of 80 inches.

Typical pedon of Halso silt loam, 2 to 5 percent slopes; about 6.2 miles east-southeast of Dry Forks, 500 feet east and 1,200 feet north of the southwest corner of sec. 27, T. 11 N., R. 8 E.

Ap—0 to 2 inches; brown (7.5YR 4/3) silt loam; weak medium granular structure; friable; many fine and medium roots; strongly acid; clear wavy boundary.

BA—2 to 6 inches; yellowish red (5YR 4/6) clay loam; weak medium subangular blocky structure; friable; many fine and medium roots; common spots and streaks of dark brown (7.5YR 4/3) silt loam; strongly acid; clear wavy boundary.

Bt1—6 to 11 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; firm; common fine, medium, and coarse roots; common distinct clay films on faces of peds; few medium distinct pale brown (10YR 6/3) iron depletions on faces of peds; very strongly acid; clear wavy boundary.

Bt2—11 to 15 inches; dark red (2.5YR 3/6) clay; strong fine and medium angular blocky structure; firm; common fine and medium roots and few coarse roots; common distinct clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions; few fine distinct red (10R 4/6) and few fine faint light yellowish brown (10YR 6/4) masses of iron accumulation; very strongly acid; clear wavy boundary.

Bt3—15 to 26 inches; 30 percent yellowish red (5YR 5/6), 30 percent light brownish gray (2.5Y 6/2), 20 percent light yellowish brown (2.5Y 6/4), and 20 percent olive yellow (2.5Y 6/6) clay; moderate medium angular blocky structure; firm; common fine and medium roots and few coarse roots; common distinct clay films on faces of peds; areas of yellowish red, light yellowish brown, and olive yellow are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid; gradual wavy boundary.

Bt4—26 to 31 inches; 55 percent light brownish gray (2.5Y 6/2) and 45 percent yellowish brown (10YR 5/4) clay; moderate medium angular blocky structure; firm; common medium and coarse roots; common distinct clay films on faces of peds; areas of yellowish brown are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid; clear wavy boundary.

BC—31 to 36 inches; light olive brown (2.5Y 5/3) clay; weak coarse angular blocky structure; firm; few fine and medium roots; common medium faint light yellowish brown (2.5Y 6/4) masses of iron accumulation; common medium faint light brownish gray (2.5Y 6/2) iron depletions in horizontal bands; very strongly acid; clear wavy boundary.

C/B—36 to 42 inches; 80 percent grayish brown (2.5Y 5/2) clayey shale (C); weak thick platy rock structure; 20 percent light yellowish brown (2.5Y 6/4) clay loam (B); weak fine subangular blocky structure; few fine and medium roots; common coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation in horizontal bands; very strongly acid; clear wavy boundary.

Cr—42 to 80 inches; grayish brown (2.5Y 5/2) clayey shale; moderate thick platy rock structure; very firm; many medium and coarse distinct yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/4) masses of iron accumulation on faces of peds; very strongly acid.

The thickness of the solum ranges from 25 to 50 inches, and the depth to soft shale bedrock ranges from 40 to 60 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. It is silt loam or loam.

The BA horizon, if it occurs, has hue of 5YR, value of 3 or 4, and chroma of 4 to 6. It is clay loam, silty clay loam, or clay.

The upper part of the Bt horizon has hue of 2.5YR or 5YR, value of 3 to 5, and chroma of 4 to 8. The lower part has hue of 2.5YR or 5YR, value of 4 or 5, chroma of 4 to 8, common or many redoximorphic depletions in shades of gray, and common or many redoximorphic accumulations in shades of red, yellow, and brown; or it has no dominant matrix color and is multicolored in shades of gray, red, brown, and yellow. The texture is silty clay or clay.

The BC horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 6; or it has no dominant matrix color and is multicolored in shades of gray, red, brown, and yellow. It is silty clay or clay.

The C part of the C/B horizon is weathered shale. It has thick platy rock structure and a wide range in colors. The B part has hue of 5YR to 2.5Y, value of 4 to 7, and chroma of 1 to 6. It has common or many redoximorphic accumulations in shades of red, yellow, and brown. The texture of the C/B horizon ranges from sandy clay loam to clay.

The Cr horizon is clayey shale that can be cut with hand tools and is rippable by light machinery.

## Houlka Series

The Houlka series consists of very deep, somewhat poorly drained soils that formed in clayey alluvium. These soils are on flood plains and are subject to frequent flooding. Slopes are 0 to 1 percent. Houlka soils are fine, smectitic, thermic Aeric Epiaquerts.

Houlka soils are commonly associated on the landscape with Congaree and Sucarnoochee soils. Congaree soils are on high parts of natural levees and

are fine-loamy. Sucarnoochee soils are in positions similar to those of the Houlka soils and are alkaline throughout.

Typical pedon of Houlka silty clay loam, 0 to 1 percent slopes, frequently flooded; about 3.1 miles north of Anne Manie, 2,000 feet south and 350 feet west of the northeast corner of sec. 16, T. 13 N., R. 5 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine granular structure; friable; many fine and medium roots and few coarse roots; moderately acid; clear wavy boundary.

Bssg1—6 to 28 inches; 50 percent light brownish gray (10YR 6/2), 25 percent yellowish brown (10YR 5/6), 15 percent yellowish red (5YR 4/6), and 10 percent strong brown (7.5YR 5/6) clay; moderate medium angular blocky structure; firm; few fine and medium roots; few intersecting slickensides having thin, striated surfaces; areas of light brownish gray are iron depletions; areas of yellowish brown, yellowish red, and strong brown are masses of iron accumulation; very strongly acid; clear wavy boundary.

Bssg2—28 to 52 inches; light brownish gray (10YR 6/2) clay; moderate very coarse angular blocky structure parting to strong medium angular blocky; firm; few fine roots, flattened on faces of peds; common large intersecting slickensides that have distinct, polished and grooved surfaces; common medium distinct yellowish brown (10YR 5/6) and strong brown 7.5YR 5/6) and few medium prominent yellowish red (5YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Bssg3—52 to 65 inches; light brownish gray (2.5Y 6/2) silty clay; moderate very coarse angular blocky structure; firm; few fine roots, flattened on faces of peds; common large intersecting slickensides that have distinct, polished and grooved surfaces; firm; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) and few medium faint light olive brown (2.5Y 5/4) masses of iron accumulation; common fine black concretions of iron and manganese oxides; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4.

The upper part of the Bssg horizon commonly has no dominant matrix color and is multicolored in shades of brown, yellow, red, and gray. It has redoximorphic accumulations in shades of red, brown, and yellow. It is clay loam, silty clay, or clay.

The lower part of the Bssg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It has redoximorphic accumulations in shades of red, brown, and yellow. It is silty clay or clay.

The Houlka soils in this survey area are taxadjuncts to the series because they are more acid in the upper part of the subsoil than is definitive for the series. This difference, however, does not significantly affect the use, management, or interpretations of the soils. In this survey area, the Houlka soils are fine, smectitic, thermic Aeric Dystraquerts.

## Izagora Series

The Izagora series consists of very deep, moderately well drained soils that formed in loamy and clayey alluvium. These soils are on low terraces along the Alabama River and other large streams and are subject to occasional flooding. Slopes range from 0 to 2 percent. These soils are fine-loamy, siliceous, semiactive, thermic Aquic Paleudults.

Izagora soils are commonly associated on the landscape with Annemaine, Cahaba, Chrysler, Jedburg, and Lenoir soils. Annemaine and Chrysler soils are in the slightly higher positions on the terraces and have a clayey argillic horizon. The well drained Cahaba soils are in slightly higher, more convex positions than the Izagora soils and have a reddish subsoil. The somewhat poorly drained Jedburg and Lenoir soils are in slightly lower, more concave positions than the Izagora soils. Lenoir soils have a clayey argillic horizon.

Typical pedon of Izagora fine sandy loam, 0 to 2 percent slopes, occasionally flooded; about 2.75 miles west of Canton Bend on a gravel road, about 2,400 feet north and 2,500 feet west of the southeast corner of sec. 29, T. 13 N., R. 7 E.

Ap1—0 to 6 inches; dark yellowish brown (10YR 3/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; few wormcasts; slightly acid; gradual smooth boundary.

Ap2—6 to 11 inches; mixed dark grayish brown (10YR 4/2) and dark yellowish brown (10YR 3/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; few wormcasts; slightly acid; clear smooth boundary.

Bt1—11 to 18 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; few fine faint pale

brown (10YR 6/3) iron depletions; moderately acid; gradual wavy boundary.

Bt2—18 to 30 inches; yellowish brown (10YR 5/6) loam; moderate medium subangular blocky structure; friable; common fine roots; common faint clay films on faces of peds; common thin clay depletions on faces of peds; few medium distinct light brownish gray (10YR 6/2) iron depletions; few fine faint strong brown (7.5YR 5/6) masses of iron accumulation; few soft black masses of iron and manganese oxides; moderately acid; gradual wavy boundary.

Bt3—30 to 46 inches; yellowish brown (10YR 5/6) clay loam; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common faint clay films on faces of peds; common thin clay depletions on faces of peds; few fine flakes of mica; common medium distinct light gray (10YR 7/1) iron depletions; common medium distinct strong brown (7.5YR 5/6) and yellowish red (5YR 4/6) and few fine prominent dark red (2.5YR 3/6) masses of iron accumulation; strongly acid; gradual wavy boundary.

Bt4—46 to 63 inches; 25 percent brownish yellow (10YR 6/6), 25 percent light gray (10YR 7/1), 25 percent strong brown (7.5YR 5/6), and 25 percent dark red (2.5YR 3/6) clay; moderate coarse prismatic structure parting to moderate coarse subangular blocky; firm; few fine roots; common faint clay films on faces of peds; few fine flakes of mica; areas of brownish yellow, strong brown, and dark red are masses of iron accumulation; areas of light gray are iron depletions; very strongly acid; gradual wavy boundary.

Bt5—63 to 91 inches; 25 percent gray (10YR 6/1), 25 percent brownish yellow (10YR 6/6), 25 percent strong brown (7.5YR 5/6), and 25 percent yellowish red (5YR 4/6) clay loam; weak coarse subangular blocky structure; firm; few fine flakes of mica; areas of gray are iron depletions; areas of brownish yellow, strong brown, and yellowish red are masses of iron accumulation; few soft black masses of iron and manganese oxides; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or 4. It is fine sandy loam or sandy loam.

The upper part of the Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8. It has few to many redoximorphic accumulations in shades of brown, yellow, and red and few to many redoximorphic depletions in shades of gray. Redoximorphic depletions with chroma of 2 or less are within a depth of 30 inches. The texture is loam, silty clay loam, or clay loam.

The lower part of the Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 8; or it has no dominant matrix color and is multicolored in shades of brown, yellow, red, and gray. It has few to many redoximorphic accumulations in shades of brown, yellow, and red and few to many redoximorphic depletions in shades of gray. It is clay loam or clay.

## Jedburg Series

The Jedburg series consists of very deep, somewhat poorly drained soils that formed in loamy and sandy alluvium. These soils are on low terraces along the Alabama River and other large streams and are subject to occasional flooding. These soils are fine-loamy, siliceous, semiactive, thermic Aeric Paleaquults.

Jedburg soils are commonly associated on the landscape with Izagora soils. The moderately well drained Izagora soils are in the slightly higher, more convex positions on the terraces.

Typical pedon of Jedburg fine sandy loam, in an area of Izagora-Jedburg complex, 0 to 2 percent slopes, occasionally flooded; about 1.5 miles south-southwest of Coy, about 800 feet south and 400 feet east of the northwest corner of sec. 4, T. 10 N., R. 6 E.

A—0 to 4 inches; very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.

E—4 to 8 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; common fine distinct strong brown (7.5YR 5/8) masses of iron accumulation in root channels; common medium distinct light brownish gray (2.5Y 6/2) iron depletions; strongly acid; clear wavy boundary.

Btg1—8 to 20 inches; 50 percent light brownish gray (10YR 6/2), 30 percent yellowish brown (10YR 5/6), 10 percent brown (10YR 5/3), and 10 percent strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; common faint clay films on faces of peds; common fine and medium roots; areas of light brownish gray are iron depletions; areas of brown, yellowish brown,

and strong brown are masses of iron accumulation; very strongly acid; gradual wavy boundary.

Btg2—20 to 36 inches; 50 percent light brownish gray (10YR 6/2), 30 percent yellowish brown (10YR 5/6), and 20 percent yellowish red (5YR 5/6) clay loam; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; few fine, medium, and coarse roots; areas of yellowish brown and yellowish red are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid; clear wavy boundary.

Btg3—36 to 50 inches; light gray (10YR 6/1) clay loam; moderate medium subangular blocky structure; firm; few medium and coarse roots; common faint clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Btg4—50 to 80 inches; light gray (10YR 6/1) clay loam; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; few fine and medium prominent yellowish brown (10YR 5/6), strong brown (7.5YR 5/6), and yellowish red (5YR 5/6) masses of iron accumulation; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The E horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4. The number of redoximorphic accumulations in shades of brown, yellow, and red ranges from none to common. The number of redoximorphic depletions in shades of gray ranges from none to common. The texture is fine sandy loam, sandy loam, or silt loam.

The upper part of the Btg horizon commonly has no dominant matrix color and is multicolored in shades of gray, brown, yellow, and red. The lower part has hue of 10YR or 2.5Y, value of 5 to 7, chroma of 1 or 2, and common or many redoximorphic accumulations in shades of red, yellow, and brown. The texture is loam, clay loam, or sandy clay loam.

## Kinston Series

The Kinston series consists of very deep, poorly drained soils that formed in stratified loamy and sandy alluvium. These soils are on low parts of flood plains and are subject to frequent flooding for brief periods in winter and spring in most years. Slopes are 0 to 1 percent. These soils are fine-loamy, siliceous, semiactive, acid, thermic Typic Fluvaquents.

Kinston soils are commonly associated on the landscape with Mantachie and Mooreville soils. The somewhat poorly drained Mantachie and moderately well drained Mooreville soils are in the slightly higher, more convex positions on the flood plains. They are brownish in the upper part of the subsoil.

Typical pedon of Kinston silt loam, in an area of Mooreville, Mantachie, and Kinston soils, 0 to 1 percent slopes, frequently flooded; about 1.3 miles east-northeast of Vredenburgh, 600 feet west and 1,000 feet south of the northeast corner of sec. 10, T. 10 N., R. 7 E.

A—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; clear wavy boundary.

Cg1—3 to 14 inches; light brownish gray (2.5Y 6/2) loam; massive; friable; many fine and medium roots and few coarse roots; common fine prominent brownish yellow (10YR 6/6) and yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; clear wavy boundary.

Cg2—14 to 28 inches; light brownish gray (10YR 6/2) loam; massive; friable; common fine, medium, and coarse roots; common medium distinct yellowish brown (10YR 5/4) and common fine faint light yellowish brown (10YR 6/4) masses of iron accumulation; very strongly acid; clear wavy boundary.

Cg3—28 to 41 inches; gray (10YR 6/1) sandy clay loam; massive; friable; few fine, medium, and coarse roots; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Cg4—41 to 49 inches; gray (10YR 6/1) clay loam; massive; firm; few fine roots; common medium distinct yellowish brown (10YR 5/6) and few medium prominent strong brown (7.5YR 5/6) and dark yellowish brown (10YR 4/4) masses of iron accumulation; very strongly acid; clear wavy boundary.

Cg5—49 to 70 inches; gray (10YR 6/1) clay loam; massive; firm; common medium distinct yellowish brown (10YR 5/6) and few fine distinct olive (5Y 5/6) masses of iron accumulation; very strongly acid.

Reaction is very strongly acid or strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The Cg horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It has few or common redoximorphic accumulations in shades of brown, red, and yellow. The number of soft, black masses of iron and manganese oxides ranges from none to common. The upper part of the horizon is sandy loam, fine sandy loam, loam, or sandy clay loam. The lower part is loamy sand, sandy loam, loam, sandy clay loam, or clay loam. In some pedons the horizon has gravelly strata below a depth of 40 inches.

## Kipling Series

The Kipling series consists of very deep, somewhat poorly drained soils that formed in clayey marine sediments. These soils are on ridgetops and side slopes in the uplands of the Blackland Prairie. Slopes range from 1 to 12 percent. These soils are fine, smectitic, thermic Vertic Paleudalfs.

Kipling soils are commonly associated on the landscape with Oktibbeha, Searcy, and Vaiden soils. The moderately well drained Oktibbeha soils are in slightly higher positions on the landscape than the Kipling soils and are very-fine textured. The moderately well drained Searcy soils are in positions similar to those of the Kipling soils. They have a mixed clay mineralogy. Vaiden soils are in smoother, less sloping positions than the Kipling soils and are very-fine textured.

Typical pedon of Kipling silty clay loam, 5 to 12 percent slopes, eroded; about 4.6 miles south-southeast of Prairie, 2,000 feet east and 1,600 feet south of the northwest corner of sec. 13, T. 13 N., R. 6 E.

Ap—0 to 4 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine granular structure; friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.

Bt1—4 to 8 inches; yellowish brown (10YR 5/4) silty clay; moderate medium subangular blocky structure; firm; many fine and medium roots; common faint clay films on faces of peds; few fine faint pale brown (10YR 6/3) and light brownish gray (10YR 6/2) iron depletions; common medium distinct yellowish red (5YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Bt2—8 to 18 inches; 35 percent yellowish brown (10YR 5/6), 35 percent red (2.5YR 5/6), and 30 percent light brownish gray (10YR 6/2) silty clay; moderate fine and medium angular blocky structure; firm; common medium and coarse roots; common faint clay films on faces of peds; areas of yellowish brown and red are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid; clear wavy boundary.

Bt3—18 to 29 inches; yellowish brown (10YR 5/4) silty clay; moderate medium angular blocky structure; firm; common medium and coarse roots; common faint clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) and pale brown (10YR 6/3) iron depletions; common medium prominent yellowish red (5YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Btss1—29 to 37 inches; yellowish brown (10YR 5/4) silty clay; weak coarse angular blocky structure parting to moderate fine and medium angular blocky; firm; few medium and coarse roots; common intersecting slickensides that have thin, striated surfaces; common medium distinct light brownish gray (10YR 6/2) iron depletions; common medium distinct brownish yellow (10YR 6/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Btss2—37 to 43 inches; 25 percent yellowish brown (10YR 5/6), 25 percent strong brown (7.5YR 5/6), 25 percent pale brown (10YR 6/3), and 25 percent light brownish gray (10YR 6/2) silty clay; weak coarse angular blocky structure; firm; few medium and coarse roots; common large intersecting slickensides that have distinct, polished and grooved surfaces; areas of yellowish brown and strong brown are masses of iron accumulation; areas of pale brown and light brownish gray are iron depletions; neutral; clear wavy boundary.

Bkss1—43 to 59 inches; light yellowish brown (10YR 6/4) silty clay; weak coarse angular blocky structure; firm; common large intersecting slickensides that have distinct, polished and grooved surfaces; many fine and medium faint light brownish gray (10YR 6/2) iron depletions; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; common medium and coarse concretions of calcium carbonate; moderately alkaline; clear wavy boundary.

Bkss2—59 to 73 inches; 60 percent yellowish brown (10YR 5/6), 30 percent light brownish gray (10YR 6/2), and 10 percent light olive brown (2.5Y 5/4) silty clay; weak coarse angular blocky structure; firm; common large intersecting slickensides that have distinct, polished and grooved surfaces; areas of yellowish brown and light olive brown are masses of iron accumulation; areas of light brownish gray are iron depletions; common

medium concretions of calcium carbonate; moderately alkaline; clear wavy boundary.

Bkss3—73 to 85 inches; 40 percent yellowish brown (10YR 5/8), 30 percent light brownish gray (10YR 6/2), and 30 percent dark grayish brown (2.5Y 4/2) silty clay; weak very coarse angular blocky structure; firm; common large intersecting slickensides that have distinct, polished and grooved surfaces; areas of yellowish brown are masses of iron accumulation; areas of light brownish gray and dark grayish brown are iron depletions; common medium concretions of calcium carbonate; moderately alkaline.

The solum is more than 60 inches thick. The depth to alkaline clay ranges from 40 to 80 inches. Reaction is very strongly acid or strongly acid in the Ap, Bt, and Btss horizons, except in areas where the surface layer has been limed. Reaction ranges from slightly acid to moderately alkaline in the Bkss horizon.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8; or it has no dominant matrix color and is multicolored in shades of brown, gray, yellow, and red. It has common or many redoximorphic depletions in shades of gray and common or many redoximorphic accumulations in shades of brown, yellow, and red. It is silty clay loam, clay loam, silty clay, or clay.

The Btss and Bkss horizons have hue of 10YR or 2.5Y and value and chroma of 4 to 6; or they have no dominant matrix color and are multicolored in shades of olive, brown, red, and gray. These horizons have few to many redoximorphic depletions in shades of gray and few to many redoximorphic accumulations in shades of brown, yellow, and red. The Bkss horizon has few to many soft masses or concretions or both of calcium carbonate. The texture is silty clay or clay.

## Lenoir Series

The Lenoir series consists of very deep, somewhat poorly drained soils that formed in clayey alluvium. These soils are on low terraces along the Alabama River and other large streams and are subject to occasional flooding. Slopes are 0 to 1 percent. These soils are fine, mixed, semiactive, thermic Aeric Paleaquults.

Lenoir soils are commonly associated on the landscape with Annemaine, Canton Bend, Chrysler, Izagora, and Urbo soils. Annemaine, Canton Bend, and Chrysler soils are in the slightly higher, more convex positions on the terraces and have reddish colors in the upper part of the argillic horizon. Izagora soils are in slightly higher, more convex positions than the Lenoir soils and are fine-loamy. Urbo soils are on flood plains adjacent to areas of the Lenoir soils and do not have an argillic horizon.

Typical pedon of Lenoir silt loam, 0 to 1 percent slopes, occasionally flooded; about 1.75 miles west-northwest of Hybart, 1,400 feet north and 1,700 feet west of the southeast corner of sec. 18, T. 10 N., R. 7 E.

A—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid; clear wavy boundary.

Bt—3 to 13 inches; 50 percent light brownish gray (10YR 6/2), 30 percent yellowish brown (10YR 5/6), and 20 percent strong brown (7.5YR 5/6) silty clay loam; weak medium subangular blocky structure; firm; common fine and medium roots; areas of light brownish gray are iron depletions; areas of yellowish brown and strong brown are masses of iron accumulation; very strongly acid; clear wavy boundary.

Btg1—13 to 29 inches; light brownish gray (10YR 6/2) silty clay; moderate medium subangular blocky structure; firm; few fine and medium roots; common medium prominent strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Btg2—29 to 41 inches; gray (10YR 5/1) clay; moderate medium subangular blocky structure; firm; common medium distinct light olive brown (2.5Y 5/6) and yellowish brown (10YR 5/4) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Btg3—41 to 65 inches; gray (2.5Y 6/1) clay; moderate medium subangular blocky structure; firm; common medium prominent yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/6) masses of iron accumulation; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 8; or it has no dominant matrix color and is multicolored in shades of gray, brown, or yellow. It has common or many redoximorphic accumulations in shades of brown,

yellow, and red and common or many redoximorphic depletions in shades of gray. It is clay, clay loam, silty clay loam, or silty clay.

The Btg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It has few to many redoximorphic accumulations in shades of brown, yellow, or red. It is clay loam, silty clay loam, silty clay, or clay.

## Lucedale Series

The Lucedale series consists of very deep, well drained soils that formed in loamy sediments. These soils are on broad summits of high stream terraces. Slopes range from 0 to 2 percent. These soils are fine-loamy, siliceous, subactive, thermic Rhodic Paleudults.

Lucedale soils are commonly associated on the landscape with Bama, Malbis, and Smithdale soils. Bama soils are in positions similar to those of the Lucedale soils. They do not have dark red colors throughout the argillic horizon. Malbis soils are in slightly lower, less convex positions than the Lucedale soils and have hue of 10YR or yellower in the upper part of the argillic horizon. Smithdale soils are on side slopes adjacent to areas of the Lucedale soils and do not have dark red colors throughout the argillic horizon.

Typical pedon of Lucedale loam, 0 to 2 percent slopes; about 4.3 miles east-northeast of Yellow Bluff, about 2,500 feet east and 1,400 feet north of the southwest corner of sec. 29, T. 12 N., R. 7 E.

Ap—0 to 7 inches; dark reddish brown (5YR 3/2) loam; weak fine granular structure; very friable; many fine and medium roots; slightly acid; abrupt smooth boundary.

Bt1—7 to 16 inches; dark reddish brown (2.5YR 3/4) sandy clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; common faint clay films on faces of peds; moderately acid; clear wavy boundary.

Bt2—16 to 42 inches; dark red (2.5YR 3/6) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—42 to 80 inches; dark red (2.5YR 3/6) sandy clay loam; weak medium subangular blocky structure; friable; common faint clay films on faces of peds; few fine quartz pebbles; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The Ap horizon has hue of 5YR, value of 3, and chroma of 2 to 4.

The Bt horizon has hue of 2.5YR or 10R, value of 3, and chroma of 4 to 6. It is loam, sandy clay loam, or clay loam.

## Luverne Series

The Luverne series consists of very deep, well drained soils that formed in stratified clayey and loamy sediments. These soils are on ridgetops and side slopes in the uplands throughout the county. Slopes range from 2 to 35 percent. These soils are fine, mixed, semiactive, thermic Typic Hapludults.

Luverne soils are commonly associated on the landscape with Arundel, Halso, Saffell, and Smithdale soils. Arundel soils are in positions similar to those of the Luverne soils but are generally at higher elevations. They are moderately deep over bedrock. Halso, Saffell, and Smithdale soils are in positions similar to those of the Luverne soils. Halso soils have smectitic mineralogy and are deep over bedrock. Saffell soils are loamy-skeletal. Smithdale soils are fine-loamy.

Typical pedon of Luverne fine sandy loam, 2 to 5 percent slopes; about 2 miles northwest of Lower Peach Tree, 500 feet north and 1,650 feet west of the southeast corner of sec. 4, T. 10 N., R. 5 E.

Ap—0 to 3 inches; brown (7.5YR 4/4) fine sandy loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.

Bt1—3 to 15 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; firm; common fine and medium roots; common faint clay films on faces of peds; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bt2—15 to 25 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; few fine and medium roots; common faint clay films on faces of peds; few fine flakes of mica; very strongly acid; clear wavy boundary.

Bt3—25 to 32 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; firm; few fine roots; common faint clay films on faces of peds; few fine flakes of mica; common fine and medium distinct pale brown (10YR 6/3) and strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

C—32 to 65 inches; thinly stratified strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) sandy clay loam, yellowish red (5YR 5/6) sandy

loam, and pale brown (10YR 6/3) sandy clay; weak medium platy structure; friable; many fine flakes of mica; areas of pale brown are iron depletions; extremely acid; clear wavy boundary.

The thickness of the solum ranges from 20 to 50 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. It is fine sandy loam or sandy loam.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It is loamy sand, sandy loam, or fine sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. The number of redoximorphic features in shades of brown, red, yellow, and gray ranges from none to common. These features are assumed to be relic. The texture is clay loam, clay, or sandy clay.

The BC horizon, if it occurs, has colors similar to those of the Bt horizon. It is sandy clay loam or clay loam.

The C horizon consists of stratified, loamy to clayey sediments that have a high content of mica. The texture of individual strata ranges from loamy sand to clay, and the thickness of individual strata ranges from a few millimeters to several centimeters. In some pedons the horizon has few to common thin strata of clayey shale or ironstone. The colors are variable, but sandy and loamy strata commonly have hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 5 to 8. The clayey strata are generally grayish.

The Luverne soil in map unit LvF, Luverne fine sandy loam, 15 to 35 percent slopes, is a taxadjunct to the series because it has clay mineralogy that is smectitic rather than mixed. This difference, however, does not significantly affect the use, management, or interpretations of the soil. This soil is a fine, smectitic, thermic Typic Hapludult.

## Malbis Series

The Malbis series consists of very deep, moderately well drained soils that formed in loamy sediments. These soils are on broad summits and on side slopes of high terraces. Slopes range from 0 to 8 percent. These soils are fine-loamy, siliceous, subactive, thermic Plinthic Paleudults.

Malbis soils are commonly associated on the landscape with Bama, Escambia, Lucedale, and Poarch soils. Bama and Lucedale soils are in the slightly higher, more convex positions on the broad summits. They have a reddish argillic horizon and do not have a significant content of plinthite. The somewhat poorly drained Escambia soils are in lower, more concave positions than the Malbis soils and are coarse-loamy. Poarch soils are in positions similar to those of the Malbis soils and are coarse-loamy.

Typical pedon of Malbis silt loam, 0 to 2 percent slopes; about 1.7 miles west-northwest of the main building of the Lower Coastal Plain Experiment Station, about 1,320 feet north and 300 feet east of the southwest corner of sec. 2, T. 12 N., R. 7 E.

Ap1—0 to 5 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; slightly acid; clear wavy boundary.

Ap2—5 to 12 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; common fine spots of yellowish brown (10YR 5/4) loam; slightly acid; abrupt smooth boundary.

Bt1—12 to 22 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; common fine and medium roots; common faint clay films on faces of peds; moderately acid; gradual wavy boundary.

Bt2—22 to 34 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine and medium roots; common faint clay films on faces of peds; about 3 percent nodular plinthite; few medium distinct pale brown (10YR 6/3) iron depletions; few medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; strongly acid; gradual wavy boundary.

Btv1—34 to 58 inches; yellowish brown (10YR 5/8) clay loam; moderate coarse subangular blocky structure parting to moderate medium subangular blocky; firm; few fine roots; common faint clay films on faces of peds; about 10 percent nodular plinthite; common medium distinct light brownish gray (10YR 6/2) iron depletions; common medium distinct yellowish red (5YR 4/6) and strong brown (7.5YR 5/6) masses of iron accumulation; strongly acid; gradual wavy boundary.

Btv2—58 to 72 inches; 25 percent yellowish brown (10YR 5/8), 25 percent yellowish red (5YR 4/6), 25 percent light brownish gray (10YR 6/2), and 25 percent strong brown (7.5YR 5/6) clay loam; weak coarse subangular blocky structure; firm; common faint clay films on faces of peds; about 8 percent nodular plinthite; areas of yellowish brown, yellowish red, and strong brown are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid.

The solum is more than 60 inches thick. The depth to a horizon that has 5 percent or more plinthite ranges from 24 to 48 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. It is silt loam or fine sandy loam.

The Bt horizon has hue of 10YR, value of 4 or 5, and chroma of 4 to 8. It is loam, sandy clay loam, or clay loam.

The upper part of the Btv horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. It has few to many redoximorphic accumulations in shades of brown, yellow, or red and few redoximorphic depletions in shades of brown or gray. The lower part has colors that are similar to the upper part, or it has no dominant matrix color and is multicolored in shades of brown, red, yellow, and gray. The texture commonly is sandy clay loam or clay loam, but in some pedons it is clay below a depth of 50 inches. The content of nodular plinthite ranges from 5 to 15 percent in the Btv horizon.

## Mantachie Series

The Mantachie series consists of very deep, somewhat poorly drained soils that formed in loamy alluvium. These soils are on flood plains along streams throughout the county. They are subject to flooding for brief periods one or more times in most years. Slopes are 0 to 1 percent. These soils are fine-loamy, siliceous, active, acid, thermic Aeric Endoaquepts.

Mantachie soils are commonly associated on the landscape with Kinston and Mooreville soils. The poorly drained Kinston soils are in the slightly lower, more concave positions on the flood plains. The moderately well drained Mooreville soils are in slightly higher, more convex positions than the Mantachie soils.

Typical pedon of Mantachie loam, in an area of Mooreville, Mantachie, and Kinston soils, 0 to 1 percent slopes, frequently flooded; about 3.5 miles west-northwest of Hybart, 1,600 feet west and 700 feet north of the southeast corner of sec. 14, T. 10 N., R. 6 E.

A1—0 to 3 inches; dark brown (10YR 3/3) loam; weak fine granular structure; very friable; many fine roots and few medium and coarse roots; strongly acid; clear wavy boundary.

A2—3 to 6 inches; dark yellowish brown (10YR 4/4) sandy loam; moderate medium granular structure; very friable; common medium and coarse roots and few fine roots; many fine distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid; clear wavy boundary.

Bw—6 to 10 inches; 40 percent light brownish gray (10YR 6/2), 30 percent light yellowish brown (10YR 6/4), and 30 percent yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; very friable; common medium and coarse roots; areas of light yellowish brown and yellowish brown are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid; clear wavy boundary.

Bg1—10 to 18 inches; light brownish gray (10YR 6/2) sandy clay loam; weak medium subangular blocky structure; friable; common medium and coarse roots; many medium distinct brownish yellow (10YR 6/6) and few fine prominent reddish yellow (7.5YR 6/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Bg2—18 to 36 inches; light brownish gray (10YR 6/2) sandy clay loam; weak medium subangular blocky structure; friable; few medium and coarse roots; many medium distinct brownish yellow (10YR 6/6) and few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Bg3—36 to 51 inches; light brownish gray (10YR 6/2) sandy loam; weak coarse subangular blocky structure; few fine and medium roots; common fine distinct brownish yellow (10YR 6/6) and common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Cg1—51 to 60 inches; grayish brown (10YR 5/2) sandy loam; massive; friable; few coarse roots; common medium distinct brownish yellow (10YR 6/6), common medium prominent yellowish red (5YR 5/6), and few fine prominent reddish yellow (7.5YR 6/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Cg2—60 to 68 inches; gray (10YR 6/1) sandy loam; massive; friable; few coarse roots; common medium prominent brownish yellow (10YR 6/6) and yellowish red (5YR 4/6) and few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid.

The thickness of the solum ranges from 30 to 65 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4.

The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5, chroma of 3 to 6, and common or many

redoximorphic depletions in shades of gray; or it has no dominant matrix color and is multicolored in shades of gray, brown, red, and yellow. It is sandy loam, loam, clay loam, or sandy clay loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It has common or many redoximorphic accumulations in shades of brown, yellow, or red. It is sandy loam, loam, sandy clay loam, or clay loam.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It has few to many redoximorphic accumulations in shades of brown, yellow, or red. It is fine sandy loam, sandy loam, clay loam, loam, or sandy clay loam.

## Mooreville Series

The Mooreville series consists of very deep, moderately well drained soils that formed in loamy alluvium. These soils are on flood plains along streams throughout the county. They are subject to flooding for brief periods one or more times in most years. Slopes are 0 to 1 percent. These soils are fine-loamy, siliceous, active, thermic Fluvaquentic Dystrochrepts.

Mooreville soils are commonly associated on the landscape with Kinston, Mantachie, Riverview, Una, and Urbo soils. The poorly drained Kinston and Una soils are in lower, more concave positions than Mooreville soils. They are grayish throughout. Mantachie and Urbo soils are in slightly lower, less convex positions than the Mooreville soils. Mantachie soils are somewhat poorly drained. Urbo soils are somewhat poorly drained and are clayey throughout. Riverview soils are in slightly higher, more convex positions than the Mooreville soils and are well drained.

Typical pedon of Mooreville silt loam, in an area of Mooreville, Mantachie, and Kinston soils, 0 to 1 percent slopes, frequently flooded; about 1.3 miles east-northeast of Vredenburgh, 200 feet south and 600 feet west of the northeast corner of sec. 10, T. 10 N., R. 7 E.

A—0 to 4 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.

Bw1—4 to 22 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; many fine, medium, and coarse roots; strongly acid; clear wavy boundary.

Bw2—22 to 28 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; common fine, medium, and coarse roots; few fine distinct light brownish gray (10YR 6/2) iron depletions; strongly acid; clear wavy boundary.

Bw3—28 to 35 inches; 35 percent light brownish gray (10YR 6/2), 35 percent yellowish brown (10YR 5/6), and 30 percent brownish yellow (10YR 6/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots and few coarse roots; areas of light brownish gray are iron depletions; areas of yellowish brown and brownish yellow are masses of iron accumulation; strongly acid; clear wavy boundary.

Bg—35 to 44 inches; light brownish gray (10YR 6/2) sandy clay loam; moderate medium subangular blocky structure; friable; few fine, medium, and coarse roots; many medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation; very strongly acid; clear wavy boundary.

Cg—44 to 70 inches; gray (10YR 6/1) sandy clay loam; massive; friable; few thin strata of pale brown (10YR 6/3) sandy loam; common medium distinct dark yellowish brown (10YR 4/4) and common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3.

The upper part of the Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 4 to 8. The number of redoximorphic depletions in shades of gray ranges from none to common. The number of redoximorphic accumulations in shades of brown, yellow, or red ranges from none to common. The lower part commonly has no dominant matrix color and is multicolored in shades of brown, gray, yellow, and red; or it has hue of 10YR, value of 4 or 5, chroma of 4 to 8, and common or many redoximorphic depletions in shades of gray. The texture is loam, sandy clay loam, or clay loam.

The Bg horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It has few to many redoximorphic accumulations in shades of brown, red, and yellow. It is loam, sandy clay loam, or clay loam.

The Cg horizon commonly has a grayish matrix and few to many redoximorphic accumulations in shades of brown, yellow, or red; or it has no dominant matrix color and is multicolored in shades of gray, brown, and yellow. In most pedons it has thin strata of finer- or coarser-textured material. It is sandy clay loam, clay loam, loam, or sandy loam.

**Figure 15.—A profile of a Oktibbeha soil, which formed in acid, clayey sediments and the underlying alkaline clay or soft limestone (chalk). Oktibbeha soils are very deep and clayey. They are acid and have reddish colors in the upper part of the subsoil.**

## Oktibbeha Series

The Oktibbeha series consists of very deep, moderately well drained soils on ridgetops and side slopes in the uplands of the Blackland Prairie (fig. 15). These soils formed in acid, clayey sediments and the underlying alkaline clay or soft limestone (chalk). Slopes range from 1 to 25 percent. These soils are very-fine, smectitic, thermic Chromic Dystruderts.

Oktibbeha soils are commonly associated on the landscape with Brantley, Kipling, Searcy, and Vaiden soils. Brantley soils are in positions similar to those of the Oktibbeha soils and are fine-textured. Kipling and Vaiden soils are in slightly lower, less convex positions than the Oktibbeha soils and are somewhat poorly drained. Searcy soils are in lower positions than the Oktibbeha soils and are fine-textured.

Typical pedon of Oktibbeha clay loam, 1 to 5 percent slopes; about 1.25 miles east-southeast of Rehobeth, 650 feet east and 200 feet south of the northwest corner of sec. 17, T. 14 N., R. 7 E.

Ap—0 to 3 inches; brown (10YR 4/3) clay loam; moderate fine subangular blocky structure; common fine and medium roots; very strongly acid; abrupt smooth boundary.

Bt—3 to 14 inches; red (2.5YR 4/6) clay; weak coarse prismatic structure parting to strong medium subangular and angular blocky; firm; common fine and medium roots; distinct pressure faces on surfaces of peds; few distinct streaks of dark brown (10YR 4/3) clay loam; few fine distinct yellowish red (5YR 5/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Btss1—14 to 19 inches; red (2.5YR 5/6) clay; weak coarse prismatic structure parting to moderate

medium angular and subangular blocky; firm; common fine and medium roots; common large intersecting slickensides that have distinct, polished and grooved surfaces; common distinct light olive brown (2.5Y 5/6) and yellowish brown (10YR 5/6) masses of iron accumulation; few distinct pale brown (10YR 6/3) iron depletions on faces of peds; very strongly acid; clear wavy boundary.

Btss2—19 to 29 inches; 25 percent yellowish brown (10YR 5/6), 25 percent yellowish red (5YR 5/6), 25 percent pale brown (10YR 6/3), and 25 percent light brownish gray (10YR 6/2) clay; weak coarse subangular blocky structure parting to moderate medium subangular and angular blocky; firm; common fine and medium roots; common large intersecting slickensides that have distinct, polished and grooved surfaces; areas of yellowish brown and yellowish red are masses of iron accumulation; areas of pale brown and light brownish gray are iron depletions; very strongly acid; clear wavy boundary.

Btss3—29 to 35 inches; light olive brown (2.5Y 5/4) clay; weak coarse angular blocky structure parting to strong medium angular blocky; firm; few fine and medium roots; common large intersecting slickensides that have distinct, polished and grooved surfaces; few medium prominent red (2.5YR 4/6) and few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; few fine and medium distinct light brownish gray (10YR 6/2) iron depletions within the matrix; slightly acid; clear wavy boundary.

Bkss1—35 to 44 inches; clay, light olive brown (2.5Y 5/4) interior and light brownish gray (2.5Y 6/2) exterior; weak very coarse angular blocky structure parting to strong medium angular blocky; firm; few fine roots, flattened on ped faces; common large intersecting slickensides that have prominent, polished and grooved surfaces; few fine and medium distinct light brownish gray (10YR 6/2) iron depletions within the matrix; light brownish gray areas on faces of slickensides are iron depletions; common fine and medium soft masses of calcium carbonate and few fine rounded nodules of calcium carbonate; violently effervescent; moderately alkaline; gradual wavy boundary.

Bkss2—44 to 49 inches; clay, light olive brown (2.5Y 5/6) interior and light brownish gray (2.5Y 6/2) exterior; weak very coarse angular blocky structure parting to strong fine and medium angular blocky; firm; few fine roots, flattened on ped faces; common large intersecting slickensides that have prominent, polished and grooved surfaces; common medium distinct olive yellow (2.5Y 6/6) masses of iron accumulation; light brownish gray areas on faces of slickensides are iron depletions; common fine and medium soft masses of calcium carbonate and few fine rounded nodules of calcium carbonate; violently effervescent; moderately alkaline; gradual wavy boundary.

Bkss3—49 to 70 inches; silty clay, light olive brown (2.5Y 5/4) interior and olive gray (5Y 5/2) exterior; weak very coarse angular blocky structure parting to strong fine and medium angular blocky; firm; common large intersecting slickensides that have prominent, polished and grooved surfaces; few distinct light brownish gray (10YR 6/2) iron depletions; olive gray areas on faces of slickensides are iron depletions; common medium soft masses of calcium carbonate and few medium rounded nodules of calcium carbonate; violently effervescent; moderately alkaline.

The depth to horizons that have secondary carbonates ranges from 30 to 50 inches. The depth to soft limestone (chalk) is more than 60 inches.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. It is clay loam or clay. It is very strongly acid to moderately acid, except in areas where lime has been applied.

The Bt horizon, if it occurs, has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. In some pedons it has common redoximorphic depletions in shades of gray and common redoximorphic accumulations in shades of brown and red. It is extremely acid to strongly acid.

The upper part of the Btss horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8; or it has no dominant matrix color and is multicolored in shades of red, brown, and gray. It is extremely acid to strongly acid. The lower part of the Btss horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6. It has few to many redoximorphic depletions in shades of gray and few to many redoximorphic accumulations in shades of brown, yellow, and red. It is extremely acid to slightly acid. The texture of the Btss horizon is clay.

The Bkss horizon has hue of 10YR to 5Y and value of 4 to 6. Chroma ranges from 4 to 8 in the ped interiors and from 2 to 4 on the exterior faces of peds and on faces of slickensides. The horizon has few to many redoximorphic depletions in shades of gray and few to many redoximorphic accumulations in shades of brown. These redoximorphic features are most common on the surfaces of peds or slickensides. In

some pedons the horizon does not have a dominant matrix color and is multicolored in shades of olive, brown, and gray. The horizon has common or many soft masses of calcium carbonate and few to many concretions or nodules of calcium carbonate. It is neutral to moderately alkaline. The texture is clay or silty clay.

The 2C horizon, if it occurs, is soft limestone (chalk) or alkaline clay. It is massive or has platy rock structure.

Some pedons have a 2Cr horizon of soft limestone (chalk) below a depth of 60 inches. This horizon can be dug with difficulty with hand tools and is rippable by light machinery.

## Poarch Series

The Poarch series consists of very deep, moderately well drained soils that formed in loamy sediments. These soils are on broad summits of high terraces. Slopes range from 0 to 2 percent. These soils are coarse-loamy, siliceous, semiactive, thermic Plinthic Paleudults.

Poarch soils are commonly associated on the landscape with Escambia and Malbis soils. The somewhat poorly drained Escambia soils are in slightly lower, more concave positions than the Poarch soils. Malbis soils are in positions similar to those of the Poarch soils and are fine-loamy.

Typical pedon of Poarch fine sandy loam, 0 to 2 percent slopes; about 2.6 miles southeast of Rehobeth, 800 feet south and 1,400 feet east of the northwest corner of sec. 26, T. 14 N., R. 7 E.

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

E—4 to 8 inches; light yellowish brown (10YR 6/4) loamy fine sand; single-grained; very friable; common fine and medium roots; strongly acid; abrupt wavy boundary.

Bt—8 to 24 inches; light olive brown (2.5Y 5/6) loam; weak medium subangular blocky structure; friable; few fine and medium roots; common faint clay films on faces of peds; common fine distinct strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Btv1—24 to 42 inches; 25 percent light olive brown (2.5Y 5/6), 25 percent light yellowish brown (2.5Y 6/4), 25 percent strong brown (7.5YR 5/6), and 25 percent light brownish gray (2.5Y 6/2) loam; weak coarse subangular blocky structure; friable; common faint clay films on faces of peds; about 5 percent nodular plinthite; areas of light olive brown, light yellowish brown, and strong brown are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid; gradual wavy boundary.

Btv2—42 to 65 inches; 25 percent yellowish brown (10YR 5/6), 25 percent light brownish gray (10YR 6/2), 25 percent light olive brown (2.5Y 5/6), and 25 percent strong brown (7.5YR 5/6) sandy clay loam; weak coarse subangular blocky structure; friable; common faint clay films on faces of peds; about 8 percent nodular plinthite; areas of yellowish brown, light olive brown, and strong brown are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. The depth to a horizon that has 5 percent or more plinthite ranges from 24 to 42 inches.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It is sandy loam or fine sandy loam.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8. The number of redoximorphic accumulations in shades of brown and red ranges from none to common. The texture is loam, sandy loam, or fine sandy loam.

The Btv horizon commonly has no dominant matrix color and is multicolored in shades of yellow, gray, brown, and red. In some pedons it has hue of 10YR or 2.5Y, value of 5 or 6, chroma of 4 to 8, and common or many redoximorphic accumulations and depletions. The content of nodular plinthite ranges from 5 to 15 percent. The texture generally is loam. In some pedons, however, it is sandy clay loam below a depth of 40 inches.

## Riverview Series

The Riverview series consists of very deep, well drained soils that formed in loamy alluvium. These soils are on high parts of the flood plain along the Alabama River. Slopes range from 0 to 2 percent. These soils are fine-loamy, mixed, active, thermic Fluventic Dystrochrepts.

Riverview soils are commonly associated on the landscape with Bigbee, Mooreville, Una, and Urbo soils. Bigbee and Mooreville soils are in positions similar to those of the Riverview soils. Bigbee soils are sandy throughout. Mooreville soils are moderately well drained. Una and Urbo soils are in slightly lower, less

convex positions than the Riverview soils and are clayey throughout.

Typical pedon of Riverview fine sandy loam, 0 to 2 percent slopes, occasionally flooded; about 3.3 miles east of Yellow Bluff, 1,900 feet north and 2,200 feet east of the southwest corner of sec. 31, T. 12 N., R. 7. E.

Ap—0 to 8 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; many fine and medium roots; common fine flakes of mica; strongly acid; abrupt smooth boundary.

Bw1—8 to 23 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; common fine flakes of mica; moderately acid; clear wavy boundary.

Bw2—23 to 29 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; common fine and medium roots; common fine flakes of mica; few faint dark yellowish brown (10YR 4/4) masses of iron accumulation; moderately acid; gradual wavy boundary.

Bw3—29 to 35 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; few medium and coarse roots; common fine flakes of mica; moderately acid; gradual wavy boundary.

Bw4—35 to 48 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; few medium roots; few thin strata of pale brown (10YR 6/3) sandy loam; many fine flakes of mica; common medium distinct grayish brown (10YR 5/2) iron depletions; common medium distinct yellowish brown (10YR 5/4) masses of iron accumulation; moderately acid; gradual wavy boundary.

C—48 to 70 inches; dark yellowish brown (10YR 4/4) sandy loam; massive; friable; few fine roots; few thin strata of pale brown (10YR 6/3) loamy sand; common fine flakes of mica; few medium faint brown (10YR 5/3) iron depletions; moderately acid.

The thickness of the solum ranges from 24 inches to 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. The number of redoximorphic accumulations in shades of yellow, brown, or red ranges from none to common. At a depth of 24 inches or more, the number of redoximorphic depletions having chroma of 2 or less ranges from none to common. The texture is clay loam, sandy clay loam, loam, fine sandy loam, silt loam, or silty clay loam.

The C horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. It has few or common redoximorphic accumulations in shades of red, brown, and yellow and few or common redoximorphic depletions in shades of gray. It is dominantly loam, fine sandy loam, sandy loam, loamy fine sand, loamy sand, or sand. In most pedons it has strata of finer- or coarser-textured material.

## Saffell Series

The Saffell series consists of very deep, well drained soils that formed in stratified loamy, gravelly, and sandy sediments. These soils are on narrow ridgetops and on side slopes in the uplands. Slopes range from 8 to 35 percent. These soils are loamy-skeletal, siliceous, semiactive, thermic Typic Hapludults.

Saffell soils are commonly associated on the landscape with Luverne and Smithdale soils. These associated soils are in landscape positions similar to those of the Saffell soils. Luverne soils have a clayey argillic horizon. Smithdale soils do not have a significant content of gravel within the solum.

Typical pedon of Saffell gravelly sandy loam, in an area of Saffell-Smithdale-Luverne complex, 8 to 35 percent slopes; about 4.8 miles east-northeast of Yellow Bluff, about 1,350 feet west and 900 feet south of the northeast corner of sec. 30, T. 12 N., R. 7 E.

A—0 to 5 inches; brown (10YR 4/3) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium roots; about 15 percent quartzite pebbles; very strongly acid; clear wavy boundary.

E—5 to 11 inches; yellowish brown (10YR 5/4) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium roots; about 15 percent quartzite pebbles; strongly acid; clear wavy boundary.

Bt1—11 to 23 inches; yellowish red (5YR 4/6) very gravelly sandy clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; common faint clay films on faces of peds; about 40 percent quartzite pebbles; strongly acid; clear wavy boundary.

Bt2—23 to 37 inches; yellowish red (5YR 5/8) very gravelly sandy clay loam; moderate medium

subangular blocky structure; friable; few fine and medium roots; common distinct clay films on faces of peds; about 45 percent quartzite pebbles; very strongly acid; clear wavy boundary.

BC—37 to 49 inches; red (2.5YR 4/6) extremely gravelly sandy loam; weak medium subangular blocky structure; very friable; about 80 percent quartzite pebbles; very strongly acid; clear wavy boundary.

C1—49 to 61 inches; yellowish red (5YR 4/6) extremely gravelly loamy sand; massive; very friable; about 80 percent quartzite pebbles; very strongly acid; gradual wavy boundary.

C2—61 to 80 inches; 55 percent red (2.5YR 4/6) and 45 percent yellowish red (5YR 5/8) extremely gravelly loamy sand; massive; thinly bedded; very friable; about 80 percent quartzite pebbles; very strongly acid.

The thickness of the solum ranges from 35 to 60 inches. Reaction is very strongly acid or strongly acid throughout.

The A or Ap horizon has hue of 7.5YR or 10YR , value of 3 or 4, and chroma of 2 to 4. The content of quartzite pebbles ranges from 15 to 35 percent, by volume.

The E horizon, if it occurs, has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. It is very gravelly loam, very gravelly fine sandy loam, or gravelly fine sandy loam. The content of quartzite pebbles ranges from 15 to 60 percent, by volume.

The Bt horizon has hue of 2.5YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. It is very gravelly or extremely gravelly sandy clay loam, sandy loam, or clay loam. The content of pebbles ranges from 35 to 75 percent, by volume.

The BC horizon, if it occurs, has colors similar to those of the Bt horizon. It is gravelly, very gravelly, or extremely gravelly loamy sand, sandy loam, or sandy clay loam. The content of quartzite pebbles ranges from 15 to 80 percent, by volume.

The C horizon has colors similar to those of the Bt horizon. In some pedons it has few or common redoximorphic accumulations in shades of yellow, brown, and red. It is gravelly, very gravelly, or extremely gravelly loamy sand or sandy loam. The content of quartzite pebbles ranges from 20 to 80 percent, by volume.

## Searcy Series

The Searcy series consists of very deep, moderately well drained soils that formed in clayey marine sediments. These soils are on ridgetops in the uplands of the Blackland Prairie. Slopes range from 2 to 5 percent. These soils are fine, mixed, active, thermic Aquic Paleudalfs.

Searcy soils are commonly associated on the landscape with Brantley, Freest, Kipling, and Oktibbeha soils. Brantley soils are in positions similar to those of the Searcy soils and on adjacent side slopes. They do not have low-chroma redoximorphic depletions in the upper part of the argillic horizon. Freest soils are on stream terraces at lower elevations than Searcy soils and are fine-loamy. Kipling and Oktibbeha soils are commonly in lower positions than the Searcy soils. Kipling soils are somewhat poorly drained and have smectitic mineralogy. Oktibbeha soils are very-fine textured and have smectitic mineralogy.

Typical pedon of Searcy sandy clay loam, 2 to 5 percent slopes, eroded; about 2.2 miles southeast of Estelle, 2,400 feet south and 500 feet east of the northwest corner of sec. 4, T. 11 N., R. 9 E.

Ap—0 to 4 inches; brown (7.5YR 4/4) sandy clay loam; weak medium granular structure; friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

Bt1—4 to 16 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; common fine and medium roots; common faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—16 to 27 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; common fine roots; common distinct clay films on faces of peds; few fine distinct light brownish gray (2.5Y 6/2) iron depletions; strongly acid; gradual wavy boundary.

Bt3—27 to 35 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; firm; common fine roots; common distinct clay films on faces of peds; many fine and medium distinct light brownish gray (2.5Y 6/2) iron depletions; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid; abrupt wavy boundary.

2Bt4—35 to 65 inches; 25 percent yellowish brown (10YR 5/6), 25 percent light brownish gray (2.5Y 6/2), 25 percent yellowish red (5YR 5/6), and 25 percent red (2.5YR 4/6) clay; weak medium subangular blocky structure; firm; common fine roots; common faint clay films on faces of peds; areas of yellowish brown, yellowish red, and red are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4.

The upper part of the Bt horizon has hue of 2.5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The number of redoximorphic depletions in shades of gray ranges from none to common. The number of redoximorphic accumulations in shades of brown, yellow, and red ranges from none to common. The texture is clay loam, sandy clay, or clay.

The lower part of the Bt horizon has colors similar to those of the upper part, or it does not have a dominant matrix color and is multicolored in shades of red, brown, and gray. It is sandy clay, clay, or silty clay.

The 2Bt horizon, if it occurs, commonly does not have a dominant matrix color and is multicolored in shades of brown, yellow, gray, and red. It is silty clay, sandy clay, or clay.

## Smithdale Series

The Smithdale series consists of very deep, well drained soils that formed in loamy sediments. These soils are on narrow ridgetops and on side slopes in the uplands. Slopes range from 2 to 35 percent. These soils are fine-loamy, siliceous, subactive, thermic Typic Hapludults.

Smithdale soils are commonly associated on the landscape with Bama, Boykin, Lucedale, Luverne, and Saffell soils. Bama and Lucedale soils are in higher positions than the Smithdale soils. Bama soils have an argillic horizon that does not have a significant decrease in clay content with increasing depth. Lucedale soils have a dark red argillic horizon. Boykin, Luverne, and Saffell soils are in landscape positions similar to those of the Smithdale soils. Boykin soils have a thick sandy epipedon. Luverne soils have a clayey argillic horizon. Saffell soils are loamy-skeletal.

Typical pedon of Smithdale sandy loam, in an area of Saffell-Smithdale-Luverne complex, 8 to 35 percent slopes; about 4.8 miles east-northeast of Yellow Bluff, 1,350 feet west and 900 feet south of the northeast corner of sec. 30, T. 12 N., R. 7 E.

A—0 to 5 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine, medium, and coarse roots; slightly acid; clear wavy boundary.

E—5 to 14 inches; strong brown (7.5YR 5/6) loamy sand; weak coarse subangular blocky structure; very friable; few fine quartzite pebbles; many fine, medium, and coarse roots; slightly acid; clear wavy boundary.

Bt1—14 to 19 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine, medium, and coarse roots; common faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—19 to 41 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots and common medium and coarse roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—41 to 60 inches; red (2.5YR 4/6) sandy clay loam; weak coarse subangular blocky structure; friable; few fine roots; common distinct clay films on faces of peds; few distinct strong brown (7.5YR 5/6) masses of iron accumulation; strongly acid; clear wavy boundary.

C—60 to 80 inches; red (2.5YR 4/6) loamy sand; massive; very friable; common thin strata of yellowish red (5YR 5/6) and strong brown (7.5YR 5/6) sandy loam; very strongly acid.

The thickness of the solum ranges from 60 inches to more than 100 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where lime has been applied.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4.

The E horizon, if it occurs, has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. It is loamy sand or sandy loam.

The upper part of the Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It is sandy clay loam, clay loam, or loam.

The lower part of the Bt horizon has colors similar to those of the upper part. It commonly has streaks and pockets of uncoated sand. It is sandy loam, loam, or sandy clay loam.

The C horizon, if it occurs, has hue of 2.5YR or 7.5YR, value of 4 or 5, and chroma of 6 to 8. It is massive and commonly has thin bedding planes. Redoximorphic depletions or accumulations, if they occur, are assumed to be relic features. The texture is dominantly sandy loam or loamy sand. In most pedons the horizon has thin strata of finer- and coarser-textured materials.

## Sucarnoochee Series

The Sucarnoochee series consists of very deep, somewhat poorly drained soils that formed in alkaline, clayey alluvium. These soils are on flood plains of the

Blackland Prairie. They are subject to flooding for brief periods one or more times during late winter and early spring in most years. Slopes are 0 to 1 percent. These soils are fine, smectitic, thermic Chromic Epiaquerts.

Sucarnoochee soils are commonly associated on the landscape with Demopolis, Freest, Sumter, and Vaiden soils. These associated soils are on uplands adjacent to areas of the Sucarnoochee soils and are not subject to flooding. Demopolis soils are shallow over bedrock. Freest soils are fine-loamy. Sumter soils are moderately deep over bedrock. Vaiden soils are acid in the upper part of the subsoil.

Typical pedon of Sucarnoochee silty clay loam, 0 to 1 percent slopes, frequently flooded; about 3.75 miles east-southeast of Furman, 2,500 feet west and 800 feet north of the southeast corner of sec. 19, T. 12 N., R. 12 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate medium granular structure; friable; many fine and medium roots; slightly alkaline; abrupt smooth boundary.

AB—9 to 15 inches; dark grayish brown (10YR 4/2) clay; moderate medium angular blocky structure; firm; common fine roots; few fine soft black masses of iron and manganese oxides; common medium distinct olive brown (2.5Y 4/4) masses of iron accumulation; slightly alkaline; clear wavy boundary.

Bss1—15 to 35 inches; dark grayish brown (2.5Y 4/2) clay; moderate coarse angular blocky structure parting to strong medium angular blocky; firm; few fine roots, flattened on ped faces; common large intersecting slickensides that have distinct, polished and grooved surfaces; few fine soft black masses of iron and manganese oxides; many coarse distinct brown (10YR 4/3) and yellowish brown (10YR 5/6) masses of iron accumulation; slightly alkaline; clear wavy boundary.

Bss2—35 to 65 inches; 25 percent light gray (5Y 5/1), 25 percent dark grayish brown (2.5Y 4/2), 25 percent brown (10YR 4/3), and 25 percent strong brown (7.5YR 5/6) clay; weak very coarse angular blocky structure parting to strong medium angular blocky; very firm; few fine roots, flattened on faces of peds; common large intersecting slickensides that have distinct, polished and grooved surfaces; common fine soft black masses of iron and manganese oxides; areas of dark brown and strong brown are masses of iron accumulation; areas of light gray and dark grayish brown are iron depletions; slightly alkaline.

The solum is more than 60 inches thick. Reaction ranges from neutral to moderately alkaline throughout.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3.

The AB horizon, if it occurs, has hue of 10YR to 5Y, value of 3 or 4, and chroma of 1 to 3. It is clay or silty clay.

The Bss horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 6; or it has no dominant matrix color and is multicolored in shades of brown, olive, yellow, and gray. It has few to many redoximorphic depletions in shades of gray and few to many redoximorphic accumulations in shades of brown, yellow, and olive. It is silty clay or clay.

The Bkss horizon, if it occurs, generally has no dominant matrix color and is multicolored in shades of olive, brown, and gray. It has few to many soft masses or nodules of calcium carbonate.

## Sumter Series

The Sumter series consists of moderately deep, well drained soils that formed in alkaline, loamy and clayey residuum derived from soft limestone (chalk). These soils are on ridgetops and side slopes in the uplands of the Blackland Prairie (fig. 16). Slopes range from 1 to 25 percent. These soils are fine-silty, carbonatic, thermic Rendollic Eutrochrepts.

Sumter soils are commonly associated on the landscape with Brantley, Demopolis, and Watsonia soils. Brantley soils are in landscape positions similar to those of the Sumter soils but are at lower elevations. They have a reddish, acid argillic horizon. Demopolis and Watsonia soils are in positions similar to those of the Sumter soils. Demopolis soils are shallow over bedrock. Watsonia soils are shallow over bedrock and are acid in the upper part of the subsoil.

Typical pedon of Sumter silty clay loam, in an area of Sumter-Demopolis complex, 8 to 25 percent slopes, eroded; about 2.2 miles east-northeast of Roland Cooper State Park, 350 feet west and 600 feet north of the southeast corner of sec. 30, T. 13 N., R. 9 E.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silty clay loam; moderate fine granular structure; friable; many fine and medium roots; about 10 percent fragments of soft limestone (chalk); common fine and medium nodules of calcium carbonate; moderately effervescent; moderately alkaline; clear wavy boundary.

Bk1—6 to 16 inches; light yellowish brown (2.5Y 6/4) silty clay; moderate medium subangular blocky

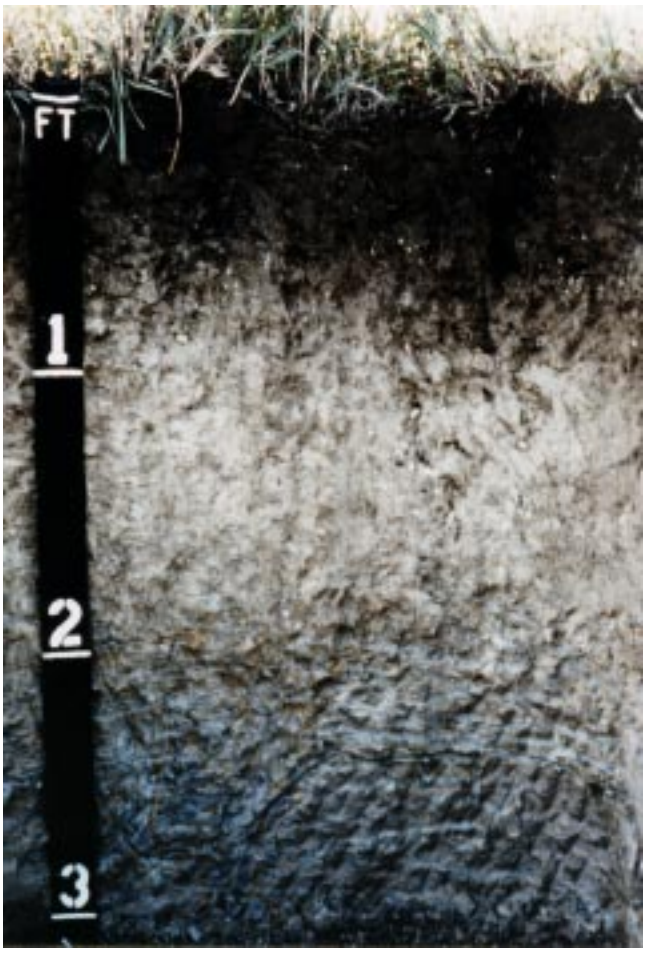


**Figure 16.—A profile of a Sumter soil, which formed in alkaline, loamy and clayey residuum derived from soft limestone (chalk). Sumter soils are well drained, alkaline, and have chalk bedrock that can be dug by hand tools at a depth of 20 to 40 inches.**

structure; firm; many fine and medium roots; common fine and medium soft masses and nodules of calcium carbonate; strongly effervescent; moderately alkaline; clear wavy boundary.

Bk2—16 to 31 inches; light yellowish brown (2.5Y 6/4) silty clay; moderate medium subangular blocky structure; firm; common fine roots; common fine and medium soft masses and nodules of calcium carbonate; common medium distinct olive yellow (2.5Y 6/6) masses of iron accumulation; violently effervescent; moderately alkaline; abrupt wavy boundary.

Cr—31 to 65 inches; weathered limestone (chalk); moderate thick platy rock structure; very firm; few fine roots in fractures; violently effervescent; moderately alkaline.

The thickness of the solum and the depth to soft limestone (chalk) range from 20 to 40 inches. Reaction ranges from neutral to moderately alkaline in the surface layer and is slightly alkaline or moderately alkaline in the subsoil.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2. It is silty clay loam or silty clay.

The Bk horizon, has hue of 2.5Y or 5Y, value of 4 to 7, and chroma of 3 to 6. The number of redoximorphic accumulations in shades of olive and brown ranges from none to common. The horizon has common or many nodules and soft masses of calcium carbonate. In most pedons it has fragments of soft limestone (chalk). The content of these fragments ranges from 2 to 15 percent, by volume, and generally increases with depth. The texture is silty clay loam, silty clay, or clay.

The Cr horizon is level-bedded, soft limestone (chalk). It is massive or has platy rock structure. It restricts plant roots, but it can be cut with hand tools and is rippable by light equipment. It has hue of 2.5Y or 5Y, value of 5 to 7, and chroma of 1 to 4. In some pedons it has discontinuous lenses of hard limestone.

## Una Series

The Una series consists of very deep, poorly drained soils that formed in acid, clayey alluvium. These soils are in depressional areas on the flood plain along the Alabama River. They are subject to frequent flooding and ponding for long periods in winter and spring in most years. Slopes are 0 to 1 percent. These soils are fine, mixed, active, acid, thermic Typic Epiaquepts.

Una soils are commonly associated on the landscape with Mooreville, Riverview, and Urbo soils. Mooreville and Riverview soils are in slightly higher, more convex positions on the flood plains than the Una soils. They are fine-loamy. Urbo soils are in slightly higher positions than the Una soils and are somewhat poorly drained.

Typical pedon of Una silty clay, ponded; about 2.25 miles south-southeast of Coy, 1,500 feet south and 1,700 feet east of the northwest corner of sec. 9, T. 10 N., R. 6 E.

A1—0 to 2 inches; very dark gray (10YR 3/1) silty clay; moderate medium granular structure; firm; many fine roots; very strongly acid; clear smooth boundary.

A2—2 to 6 inches; dark gray (10YR 4/1) silty clay; weak medium subangular blocky structure; firm;

many fine roots; few fine black masses of iron and manganese oxides; very strongly acid; clear smooth boundary.

Bg1—6 to 20 inches; gray (5Y 5/1) silty clay; weak medium subangular blocky structure; firm; common fine roots; common medium distinct brown (10YR 4/3) and dark yellowish brown (10YR 4/4) masses of iron accumulation; few medium faint dark gray (5Y 4/1) iron depletions; few fine and medium black masses of iron and manganese oxides; very strongly acid; gradual wavy boundary.

Bg2—20 to 42 inches; gray (5Y 5/1) clay; weak medium subangular blocky structure; firm; few fine roots; common medium distinct light olive brown (2.5Y 5/6) and dark yellowish brown (10YR 4/4) masses of iron accumulation; common fine and medium black masses of iron and manganese oxides; very strongly acid; gradual wavy boundary.

Bg3—42 to 55 inches; gray (5Y 5/1) clay; weak coarse subangular blocky structure; very firm; few medium distinct light olive brown (2.5Y 5/6) and dark yellowish brown (10YR 4/4) masses of iron accumulation; common fine black masses and stains of iron and manganese oxides; very strongly acid; gradual wavy boundary.

Bg4—55 to 65 inches; gray (5Y 5/1) clay; weak coarse subangular blocky structure; firm; few medium faint olive (5Y 5/3) masses of iron accumulation; common fine and medium black masses and stains of iron and manganese oxides; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2. The number of redoximorphic accumulations in shades of yellow and brown ranges from none to many.

The Bg horizon has hue of 10YR to 5Y, value of 5 or 6, and chroma of 1 or 2. It has few to many redoximorphic accumulations in shades of yellow and brown. It is silty clay loam, silty clay, or clay.

## Urbo Series

The Urbo series consists of very deep, somewhat poorly drained soils that formed in clayey alluvium. These soils are on the flood plain along the Alabama River. They are subject to frequent flooding for brief periods in winter and spring in most years. Slopes are 0 to 1 percent. Urbo soils are fine, mixed, active, acid, thermic Vertic Epiaquepts.

Urbo soils are commonly associated on the landscape with Annemaine, Lenoir, Mooreville, Riverview, and Una soils. Annemaine and Lenoir soils are on lower terraces adjacent to areas of the Urbo soils. Annemaine soils have a reddish argillic horizon. Lenoir soils are brownish in the upper part of the argillic horizon. Mooreville and Riverview soils are in slightly higher positions than the Urbo soils. They are fine-loamy. Una soils are in slightly lower, more concave positions than the Urbo soils and are poorly drained.

Typical pedon of Urbo silty clay loam, in an area of Urbo-Mooreville-Una complex, gently undulating, frequently flooded; about 1.4 miles north-northeast of Lower Peach Tree, 1,200 feet north and 500 feet west of the southeast corner of sec. 2, T. 10 N., R. 5 E.

A—0 to 3 inches; brown (10YR 4/3) silty clay loam; moderate fine granular structure; friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bw—3 to 12 inches; brown (10YR 4/3) silty clay; weak medium subangular blocky structure; firm; few fine and medium roots; few fine soft black masses of iron and manganese oxides; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; common fine faint grayish brown (10YR 5/2) iron depletions; strongly acid; clear wavy boundary.

Bg1—12 to 26 inches; grayish brown (10YR 5/2) clay; moderate fine and medium subangular blocky structure; firm; few fine and medium roots; few fine soft black masses of iron and manganese oxides; many medium distinct yellowish brown (10YR 5/6) and common medium distinct dark brown (10YR 4/3) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Bg2—26 to 36 inches; grayish brown (10YR 5/2) clay; moderate medium subangular blocky structure; firm; common fine and medium roots; few fine soft black masses of iron and manganese oxides; many medium distinct dark yellowish brown (10YR 4/6) and common medium distinct yellowish brown (10YR 5/4) masses of iron accumulation; very strongly acid; clear wavy boundary.

Bssg1—36 to 52 inches; light brownish gray (2.5Y 6/2) clay; weak coarse subangular blocky structure; firm; few fine roots; few large slickensides that have faint, polished and slightly grooved surfaces; common medium distinct dark grayish brown (10YR 4/2) iron depletions; common medium distinct dark yellowish brown (10YR 4/6) masses of iron accumulation; common fine soft black masses of iron and manganese oxides; very strongly acid; clear wavy boundary.

Bssg2—52 to 65 inches; light brownish gray (2.5Y 6/2) silty clay; weak coarse subangular blocky

structure; firm; common large intersecting slickensides that have distinct, polished and slightly grooved surfaces; common medium distinct dark yellowish brown (10YR 4/6) masses of iron accumulation; many fine soft black masses of iron and manganese oxides; strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The Bw horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4. It has few to many redoximorphic accumulations in shades of brown and yellow and few to many redoximorphic depletions in shades of gray. It is silty clay loam, clay loam, silty clay, or clay.

The Bg and Bssg horizons have hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. They have common or many redoximorphic accumulations in shades of brown and yellow. They are silty clay loam, clay loam, silty clay, or clay.

The Urbo soils in this survey area are taxadjuncts to the series because they have clay mineralogy that is smectitic. This difference, however, does not significantly affect the use, management, or interpretations of the soils. In this survey area, the Urbo soils are fine, smectitic, thermic Vertic Epiaquepts.

## Vaiden Series

The Vaiden series consists of very deep, somewhat poorly drained soils that formed in acid, clayey sediments and the underlying alkaline clay or soft limestone (chalk). These soils are on broad ridgetops and gentle side slopes in the uplands of the Blackland Prairie. Slopes range from 0 to 5 percent. These soils are very-fine, smectitic, thermic Aquic Dystruderts.

Vaiden soils are commonly associated on the landscape with Kipling, Oktibbeha, Sucarnoochee, and Sumter soils. Kipling soils are in positions similar to those of the Vaiden soils and are fine-textured. Oktibbeha soils are in slightly higher landscape positions than the Vaiden soils. They have reddish colors in the upper part of the subsoil. Sucarnoochee soils are on flood plains adjacent to areas of the Vaiden soils and are alkaline throughout. Sumter soils are in higher landscape positions than the Vaiden soils and are moderately deep over bedrock.

Typical pedon of Vaiden silty clay, 0 to 1 percent slopes; about 2 miles south-southwest of Prairie, 2,300 feet south and 1,600 feet east of the northwest corner of sec. 13, T. 13 N., R. 6 E.

Ap—0 to 5 inches; brown (10YR 4/3) silty clay; weak coarse subangular blocky structure; firm; common fine and medium roots; few fine faint grayish brown iron depletions; moderately acid; abrupt smooth boundary.

Btss1—5 to 18 inches; 40 percent yellowish brown (10YR 5/6), 30 percent light brownish gray (2.5Y 6/2), and 30 percent light yellowish brown (2.5Y 6/4) clay; moderate coarse subangular blocky structure parting to moderate fine and medium angular blocky; firm; many fine and medium roots; few large intersecting slickensides that have slightly grooved surfaces; areas of yellowish brown and light yellowish brown are masses of iron accumulation; areas of light brownish gray are iron depletions; strongly acid; clear wavy boundary.

Btss2—18 to 33 inches; 30 percent yellowish brown (10YR 5/6), 30 percent light brownish gray (2.5Y 6/2), 20 percent light yellowish brown (2.5Y 6/4), and 20 percent yellowish red (5YR 5/6) clay; weak coarse subangular blocky structure parting to moderate fine and medium angular blocky; firm; common fine and medium roots; common large intersecting slickensides that have distinct, polished and grooved surfaces; areas of yellowish brown, light yellowish brown, and yellowish red are masses of iron accumulation; areas of light brownish gray are iron depletions; strongly acid; gradual wavy boundary.

Bss1—33 to 42 inches; 40 percent yellowish brown (10YR 5/6), 30 percent light brownish gray (2.5Y 6/2), 20 percent strong brown (7.5YR 5/6), and 10 percent yellowish red (5YR 5/6) clay; moderate coarse angular blocky structure parting to moderate medium angular blocky; firm; few fine roots, flattened on ped faces; common large intersecting slickensides that have distinct, polished and grooved surfaces; common fine soft black masses of iron and manganese oxides; areas of strong brown, yellowish brown, and yellowish red are masses of iron accumulation; areas of light brownish gray are iron depletions; strongly acid; gradual wavy boundary.

Bss2—42 to 46 inches; 40 percent light olive brown (2.5Y 5/6), 40 percent light brownish gray (2.5Y 6/2), and 20 percent strong brown (7.5YR 5/6) clay; moderate very coarse angular blocky structure parting to strong medium angular blocky; firm; common large intersecting slickensides that have prominent, polished and grooved surfaces; common fine soft black masses of iron and

manganese oxides; areas of light olive brown and strong brown are masses of iron accumulation; areas of light brownish gray are iron depletions; slightly acid; clear wavy boundary.

Bkss—46 to 70 inches; 55 percent light olive brown (2.5Y 5/6) and 45 percent light olive gray (5Y 6/2) clay; weak very coarse angular blocky structure parting to strong medium angular blocky; very firm; many large intersecting slickensides that have prominent, polished and grooved surfaces; common fine and medium rounded nodules and soft masses of calcium carbonate; common fine soft black masses of iron and manganese oxides; strongly effervescent; moderately alkaline.

The depth to horizons that have secondary carbonates ranges from 36 to 80 inches. The depth to soft limestone (chalk) is more than 60 inches.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Reaction is very strongly acid or strongly acid, except in areas where lime has been applied.

The Btss horizon or the Bt horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 8; or it does not have a dominant matrix color and is multicolored in shades of brown, gray, red, and yellow. It has common or many redoximorphic depletions in shades of gray and common or many redoximorphic accumulations in shades of brown, red, and yellow. Reaction is very strongly acid or strongly acid. The texture is clay.

The Bss horizon commonly has no dominant matrix color and is multicolored in shades of gray, brown, olive, and red. In some pedons it has hue of 10YR, 2.5Y, or 5Y and value of 5 or 6. Chroma ranges from 4 to 8 in ped interiors and is 1 or 2 on ped exteriors and on faces of slickensides. The horizon has common or many redoximorphic depletions in shades of gray and common or many redoximorphic accumulations in shades of brown, olive, and red. In some pedons it has few or common nodules or soft masses of iron and manganese oxides. It is very strongly acid to slightly acid.

The Bkss horizon, if it occurs, has hue of 10YR, 2.5Y, or 5Y and value of 4 to 6. Chroma ranges from 4 to 6 in ped interiors and is 1 or 2 on the exterior of peds and on faces of slickensides. In some pedons the horizon does not have a dominant matrix color and is multicolored in shades of gray, brown, and olive. It has few to many redoximorphic depletions in shades of gray and few to many redoximorphic accumulations in shades of brown and olive. It has few to many nodules and soft masses of calcium carbonate. In some pedons it has few or common soft masses or nodules of iron and manganese oxides. It is neutral to moderately alkaline. It is clay or silty clay.

The 2C horizon, if it occurs, is highly weathered limestone (chalk) or alkaline clay. It is massive or has platy rock structure.

Some pedons have a 2Cr horizon of weathered limestone (chalk) below a depth of 60 inches. This horizon can be dug with difficulty with hand tools and is rippable by light equipment.

## Watsonia Series

The Watsonia series consists of shallow, well drained soils that formed in clayey sediments and the underlying soft limestone (chalk). These soils are on ridgetops and side slopes in the uplands of the Blackland Prairie. Slopes range from 2 to 8 percent. These soils are clayey, smectitic, thermic, shallow Leptic Hapluderts.

Watsonia soils are commonly associated on the landscape with Demopolis, Oktibbeha, and Sumter soils. These associated soils are in landscape positions similar to those of the Watsonia soils. Demopolis soils are loamy and are alkaline throughout. Oktibbeha soils are very deep over bedrock. Sumter soils are moderately deep and are alkaline throughout.

Typical pedon of Watsonia clay, in an area of Demopolis-Watsonia complex, 2 to 8 percent slopes; about 2 miles south-southwest of Furman, 500 feet south and 600 feet west of the northeast corner of sec. 32, T. 12 N., R. 11 E.

Ap—0 to 3 inches; brown (7.5YR 4/3) clay; weak coarse subangular blocky structure; firm; many fine roots; moderately acid; abrupt smooth boundary.

Bss—3 to 11 inches; red (2.5YR 4/6) clay; weak coarse angular blocky structure parting to strong medium angular blocky; firm; few fine roots; few large intersecting slickensides that have distinct, polished and grooved surfaces; moderately acid; clear wavy boundary.

Bkss—11 to 18 inches; light olive brown (2.5Y 5/4) clay; moderate coarse angular blocky structure; firm; few fine roots; common large intersecting slickensides that have distinct, polished and grooved surfaces; common medium prominent yellowish red (5YR 5/6) masses of iron accumulation; common soft white masses of calcium carbonate; strongly effervescent; slightly alkaline; abrupt wavy boundary.

2Cr—18 to 60 inches; pale olive (5Y 6/3) soft limestone (chalk); strong medium and thick platy

rock structure; very firm; violently effervescent; moderately alkaline.

The depth to soft limestone (chalk) is 10 to 20 inches.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. It is very strongly acid to slightly acid.

The Bss horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. It is very strongly acid to slightly acid. It is silty clay or clay.

The Bkss horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 4 to 8. In some pedons it has few or common redoximorphic accumulations in shades of red, olive, or brown. Reaction ranges from slightly acid to moderately alkaline. The content of soft masses or concretions or both of calcium carbonate ranges from few to common. The texture is clay or silty clay.

The 2Cr horizon is soft limestone (chalk). It is massive or has platy rock structure. It can be cut with hand tools and is rippable by light machinery.

## Wilcox Series

The Wilcox series consists of deep, somewhat poorly drained soils that formed in clayey sediments and the underlying shale. These soils are on broad ridgetops and on side slopes in the uplands. Slopes range from 1 to 15 percent. These soils are very-fine, smectitic, thermic Chromic Dystruderts.

Wilcox soils are commonly associated on the landscape with Luverne soils. Luverne soils are in positions similar to those of the Wilcox soils but are at higher elevations. They are very deep over bedrock and have mixed clay mineralogy.

Typical pedon of Wilcox clay, 1 to 5 percent slopes; about 3.75 miles south-southwest of Catherine, 150 feet south and 1,300 feet west of the northeast corner of sec. 5, T. 13 N., R. 6 E.

Ap—0 to 4 inches; brown (10YR 4/3) clay; moderate fine subangular blocky structure; firm; many fine roots; few fine faint brown (7.5YR 4/4) masses of iron accumulation in root channels; very strongly acid; abrupt smooth boundary.

Btss—4 to 17 inches; yellowish red (5YR 5/6) clay; weak coarse subangular blocky structure parting to moderate fine and medium angular blocky; very firm; common fine and medium roots; few faint clay films in some pores; few intersecting slickensides that have faint, slightly grooved surfaces; many medium distinct light brownish gray (10YR 6/2) and common medium distinct pale brown (10YR 6/3) iron depletions; very strongly acid; clear wavy boundary.

Bss1—17 to 41 inches; 45 percent light brownish gray (2.5Y 6/2), 30 percent red (2.5YR 5/6), and 25 percent yellowish brown (10YR 5/6) clay; moderate coarse angular blocky structure; firm; common fine and medium roots, flattened on faces of peds; common large intersecting slickensides that have distinct, polished and grooved surfaces; areas of red and yellowish brown are masses of iron accumulation; areas of light brownish gray are iron depletions; extremely acid; clear wavy boundary.

Bss2—41 to 52 inches; 50 percent light brownish gray (2.5Y 6/2), 30 percent yellowish red (5YR 5/6), and 20 percent yellowish brown (10YR 5/6) clay; moderate coarse angular blocky structure; very firm; few fine roots, flattened on faces of peds; common large intersecting slickensides that have distinct, polished and grooved surfaces; few fine fragments of shale; areas of yellowish red and yellowish brown are masses of iron accumulation; areas of light brownish gray are iron depletions; extremely acid; clear irregular boundary.

Cr1—52 to 64 inches; light brownish gray (2.5Y 6/2) shale; strong thick platy rock structure; very firm; few fine roots in fractures; common fine distinct olive yellow (2.5Y 6/6) masses of iron accumulation on faces of peds; very strongly acid; gradual wavy boundary.

Cr2—64 to 80 inches; grayish brown (2.5Y 5/2) shale; strong thick platy rock structure; very firm; many medium distinct light olive brown (2.5Y 5/4) and olive yellow (2.5Y 6/6) masses of iron accumulation on faces of peds; extremely acid.

The thickness of the solum and the depth to shale range from 40 to 60 inches.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 3. Reaction ranges from extremely acid to strongly acid, except in areas where lime has been applied.

The Btss or Bt horizon has hue of 2.5YR or 7.5YR, value of 4 or 5, chroma of 4 to 8, few to many redoximorphic depletions in shades of gray, and few to many redoximorphic accumulations in shades of brown, red, and yellow; or it has no dominant matrix color and is multicolored in shades of brown, yellow, red, and gray. In some pedons it has few or common fragments of ironstone. Reaction is extremely acid or very strongly acid. The texture is clay.

The Bss horizon commonly has no dominant matrix color and is multicolored in shades of gray, brown, yellow, olive, and red. In some pedons it has a gray matrix and few to many redoximorphic accumulations

in shades of red, brown, yellow, and olive. The number of fragments of shale and ironstone ranges from none to common. Reaction commonly ranges from extremely acid to strongly acid, but in the lower part of some pedons it is moderately acid. The texture is silty clay or clay.

The Cr horizon is shale or clayey shale. It has platy or conchoidal rock structure and is restrictive to root growth. It can be cut with hand tools and is rippable by light machinery. Reaction commonly ranges from ultra acid to strongly acid, but in some pedons the horizon has strata of alkaline shale.

# Formation Of The Soils

In this section, the factors of soil formation are related to the soils in Wilcox County, the processes of horizon differentiation are explained, and the surface geology of the county is described.

## Factors of Soil Formation

Soil is a natural, three-dimensional body on the earth's surface that supports plants. It forms through weathering and other processes that act on deposited or accumulated geologic material. The kind of soil that forms depends on the type of parent material; the climate under which soil material has existed since accumulation; the relief, or lay of the land; the plant and animal life in and on the soil; and the length of time that the forces of soil formation have acted on the soil material. The relative importance of each of these factors differs from place to place; in some areas, one factor is more important, and in other areas another may dominate. A modification or variation in any of the factors results in a different kind of soil.

Climate and living organisms are the active factors of soil formation. They act on parent material and change it to a natural body with definite characteristics. The effects of climate and living organisms are conditioned by relief, which influences surface drainage; the amount of water that percolates through the soil; the rate of erosion; and the kind of vegetation that grows on the soil. The nature of the parent material also affects the kind of soil profile that is formed. Time is needed for the parent material to change into a soil. The development of a distinct soil horizon normally requires a long period of time.

### Parent Material

The soils of Wilcox County formed mainly in three kinds of parent material—loamy and clayey unconsolidated marine sediment that has undergone considerable weathering in place, water-deposited material on stream terraces and flood plains, and materials weathered from soft limestone (chalk), claystone or siltstone, and shale. Brantley, Luverne, Searcy, and Smithdale soils formed in the weathered, loamy and clayey marine sediment. Bama, Cahaba, Chrysler, Houlka, Izagora, Kinston, Lenoir, Lucedale, Malbis, Mantachie, and Sucarnoochee soils formed in the water-deposited material on stream terraces and flood plains. Demopolis, Oktibbeha, Sumter, Vaiden, and Watsonia soils formed in the materials weathered from soft limestone (chalk). Arundel and Cantuche soils formed in the materials weathered from claystone or siltstone. Beatrice, Halso, and Wilcox soils formed in the materials weathered from shale.

### Climate

The climate of Wilcox County is warm and humid. Summers are long and hot. Winters are short and mild, and the ground rarely freezes to a depth of more than a few inches. The climate is fairly even throughout the county and accounts for few differences between the soils. Rainfall averages 56 inches a year.

This mild, humid climate favors rapid decomposition of organic matter and increases the rate of chemical reactions in the soil. The plentiful rainfall leaches large amounts of soluble bases and carries the less soluble fine particles downward, resulting in acid soils that have a sandy surface layer and that are low in natural fertility. The large amount of moisture and the warm temperature favor the growth of bacteria and fungi and speed the decomposition of organic matter, resulting in soils that are low in organic matter content.

### Relief

Relief influences the formation of soil through its effect on drainage, runoff, and erosion. In Wilcox County, the topography ranges from nearly level to steep. The elevation ranges from about 40 to 550 feet above sea level. Large flat areas and depressions generally are poorly drained, and accumulated water, received mainly as runoff from adjacent areas, slows the formation of soils. As slope increases, the hazard of erosion and the runoff rate increase, but less water soaks into the soil and leaching decreases. In places, the rate of erosion nearly keeps pace with the rate of soil formation. Thus, the steeper soils are generally thin and weakly developed.

The aspect of slope affects the microclimate. Soils on south- or southwest-facing slopes warm up somewhat earlier in spring and generally reach a higher temperature each day than soils on north-facing

slopes. The warmer soil temperature results in accelerated chemical weathering. The soils on north-facing slopes retain moisture longer because they are shaded for longer periods and have a lower temperature. In Wilcox County, differences caused by the direction of slope are slight and of minor importance in soil formation.

### Plants and Animals

Living organisms greatly influence the processes of soil formation and the characteristics of the soils. Trees, grasses, earthworms, rodents, fungi, bacteria, and other forms of plant and animal life are affected by the other soil-forming factors. Animal activity is largely confined to the surface layer of the soil. The soil is continually mixed by their activity, which improves water infiltration. Plant roots create channels through which air and water move more rapidly, thereby improving soil structure and increasing the rate of chemical reactions in the soil.

Micro-organisms help to decompose organic matter, which releases plant nutrients and chemicals into the soil. These nutrients are either used by the plants or are leached from the soil. Human activities have a strong influence on plant and animal populations in the soil and thus affect the future rate of soil formation.

The native vegetation in the uplands of Wilcox County consisted dominantly of coniferous and deciduous trees. The understory species were holly, panicums, bluestems, American beautyberry, Indiangrass, longleaf uniola, and flowering dogwood. These species represent only a very limited number of species that once grew in the county. They can be used as a guide to the plants that currently grow in the county.

The plant communities in the area are also reflected in the species distribution of fauna. Animals, in turn, have an impact on the soil properties of a particular area. For example, worms, moles, armadillo, and gophers can improve aeration in a compacted soil. Microbes that thrive in a particular plant community react to various soil conditions and consequently influence the soil profile by providing decayed organic matter and nitrogen to the soil matrix.

### Time

If all other factors of soil formation are equal, the degree of soil formation is in direct proportion to time. If soil-forming factors have been active for a long time, horizon development is stronger than if these same factors have been active for a relatively short time.

Geologically, the soils in Wilcox County are relatively young. The youngest soils are the alluvial soils on active flood plains along streams and rivers. These soils receive deposits of sediment and are undergoing a cumulative soil-forming process. In most cases, these young soils have very weakly defined horizons, mainly because the soil-forming processes have been active for only a short time. Congaree, Houlka, Kinston, Mantachie, Mooreville, Riverview, Sucarnoochee, Una, and Urbo soils are examples of young soils.

Soils on terraces along the Alabama River are older than soils on flood plains but are still relatively young. Although they formed in material deposited by the river, these soils are no longer reached by overflow because the river channel is now deeper. Many of these soils have relatively strong horizon development. Bama, Cahaba, Canton Bend, Chrysler, Izagora, Lenoir, Lucedale, and Malbis soils are examples of soils on stream terraces of varying age.

The oldest soils in the county are in the uplands. They formed in marine sediment that has undergone considerable weathering. Arundel, Beatrice, Halso, Kipling, Luverne, Oktibbeha, and Vaiden soils are examples.

## Processes of Horizon Differentiation

The main processes involved in the formation of soil horizons are accumulation of organic matter, leaching of calcium carbonate and bases, reduction and transfer of iron, and formation and translocation of silicate clay minerals. These processes can occur in combination or individually, depending on the integration of the factors of soil formation.

Most soils have four main horizons. The A horizon is the surface layer. It is the horizon of maximum accumulation of organic matter. The E horizon, usually called the subsurface layer, is the horizon of maximum loss of soluble or suspended material. Boykin and Smithdale soils have both an A horizon and an E horizon. Other soils, such as Mantachie soils, have an A horizon but do not have an E horizon. In all soils in Wilcox County, organic matter has accumulated in the surface layer to form an A horizon. The content of organic matter varies in different soils because of differences in relief, wetness, and natural fertility.

The B horizon, usually called the subsoil, is immediately below the A or E horizon. It is the horizon of maximum accumulation of dissolved or suspended material, such as iron or clay. The B horizon has not yet developed in very young soils, such as Bigbee or Congaree soils.

The C horizon is the substratum. It has been affected very little by the soil forming processes, but it may be somewhat modified by weathering.

The chemical reduction and transfer of iron, called

gleying, is evident in the wet soils in the county. Gleying results in gray colors in the subsoil and gray mottles in other horizons. The gray colors indicate the reduction and loss of iron and manganese. The horizons of some soils, such as Malbis soils, have reddish mottles and nodules, which indicate a segregation of iron.

Leaching of carbonates and bases has occurred in most of the soils in the county. This process contributes to the development of distinct horizons and to the naturally low fertility and acid reaction of most of the soils in the Coastal Plain area. In the Blackland Prairie area, some of the soils, such as Demopolis, Sucarnoochee, and Sumter soils, developed in materials weathered from soft limestone (chalk). These soils are high in natural fertility and are alkaline throughout.

In uniform materials, natural drainage generally is closely associated with slope or relief. It generally affects the color of the soil. Soils that formed under good drainage conditions, such as Bama and Lucedale soils, have a subsoil that is uniformly bright in color. Soils that formed under poor drainage conditions, such as Kinston, Una, and Urbo soils, are grayish. Soils that formed where drainage is intermediate have a subsoil that is mottled in shades of gray and brown. Annemaine, Chrysler, Escambia, and Mantachie soils are examples. The grayish color persists even if artificial drainage is provided. The dark grayish brown colors in the upper part of the Sucarnoochee soils are assumed to be inherited from the color of the parent material.

In steeper areas, the surface soil erodes. In low areas or in depressions, soil materials commonly accumulate and add to the thickness of the surface layer. In some areas, the formation of soil materials and the rates of removal are in equilibrium with soil development. The degree of relief also affects the eluviation of clay from the E horizon to the Bt horizon.

## Surface Geology

The geological formations in Wilcox County are sedimentary and range in age from Cretaceous to Recent. They consist mainly of unconsolidated sediments of sand, silt, clay, and gravel and layers of soft limestone, claystone, and shale. The units, from oldest to youngest, include the Tuscaloosa Group, the Eutaw, Mooreville, Demopolis, and Ripley Formations, and the Prairie Bluff Chalk, which are of the Upper Cretaceous Series; the Clayton, Porters Creek, and Naheola Formations, which are of the Paleocene Series; the Nanafalia, Tuscahoma, Hatchetigbee, and Tallahatta Formations, which are of the Eocene Series; the high terrace deposits, which are of Pleistocene Age; and the low terrace and alluvial deposits of Recent and Holocene Age. Except for the terrace and alluvial deposits, all of the formations that crop out in the county do so in northwest- to southeast-trending belts *(9, 10)*.

The Tuscaloosa Group and the Eutaw, Mooreville, and Demopolis Formations are the oldest formations penetrated by wells in the county. They do not crop out in the county.

The Ripley Formation is the oldest unit exposed in Wilcox County. It crops out in a 4-mile wide belt along Chilatchee Creek in the northern part of the county and in a small area in the northeastern corner of the county. Brantley, Oktibbeha, and Searcy soils formed in material weathered from the Ripley Formation.

The Prairie Bluff Chalk overlies the Ripley Formation. It is exposed in a narrow belt along the southern margin of the area where the Ripley Formation crops out, but not in the northwest corner of the county. It is 10 to 15 feet thick and is composed of grayish, sandy chalk containing many phosphatized casts of fossil shells. Demopolis, Oktibbeha, Sumter, and Watsonia soils formed in material weathered from the Prairie Bluff Chalk.

The Clayton Formation overlies the Prairie Bluff Chalk and crops out in the northern part of the county. It is about 60 feet thick in the western part of the county and increases to about 175 feet thick in the eastern part. The soils that formed in material weathered from the Clayton Formation include the Kipling, Oktibbeha, and Vaiden soils in the western part of the county and the Brantley, Demopolis, Oktibbeha, Searcy, Sumter, and Watsonia soils in the eastern part.

The Porters Creek Formation overlies the Clayton Formation and crops out diagonally across the northern part of the county. It is about 20 feet thick in the western part of the county and increases to about 150 feet thick in the eastern part. The area of outcrop west of the Alabama River has low relief and is called the "Flatwoods." The Wilcox soils are the major soils in this area. The lower part of the formation is more alkaline than the upper part and forms a narrow belt across the eastern part of the county. Brantley, Oktibbeha, and Searcy soils also formed in material weathered from the Porters Creek Formation.

The Naheola Formation overlies the Porters Creek Formation. It runs southeasterly from Lamison near the Marengo County line to just north of Awin in the southeast corner of Wilcox County. The upper part of the formation is called the Coal Bluff Marl Member, and the lower part is called the Oak Hill Member. The Coal Bluff Member is about 60 feet thick, and the Oak Hill Member is about 100 to 125 feet thick. A nearly

continuous bed of lignite marks the top of the Oak Hill Member. Luverne and Smithdale soils formed in material weathered from the Naheola Formation.

The Nanafalia Formation overlies the Naheola Formation and runs unconformably from just north of Pine Hill at the Marengo County line to Awin in the southeast corner of Wilcox County. It is divided into three members. The upper member is called the Grampian Hills Member. It ranges from 80 to 110 feet thick. Arundel, Cantuche, Halso, and Luverne soils formed in material weathered from this member. The middle member is unnamed and ranges in thickness from about 35 to 45 feet. Halso, Luverne, Oktibbeha, and Brantley soils formed in material weathered from this member. The Gravel Creek Member is the lower member and ranges to a thickness of about 60 feet in the eastern part of the county. Boykin, Luverne, and Smithdale soils are the major soils that formed in material weathered from this member.

The Tuscahoma Sand Formation overlies the Nanafalia Formation. It runs unconformably from the Clarke County line to just east of Alabama Highway 265 at the Monroe County line. It is approximately 275 feet thick. Halso, Luverne, and Smithdale soils formed in material weathered from the Tuscahoma Sand Formation.

The Hatchetigbee Formation overlies the Tuscahoma Sand and is exposed in the southwestern part of the county. Halso and Luverne soils formed in material weathered from the Hatchetigbee Formation.

The Tallahatta Formation overlies the Hatchetigbee Formation. It caps two small hills in the southwestern part of the county. Arundel and Cantuche soils are the most common soils that formed in material weathered from the Tallahatta Formation.

High terrace deposits, primarily of Pleistocene age, lie unconformably on the older formations along the Alabama River and some of the larger tributaries. They consist of poorly sorted deposits of reddish brown, yellowish red, and gray gravel, sand, silt, and clay. The largest areas of high terrace deposits are near Camden, Dry Forks, Alberta, Oak Hill, and Pineapple and in the Grampian Hills south of Camden. Bama, Escambia, Lucedale, Malbis, and Poarch soils formed in material weathered from the high terrace deposits.

Alluvial deposits of Recent age and low terrace deposits of Holocene age are along the Alabama River and in stream valleys throughout the county. They overlie older geologic units and are generally 1 to 30 feet thick. They consist of deposits of brownish and grayish sand, gravel, clay, and silt. Congaree, Houlka, Kinston, Mantachie, Mooreville, Riverview, Sucarnoochee, Una, and Urbo soils are on active flood plains. Annemaine, Cahaba, Canton Bend, Chrysler, Izagora, Jedburg, and Lenoir soils are on low terraces.

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# Glossary

**ABC soil.** A soil having an A, a B, and a C horizon.

**AC soil.** A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

**Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

**Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

**Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.

**Alpha,alpha-dipyridyl.** A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

**Animal unit month (AUM).** The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

**Aquic conditions.** Current soil wetness characterized by saturation, reduction, and redoximorphic features.

**Area reclaim** (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

**Argillic horizon.** A subsoil horizon characterized by an accumulation of illuvial clay.

**Aspect.** The direction in which a slope faces.

**Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

| | |
|---|---|
| Very low | 0 to 3 |
| Low | 3 to 6 |
| Moderate | 6 to 9 |
| High | 9 to 12 |
| Very high | more than 12 |

**Back slope.** The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

**Basal area.** The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

**Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

**Bedding planes.** Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

**Bedding system.** A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

**Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

**Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

**Bench terrace.** A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

**Bisequum.** Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

**Bottom land.** The normal flood plain of a stream, subject to flooding.

**Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.

**Breast height.** An average height of 4.5 feet above the

ground surface; the point on a tree where diameter measurements are ordinarily taken.

**Cable yarding.** A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

**Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

**Canopy.** The leafy crown of trees or shrubs. (See Crown.)

**Capillary water.** Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

**Catena.** A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

**Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

**Cation-exchange capacity.** The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

**Channery soil material.** Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, limestone, or siltstone as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

**Chemical treatment.** Control of unwanted vegetation through the use of chemicals.

**Chiseling.** Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

**Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

**Clay depletions.** Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

**Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

**Coarse textured soil.** Sand or loamy sand.

**Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

**Cobbly soil material.** Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

**Colluvium.** Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

**Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

**Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

**Concretions.** Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

**Conservation cropping system.** Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

**Conservation tillage.** A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

**Consistence, soil.** Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

**Contour stripcropping.** Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

**Control section.** The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

**Corrosion.** Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

**Cover crop.** A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

**Cropping system.** Growing crops according to a planned system of rotation and management practices.

**Crop residue management.** Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

**Cross-slope farming.** Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

**Crown.** The upper part of a tree or shrub, including the living branches and their foliage.

**Culmination of the mean annual increment (CMAI).** The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

**Cutbanks cave** (in tables). The walls of excavations tend to cave in or slough.

**Deferred grazing.** Postponing grazing or resting grazing land for a prescribed period.

**Dense layer** (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

**Depth, soil.** Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

**Depth to rock** (in tables). Bedrock is too near the surface for the specified use.

**Diversion (or diversion terrace).** A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

**Divided-slope farming.** A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

**Drainage class** (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

**Drainage, surface.** Runoff, or surface flow of water, from an area.

**Duff.** A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

**Eluviation.** The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

**Endosaturation.** A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

**Ephemeral stream.** A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting

snow or other source, and its channel is above the water table at all times.

**Episaturation.** A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

**Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

*Erosion* (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

*Erosion* (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

**Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

**Excess fines** (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

**Excess lime** (in tables). Excess carbonates in the soil that restrict the growth of some plants.

**Fallow.** Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

**Fast intake** (in tables). The rapid movement of water into the soil.

**Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

**Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

**Fill slope.** A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

**Fine textured soil.** Sandy clay, silty clay, or clay.

**Firebreak.** Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

**First bottom.** The normal flood plain of a stream, subject to frequent or occasional flooding.

**Flood plain.** A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

**Fluvial.** Of or pertaining to rivers; produced by river action, as a fluvial plain.

**Foot slope.** The inclined surface at the base of a hill.

**Forb.** Any herbaceous plant not a grass or a sedge.

**Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.

**Forest type.** A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

**Fragile** (in tables). A soil that is easily damaged by use or disturbance.

**Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

**Gilgai.** Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

**Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

**Graded stripcropping.** Growing crops in strips that grade toward a protected waterway.

**Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

**Gravel.** Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

**Gravelly soil material.** Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

**Green manure crop** (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

**Ground water.** Water filling all the unblocked pores of the material below the water table.

**Gully.** A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a

gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

**High-residue crops.** Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

**Hill.** A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

*O horizon.*—An organic layer of fresh and decaying plant residue.

*A horizon.*—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

*E horizon.*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

*B horizon.*—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

*C horizon.*—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

*Cr horizon.*—Soft, consolidated bedrock beneath the soil.

*R layer.*—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

**Humus.** The well decomposed, more or less stable part of the organic matter in mineral soils.

**Hydrologic soil groups.** Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

**Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

**Impervious soil.** A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

**Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

**Infiltration capacity.** The maximum rate at which water can infiltrate into a soil under a given set of conditions.

**Infiltration rate.** The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

**Intake rate.** The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

| | |
|---|---|
| Less than 0.2 | very low |
| 0.2 to 0.4 | low |
| 0.4 to 0.75 | moderately low |
| 0.75 to 1.25 | moderate |
| 1.25 to 1.75 | moderately high |
| 1.75 to 2.5 | high |
| More than 2.5 | very high |

**Intermittent stream.** A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

**Iron depletions.** Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

**Irrigation.** Application of water to soils to assist in production of crops. Methods of irrigation are:
*Drip (or trickle).*—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.
*Furrow.*—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.
*Sprinkler.*—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

**Knoll.** A small, low, rounded hill rising above adjacent landforms.

**Landslide.** The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

**Large stones** (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Low-residue crops.** Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

**Low strength.** The soil is not strong enough to support loads.

**Marl.** An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

**Masses.** Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

**Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

**Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.

**Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.

**Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.

**Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.

**Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

**Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

**Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

**Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

**Nodules.** Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

**Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon,

hydrogen, and oxygen obtained from the air and water.

**Organic matter.** Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

| | |
|---|---|
| Low | less than 2.0 percent |
| Medium | 2.0 to 4.0 percent |
| High | 4.0 to 8.0 percent |

**Pan.** A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

**Parent material.** The unconsolidated organic and mineral material in which soil forms.

**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.

**Pedon.** The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

**Percolation.** The downward movement of water through the soil.

**Percs slowly** (in tables). The slow movement of water through the soil adversely affects the specified use.

**Permeability.** The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

| | |
|---|---|
| Extremely slow | 0.0 to 0.01 inch |
| Very slow | 0.01 to 0.06 inch |
| Slow | 0.06 to 0.2 inch |
| Moderately slow | 0.2 to 0.6 inch |
| Moderate | 0.6 inch to 2.0 inches |
| Moderately rapid | 2.0 to 6.0 inches |
| Rapid | 6.0 to 20 inches |
| Very rapid | more than 20 inches |

**Phase, soil.** A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

**pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

**Piping** (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.

**Plinthite.** The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as reddish or brownish masses, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

**Plowpan.** A compacted layer formed in the soil directly below the plowed layer.

**Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

**Poor filter** (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

**Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

**Poor outlets** (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

**Potential rooting depth (effective rooting depth).** Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

**Prescribed burning.** Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

**Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Proper grazing use.** Grazing at an intensity that

maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

**Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

| | |
|---|---|
| Ultra acid | less than 3.5 |
| Extremely acid | 3.5 to 4.4 |
| Very strongly acid | 4.5 to 5.0 |
| Strongly acid | 5.1 to 5.5 |
| Moderately acid | 5.6 to 6.0 |
| Slightly acid | 6.1 to 6.5 |
| Neutral | 6.6 to 7.3 |
| Slightly alkaline | 7.4 to 7.8 |
| Moderately alkaline | 7.9 to 8.4 |
| Strongly alkaline | 8.5 to 9.0 |
| Very strongly alkaline | 9.1 and higher |

**Redoximorphic concentrations.** Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

**Redoximorphic depletions.** Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

**Redoximorphic features.** Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

**Relief.** The elevations or inequalities of a land surface, considered collectively.

**Residuum (residual soil material).** Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

**Rill.** A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

**Road cut.** A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

**Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

**Rooting depth** (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**Runoff.** The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

**Sand.** As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

**Sandstone.** Sedimentary rock containing dominantly sand-sized particles.

**Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

**Second bottom.** The first terrace above the normal flood plain (or first bottom) of a river.

**Sedimentary rock.** Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; siltstone or claystone, formed from a mixture of clay and silt; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types.

**Seepage** (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

**Sequum.** A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

**Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

**Shale.** Sedimentary rock formed by the hardening of a clay deposit.

**Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

**Shrink-swell** (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling

can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

**Silica.** A combination of silicon and oxygen. The mineral form is called quartz.

**Silica-sesquioxide ratio.** The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

**Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

**Siltstone.** Sedimentary rock made up of dominantly silt-sized particles.

**Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

**Site index.** A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

**Slickensides.** Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

**Slippage** (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

**Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

| | |
|---|---|
| Level | 0 to 1 percent |
| Nearly level | 0 to 2 percent |
| Gently sloping | 2 to 5 percent |
| Moderately sloping | 5 to 8 percent |
| Strongly sloping | 8 to 15 percent |
| Moderately steep | 15 to 25 percent |
| Steep | 25 to 35 percent |

Classes for complex slopes are as follows:

| | |
|---|---|
| Level | 0 to 1 percent |
| Nearly level | 0 to 2 percent |
| Gently undulating | 0 to 3 percent |
| Gently rolling | 5 to 15 percent |
| Steep | 15 to 35 percent |

**Slope** (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

**Slow intake** (in tables). The slow movement of water into the soil.

**Slow refill** (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

**Small stones** (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

**Soft bedrock.** Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

**Soil.** A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

**Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

| | |
|---|---|
| Very coarse sand | 2.0 to 1.0 |
| Coarse sand | 1.0 to 0.5 |
| Medium sand | 0.5 to 0.25 |
| Fine sand | 0.25 to 0.10 |
| Very fine sand | 0.10 to 0.05 |
| Silt | 0.05 to 0.002 |
| Clay | less than 0.002 |

**Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

**Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

**Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.

**Stripcropping.** Growing crops in a systematic arrangement of strips or bands that provide

vegetative barriers to wind erosion and water erosion.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

**Stubble mulch.** Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Subsoiling.** Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

**Substratum.** The part of the soil below the solum.

**Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

**Surface soil.** The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

**Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

**Terrace.** An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

**Terrace** (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

**Thin layer** (in tables). Otherwise suitable soil material that is too thin for the specified use.

**Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

**Toe slope.** The outermost inclined surface at the base of a hill; part of a foot slope.

**Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

**Trace elements.** Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

**Unstable fill** (in tables). Risk of caving or sloughing on banks of fill material.

**Upland.** Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

**Water bars.** Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

**Weathering.** All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

**Well graded.** Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

**Wilting point (or permanent wilting point).** The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

**Windthrow.** The uprooting and tipping over of trees by the wind.

# Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1961-90 at Camden, Alabama)

| Month | Temperature | | | | | | Precipitation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Average daily maximum | Average daily minimum | Average daily | 2 years in 10 will have-- Maximum temperature higher than-- | 2 years in 10 will have-- Minimum temperature lower than-- | Average number of growing degree days* | Average | 2 years in 10 will have-- Less than-- | 2 years in 10 will have-- More than-- | Average number of days with 0.10 inch or more | Average snowfall |
| | °F | °F | °F | °F | °F | Units | In | In | In | | In |
| January----- | 56.9 | 33.5 | 45.2 | 78 | 8 | 72 | 5.25 | 3.44 | 6.90 | 8 | 0.3 |
| February---- | 61.1 | 36.1 | 48.6 | 81 | 15 | 98 | 5.43 | 3.37 | 7.29 | 6 | 0.1 |
| March------- | 70.4 | 43.6 | 57.0 | 86 | 23 | 255 | 6.13 | 3.63 | 8.36 | 7 | 0.0 |
| April------- | 78.3 | 51.1 | 64.7 | 90 | 32 | 443 | 4.56 | 1.83 | 6.86 | 5 | 0.0 |
| May--------- | 84.4 | 58.4 | 71.4 | 94 | 41 | 662 | 4.64 | 2.15 | 6.78 | 6 | 0.0 |
| June-------- | 90.5 | 65.2 | 77.8 | 100 | 51 | 835 | 3.83 | 1.99 | 5.43 | 6 | 0.0 |
| July-------- | 92.0 | 68.1 | 80.0 | 100 | 59 | 931 | 5.54 | 2.85 | 7.90 | 8 | 0.0 |
| August------ | 91.2 | 67.6 | 79.4 | 99 | 58 | 910 | 4.02 | 2.30 | 5.55 | 6 | 0.0 |
| September--- | 87.3 | 62.6 | 75.0 | 97 | 45 | 749 | 3.50 | 1.53 | 5.17 | 5 | 0.0 |
| October----- | 78.0 | 50.6 | 64.3 | 91 | 31 | 444 | 2.61 | 0.79 | 4.24 | 3 | 0.0 |
| November---- | 68.2 | 42.5 | 55.4 | 84 | 21 | 211 | 4.05 | 2.07 | 5.78 | 5 | 0.0 |
| December---- | 59.8 | 36.0 | 47.9 | 80 | 13 | 104 | 5.95 | 3.60 | 8.06 | 7 | 0.1 |
| Yearly: | | | | | | | | | | | |
| Average--- | 76.5 | 51.3 | 63.9 | --- | --- | --- | --- | --- | --- | --- | --- |
| Extreme--- | 104 | 0 | --- | 102 | 7 | --- | --- | --- | --- | --- | --- |
| Total----- | --- | --- | --- | --- | --- | 5,714 | 55.50 | 45.36 | 62.29 | 72 | 0.4 |

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Camden, Alabama)

| Probability | Temperature | | |
|---|---|---|---|
| | 24°F or lower | 28°F or lower | 32°F or lower |
| Last freezing temperature in spring: | | | |
| 1 year in 10 later than-- | Mar. 13 | Mar. 31 | Apr. 6 |
| 2 years in 10 later than-- | Mar. 7 | Mar. 23 | Apr. 1 |
| 5 years in 10 later than-- | Feb. 23 | Mar. 7 | Mar. 22 |
| First freezing temperature in fall: | | | |
| 1 year in 10 earlier than-- | Nov. 10 | Oct. 30 | Oct. 22 |
| 2 years in 10 earlier than-- | Nov. 19 | Nov. 6 | Oct. 28 |
| 5 years in 10 earlier than-- | Dec. 6 | Nov. 20 | Nov. 8 |

Table 3.--Growing Season

(Recorded in the period 1961-90 at Camden, Alabama)

| Probability | Daily minimum temperature during growing season | | |
|---|---|---|---|
| | Higher than 24°F | Higher than 28°F | Higher than 32°F |
| | Days | Days | Days |
| 9 years in 10 | 243 | 221 | 205 |
| 8 years in 10 | 258 | 233 | 214 |
| 5 years in 10 | 286 | 257 | 231 |
| 2 years in 10 | 314 | 281 | 248 |
| 1 year in 10 | 328 | 294 | 257 |

Table 4.--Suitability and Limitations of General Soil Map Units For Specified Uses

| Map unit | Extent of area | Cultivated crops | Pasture and hay | Woodland | Urban uses |
|---|---|---|---|---|---|
| | Pct | | | | |
| 1. Urbo-Mooreville-Una | 5 | Poorly suited: wetness, flooding, poor tilth. | Poorly suited: wetness, flooding. | Suited: restricted use of equipment, seedling mortality. | Not suited: wetness, flooding. |
| 2. Sucarnoochee-Congaree | 4 | Poorly suited: wetness, flooding, poor tilth. | Suited: wetness, flooding. | Suited: restricted use of equipment, seedling mortality. | Not suited: wetness, flooding. |
| 3. Mantachie-Kinston-Izagora | 4 | Poorly suited: wetness, flooding. | Poorly suited: wetness, flooding. | Suited: restricted use of equipment, seedling mortality. | Not suited: wetness, flooding. |
| 4. Annemaine-Izagora-Lenoir | 10 | Suited: wetness, flooding. | Well suited | Well suited | Poorly suited: flooding, wetness, moderately slow and slow permeability. |
| 5. Bama-Malbis-Luverne | 12 | Suited: low fertility, hazard of erosion, slope. | Well suited | Well suited | Suited: moderate and moderately slow permeability. |
| 6. Wilcox | 2 | Suited: wetness, poor tilth, hazard of erosion. | Suited: wetness. | Suited: restricted use of equipment, seedling mortality. | Poorly suited: wetness, shrink-swell potential, very slow permeability. |
| 7. Vaiden-Sucarnoochee-Oktibbeha | 3 | Suited: wetness, poor tilth, flooding, hazard of erosion. | Suited: wetness. | Suited: restricted use of equipment, seedling mortality. | Poorly suited: wetness, flooding, shrink-swell potential, very slow permeability. |
| 8. Searcy-Freest | 2 | Suited: hazard of erosion, poor tilth. | Well suited | Well suited | Suited: wetness, shrink-swell potential, moderately slow and slow permeability. |

Table 4.--Suitability and Limitations of General Soil Map Units For Specified Uses--Continued

| Map unit | Extent of area | Cultivated crops | Pasture and hay | Woodland | Urban uses |
|---|---|---|---|---|---|
| | Pct | | | | |
| 9. Demopolis-Watsonia | 6 | Poorly suited: slope, hazard of of erosion, droughtiness, poor tilth. | Poorly suited: slope, droughtiness. | Poorly suited: restricted use of equipment, hazard of erosion, seedling mortality. | Poorly suited: depth to rock, shrink-swell potential, very slow permeability. |
| 10. Luverne-Halso | 31 | Suited: slope, low fertility, hazard of erosion. | Well suited | Suited: restricted use of equipment, hazard of erosion. | Poorly suited: slope, shrink-swell potential, very slow and moderately slow permeability. |
| 11. Arundel-Cantuche | 5 | Not suited: slope, hazard of erosion. | Poorly suited: slope, droughtiness, hazard of erosion. | Suited: restricted use of equipment, hazard of erosion, seedling mortality. | Poorly suited: depth to rock, shrink-swell potential, slope, very slow permeability. |
| 12. Oktibbeha-Brantley | 16 | Poorly suited: slope, hazard of erosion, poor tilth. | Suited: slope, hazard of erosion. | Suited: restricted use of equipment, hazard of erosion, seedling mortality. | Poorly suited: slope, shrink-swell potential, very slow and moderately slow permeability. |

Table 5.--Acreage and Proportionate Extent of the Soils

| Map symbol | Soil name | Acres | Percent |
|---|---|---|---|
| AnA | Annemaine fine sandy loam, 0 to 2 percent slopes, occasionally flooded | 8,200 | 1.4 |
| AnB | Annemaine fine sandy loam, 2 to 5 percent slopes, occasionally flooded | 6,920 | 1.2 |
| ArC | Arundel-Cantuche complex, 2 to 8 percent slopes | 4,370 | 0.7 |
| ArF | Arundel-Cantuche complex, 8 to 35 percent slopes | 20,900 | 3.6 |
| BaA | Bama fine sandy loam, 0 to 2 percent slopes | 3,050 | 0.5 |
| BaB | Bama fine sandy loam, 2 to 5 percent slopes | 10,920 | 1.9 |
| BeB | Beatrice silt loam, 1 to 5 percent slopes | 200 | * |
| BeC2 | Beatrice silt loam, 5 to 10 percent slopes, eroded | 290 | * |
| BgB | Bigbee sand, 0 to 5 percent slopes, occasionally flooded | 5,250 | 0.9 |
| BrB | Brantley fine sandy loam, 2 to 5 percent slopes | 2,170 | 0.4 |
| BtF2 | Brantley sandy clay loam, 15 to 35 percent slopes, eroded | 12,030 | 2.1 |
| CaA | Cahaba fine sandy loam, 0 to 2 percent slopes, rarely flooded | 5,830 | 1.0 |
| CbA | Canton Bend loam, 0 to 2 percent slopes, occasionally flooded | 1,800 | 0.3 |
| ChA | Chrysler loam, 0 to 2 percent slopes, occasionally flooded | 4,210 | 0.7 |
| CoA | Congaree fine sandy loam, 0 to 2 percent slopes, frequently flooded | 2,580 | 0.4 |
| DwC | Demopolis-Watsonia complex, 2 to 8 percent slopes | 13,980 | 2.4 |
| EsA | Escambia fine sandy loam, 0 to 2 percent slopes | 2,960 | 0.5 |
| FrA | Freest fine sandy loam, 0 to 2 percent slopes | 2,740 | 0.5 |
| FrB | Freest fine sandy loam, 2 to 5 percent slopes | 3,610 | 0.6 |
| HaB | Halso silt loam, 2 to 5 percent slopes | 10,140 | 1.7 |
| HbD2 | Halso loam, 5 to 15 percent slopes, eroded | 22,100 | 3.8 |
| HoA | Houlka silty clay loam, 0 to 1 percent slopes, frequently flooded | 13,000 | 2.2 |
| IaA | Izagora fine sandy loam, 0 to 2 percent slopes, occasionally flooded | 8,500 | 1.5 |
| IjB | Izagora-Jedburg complex, gently undulating, occasionally flooded | 4,600 | 0.8 |
| KpD2 | Kipling silty clay loam, 5 to 12 percent slopes, eroded | 1,170 | 0.2 |
| LbA | Lenoir silt loam, 0 to 1 percent slopes, occasionally flooded | 11,590 | 2.0 |
| LdA | Lucedale loam, 0 to 2 percent slopes | 1,830 | 0.3 |
| LvB | Luverne fine sandy loam, 2 to 5 percent slopes | 16,900 | 2.9 |
| LvD2 | Luverne fine sandy loam, 5 to 15 percent slopes, eroded | 26,000 | 4.5 |
| LvF | Luverne fine sandy loam, 15 to 35 percent slopes | 60,660 | 10.4 |
| MaA | Malbis silt loam, 0 to 2 percent slopes | 4,590 | 0.8 |
| MbB | Malbis fine sandy loam, 2 to 5 percent slopes | 12,800 | 2.2 |
| MbC | Malbis fine sandy loam, 5 to 8 percent slopes | 2,360 | 0.4 |
| MKA | Mooreville, Mantachie, and Kinston soils, 0 to 1 percent slopes, frequently flooded | 30,840 | 5.3 |
| OkB | Oktibbeha clay loam, 1 to 5 percent slopes | 8,060 | 1.4 |
| OtE2 | Oktibbeha-Brantley complex, 5 to 25 percent slopes, eroded | 47,260 | 8.1 |
| Pt | Pits | 290 | * |
| PvA | Poarch fine sandy loam, 0 to 2 percent slopes | 460 | 0.1 |
| RvA | Riverview fine sandy loam, 0 to 2 percent slopes, occasionally flooded | 2,320 | 0.4 |
| SaF | Saffell-Smithdale-Luverne complex, 8 to 35 percent slopes | 36,250 | 6.2 |
| SeB2 | Searcy sandy clay loam, 2 to 5 percent slopes, eroded | 8,460 | 1.5 |
| SmB | Smithdale-Boykin complex, 2 to 5 percent slopes | 12,500 | 2.1 |
| SnA | Sucarnoochee silty clay loam, 0 to 1 percent slopes, frequently flooded | 30,270 | 5.2 |
| SpE2 | Sumter-Demopolis complex, 8 to 25 percent slopes, eroded | 12,320 | 2.1 |
| SuE3 | Sumter-Gullied land complex, 8 to 25 percent slopes, severely eroded | 380 | 0.1 |
| UbC | Udorthents-Urban land complex, 0 to 8 percent slopes | 650 | 0.1 |
| UnA | Una silty clay, ponded | 11,260 | 1.9 |
| UuB | Urbo-Mooreville-Una complex, gently undulating, frequently flooded | 29,240 | 5.0 |
| VaA | Vaiden silty clay, 0 to 1 percent slopes | 5,640 | 1.0 |
| VaB | Vaiden silty clay, 1 to 5 percent slopes | 10,510 | 1.8 |
| WcB | Wilcox clay, 1 to 5 percent slopes | 4,440 | 0.8 |
| WcD2 | Wilcox clay, 5 to 15 percent slopes, eroded | 5,810 | 1.0 |
| | Water | 17,480 | 3.0 |
| | Total | 582,690 | 100.0 |

* The combined extent of the acreage designated by an asterisk is about 0.1 percent of the total acreage.

Table 6.--Land Capability and Yields per Acre of Crops

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

| Soil name and map symbol | Land capability | Cotton lint | Corn | Soybeans | Grain sorghum | Wheat |
|---|---|---|---|---|---|---|
| | | Lbs | Bu | Bu | Bu | Bu |
| AnA---------- Annemaine | IIw | 800 | 100 | 40 | 80 | 40 |
| AnB---------- Annemaine | IIIe | 750 | 90 | 30 | 70 | 30 |
| ArC---------- | | --- | --- | --- | --- | --- |
| Arundel---------- | IVe | | | | | |
| Cantuche---------- | VIIs | | | | | |
| ArF---------- Arundel-Cantuche | VIIe | --- | --- | --- | --- | --- |
| BaA---------- Bama | I | 850 | 110 | 35 | 90 | 40 |
| BaB---------- Bama | IIe | 750 | 90 | 35 | 90 | 35 |
| BeB---------- Beatrice | IIIe | 600 | 70 | 35 | 60 | 30 |
| BeC2---------- Beatrice | IVe | --- | --- | --- | --- | --- |
| BgB---------- Bigbee | IIIs | --- | --- | --- | --- | --- |
| BrB---------- Brantley | IIIe | 650 | 80 | 30 | 80 | 30 |
| BtF2---------- Brantley | VIIe | --- | --- | --- | --- | --- |
| CaA---------- Cahaba | I | 800 | 100 | 40 | 100 | 40 |
| CbA---------- Canton Bend | IIw | 950 | 100 | 45 | 90 | 40 |
| ChA---------- Chrysler | IIw | 800 | 100 | 40 | 90 | 35 |
| CoA---------- Congaree | IIIw | 800 | 120 | 40 | 100 | 40 |
| DwC---------- Demopolis-Watsonia | VIs | --- | --- | --- | --- | --- |
| EsA---------- Escambia | IIw | --- | 90 | 40 | 80 | 25 |
| FrA---------- Freest | IIw | 800 | 110 | 40 | 110 | 40 |

See footnote at end of table.

Table 6.--Land Capability Classes and Yields per Acre of Crops--Continued

| Soil name and map symbol | Land capability | Cotton lint | Corn | Soybeans | Grain sorghum | Wheat |
|---|---|---|---|---|---|---|
| | | Lbs | Bu | Bu | Bu | Bu |
| FrB Freest | IIe | 750 | 90 | 35 | 110 | 40 |
| HaB Halso | IIIe | 600 | 70 | 30 | 60 | 30 |
| HbD2 Halso | VIIe | --- | --- | --- | --- | --- |
| HoA Houlka | IVw | --- | 80 | 35 | 80 | --- |
| IaA Izagora | IIw | 700 | 100 | 40 | 90 | 35 |
| IjB | | 500 | 90 | 40 | 90 | 35 |
| Izagora | IIw | | | | | |
| Jedburg | IIIw | | | | | |
| KpD2 Kipling | VIe | --- | --- | --- | --- | --- |
| LbA Lenoir | IVw | --- | --- | --- | --- | --- |
| LdA Lucedale | I | 900 | 115 | 40 | 110 | 40 |
| LvB Luverne | IIIe | 600 | 70 | 30 | 80 | 30 |
| LvD2 Luverne | VIe | --- | --- | --- | --- | --- |
| LvF Luverne | VIIe | --- | --- | --- | --- | --- |
| MaA Malbis | I | 800 | 110 | 40 | 100 | 40 |
| MbB Malbis | IIe | 750 | 95 | 35 | 90 | 40 |
| MbC Malbis | IIIe | 650 | 80 | 30 | 80 | 30 |
| MKA Mooreville, Mantachie, and Kinston | Vw | --- | --- | --- | --- | --- |
| OkB2 Oktibbeha | IIIe | 500 | 50 | 30 | 60 | 30 |
| OtE2 Oktibbeha-Brantley | VIIe | --- | --- | --- | --- | --- |
| Pt* Pits | VIIIs | --- | --- | --- | --- | --- |

See footnote at end of table.

Table 6.--Land Capability Classes and Yields per Acre of Crops--Continued

| Soil name and map symbol | Land capability | Cotton lint | Corn | Soybeans | Grain sorghum | Wheat |
|---|---|---|---|---|---|---|
| | | Lbs | Bu | Bu | Bu | Bu |
| PvA---------- Poarch | I | 750 | 90 | 35 | 100 | 40 |
| RvA---------- Riverview | IIw | 800 | 125 | 40 | 110 | 45 |
| SaF---------- Saffell-Smithdale-Luverne | VIIe | --- | --- | --- | --- | --- |
| SeB2---------- Searcy | IIIe | 600 | 75 | 30 | --- | 30 |
| SmB---------- | | 450 | 60 | 25 | 70 | 25 |
| Smithdale---------- | IIe | | | | | |
| Boykin---------- | IIs | | | | | |
| SnA---------- Sucarnoochee | IVw | --- | 100 | 35 | 80 | --- |
| SpE2---------- Sumter-Demopolis | VIIe | --- | --- | --- | --- | --- |
| SuE3*---------- | | --- | --- | --- | --- | --- |
| Sumter---------- | VIIe | | | | | |
| Gullied land---------- | VIIIs | | | | | |
| UbC*. Udorthents-Urban land | | | | | | |
| UnA---------- Una | VIIw | --- | --- | --- | --- | --- |
| UuB---------- Urbo-Mooreville-Una | Vw | --- | --- | --- | --- | --- |
| VaA---------- Vaiden | IIIw | 500 | 80 | 40 | 60 | 30 |
| VaB---------- Vaiden | IIIe | 450 | 75 | 35 | 55 | 30 |
| WcB---------- Wilcox | IIIe | 450 | 70 | 35 | 55 | 30 |
| WcD2---------- Wilcox | VIe | --- | --- | --- | --- | --- |

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 7.--Yields per Acre of Pasture and Hay

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

| Soil name and map symbol | Improved bermudagrass hay | Improved bermudagrass | Bahiagrass | Tall fescue | Dallisgrass-clover | Cool-season annuals | Johnsongrass hay |
|---|---|---|---|---|---|---|---|
| | Tons | AUM* | AUM* | AUM* | AUM* | AUM* | Tons |
| AnA---------- Annemaine | 5.0 | 8.5 | 9.0 | --- | 8.0 | 5.0 | --- |
| AnB---------- Annemaine | 4.5 | 8.0 | 9.0 | --- | 8.0 | 4.5 | --- |
| ArC---------- Arundel-Cantuche | --- | --- | 5.5 | --- | --- | --- | --- |
| ArF. Arundel-Cantuche | | | | | | | |
| BaA---------- Bama | 6.0 | 10.0 | 8.5 | --- | --- | 5.0 | --- |
| BaB---------- Bama | 5.5 | 9.5 | 8.0 | --- | --- | 4.5 | --- |
| BeB---------- Beatrice | 4.0 | 7.0 | 6.0 | --- | 7.0 | 4.5 | --- |
| BeC2---------- Beatrice | 3.5 | 6.0 | 5.5 | --- | --- | 4.0 | --- |
| BgB---------- Bigbee | 4.0 | 7.0 | 7.0 | --- | --- | 4.5 | --- |
| BrB---------- Brantley | 4.5 | 8.0 | 7.0 | 6.0 | 4.5 | 4.0 | --- |
| BtF2. Brantley | | | | | | | |
| CaA---------- Cahaba | 6.0 | 10.0 | 8.5 | --- | --- | 5.0 | --- |
| CbA---------- Canton Bend | 5.5 | 9.0 | 9.0 | --- | --- | 5.0 | --- |
| ChA---------- Chrysler | 5.5 | 10.0 | 8.5 | --- | --- | 4.5 | --- |
| CoA---------- Congaree | 6.0 | 9.5 | 8.5 | --- | --- | 5.0 | --- |
| DwC---------- Demopolis-Watsonia | --- | --- | --- | 3.0 | --- | --- | 3.0 |
| EsA---------- Escambia | --- | --- | 8.0 | --- | --- | --- | --- |

See footnotes at end of table.

Table 7.--Yields per Acre of Pasture and Hay--Continued

| Soil name and map symbol | Improved bermudagrass hay | Improved bermudagrass | Bahiagrass | Tall fescue | Dallisgrass-clover | Cool-season annuals | Johnsongrass hay |
|---|---|---|---|---|---|---|---|
| | Tons | AUM* | AUM* | AUM* | AUM* | AUM* | Tons |
| FrA---------- Freest | --- | 9.0 | 9.0 | 7.0 | 8.0 | 4.5 | --- |
| FrB---------- Freest | 4.0 | 8.0 | 8.0 | 7.0 | 7.5 | 4.0 | --- |
| HaB---------- Halso | 4.0 | 7.0 | 6.0 | --- | --- | 4.5 | --- |
| HbD2. Halso | | | | | | | |
| HoA---------- Houlka | --- | --- | --- | 6.5 | 6.0 | --- | 4.5 |
| IaA---------- Izagora | 4.5 | 8.0 | 8.0 | 7.0 | 8.0 | 4.5 | --- |
| IjB---------- Izagora-Jedburg | 4.0 | 8.0 | 7.0 | 6.5 | 8.0 | 4.0 | --- |
| KpD2---------- Kipling | --- | --- | --- | 6.0 | 7.0 | --- | 5.0 |
| LbA---------- Lenoir | --- | --- | --- | --- | 7.5 | --- | --- |
| LdA---------- Lucedale | 6.0 | 10.0 | 8.5 | --- | --- | 5.0 | --- |
| LvB---------- Luverne | 4.5 | 9.5 | 8.5 | --- | --- | 4.5 | --- |
| LvD2---------- Luverne | 4.0 | 8.0 | 7.0 | --- | --- | 4.0 | --- |
| LvF. Luverne | | | | | | | |
| MaA---------- Malbis | 6.0 | 10.0 | 9.0 | --- | --- | 5.0 | --- |
| MbB---------- Malbis | 5.5 | 9.5 | 8.5 | --- | --- | 4.5 | --- |
| MbC---------- Malbis | 5.0 | 9.0 | 8.0 | --- | --- | 4.0 | --- |
| MKA---------- Mooreville, Mantachie, and Kinston | --- | --- | --- | --- | 6.0 | --- | --- |
| OkB---------- Oktibbeha | --- | --- | --- | 8.0 | 7.5 | --- | 5.0 |
| OtE2. Oktibbeha-Brantley | | | | | | | |

See footnotes at end of table.

Table 7.--Yields per Acre of Pasture and Hay--Continued

| Soil name and map symbol | Improved bermudagrass hay | Improved bermudagrass | Bahiagrass | Tall fescue | Dallisgrass-clover | Cool-season annuals | Johnsongrass hay |
|---|---|---|---|---|---|---|---|
| | Tons | AUM* | AUM* | AUM* | AUM* | AUM* | Tons |
| Pt**. Pits | | | | | | | |
| PvA---------- Poarch | 5.5 | 9.0 | 9.5 | --- | --- | 5.0 | --- |
| RvA---------- Riverview | 7.0 | 10.0 | 9.0 | --- | 7.0 | 5.0 | 5.0 |
| SaF. Saffell-Smithdale-Luverne | | | | | | | |
| SeB2---------- Searcy | 4.5 | 8.0 | 7.0 | 6.0 | 4.5 | 4.0 | --- |
| SmB---------- Smithdale-Boykin | 5.0 | 9.0 | 8.0 | --- | --- | 5.0 | --- |
| SnA---------- Sucarnoochee | --- | --- | --- | 8.5 | 8.0 | --- | 4.5 |
| SpE2---------- Sumter-Demopolis | --- | --- | --- | 3.0 | --- | --- | --- |
| SuE3**. Sumter-Gullied land | | | | | | | |
| UbC**. Udorthents-Urban land | | | | | | | |
| UnA. Una | | | | | | | |
| UuB---------- Urbo-Mooreville-Una | --- | --- | --- | 5.5 | 5.0 | --- | --- |
| VaA---------- Vaiden | --- | --- | --- | 8.5 | 7.0 | --- | 5.0 |
| VaB---------- Vaiden | --- | --- | --- | 8.0 | 6.5 | --- | 4.5 |
| WcB---------- Wilcox | --- | --- | --- | 8.0 | 6.5 | --- | 4.5 |
| WcD2---------- Wilcox | --- | --- | --- | 6.0 | --- | --- | --- |

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 8.--Woodland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Plant competition | Potential productivity: Common trees | Site index | Volume* | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|
| AnA, AnB Annemaine | 9W | Slight | Moderate | Slight | Severe | Loblolly pine | 90 | 2.2 | Loblolly pine, yellow-poplar, sweetgum, American sycamore, cherrybark oak, water oak, Shumard oak. |
| | | | | | | Shortleaf pine | 80 | --- | |
| | | | | | | Yellow-poplar | 85 | --- | |
| | | | | | | Sweetgum | 95 | --- | |
| | | | | | | American sycamore | 90 | --- | |
| | | | | | | Water oak | 90 | --- | |
| | | | | | | Willow oak | 90 | --- | |
| ArC**: | | | | | | | | | |
| Arundel | 8C | Slight | Moderate | Moderate | Moderate | Loblolly pine | 85 | 2.1 | Loblolly pine. |
| | | | | | | Shortleaf pine | 70 | --- | |
| Cantuche | 8D | Slight | Severe | Severe | Moderate | Loblolly pine | 80 | 1.8 | Loblolly pine, longleaf pine. |
| | | | | | | Shortleaf pine | 65 | --- | |
| | | | | | | Longleaf pine | 65 | --- | |
| ArF**: | | | | | | | | | |
| Arundel | 8R | Moderate | Moderate | Moderate | Moderate | Loblolly pine | 85 | 2.1 | Loblolly pine. |
| | | | | | | Shortleaf pine | 70 | --- | |
| Cantuche | 8R | Slight | Severe | Severe | Moderate | Loblolly pine | 80 | 1.8 | Loblolly pine, longleaf pine. |
| | | | | | | Shortleaf pine | 65 | --- | |
| | | | | | | Longleaf pine | 65 | --- | |
| BaA, BaB Bama | 9A | Slight | Slight | Slight | Moderate | Loblolly pine | 90 | 2.2 | Loblolly pine. |
| | | | | | | Shortleaf pine | 80 | --- | |
| BeB, BeC2 Beatrice | 9C | Slight | Moderate | Slight | Severe | Loblolly pine | 90 | 2.2 | Loblolly pine. |
| | | | | | | Shortleaf pine | 80 | --- | |
| | | | | | | Water oak | --- | --- | |
| | | | | | | Sweetgum | --- | --- | |
| BgB Bigbee | 7S | Slight | Moderate | Moderate | Slight | Loblolly pine | 75 | 1.6 | Loblolly pine, longleaf pine. |
| | | | | | | Longleaf pine | 65 | --- | |
| BrB Brantley | 9C | Slight | Slight | Slight | Moderate | Loblolly pine | 90 | 2.2 | Loblolly pine. |
| | | | | | | Shortleaf pine | 80 | --- | |
| BtF2 Brantley | 8R | Moderate | Moderate | Slight | Moderate | Loblolly pine | 85 | 2.1 | Loblolly pine. |
| | | | | | | Shortleaf pine | 75 | --- | |
| CaA Cahaba | 10A | Slight | Slight | Slight | Severe | Loblolly pine | 95 | 2.5 | Loblolly pine, sweetgum, water oak, cherrybark oak, Shumard oak, yellow-poplar, American sycamore. |
| | | | | | | Shortleaf pine | 85 | --- | |
| | | | | | | Yellow-poplar | 105 | --- | |
| | | | | | | Sweetgum | 95 | --- | |
| | | | | | | Southern red oak | --- | --- | |
| | | | | | | Water oak | 95 | --- | |
| | | | | | | Willow oak | 95 | --- | |

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Plant competition | Potential productivity: Common trees | Site index | Volume* | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|
| CbA---------- Canton Bend | 9A | Slight | Slight | Slight | Moderate | Loblolly pine------- | 90 | 2.2 | Loblolly pine, |
| | | | | | | Yellow-poplar------- | 90 | --- | yellow-poplar, |
| | | | | | | Shortleaf pine------ | 80 | --- | sweetgum, |
| | | | | | | Sweetgum---------- | 90 | --- | water oak, |
| | | | | | | Water oak---------- | 85 | --- | cherrybark oak, |
| | | | | | | Willow oak---------- | 85 | --- | Shumard oak, |
| | | | | | | | | | American |
| | | | | | | | | | sycamore. |
| ChA---------- Chrysler | 9W | Slight | Moderate | Slight | Severe | Loblolly pine------- | 90 | 2.2 | Loblolly pine, |
| | | | | | | Shortleaf pine------ | 90 | --- | sweetgum, |
| | | | | | | Sweetgum---------- | 95 | --- | water oak, |
| | | | | | | Water oak---------- | 85 | --- | yellow-poplar, |
| | | | | | | Yellow-poplar------- | 90 | --- | Shumard oak, |
| | | | | | | American sycamore--- | 85 | --- | cherrybark oak. |
| | | | | | | Cherrybark oak------ | 95 | --- | |
| | | | | | | Willow oak---------- | 85 | --- | |
| CoA---------- Congaree | 9A | Slight | Slight | Slight | Moderate | Loblolly pine------- | 90 | 2.2 | Loblolly pine, |
| | | | | | | Sweetgum---------- | 110 | --- | sweetgum, |
| | | | | | | Yellow-poplar------- | 110 | --- | yellow-poplar, |
| | | | | | | Cherrybark oak------ | 110 | --- | American |
| | | | | | | American sycamore--- | 100 | --- | sycamore, |
| | | | | | | Water oak---------- | 100 | --- | cherrybark oak, |
| | | | | | | Willow oak---------- | 100 | --- | water oak, |
| | | | | | | Green ash---------- | 95 | --- | Shumard oak, |
| | | | | | | | | | green ash. |
| DwC**: | | | | | | | | | |
| Demopolis------ | 3D | Slight | Slight | Severe | Slight | Eastern redcedar---- | 40 | * | Eastern |
| | | | | | | | | | redcedar. |
| Watsonia------- | 7D | Slight | Moderate | Severe | Moderate | Loblolly pine------- | 75 | 1.6 | Loblolly pine. |
| | | | | | | Eastern redcedar---- | 40 | --- | |
| EsA---------- Escambia | 10W | Slight | Moderate | Slight | Severe | Loblolly pine------- | 95 | 2.5 | Loblolly pine, |
| | | | | | | Sweetgum---------- | 90 | --- | cherrybark oak, |
| | | | | | | Water oak---------- | 90 | --- | Shumard oak, |
| | | | | | | Willow oak---------- | 90 | --- | sweetgum, |
| | | | | | | | | | water oak. |
| FrA, FrB-------- Freest | 9A | Slight | Slight | Slight | Severe | Loblolly pine------- | 95 | 2.5 | Loblolly pine. |
| | | | | | | Shortleaf pine------ | 80 | --- | |
| | | | | | | Water oak---------- | --- | --- | |
| | | | | | | Sweetgum---------- | --- | --- | |
| HaB, HbD2------- Halso | 8C | Slight | Moderate | Slight | Moderate | Loblolly pine------- | 85 | 2.1 | Loblolly pine. |
| | | | | | | Shortleaf pine------ | 75 | --- | |
| | | | | | | Water oak---------- | --- | --- | |
| | | | | | | Sweetgum---------- | --- | --- | |

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Plant competition | Potential productivity: Common trees | Site index | Volume* | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|
| HoA---------- Houlka | 6W | Slight | Moderate | Moderate | Moderate | Water oak---------- | 95 | 1.0 | Water oak, |
| | | | | | | Sweetgum---------- | 95 | --- | sweetgum, |
| | | | | | | Green ash---------- | 80 | --- | cherrybark oak, |
| | | | | | | Loblolly pine------- | 95 | --- | green ash, |
| | | | | | | Cherrybark oak------ | 95 | --- | Nuttall oak, |
| | | | | | | Nuttall oak--------- | 90 | --- | Shumard oak. |
| | | | | | | Shumard oak--------- | 90 | --- | |
| | | | | | | American sycamore--- | 95 | --- | |
| | | | | | | Willow oak---------- | 90 | --- | |
| IaA---------- Izagora | 10W | Slight | Moderate | Slight | Severe | Loblolly pine------- | 95 | 2.5 | Loblolly pine, |
| | | | | | | Sweetgum---------- | 100 | --- | sweetgum, |
| | | | | | | Yellow-poplar------- | 95 | --- | yellow-poplar, |
| | | | | | | Water oak---------- | 95 | --- | water oak, |
| | | | | | | Willow oak---------- | 95 | --- | cherrybark oak, |
| | | | | | | Cherrybark oak------ | 100 | --- | Shumard oak, |
| | | | | | | | | | American |
| | | | | | | | | | sycamore. |
| IjB**: | | | | | | | | | |
| Izagora-------- | 10W | Slight | Moderate | Slight | Severe | Loblolly pine------- | 95 | 2.5 | Loblolly pine, |
| | | | | | | Sweetgum---------- | 100 | --- | sweetgum, |
| | | | | | | Yellow-poplar------- | 95 | --- | yellow-poplar, |
| | | | | | | Water oak---------- | 95 | --- | water oak, |
| | | | | | | Willow oak---------- | 95 | --- | cherrybark oak, |
| | | | | | | Cherrybark oak------ | 100 | --- | Shumard oak, |
| | | | | | | | | | American |
| | | | | | | | | | sycamore. |
| Jedburg-------- | 8W | Slight | Severe | Moderate | Severe | Loblolly pine------- | 85 | 2.1 | Loblolly pine, |
| | | | | | | Yellow-poplar------- | 85 | --- | cherrybark oak, |
| | | | | | | Sweetgum---------- | 90 | --- | Shumard oak, |
| | | | | | | Swamp chestnut oak-- | 80 | --- | sweetgum, |
| | | | | | | Water oak---------- | 80 | --- | water oak, |
| | | | | | | | | | yellow-poplar. |
| KpD2---------- Kipling | 8C | Slight | Moderate | Moderate | Moderate | Loblolly pine------- | 85 | 2.1 | Loblolly pine. |
| | | | | | | Sweetgum---------- | 85 | --- | |
| | | | | | | Water oak---------- | 70 | --- | |
| LbA---------- Lenoir | 8W | Slight | Moderate | Slight | Severe | Loblolly pine------- | 85 | 2.1 | Loblolly pine, |
| | | | | | | Water oak---------- | 75 | --- | water oak, |
| | | | | | | Sweetgum---------- | 80 | --- | cherrybark oak, |
| | | | | | | Willow oak---------- | 75 | --- | Shumard oak, |
| | | | | | | Red maple---------- | --- | --- | sweetgum. |
| | | | | | | Blackgum---------- | --- | --- | |
| LdA---------- Lucedale | 9A | Slight | Slight | Slight | Moderate | Loblolly pine------- | 90 | 2.2 | Loblolly pine. |
| | | | | | | Shortleaf pine------ | --- | --- | |
| LvB, LvD2------- Luverne | 9C | Slight | Moderate | Slight | Moderate | Loblolly pine------- | 90 | 2.2 | Loblolly pine. |
| | | | | | | Shortleaf pine------ | 80 | --- | |
| LvF---------- Luverne | 9R | Severe | Severe | Moderate | Moderate | Loblolly pine------- | 90 | 2.2 | Loblolly pine. |
| | | | | | | Shortleaf pine------ | 80 | --- | |
| MaA, MbB, MbC--- Malbis | 10A | Slight | Slight | Slight | Severe | Loblolly pine------- | 95 | 2.5 | Loblolly pine. |
| | | | | | | Shortleaf pine------ | 90 | --- | |

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Plant competition | Potential productivity: Common trees | Site index | Volume* | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|
| MKA**: | | | | | | | | | |
| Mooreville | 10W | Slight | Moderate | Moderate | Severe | Loblolly pine | 100 | 2.6 | Cherrybark oak, |
| | | | | | | Cherrybark oak | 100 | --- | green ash, |
| | | | | | | Green ash | 80 | --- | loblolly pine, |
| | | | | | | Sweetgum | 100 | --- | sweetgum, |
| | | | | | | Yellow-poplar | 100 | --- | yellow-poplar, |
| | | | | | | Water oak | 100 | --- | water oak, |
| | | | | | | Willow oak | 100 | --- | Shumard oak, |
| | | | | | | Swamp chestnut oak | 90 | --- | American chestnut. |
| Mantachie | 10W | Slight | Severe | Severe | Severe | Loblolly pine | 100 | 2.6 | Loblolly pine, |
| | | | | | | Cherrybark oak | 100 | --- | cherrybark oak, |
| | | | | | | Green ash | 80 | --- | green ash, |
| | | | | | | Sweetgum | 95 | --- | sweetgum, |
| | | | | | | Yellow-poplar | 95 | --- | yellow-poplar, |
| | | | | | | | | | water oak, |
| | | | | | | | | | Shumard oak. |
| Kinston | 8W | Slight | Severe | Moderate | Severe | Water oak | 90 | 1.0 | Loblolly pine, |
| | | | | | | Loblolly pine | 90 | --- | cherrybark oak, |
| | | | | | | Sweetgum | 85 | --- | green ash, |
| | | | | | | Cherrybark oak | 90 | --- | sweetgum, |
| | | | | | | Willow oak | 80 | --- | Shumard oak, |
| | | | | | | Green ash | 80 | --- | water oak. |
| OkB | 9C | Slight | Moderate | Moderate | Moderate | Loblolly pine | 90 | 2.2 | Loblolly pine. |
| Oktibbeha | | | | | | Shortleaf pine | 80 | --- | |
| | | | | | | Eastern redcedar | --- | --- | |
| | | | | | | Southern red oak | --- | --- | |
| OtE2**: | | | | | | | | | |
| Oktibbeha | 9R | Slight | Moderate | Moderate | Moderate | Loblolly pine | 90 | 2.2 | Loblolly pine. |
| | | | | | | Shortleaf pine | 80 | --- | |
| | | | | | | Eastern redcedar | --- | --- | |
| | | | | | | Southern red oak | --- | --- | |
| Brantley | 9R | Slight | Slight | Slight | Moderate | Loblolly pine | 90 | 2.2 | Loblolly pine. |
| | | | | | | Shortleaf pine | 70 | --- | |
| PvA | 9A | Slight | Slight | Slight | Moderate | Loblolly pine | 90 | 2.2 | Loblolly pine, |
| Poarch | | | | | | Longleaf pine | 80 | --- | longleaf pine. |
| RvA | 11A | Slight | Slight | Slight | Severe | Loblolly pine | 90 | 2.2 | Loblolly pine, |
| Riverview | | | | | | Yellow-poplar | 110 | --- | yellow-poplar, |
| | | | | | | Sweetgum | 110 | --- | sweetgum, |
| | | | | | | Water oak | 100 | --- | eastern |
| | | | | | | | | | cottonwood, |
| | | | | | | | | | American |
| | | | | | | | | | sycamore, |
| | | | | | | | | | Shumard oak. |
| SaF**: | | | | | | | | | |
| Saffell | 6R | Moderate | Moderate | Moderate | Slight | Loblolly pine | 70 | 1.4 | Loblolly pine, |
| | | | | | | Longleaf pine | 60 | --- | longleaf pine. |
| Smithdale | 8R | Moderate | Moderate | Moderate | Moderate | Loblolly pine | 85 | 2.1 | Loblolly pine. |
| | | | | | | Shortleaf pine | 70 | --- | |

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Plant competition | Potential productivity: Common trees | Site index | Volume* | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|
| SaF**: | | | | | | | | | |
| Luverne | 9R | Moderate | Moderate | Moderate | Moderate | Loblolly pine | 90 | 2.2 | Loblolly pine. |
| | | | | | | Shortleaf pine | 80 | --- | |
| SeB2 | 12C | Slight | Moderate | Slight | Severe | Loblolly pine | 105 | 2.9 | Loblolly pine. |
| Searcy | | | | | | Shortleaf pine | 95 | --- | |
| | | | | | | Sweetgum | --- | --- | |
| | | | | | | Water oak | 90 | --- | |
| SmB**: | | | | | | | | | |
| Smithdale | 9A | Slight | Slight | Slight | Moderate | Loblolly pine | 85 | 2.1 | Loblolly pine, |
| | | | | | | Shortleaf pine | 70 | --- | longleaf pine. |
| Boykin | 8S | Slight | Moderate | Severe | Moderate | Loblolly pine | 85 | 2.1 | Loblolly pine, |
| | | | | | | Longleaf pine | 75 | --- | longleaf pine. |
| SnA | 6W | Slight | Moderate | Severe | Severe | Water oak | 95 | 1.0 | American |
| Sucarnoochee | | | | | | Eastern cottonwood | 110 | --- | sycamore, |
| | | | | | | American sycamore | 100 | --- | yellow-poplar, |
| | | | | | | Yellow-poplar | 85 | --- | sweetgum, |
| | | | | | | Sweetgum | 100 | --- | Nuttall oak, |
| | | | | | | Green ash | 85 | --- | water oak, |
| | | | | | | Swamp chestnut oak | 85 | --- | cherrybark oak, |
| | | | | | | | | | green ash. |
| SpE2**: | | | | | | | | | |
| Sumter | 3R | Moderate | Severe | Moderate | Moderate | Eastern redcedar | 40 | * | Eastern |
| | | | | | | | | | redcedar. |
| Demopolis | 3R | Moderate | Moderate | Severe | Moderate | Eastern redcedar | 40 | * | Eastern |
| | | | | | | | | | redcedar. |
| SuE3**: | | | | | | | | | |
| Sumter | 3R | Severe | Severe | Severe | Moderate | Eastern redcedar | 40 | * | Eastern |
| | | | | | | | | | redcedar. |
| Gullied land. | | | | | | | | | |
| UbC**. | | | | | | | | | |
| Udorthents | | | | | | | | | |
| Urban land | | | | | | | | | |
| UnA | 4W | Slight | Severe | Severe | Severe | Baldcypress | 80 | --- | Baldcypress, |
| Una | | | | | | Water tupelo | 70 | --- | water tupelo, |
| | | | | | | Swamp tupelo | --- | --- | swamp tupelo. |
| UuB**: | | | | | | | | | |
| Urbo | 10W | Slight | Moderate | Severe | Moderate | Loblolly pine | 95 | 2.5 | Sweetgum, |
| | | | | | | Cherrybark oak | 95 | --- | loblolly pine, |
| | | | | | | Green ash | 85 | --- | American |
| | | | | | | Sweetgum | 95 | --- | sycamore, |
| | | | | | | American sycamore | 90 | --- | water oak, |
| | | | | | | Water oak | 90 | --- | cherrybark oak, |
| | | | | | | Willow oak | 90 | --- | green ash. |

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Plant competition | Potential productivity: Common trees | Site index | Volume* | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|
| UuB**: | | | | | | | | | |
| Mooreville----- | 12W | Slight | Moderate | Moderate | Severe | Loblolly pine------- | 110 | 3.0 | Cherrybark oak, |
| | | | | | | Cherrybark oak------ | 100 | --- | green ash, |
| | | | | | | Green ash---------- | 80 | --- | loblolly pine, |
| | | | | | | Sweetgum---------- | 105 | --- | sweetgum, |
| | | | | | | Yellow-poplar------- | 100 | --- | yellow-poplar, |
| | | | | | | Water oak---------- | 100 | --- | water oak, |
| | | | | | | Willow oak---------- | 100 | --- | Shumard oak, |
| | | | | | | Swamp chestnut oak-- | 90 | --- | American |
| | | | | | | Green ash---------- | 85 | --- | sycamore. |
| Una---------- | 4W | Slight | Severe | Severe | Severe | Baldcypress--------- | 80 | --- | Baldcypress, |
| | | | | | | Water tupelo-------- | 70 | --- | water tupelo, |
| | | | | | | Swamp tupelo-------- | --- | --- | swamp tupelo. |
| VaA, VaB-------- Vaiden | 8C | Slight | Moderate | Severe | Moderate | Loblolly pine------- | 80 | 2.1 | Loblolly pine. |
| | | | | | | Shortleaf pine------ | 65 | --- | |
| | | | | | | Eastern redcedar---- | 45 | --- | |
| WcB, WcD2------- Wilcox | 9C | Slight | Moderate | Moderate | Moderate | Loblolly pine------- | 90 | 2.2 | Loblolly pine. |
| | | | | | | Shortleaf pine------ | 80 | --- | |
| | | | | | | Sweetgum---------- | --- | --- | |
| | | | | | | Water oak---------- | --- | --- | |

* Volume is expressed as the average growth in cords per acre per year calculated at the age of 25 years for fully stocked, unmanaged stands of loblolly pine and at the age of 30 years for fully stocked, unmanaged stands of oak and gum. Volume for eastern redcedar is 140 board feet per acre per year calculated at the age of 40 years for fully stocked, natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 9.--Recreational Development

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| AnA Annemaine | Severe: flooding. | Moderate: wetness, percs slowly. | Moderate: wetness, flooding. | Moderate: wetness. | Moderate: wetness, flooding. |
| AnB Annemaine | Severe: flooding. | Moderate: wetness, percs slowly. | Moderate: slope, wetness, flooding. | Moderate: wetness. | Moderate: wetness, flooding. |
| ArC*: | | | | | |
| Arundel | Severe: percs slowly. | Severe: percs slowly. | Severe: percs slowly. | Severe: erodes easily. | Moderate: large stones, depth to rock. |
| Cantuche | Severe: depth to rock. | Severe: depth to rock. | Severe: small stones, depth to rock. | Moderate: large stones. | Severe: large stones, droughty. |
| ArF*: | | | | | |
| Arundel | Severe: slope, percs slowly. | Severe: slope, percs slowly. | Severe: slope, percs slowly. | Severe: erodes easily. | Severe: slope. |
| Cantuche | Severe: slope, depth to rock. | Severe: slope, depth to rock. | Severe: slope, small stones, depth to rock. | Severe: large stones, slope. | Severe: large stones, slope, droughty. |
| BaA Bama | Slight | Slight | Slight | Slight | Slight. |
| BaB Bama | Slight | Slight | Moderate: slope. | Slight | Slight. |
| BeB Beatrice | Severe: percs slowly. | Severe: percs slowly. | Severe: percs slowly. | Severe: erodes easily. | Slight. |
| BeC2 Beatrice | Severe: percs slowly. | Severe: percs slowly. | Severe: slope, percs slowly. | Severe: erodes easily. | Slight. |
| BgB Bigbee | Severe: flooding, too sandy. | Severe: too sandy. | Severe: too sandy. | Severe: too sandy. | Moderate: droughty, flooding, too sandy. |
| BrB Brantley | Moderate: percs slowly. | Moderate: percs slowly. | Moderate: slope, percs slowly. | Slight | Slight. |
| BtF2 Brantley | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| CaA Cahaba | Severe: flooding. | Slight | Slight | Slight | Slight. |

See footnote at end of table.

Table 9.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| CbA---------- Canton Bend | Severe: flooding. | Moderate: percs slowly. | Moderate: flooding, percs slowly. | Slight---------- | Moderate: flooding. |
| ChA---------- Chrysler | Severe: flooding. | Moderate: wetness, percs slowly. | Moderate: wetness, flooding. | Moderate: wetness. | Moderate: wetness, flooding. |
| CoA---------- Congaree | Severe: flooding. | Moderate: flooding. | Severe: flooding. | Moderate: flooding. | Severe: flooding. |
| DwC*: | | | | | |
| Demopolis---------- | Severe: depth to rock. | Severe: depth to rock. | Severe: depth to rock. | Severe: erodes easily. | Severe: depth to rock. |
| Watsonia---------- | Severe: percs slowly, too clayey. | Severe: too clayey, percs slowly. | Severe: too clayey, depth to rock, percs slowly. | Severe: too clayey. | Severe: depth to rock, too clayey. |
| EsA---------- Escambia | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: wetness. | Moderate: wetness. |
| FrA---------- Freest | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: wetness. | Moderate: wetness. |
| FrB---------- Freest | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: slope, wetness, percs slowly. | Moderate: wetness. | Moderate: wetness. |
| HaB---------- Halso | Severe: percs slowly. | Severe: percs slowly. | Severe: percs slowly. | Slight---------- | Slight. |
| HbD2---------- Halso | Severe: percs slowly. | Severe: percs slowly. | Severe: percs slowly. | Slight---------- | Moderate: slope. |
| HoA---------- Houlka | Severe: flooding, wetness, percs slowly. | Severe: wetness, percs slowly. | Severe: wetness, flooding. | Moderate: wetness, flooding. | Severe: flooding. |
| IaA---------- Izagora | Severe: flooding. | Moderate: wetness. | Moderate: wetness, flooding. | Slight---------- | Moderate: flooding. |
| IjB*: | | | | | |
| Izagora---------- | Severe: flooding. | Moderate: wetness. | Moderate: wetness, flooding. | Slight---------- | Moderate: flooding. |
| Jedburg---------- | Severe: flooding, wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |

See footnote at end of table.

Table 9.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| KpD2 Kipling | Moderate: slope, wetness, percs slowly. | Moderate: slope, wetness, percs slowly. | Severe: slope. | Moderate: wetness. | Moderate: wetness, slope. |
| LbA Lenoir | Severe: flooding, wetness, percs slowly. | Severe: wetness, percs slowly. | Severe: wetness. | Moderate: wetness. | Severe: wetness. |
| LdA Lucedale | Slight | Slight | Slight | Slight | Slight. |
| LvB Luverne | Moderate: percs slowly. | Moderate: percs slowly. | Moderate: slope, percs slowly. | Slight | Slight. |
| LvD2 Luverne | Moderate: slope, percs slowly. | Moderate: slope, percs slowly. | Severe: slope. | Slight | Moderate: slope. |
| LvF Luverne | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| MaA Malbis | Slight | Slight | Slight | Slight | Slight. |
| MbB Malbis | Slight | Slight | Moderate: slope. | Slight | Slight. |
| MbC Malbis | Slight | Slight | Severe: slope. | Slight | Slight. |
| MKA*: | | | | | |
| Mooreville | Severe: flooding. | Moderate: flooding, wetness. | Severe: flooding. | Moderate: wetness, flooding. | Severe: flooding. |
| Mantachie | Severe: flooding, wetness. | Moderate: flooding, wetness. | Severe: wetness, flooding. | Moderate: wetness, flooding. | Severe: flooding. |
| Kinston | Severe: flooding, wetness. | Severe: wetness. | Severe: wetness, flooding. | Severe: wetness. | Severe: wetness, flooding. |
| OkB Oktibbeha | Severe: too clayey, percs slowly. | Severe: too clayey, percs slowly. | Severe: too clayey, percs slowly. | Severe: too clayey. | Severe: too clayey. |
| OtE2*: | | | | | |
| Oktibbeha | Severe: slope, percs slowly. | Severe: slope, percs slowly. | Severe: slope, percs slowly. | Severe: too clayey, slope. | Severe: slope. |
| Brantley | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Pt* Pits | Variable | Variable | Variable | Variable | Variable. |

See footnote at end of table.

Table 9.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| PvA Poarch | Slight | Slight | Slight | Slight | Slight. |
| RvA Riverview | Severe: flooding. | Slight | Moderate: flooding. | Slight | Moderate: flooding. |
| SaF*: | | | | | |
| Saffell | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Moderate: slope. | Severe: slope. |
| Smithdale | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope. | Severe: slope. |
| Luverne | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope. | Severe: slope. |
| SeB2 Searcy | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: slope, wetness, percs slowly. | Slight | Slight. |
| SmB*: | | | | | |
| Smithdale | Slight | Slight | Moderate: slope. | Slight | Slight. |
| Boykin | Slight | Slight | Moderate: slope. | Slight | Moderate: droughty. |
| SnA Sucarnoochee | Severe: flooding, wetness, percs slowly. | Severe: wetness, percs slowly. | Severe: wetness, flooding. | Severe: wetness. | Severe: wetness, flooding. |
| SpE2*: | | | | | |
| Sumter | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| Demopolis | Severe: slope, depth to rock. | Severe: slope, depth to rock. | Severe: slope, depth to rock. | Severe: erodes easily. | Severe: slope, depth to rock. |
| SuE3*: | | | | | |
| Sumter | Severe: slope, too clayey. | Severe: slope, too clayey. | Severe: slope, too clayey. | Severe: too clayey, erodes easily. | Severe: slope, too clayey. |
| Gullied land | Variable | Variable | Variable | Variable | Variable. |
| UbC*: | | | | | |
| Udorthents | Variable | Variable | Variable | Variable | Variable. |
| Urban land | Variable | Variable | Variable | Variable | Variable. |
| UnA Una | Severe: flooding, ponding, percs slowly. | Severe: ponding, too clayey, percs slowly. | Severe: too clayey, ponding, flooding. | Severe: ponding, too clayey. | Severe: ponding, flooding, too clayey. |

See footnote at end of table.

Table 9.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| UuB*: | | | | | |
| Urbo | Severe: flooding, wetness, percs slowly. | Severe: percs slowly. | Severe: wetness, flooding. | Moderate: wetness, flooding. | Severe: flooding. |
| Mooreville | Severe: flooding. | Moderate: flooding, wetness. | Severe: flooding. | Moderate: wetness, flooding. | Severe: flooding. |
| Una | Severe: flooding, ponding, percs slowly. | Severe: ponding, too clayey, percs slowly. | Severe: too clayey, ponding, flooding. | Severe: ponding, too clayey. | Severe: ponding, flooding, too clayey. |
| VaA, VaB Vaiden | Severe: wetness, percs slowly. | Severe: too clayey, percs slowly. | Severe: too clayey, wetness. | Severe: too clayey. | Severe: too clayey. |
| WcB Wilcox | Severe: percs slowly, too clayey. | Severe: too clayey, percs slowly. | Severe: too clayey, percs slowly. | Severe: too clayey. | Severe: too clayey. |
| WcD2 Wilcox | Severe: percs slowly, too clayey. | Severe: too clayey, percs slowly. | Severe: slope, too clayey, percs slowly. | Severe: too clayey. | Severe: too clayey. |

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 10.--Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

| Soil name and map symbol | Potential for habitat elements | | | | | | | Potential as habitat for-- | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Grain and seed crops | Grasses and legumes | Wild herbaceous plants | Hardwood trees | Coniferous plants | Wetland plants | Shallow water areas | Openland wildlife | Woodland wildlife | Wetland wildlife |
| AnA---------- Annemaine | Good | Good | Good | Good | Good | Good | Good | Good | Good | Poor. |
| AnB---------- Annemaine | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |
| ArC*: | | | | | | | | | | |
| Arundel---------- | Fair | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |
| Cantuche---------- | Very poor. | Poor | Poor | Very poor. | Very poor. | Very poor. | Very poor. | Poor | Very poor. | Very poor. |
| ArF*: | | | | | | | | | | |
| Arundel---------- | Poor | Fair | Good | Good | Good | Very poor. | Very poor. | Fair | Good | Very poor. |
| Cantuche---------- | Very poor. | Poor | Poor | Very poor. | Very poor. | Very poor. | Very poor. | Poor | Very poor. | Very poor. |
| BaA---------- Bama | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |
| BaB---------- Bama | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |
| BeB---------- Beatrice | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Poor. |
| BeC2---------- Beatrice | Fair | Good | Good | Good | Good | Very poor. | Very poor. | Good | Good | Very poor. |
| BgB---------- Bigbee | Poor | Fair | Fair | Poor | Fair | Very poor. | Very poor. | Fair | Poor | Very poor. |
| BrB---------- Brantley | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |
| BtF2---------- Brantley | Poor | Fair | Good | Good | Good | Poor | Very poor. | Fair | Good | Very poor. |
| CaA---------- Cahaba | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |
| CbA---------- Canton Bend | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |
| ChA---------- Chrysler | Good | Good | Good | Good | Good | Fair | Fair | Good | Good | Fair. |
| CoA---------- Congaree | Good | Good | Good | Good | Good | Fair | Fair | Good | Good | Fair. |

See footnote at end of table.

Table 10.--Wildlife Habitat--Continued

| Soil name and map symbol | Potential for habitat elements | | | | | | | Potential as habitat for-- | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Grain and seed crops | Grasses and legumes | Wild herbaceous plants | Hardwood trees | Coniferous plants | Wetland plants | Shallow water areas | Openland wildlife | Woodland wildlife | Wetland wildlife |
| DwC*: | | | | | | | | | | |
| Demopolis | Poor | Poor | Poor | Poor | Poor | Very poor. | Very poor. | Poor | Poor | Very poor. |
| Watsonia | Poor | Poor | Poor | Poor | Poor | Poor | Poor | Poor | Fair | Poor. |
| EsA Escambia | Fair | Good | Good | Good | Good | Fair | Fair | Good | Good | Fair. |
| FrA Freest | Good | Good | Good | Good | Good | Poor | Poor | Good | Good | Poor. |
| FrB Freest | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Poor. |
| HaB Halso | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |
| HbD2 Halso | Fair | Good | Good | Good | Good | Very poor. | Very poor. | Good | Good | Very poor. |
| HoA Houlka | Poor | Fair | Fair | Good | Good | Fair | Good | Fair | Good | Fair. |
| IaA Izagora | Good | Good | Good | Good | Good | Poor | Poor | Good | Good | Poor. |
| IjB*: | | | | | | | | | | |
| Izagora | Good | Good | Good | Good | Good | Poor | Poor | Good | Good | Poor. |
| Jedburg | Good | Good | Good | Good | Good | Fair | Fair | Good | Good | Fair. |
| KpD2 Kipling | Fair | Good | Good | Good | Good | Very poor. | Very poor. | Good | Good | Very poor. |
| LbA Lenoir | Fair | Fair | Fair | Good | Good | Fair | Fair | Fair | Good | Fair. |
| LdA Lucedale | Good | Good | Good | Good | Good | Very poor. | Very poor. | Good | Good | Very poor. |
| LvB Luverne | Good | Good | Good | Good | Good | Very Poor. | Very poor. | Good | Good | Very poor. |
| LvD2 Luverne | Fair | Good | Good | Good | Good | Very poor. | Very poor. | Good | Good | Very poor. |
| LvF Luverne | Very poor. | Fair | Good | Good | Good | Very poor. | Very poor. | Fair | Good | Very poor. |
| MaA Malbis | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |
| MbB Malbis | Good | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |

See footnote at end of table.

Table 10.--Wildlife Habitat--Continued

| Soil name and map symbol | Potential for habitat elements: Grain and seed crops | Grasses and legumes | Wild herbaceous plants | Hardwood trees | Coniferous plants | Wetland plants | Shallow water areas | Potential as habitat for--: Openland wildlife | Woodland wildlife | Wetland wildlife |
|---|---|---|---|---|---|---|---|---|---|---|
| MbC---------- Malbis | Fair | Good | Good | Good | Good | Poor | Very poor. | Good | Good | Very poor. |
| MKA*: | | | | | | | | | | |
| Mooreville-------- | Poor | Fair | Fair | Good | Good | Poor | Poor | Fair | Good | Poor. |
| Mantachie--------- | Poor | Fair | Fair | Good | Good | Fair | Fair | Fair | Good | Fair. |
| Kinston---------- | Very poor. | Very poor. | Poor | Fair | Poor | Good | Fair | Poor | Poor | Fair. |
| OkB---------- Oktibbeha | Fair | Fair | Fair | Good | Good | Poor | Very poor. | Good | Good | Poor. |
| OtE2*: | | | | | | | | | | |
| Oktibbeha--------- | Very poor. | Fair | Fair | Good | Good | Very poor. | Very poor. | Poor | Good | Very poor. |
| Brantley---------- | Poor | Fair | Good | Good | Good | Poor | Very poor. | Fair | Good | Very poor. |
| Pt*---------- Pits | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. |
| PvA---------- Poarch | Good | Good | Good | Good | Good | Poor | Poor | Good | Good | Poor. |
| RvA---------- Riverview | Good | Good | Good | Good | Good | Poor | Poor | Good | Good | Poor. |
| SaF*: | | | | | | | | | | |
| Saffell---------- | Poor | Fair | Fair | Fair | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| Smithdale--------- | Poor | Fair | Good | Good | Good | Very poor. | Very poor. | Fair | Good | Very poor. |
| Luverne---------- | Poor | Fair | Good | Good | Good | Very poor. | Very poor. | Fair | Good | Very poor. |
| SeB2---------- Searcy | Good | Good | Good | Good | Good | Poor | Poor | Good | Good | Poor. |
| SmB*: | | | | | | | | | | |
| Smithdale--------- | Good | Good | Good | Good | Good | Very poor. | Very poor. | Good | Good | Very poor. |
| Boykin---------- | Poor | Fair | Good | Good | Good | Poor | Very poor. | Fair | Good | Very poor. |
| SnA---------- Sucarnoochee | Poor | Fair | Poor | Good | Poor | Fair | Fair | Poor | Fair | Fair. |

See footnote at end of table.

Table 10.--Wildlife Habitat--Continued

| Soil name and map symbol | Potential for habitat elements | | | | | | | Potential as habitat for-- | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Grain and seed crops | Grasses and legumes | Wild herbaceous plants | Hardwood trees | Coniferous plants | Wetland plants | Shallow water areas | Openland wildlife | Woodland wildlife | Wetland wildlife |
| SpE2*: | | | | | | | | | | |
| Sumter | Poor | Fair | Fair | Fair | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| Demopolis | Poor | Poor | Poor | Poor | Poor | Very poor. | Very poor. | Poor | Poor | Very poor. |
| SuE3*: | | | | | | | | | | |
| Sumter | Poor | Fair | Fair | Fair | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| Gullied land | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Poor. |
| UbC*: | | | | | | | | | | |
| Udorthents | Fair | Fair | Fair | Fair | Fair | Poor | Poor | Fair | Fair | Poor. |
| Urban land. | | | | | | | | | | |
| UnA Una | Poor | Very poor. | Very poor. | Poor | Poor | Good | Good | Very poor. | Very poor. | Good. |
| UuB*: | | | | | | | | | | |
| Urbo | Poor | Fair | Fair | Good | Good | Fair | Fair | Fair | Fair | Fair. |
| Mooreville | Poor | Fair | Fair | Good | Good | Poor | Poor | Fair | Good | Poor. |
| Una | Poor | Very poor. | Very poor. | Poor | Poor | Good | Good | Very poor. | Very poor. | Good. |
| VaA Vaiden | Fair | Fair | Fair | Good | Good | Poor | Fair | Fair | Good | Poor. |
| VaB Vaiden | Fair | Fair | Fair | Good | Good | Poor | Poor | Fair | Good | Poor. |
| WcB Wilcox | Fair | Good | Good | Good | Good | Fair | Poor | Good | Good | Poor. |
| WcD2 Wilcox | Poor | Fair | Good | Good | Good | Very poor. | Very poor. | Fair | Good | Very poor. |

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 11.--Building Site Development

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| AnA, AnB---------- Annemaine | Severe: wetness. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding. | Severe: low strength, flooding. | Moderate: wetness, flooding. |
| ArC*: | | | | | | |
| Arundel---------- | Moderate: depth to rock, too clayey. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell, low strength. | Moderate: large stones, depth to rock. |
| Cantuche--------- | Severe: depth to rock, large stones. | Severe: large stones. | Severe: depth to rock, large stones. | Severe: large stones. | Severe: large stones. | Severe: large stones, droughty. |
| ArF*: | | | | | | |
| Arundel---------- | Severe: slope. | Severe: shrink-swell, slope. | Severe: slope, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength, slope. | Severe: slope. |
| Cantuche--------- | Severe: depth to rock, large stones, slope. | Severe: slope, large stones. | Severe: depth to rock, slope, large stones. | Severe: slope, large stones. | Severe: slope, large stones. | Severe: large stones, slope, droughty. |
| BaA, BaB---------- Bama | Slight--------- | Slight--------- | Slight--------- | Slight--------- | Slight--------- | Slight. |
| BeB, BeC2--------- Beatrice | Moderate: too clayey. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: low strength, shrink-swell. | Slight. |
| BgB---------- Bigbee | Severe: cutbanks cave. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Moderate: droughty, flooding, too sandy. |
| BrB---------- Brantley | Moderate: too clayey. | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell. | Severe: low strength. | Slight. |
| BtF2---------- Brantley | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope. | Severe: slope. |
| CaA---------- Cahaba | Slight--------- | Severe: flooding. | Severe: flooding. | Severe: flooding. | Moderate: flooding. | Slight. |
| CbA---------- Canton Bend | Moderate: too clayey, flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: low strength, flooding. | Moderate: flooding. |
| ChA---------- Chrysler | Severe: wetness. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding. | Severe: low strength, flooding. | Moderate: wetness, flooding. |

See footnote at end of table.

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| CoA---------- Congaree | Moderate: wetness, flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. |
| DwC*: | | | | | | |
| Demopolis-------- | Severe: depth to rock. | Moderate: depth to rock. | Severe: depth to rock. | Moderate: slope, depth to rock. | Moderate: depth to rock. | Severe: depth to rock. |
| Watsonia--------- | Severe: depth to rock. | Severe: shrink-swell. | Severe: depth to rock, shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell, low strength. | Severe: depth to rock, too clayey. |
| EsA---------- Escambia | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: wetness. | Moderate: wetness. |
| FrA, FrB---------- Freest | Severe: wetness. | Slight--------- | Severe: wetness. | Slight--------- | Severe: low strength. | Moderate: wetness. |
| HaB---------- Halso | Moderate: too clayey. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell, low strength. | Slight. |
| HbD2---------- Halso | Moderate: too clayey, slope. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength. | Moderate: slope. |
| HoA---------- Houlka | Severe: wetness. | Severe: flooding, wetness, shrink-swell. | Severe: flooding, wetness, shrink-swell. | Severe: flooding, wetness, shrink-swell. | Severe: low strength, flooding, shrink-swell. | Severe: flooding. |
| IaA---------- Izagora | Severe: wetness. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding. | Severe: flooding. | Moderate: flooding. |
| IjB*: | | | | | | |
| Izagora---------- | Severe: wetness. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding. | Severe: low strength, flooding. | Moderate: flooding. |
| Jedburg---------- | Severe: wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: low strength, wetness, flooding. | Severe: wetness. |
| KpD2---------- Kipling | Severe: wetness. | Severe: shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength. | Moderate: wetness, slope. |
| LbA---------- Lenoir | Severe: wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: low strength, flooding. | Severe: wetness. |
| LdA---------- Lucedale | Slight--------- | Slight--------- | Slight--------- | Slight--------- | Slight--------- | Slight. |
| LvB---------- Luverne | Moderate: too clayey. | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell. | Severe: low strength. | Slight. |

See footnote at end of table.

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| LvD2 Luverne | Moderate: too clayey, slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength. | Moderate: slope. |
| LvF Luverne | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope. | Severe: slope. |
| MaA, MbB Malbis | Moderate: wetness. | Slight | Moderate: wetness. | Slight | Slight | Slight. |
| MbC Malbis | Moderate: wetness. | Slight | Moderate: wetness. | Moderate: slope. | Slight | Slight. |
| MKA*: | | | | | | |
| Mooreville | Severe: wetness. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding. | Severe: low strength, flooding. | Severe: flooding. |
| Mantachie | Severe: wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding. | Severe: flooding. |
| Kinston | Severe: wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: low strength, wetness, flooding. | Severe: wetness, flooding. |
| OkB Oktibbeha | Severe: cutbanks cave. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell, low strength. | Severe: too clayey. |
| OtE2*: | | | | | | |
| Oktibbeha | Severe: cutbanks cave, slope. | Severe: shrink-swell, slope. | Severe: slope, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength, slope. | Severe: slope, too clayey. |
| Brantley | Severe: cutbanks cave, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope. | Severe: slope. |
| Pt* Pits | Variable | Variable | Variable | Variable | Variable | Variable. |
| PvA Poarch | Moderate: wetness. | Slight | Moderate: wetness. | Slight | Slight | Slight. |
| RvA Riverview | Severe: cutbanks cave. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Moderate: flooding. |
| SaF*: | | | | | | |
| Saffell | Severe: cutbanks cave, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Smithdale | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |

See footnote at end of table.

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| SaF*: | | | | | | |
| Luverne | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope. | Severe: slope. |
| SeB2 Searcy | Moderate: wetness. | Moderate: wetness, shrink-swell. | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: low strength. | Slight. |
| SmB*: | | | | | | |
| Smithdale | Slight | Slight | Slight | Slight | Slight | Slight. |
| Boykin | Moderate: cutbanks cave. | Slight | Slight | Slight | Slight | Moderate: droughty. |
| SnA Sucarnoochee | Severe: wetness. | Severe: flooding, wetness, shrink-swell. | Severe: flooding, wetness, shrink-swell. | Severe: flooding, wetness, shrink-swell. | Severe: low strength, wetness, flooding. | Severe: wetness, flooding. |
| SpE2*: | | | | | | |
| Sumter | Severe: slope. | Severe: shrink-swell, slope. | Severe: slope, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength, slope. | Severe: slope. |
| Demopolis | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope, depth to rock. |
| SuE3*: | | | | | | |
| Sumter | Severe: slope. | Severe: shrink-swell, slope. | Severe: slope, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength, slope. | Severe: slope, too clayey. |
| Gullied land | Variable | Variable | Variable | Variable | Variable | Variable. |
| UbC*: | | | | | | |
| Udorthents | Variable | Variable | Variable | Variable | Variable | Variable. |
| Urban land | Variable | Variable | Variable | Variable | Variable | Variable. |
| UnA Una | Severe: ponding. | Severe: flooding, ponding, shrink-swell. | Severe: flooding, ponding, shrink-swell. | Severe: flooding, ponding, shrink-swell. | Severe: shrink-swell, low strength, ponding. | Severe: ponding, flooding, too clayey. |
| UuB*: | | | | | | |
| Urbo | Severe: wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: low strength, flooding. | Severe: flooding. |
| Mooreville | Severe: wetness. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding. | Severe: low strength, flooding. | Severe: flooding. |

See footnote at end of table.

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| UuB*: | | | | | | |
| Una | Severe: ponding. | Severe: flooding, ponding, shrink-swell. | Severe: flooding, ponding, shrink-swell. | Severe: flooding, ponding, shrink-swell. | Severe: shrink-swell, low strength, ponding. | Severe: ponding, flooding, too clayey. |
| VaA, VaB | Severe: cutbanks cave. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, low strength. | Severe: too clayey. |
| WcB Wilcox | Severe: cutbanks cave. | Severe: shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell, low strength. | Severe: too clayey. |
| WcD2 Wilcox | Severe: cutbanks cave. | Severe: shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength. | Severe: too clayey. |

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 12.--Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| AnA, AnB Annemaine | Severe: flooding, wetness, percs slowly. | Severe: flooding, wetness. | Severe: flooding, wetness, too clayey. | Severe: flooding, wetness. | Poor: too clayey, hard to pack. |
| ArC*: | | | | | |
| Arundel | Severe: depth to rock, percs slowly. | Severe: depth to rock. | Severe: depth to rock, too clayey. | Severe: depth to rock. | Poor: depth to rock, too clayey, hard to pack. |
| Cantuche | Severe: depth to rock, large stones. | Severe: depth to rock, large stones. | Severe: depth to rock, large stones. | Severe: depth to rock. | Poor: depth to rock. |
| ArF*: | | | | | |
| Arundel | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope, too clayey. | Severe: depth to rock, slope. | Poor: depth to rock, too clayey, hard to pack. |
| Cantuche | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| BaA Bama | Slight | Moderate: seepage. | Slight | Slight | Good. |
| BaB Bama | Slight | Moderate: seepage, slope. | Slight | Slight | Good. |
| BeB Beatrice | Severe: percs slowly. | Moderate: slope. | Severe: too clayey. | Slight | Poor: too clayey, hard to pack. |
| BeC2 Beatrice | Severe: percs slowly. | Severe: slope. | Severe: too clayey. | Slight | Poor: too clayey, hard to pack. |
| BgB Bigbee | Severe: flooding, wetness, poor filter. | Severe: seepage, flooding. | Severe: flooding, seepage, wetness. | Severe: flooding, seepage. | Poor: seepage, too sandy. |
| BrB Brantley | Severe: percs slowly. | Moderate: seepage, slope. | Severe: too clayey. | Slight | Poor: too clayey. |
| BtF2 Brantley | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, too clayey. | Severe: slope. | Poor: too clayey, slope. |

See footnote at end of table.

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| CaA---------- Cahaba | Moderate: flooding. | Severe: seepage. | Severe: seepage. | Moderate: flooding. | Fair: thin layer. |
| CbA---------- Canton Bend | Severe: flooding, percs slowly. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Fair: too clayey. |
| ChA---------- Chrysler | Severe: flooding, wetness, percs slowly. | Severe: flooding. | Severe: flooding, wetness, too clayey. | Severe: flooding, wetness. | Poor: too clayey, hard to pack. |
| CoA---------- Congaree | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Fair: wetness. |
| DwC*: | | | | | |
| Demopolis---------- | Severe: depth to rock. | Severe: depth to rock. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock, small stones. |
| Watsonia---------- | Severe: depth to rock, percs slowly. | Severe: depth to rock. | Severe: depth to rock, too clayey. | Severe: depth to rock. | Poor: depth to rock, too clayey, hard to pack. |
| EsA---------- Escambia | Severe: wetness, percs slowly. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Fair: wetness. |
| FrA---------- Freest | Severe: wetness, percs slowly. | Slight---------- | Severe: wetness. | Severe: wetness. | Fair: wetness. |
| FrB---------- Freest | Severe: wetness, percs slowly. | Moderate: slope. | Severe: wetness. | Severe: wetness. | Fair: wetness. |
| HaB---------- Halso | Severe: percs slowly. | Moderate: depth to rock, slope. | Severe: depth to rock, too clayey. | Moderate: depth to rock. | Poor: too clayey, hard to pack. |
| HbD2---------- Halso | Severe: percs slowly. | Severe: slope. | Severe: depth to rock, too clayey. | Moderate: depth to rock, slope. | Poor: too clayey, hard to pack. |
| HoA---------- Houlka | Severe: flooding, wetness, percs slowly. | Severe: flooding. | Severe: flooding, wetness, too clayey. | Severe: flooding, wetness. | Poor: too clayey, hard to pack, wetness. |
| IaA---------- Izagora | Severe: flooding, wetness, percs slowly. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding, wetness. | Fair: too clayey, wetness, thin layer. |

See footnote at end of table.

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| IjB*: | | | | | |
| Izagora | Severe: flooding, wetness, percs slowly. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding, wetness. | Fair: too clayey, wetness, thin layer. |
| Jedburg | Severe: wetness, flooding. | Severe: wetness, flooding. | Severe: wetness, flooding. | Severe: wetness, flooding. | Poor: wetness. |
| KpD2 Kipling | Severe: wetness, percs slowly. | Severe: slope. | Severe: wetness, too clayey. | Moderate: wetness, slope. | Poor: too clayey, hard to pack. |
| LbA Lenoir | Severe: flooding, wetness, percs slowly. | Severe: flooding. | Severe: flooding, wetness, too clayey. | Severe: flooding, wetness. | Poor: too clayey, hard to pack, wetness. |
| LdA Lucedale | Slight | Moderate: seepage. | Slight | Slight | Good. |
| LvB Luverne | Severe: percs slowly. | Moderate: slope. | Severe: too clayey. | Slight | Poor: too clayey, hard to pack. |
| LvD2 Luverne | Severe: percs slowly. | Severe: slope. | Severe: too clayey. | Moderate: slope. | Poor: too clayey, hard to pack. |
| LvF Luverne | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, too clayey. | Severe: slope. | Poor: too clayey, hard to pack, slope. |
| MaA Malbis | Severe: wetness, percs slowly. | Slight | Moderate: wetness. | Moderate: wetness. | Fair: wetness. |
| MbB, MbC Malbis | Severe: wetness, percs slowly. | Moderate: slope. | Moderate: wetness. | Moderate: wetness. | Fair: wetness. |
| MKA*: | | | | | |
| Mooreville | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Fair: wetness. |
| Mantachie | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Poor: wetness. |
| Kinston | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Poor: wetness. |
| OkB Oktibbeha | Severe: percs slowly. | Moderate: slope. | Severe: too clayey. | Moderate: too clayey. | Poor: too clayey, hard to pack. |

See footnote at end of table.

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| OtE2*: | | | | | |
| Oktibbeha | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, too clayey. | Severe: slope. | Poor: too clayey, hard to pack, slope. |
| Brantley | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, too clayey. | Severe: slope. | Poor: too clayey, slope. |
| Pt* Pits | Variable | Variable | Variable | Variable | Variable. |
| PvA Poarch | Severe: wetness, percs slowly. | Moderate: seepage. | Severe: wetness. | Moderate: wetness. | Fair: wetness. |
| RvA Riverview | Severe: flooding, wetness. | Severe: seepage, flooding, wetness. | Severe: flooding, seepage, wetness. | Severe: flooding, seepage, wetness. | Fair: thin layer, wetness. |
| SaF*: | | | | | |
| Saffell | Severe: slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: slope. | Poor: small stones, slope. |
| Smithdale | Severe: slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: seepage, slope. | Poor: slope. |
| Luverne | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, too clayey. | Severe: slope. | Poor: too clayey, hard to pack, slope. |
| SeB2 Searcy | Severe: wetness, percs slowly. | Moderate: slope. | Severe: too clayey. | Moderate: wetness. | Poor: too clayey, hard to pack. |
| SmB*: | | | | | |
| Smithdale | Slight | Severe: seepage. | Severe: seepage. | Severe: seepage. | Good. |
| Boykin | Slight | Severe: seepage. | Slight | Severe: seepage. | Good. |
| SnA Sucarnoochee | Severe: flooding, wetness, percs slowly. | Severe: flooding, wetness. | Severe: flooding, wetness, too clayey. | Severe: flooding, wetness. | Poor: too clayey, hard to pack, wetness. |
| SpE2*: | | | | | |
| Sumter | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope, too clayey. | Severe: depth to rock, slope. | Poor: depth to rock, too clayey, hard to pack. |

See footnote at end of table.

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| SpE2*: | | | | | |
| Demopolis | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| SuE3*: | | | | | |
| Sumter | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope, too clayey. | Severe: depth to rock, slope. | Poor: depth to rock, too clayey, hard to pack. |
| Gullied land | Variable | Variable | Variable | Variable | Variable. |
| UbC*: | | | | | |
| Udorthents | Variable | Variable | Variable | Variable | Variable. |
| Urban land | Variable | Variable | Variable | Variable | Variable. |
| UnA Una | Severe: flooding, ponding, percs slowly. | Severe: flooding, ponding. | Severe: flooding, ponding, too clayey. | Severe: flooding, ponding. | Poor: too clayey, hard to pack, ponding. |
| UuB*: | | | | | |
| Urbo | Severe: flooding, wetness, percs slowly. | Severe: flooding. | Severe: flooding, wetness, too clayey. | Severe: flooding, wetness. | Poor: too clayey, hard to pack, wetness. |
| Mooreville | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Fair: wetness. |
| Una | Severe: flooding, ponding, percs slowly. | Severe: flooding, ponding. | Severe: flooding, ponding, too clayey. | Severe: flooding, ponding. | Poor: too clayey, hard to pack, ponding. |
| VaA Vaiden | Severe: wetness, percs slowly. | Slight | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack. |
| VaB Vaiden | Severe: wetness, percs slowly. | Moderate: slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack. |
| WcB Wilcox | Severe: wetness, percs slowly. | Moderate: depth to rock, slope. | Severe: depth to rock, wetness. | Moderate: depth to rock, wetness. | Poor: too clayey, hard to pack. |
| WcD2 Wilcox | Severe: wetness, percs slowly. | Severe: slope. | Severe: depth to rock, wetness. | Moderate: depth to rock, wetness, slope. | Poor: too clayey, hard to pack. |

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 13.--Construction Materials

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| AnA, AnB | Fair: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: thin layer. |
| ArC*: | | | | |
| Arundel | Poor: depth to rock, shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, small stones. |
| Cantuche | Poor: depth to rock, large stones. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, large stones. |
| ArF*: | | | | |
| Arundel | Poor: depth to rock, shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, small stones, slope. |
| Cantuche | Poor: depth to rock, large stones. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, large stones, slope. |
| BaA, BaB | Good | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Bama | | | | |
| BeB, BeC2 | Poor: low strength, shrink-swell. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| Beatrice | | | | |
| BgB | Good | Probable | Improbable: too sandy. | Poor: too sandy. |
| Bigbee | | | | |
| BrB | Good | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| Brantley | | | | |
| BtF2 | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, slope. |
| Brantley | | | | |
| CaA | Good | Probable | Improbable: too sandy. | Good. |
| Cahaba | | | | |
| CbA | Fair: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: thin layer. |
| Canton Bend | | | | |
| ChA | Fair: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: thin layer. |
| Chrysler | | | | |
| CoA | Fair: low strength, wetness. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Congaree | | | | |

See footnote at end of table.

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| DwC*: | | | | |
| Demopolis | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones. |
| Watsonia | Poor: depth to rock, shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, too clayey. |
| EsA Escambia | Fair: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |
| FrA, FrB Freest | Fair: low strength, wetness. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey. |
| HaB, HbD2 Halso | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| HoA Houlka | Poor: low strength, shrink-swell. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| IaA Izagora | Fair: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey. |
| IjB*: | | | | |
| Izagora | Fair: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey. |
| Jedburg | Poor: low strength, wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |
| KpD2 Kipling | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| LbA Lenoir | Poor: low strength, wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| LdA Lucedale | Good | Improbable: excess fines. | Improbable: excess fines. | Good. |
| LvB, LvD2 Luverne | Good | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| LvF Luverne | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, slope. |
| MaA, MbB, MbC Malbis | Fair: low strength, wetness. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey. |

See footnote at end of table.

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| MKA*: | | | | |
| Mooreville | Fair: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Mantachie | Fair: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |
| Kinston | Poor: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |
| OkB Oktibbeha | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, too acid. |
| OtE2*: | | | | |
| Oktibbeha | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, too acid, slope. |
| Brantley | Fair: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, slope. |
| Pt* Pits | Variable | Variable | Variable | Variable. |
| PvA Poarch | Fair: wetness. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| RvA Riverview | Good | Improbable: excess fines. | Improbable: excess fines. | Good. |
| SaF*: | | | | |
| Saffell | Fair: slope. | Improbable: excess fines. | Probable | Poor: small stones, area reclaim, slope. |
| Smithdale | Fair: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Luverne | Fair: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, slope. |
| SeB2 Searcy | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| SmB*: | | | | |
| Smithdale | Good | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Boykin | Good | Improbable: excess fines. | Improbable: excess fines. | Fair: too sandy. |

See footnote at end of table.

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| SnA---------- Sucarnoochee | Poor: low strength, wetness, shrink-swell. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, wetness. |
| SpE2*: | | | | |
| Sumter---------- | Poor: depth to rock, shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, slope. |
| Demopolis---------- | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| SuE3*: | | | | |
| Sumter---------- | Poor: depth to rock, shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, slope. |
| Gullied land--------- | Variable---------- | Variable---------- | Variable---------- | Variable. |
| UbC*: | | | | |
| Udorthents---------- | Variable---------- | Improbable: excess fines. | Improbable: excess fines. | Variable. |
| Urban land---------- | Variable---------- | Variable---------- | Variable---------- | Variable. |
| UnA---------- Una | Poor: low strength, wetness, shrink-swell. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, wetness. |
| UuB*: | | | | |
| Urbo---------- | Poor: low strength, shrink-swell. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| Mooreville---------- | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Una---------- | Poor: low strength, wetness, shrink-swell. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, wetness. |
| VaA, VaB---------- Vaiden | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| WcB, WcD2---------- Wilcox | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 14.--Water Management

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|
| AnA---------- Annemaine | Moderate: seepage. | Severe: hard to pack, wetness. | Percs slowly, flooding. | Wetness, percs slowly. | Wetness, percs slowly. | Percs slowly. |
| AnB---------- Annemaine | Moderate: seepage, slope. | Severe: hard to pack, wetness. | Percs slowly, flooding, slope. | Wetness, percs slowly, slope. | Wetness, percs slowly. | Percs slowly. |
| ArC*: | | | | | | |
| Arundel---------- | Moderate: depth to rock, slope. | Severe: hard to pack. | Deep to water | Slope, percs slowly. | Depth to rock, erodes easily. | Erodes easily, depth to rock. |
| Cantuche--------- | Severe: depth to rock. | Severe: thin layer, large stones. | Deep to water | Slope, large stones, droughty. | Large stones, depth to rock. | Large stones, depth to rock. |
| ArF*: | | | | | | |
| Arundel---------- | Severe: slope. | Severe: hard to pack. | Deep to water | Slope, percs slowly. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| Cantuche--------- | Severe: depth to rock, slope. | Severe: thin layer, large stones. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, depth to rock. |
| BaA---------- Bama | Moderate: seepage. | Moderate: piping. | Deep to water | Favorable------ | Favorable------ | Favorable. |
| BaB---------- Bama | Moderate: seepage, slope. | Moderate: piping. | Deep to water | Slope---------- | Favorable------ | Favorable. |
| BeB, BeC2--------- Beatrice | Moderate: slope. | Severe: hard to pack. | Deep to water | Percs slowly, slope, erodes easily. | Erodes easily, percs slowly. | Erodes easily, percs slowly. |
| BgB---------- Bigbee | Severe: seepage. | Severe: seepage, piping. | Deep to water | Droughty, fast intake. | Too sandy------ | Droughty. |
| BrB---------- Brantley | Moderate: seepage, slope. | Moderate: thin layer, piping. | Deep to water | Slope, percs slowly. | Percs slowly--- | Percs slowly. |
| BtF2---------- Brantley | Severe: slope. | Moderate: thin layer, piping. | Deep to water | Slope, percs slowly. | Slope, percs slowly. | Slope, percs slowly. |
| CaA---------- Cahaba | Severe: seepage. | Moderate: thin layer, piping. | Deep to water | Favorable------ | Favorable------ | Favorable. |

See footnote at end of table.

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|
| CbA Canton Bend | Moderate: seepage. | Moderate: thin layer, piping. | Deep to water | Percs slowly, flooding. | Percs slowly | Percs slowly. |
| ChA Chrysler | Slight | Severe: hard to pack, wetness. | Percs slowly, flooding. | Wetness, percs slowly. | Wetness, percs slowly. | Percs slowly. |
| CoA Congaree | Moderate: seepage. | Severe: piping. | Flooding | Wetness | Erodes easily, wetness. | Erodes easily. |
| DwC*: | | | | | | |
| Demopolis | Severe: depth to rock. | Severe: thin layer. | Deep to water | Depth to rock, slope. | Depth to rock, erodes easily. | Erodes easily, depth to rock. |
| Watsonia | Severe: depth to rock. | Severe: thin layer, hard to pack. | Deep to water, percs slowly, depth to rock. | Slope, slow intake, percs slowly. | Depth to rock, erodes easily, percs slowly. | Erodes easily, depth to rock, percs slowly. |
| EsA Escambia | Moderate: seepage. | Severe: wetness. | Percs slowly | Wetness, percs slowly. | Wetness, percs slowly. | Percs slowly. |
| FrA Freest | Slight | Moderate: piping, wetness. | Percs slowly | Wetness, percs slowly. | Wetness, percs slowly. | Percs slowly. |
| FrB Freest | Moderate: slope. | Moderate: piping, wetness. | Percs slowly, slope. | Slope, wetness, percs slowly. | Wetness, percs slowly. | Percs slowly. |
| HaB Halso | Moderate: depth to rock, slope. | Severe: hard to pack. | Deep to water | Slope, percs slowly. | Percs slowly | Percs slowly. |
| HbD2 Halso | Severe: slope. | Severe: hard to pack. | Deep to water | Slope, percs slowly. | Slope, percs slowly. | Slope, percs slowly. |
| HoA Houlka | Slight | Severe: hard to pack, wetness. | Percs slowly, flooding. | Wetness, percs slowly. | Wetness, percs slowly. | Wetness, percs slowly. |
| IaA Izagora | Slight | Moderate: piping, wetness. | Flooding | Wetness | Wetness | Favorable. |
| IjB*: | | | | | | |
| Izagora | Slight | Moderate: piping, wetness. | Flooding | Wetness | Wetness | Favorable. |
| Jedburg | Moderate: seepage. | Severe: wetness. | Flooding | Wetness | Wetness | Wetness. |
| KpD2 Kipling | Severe: slope. | Severe: hard to pack. | Percs slowly, slope. | Slope, wetness, percs slowly. | Slope, wetness, percs slowly. | Slope, percs slowly. |

See footnote at end of table.

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|
| LbA---------- Lenoir | Slight--------- | Severe: wetness. | Percs slowly, flooding. | Wetness, percs slowly, erodes easily. | Erodes easily, wetness, percs slowly. | Wetness, erodes easily, percs slowly. |
| LdA---------- Lucedale | Moderate: seepage. | Severe: piping. | Deep to water | Favorable------ | Favorable------ | Favorable. |
| LvB---------- Luverne | Moderate: slope. | Severe: piping, hard to pack. | Deep to water | Slope---------- | Favorable------ | Favorable. |
| LvD2, LvF--------- Luverne | Severe: slope. | Severe: piping, hard to pack. | Deep to water | Slope---------- | Slope---------- | Slope. |
| MaA---------- Malbis | Slight--------- | Moderate: piping. | Deep to water | Favorable------ | Favorable------ | Favorable. |
| MbB, MbC---------- Malbis | Moderate: seepage, slope. | Moderate: piping. | Deep to water | Slope---------- | Favorable------ | Favorable. |
| MKA*: | | | | | | |
| Mooreville------- | Moderate: seepage. | Severe: wetness. | Flooding------- | Wetness, erodes easily, flooding. | Erodes easily, wetness. | Erodes easily. |
| Mantachie-------- | Moderate: seepage. | Severe: piping, wetness. | Flooding------- | Wetness, flooding. | Wetness-------- | Wetness. |
| Kinston---------- | Moderate: seepage. | Severe: wetness. | Flooding------- | Wetness, flooding. | Wetness-------- | Wetness. |
| OkB---------- Oktibbeha | Moderate: slope. | Severe: hard to pack. | Deep to water | Slope, percs slowly. | Percs slowly--- | Percs slowly. |
| OtE2*: | | | | | | |
| Oktibbeha-------- | Severe: slope. | Severe: hard to pack. | Deep to water | Slope, percs slowly. | Slope, percs slowly. | Slope, percs slowly. |
| Brantley--------- | Severe: slope. | Moderate: thin layer, piping. | Deep to water | Slope, percs slowly. | Slope, percs slowly. | Slope, percs slowly. |
| Pt*---------- Pits | Variable------- | Variable------- | Variable------- | Variable------- | Variable------- | Variable. |
| PvA---------- Poarch | Moderate: seepage. | Severe: piping. | Deep to water | Favorable------ | Favorable------ | Favorable. |
| RvA---------- Riverview | Severe: seepage. | Severe: piping. | Deep to water | Flooding------- | Erodes easily-- | Favorable. |
| SaF*: | | | | | | |
| Saffell---------- | Severe: seepage, slope. | Moderate: thin layer. | Deep to water | Slope, droughty. | Slope---------- | Slope, droughty. |

See footnote at end of table.

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|
| SaF*: | | | | | | |
| Smithdale | Severe: seepage, slope. | Severe: piping. | Deep to water | Slope | Slope | Slope. |
| Luverne | Severe: slope. | Severe: piping, hard to pack. | Deep to water | Slope | Slope | Slope. |
| SeB2 Searcy | Moderate: slope. | Moderate: hard to pack, wetness. | Percs slowly, slope. | Slope, wetness. | Wetness | Percs slowly. |
| SmB*: | | | | | | |
| Smithdale | Severe: seepage. | Severe: piping. | Deep to water | Fast intake, slope. | Favorable | Favorable. |
| Boykin | Severe: seepage. | Severe: piping. | Deep to water | Droughty, fast intake, slope. | Too sandy | Droughty. |
| SnA Sucarnoochee | Slight | Severe: hard to pack, wetness. | Percs slowly, flooding. | Wetness, percs slowly. | Wetness, percs slowly. | Wetness, percs slowly. |
| SpE2*: | | | | | | |
| Sumter | Severe: slope. | Severe: thin layer. | Deep to water | Slope, percs slowly. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| Demopolis | Severe: depth to rock, slope. | Severe: thin layer. | Deep to water | Depth to rock, slope. | Slope, depth to rock. | Slope, erodes easily. |
| SuE3*: | | | | | | |
| Sumter | Severe: slope. | Severe: thin layer. | Deep to water | Slope, slow intake, percs slowly. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| Gullied land | Variable | Variable | Variable | Variable | Variable | Variable. |
| UbC*: | | | | | | |
| Udorthents | Variable | Variable | Variable | Variable | Variable | Variable. |
| Urban land | Variable | Variable | Variable | Variable | Variable | Variable. |
| UnA Una | Slight | Severe: ponding. | Ponding, percs slowly, flooding. | Ponding, slow intake, percs slowly. | Ponding, percs slowly. | Wetness, percs slowly. |
| UuB*: | | | | | | |
| Urbo | Slight | Severe: wetness. | Percs slowly, flooding. | Wetness, percs slowly. | Erodes easily, wetness, percs slowly. | Wetness, erodes easily, percs slowly. |
| Mooreville | Moderate: seepage. | Severe: wetness. | Flooding | Wetness, erodes easily, flooding. | Erodes easily, wetness. | Erodes easily. |

See footnote at end of table.

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|
| UuB*: | | | | | | |
| Una | Slight | Severe: ponding. | Ponding, percs slowly, flooding. | Ponding, slow intake, percs slowly. | Ponding, percs slowly. | Wetness, percs slowly. |
| VaA Vaiden | Slight | Severe: hard to pack. | Percs slowly | Wetness, slow intake. | Wetness, percs slowly. | Wetness, percs slowly. |
| VaB Vaiden | Moderate: slope. | Severe: hard to pack. | Percs slowly, slope. | Slope, wetness, slow intake. | Wetness, percs slowly. | Wetness, percs slowly. |
| WcB Wilcox | Moderate: depth to rock, slope. | Severe: hard to pack. | Percs slowly, slope. | Slope, wetness, slow intake. | Erodes easily, wetness. | Erodes easily, percs slowly. |
| WcD2 Wilcox | Severe: slope. | Severe: hard to pack. | Percs slowly, slope. | Slope, wetness, slow intake. | Slope, erodes easily, wetness. | Slope, erodes easily, percs slowly. |

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 15.--Engineering Index Properties

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | | | | | Pct | |
| AnA---------- Annemaine | 0-6 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4 | 0 | 95-100 | 95-100 | 70-95 | 40-75 | <20 | NP-5 |
| | 6-14 | Clay, clay loam, silty clay. | CL | A-6, A-7 | 0 | 95-100 | 95-100 | 85-100 | 70-98 | 30-50 | 10-25 |
| | 14-38 | Clay, silty clay, silty clay loam. | CH, MH, CL, ML | A-7 | 0 | 95-100 | 95-100 | 90-100 | 80-99 | 45-70 | 20-35 |
| | 38-43 | Sandy clay loam, loam, clay loam. | SC, CL | A-4, A-6 | 0 | 95-100 | 95-100 | 80-100 | 36-80 | 20-35 | 8-15 |
| | 43-65 | Sandy clay loam, fine sandy loam, sandy loam. | SM, SC-SM, SC | A-2, A-4 | 0 | 95-100 | 95-100 | 60-90 | 30-50 | <20 | NP-10 |
| AnB---------- Annemaine | 0-9 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4 | 0 | 95-100 | 95-100 | 70-95 | 40-75 | <20 | NP-5 |
| | 9-16 | Clay, clay loam, silty clay. | CL | A-6, A-7 | 0 | 95-100 | 95-100 | 85-100 | 70-98 | 30-50 | 10-25 |
| | 16-37 | Clay, silty clay, silty clay loam. | CH, MH, CL, ML | A-7 | 0 | 95-100 | 95-100 | 90-100 | 80-99 | 45-70 | 20-35 |
| | 37-49 | Sandy clay loam, loam, clay loam. | SC, CL | A-4, A-6 | 0 | 95-100 | 95-100 | 80-100 | 36-80 | 20-35 | 8-15 |
| | 49-90 | Sandy clay loam, fine sandy loam, sandy loam. | SM, SC-SM, SC | A-2, A-4 | 0 | 95-100 | 95-100 | 60-90 | 30-50 | <20 | NP-10 |
| ArC*: | | | | | | | | | | | |
| Arundel--------- | 0-3 | Loam---------- | ML, CL, CL-ML | A-4 | 0-6 | 85-100 | 77-98 | 75-98 | 60-90 | <30 | NP-10 |
| | 3-34 | Silty clay, clay | CL, CH | A-7 | 0-15 | 85-100 | 80-100 | 80-100 | 65-90 | 44-70 | 22-41 |
| | 34-80 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cantuche-------- | 0-4 | Very channery silt loam. | SC, SC-SM, CL, CL-ML | A-4, A-6 | 25-50 | 65-90 | 60-85 | 50-80 | 36-65 | 20-30 | 4-11 |
| | 4-10 | Extremely channery loam, extremely channery sandy loam. | SC, SC-SM, CL, CL-ML | A-4, A-6 | 40-75 | 65-90 | 60-85 | 50-80 | 36-65 | 20-30 | 4-11 |
| | 10-80 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ArF*: | | | | | | | | | | | |
| Arundel--------- | 0-3 | Silt loam-------- | ML, CL, CL-ML | A-4 | 0-6 | 85-100 | 77-98 | 75-98 | 60-90 | <30 | NP-10 |
| | 3-33 | Silty clay, clay | CL, CH | A-7 | 0-15 | 85-100 | 80-100 | 80-100 | 65-90 | 44-70 | 22-41 |
| | 33-80 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cantuche-------- | 0-4 | Very channery loam. | SC, SC-SM, CL, CL-ML | A-4, A-6 | 25-50 | 65-90 | 60-85 | 50-80 | 36-65 | 20-30 | 4-11 |
| | 4-10 | Extremely channery sandy loam, extremely channery loam. | SC, SC-SM, CL, CL-ML | A-4, A-6 | 40-75 | 65-90 | 60-85 | 50-80 | 36-65 | 20-30 | 4-11 |
| | 10-80 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | | | | | Pct | |
| BaA---------- Bama | 0-5 | Fine sandy loam | SM, SC, SC-SM, CL-ML | A-4 | 0 | 95-100 | 85-100 | 70-95 | 40-70 | <30 | NP-10 |
| | 5-42 | Loam, sandy clay loam. | SM, SC, SC-SM, CL-ML | A-4, A-6 | 0 | 90-100 | 85-100 | 80-95 | 36-70 | 15-35 | 2-15 |
| | 42-65 | Loam, sandy clay loam, clay loam. | SC, CL | A-4, A-6 | 0 | 85-100 | 80-100 | 80-95 | 40-70 | 20-40 | 8-18 |
| BaB---------- Bama | 0-9 | Fine sandy loam | SM, SC, SC-SM, CL-ML | A-4 | 0 | 95-100 | 85-100 | 70-95 | 40-70 | <30 | NP-10 |
| | 9-50 | Loam, sandy clay loam. | SM, SC, SC-SM, CL-ML | A-4, A-6 | 0 | 90-100 | 85-100 | 80-95 | 36-70 | 15-35 | 2-15 |
| | 50-65 | Loam, sandy clay loam, clay loam. | SC, CL | A-4, A-6 | 0 | 85-100 | 80-100 | 80-95 | 40-70 | 20-40 | 8-18 |
| BeB---------- Beatrice | 0-5 | Silt loam-------- | CL-ML, CL | A-4, A-6 | 0 | 95-100 | 95-100 | 80-100 | 60-85 | 20-35 | 5-15 |
| | 5-41 | Clay---------- | MH | A-7 | 0 | 95-100 | 95-100 | 95-100 | 95-100 | 60-82 | 24-42 |
| | 41-80 | Stratified sandy clay loam to shaly clay. | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BeC2---------- Beatrice | 0-2 | Silt loam-------- | CL-ML, CL | A-4, A-6 | 0 | 95-100 | 95-100 | 80-100 | 60-85 | 20-35 | 5-15 |
| | 2-55 | Clay---------- | MH | A-7 | 0 | 95-100 | 95-100 | 95-100 | 95-100 | 60-82 | 24-42 |
| | 55-80 | Stratified sandy clay loam to shaly clay. | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BgB---------- Bigbee | 0-4 | Sand---------- | SM, SP-SM | A-2-4, A-3 | 0 | 100 | 95-100 | 50-75 | 5-20 | <20 | NP |
| | 4-90 | Sand, fine sand | SP-SM, SM | A-2-4, A-3 | 0 | 85-100 | 85-100 | 50-75 | 5-20 | <20 | NP |
| BrB---------- Brantley | 0-10 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4 | 0 | 95-100 | 95-100 | 95-100 | 36-55 | <30 | NP-7 |
| | 10-47 | Clay, clay loam, sandy clay. | CL, ML | A-7 | 0 | 95-100 | 95-100 | 90-100 | 60-75 | 41-50 | 16-22 |
| | 47-52 | Sandy clay loam, clay loam. | SC, SM, CL, ML | A-4, A-6 | 0 | 95-100 | 95-100 | 80-100 | 36-70 | 30-40 | 7-15 |
| | 52-70 | Fine sandy loam, sandy loam, sandy clay loam. | SM, SC, ML | A-2, A-4 | 0 | 95-100 | 95-100 | 70-100 | 30-60 | <38 | NP-9 |
| BtF2---------- Brantley | 0-8 | Sandy clay loam | CL, ML | A-6, A-7, A-4 | 0 | 95-100 | 95-100 | 90-100 | 65-80 | 30-45 | 9-16 |
| | 8-18 | Clay, clay loam, sandy clay. | CL, ML | A-7 | 0 | 95-100 | 95-100 | 90-100 | 60-75 | 41-50 | 16-22 |
| | 18-53 | Sandy clay loam, clay loam. | SC, SM, CL, ML | A-4, A-6 | 0 | 95-100 | 95-100 | 80-100 | 36-70 | 30-40 | 7-15 |
| | 53-65 | Fine sandy loam, sandy loam, sandy clay loam. | SM, SC, ML | A-2, A-4 | 0 | 95-100 | 95-100 | 70-100 | 30-60 | <38 | NP-9 |

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | | | | | Pct | |
| CaA---------- Cahaba | 0-9 | Fine sandy loam | SM | A-4, A-2-4 | 0 | 95-100 | 95-100 | 65-90 | 30-45 | <20 | NP |
| | 9-53 | Sandy clay loam, loam, clay loam. | SC, CL | A-4, A-6 | 0 | 90-100 | 80-100 | 75-90 | 40-75 | 22-35 | 8-15 |
| | 53-90 | Sand, loamy sand, sandy loam. | SM, SP-SM | A-2-4 | 0 | 95-100 | 90-100 | 60-85 | 10-35 | --- | NP |
| CbA---------- Canton Bend | 0-8 | Loam---------- | CL, CL-ML, ML | A-4 | 0 | 95-100 | 95-100 | 85-100 | 60-90 | 5-27 | NP-10 |
| | 8-43 | Silty clay loam, clay loam, silty clay. | CL | A-6, A-7 | 0 | 95-100 | 95-100 | 90-100 | 85-98 | 30-45 | 11-25 |
| | 43-65 | Loam, fine sandy loam, sandy loam. | SC-SM, SM, CL-ML, ML | A-2, A-4 | 0 | 95-100 | 95-100 | 60-95 | 30-75 | 5-20 | NP-7 |
| ChA---------- Chrysler | 0-5 | Loam---------- | SM, ML | A-4 | 0 | 95-100 | 95-100 | 70-100 | 40-75 | <30 | NP-7 |
| | 5-65 | Silty clay loam, silty clay, clay. | CL, ML, CH, MH | A-7 | 0 | 95-100 | 95-100 | 90-100 | 85-100 | 45-70 | 15-35 |
| CoA---------- Congaree | 0-4 | Fine sandy loam | SM, SC-SM | A-2, A-4 | 0 | 95-100 | 95-100 | 70-100 | 20-50 | <30 | NP-7 |
| | 4-70 | Silty clay loam, fine sandy loam, loam. | SC, ML, CL, SM | A-4, A-6, A-7 | 0 | 95-100 | 95-100 | 70-100 | 40-90 | 25-50 | 3-22 |
| DwC*: | | | | | | | | | | | |
| Demopolis------- | 0-7 | Silty clay loam | CL, CL-ML | A-4, A-6, | 0-5 | 85-100 | 75-90 | 65-85 | 50-80 | 24-44 | 6-20 |
| | 7-17 | Loam, clay loam, silty clay loam. | CL, CL-ML, ML | A-4, A-6 | 0-5 | 85-100 | 75-98 | 60-85 | 50-95 | 24-44 | 6-20 |
| | 17-80 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Watsonia-------- | 0-3 | Clay---------- | CL, CH | A-7 | 0 | 100 | 100 | 95-100 | 90-100 | 42-64 | 30-40 |
| | 3-11 | Clay, silty clay | CH | A-7 | 0 | 100 | 100 | 95-100 | 95-100 | 65-85 | 45-60 |
| | 11-18 | Clay, silty clay | CH | A-7 | 0 | 100 | 95-100 | 95-100 | 95-100 | 60-80 | 40-60 |
| | 18-60 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EsA---------- Escambia | 0-14 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4 | 0 | 95-100 | 95-100 | 70-90 | 40-65 | <25 | NP-7 |
| | 14-38 | Fine sandy loam, loam. | SC, SC-SM, CL-ML | A-4, A-6 | 0 | 95-100 | 95-100 | 70-95 | 40-75 | 16-30 | 4-15 |
| | 38-65 | Sandy clay loam, clay loam. | SC, CL, CL-ML | A-4, A-6 | 0 | 87-95 | 87-95 | 60-95 | 35-80 | 20-40 | 4-20 |
| FrA---------- Freest | 0-9 | Fine sandy loam | SM, CL, ML, CL-ML | A-4 | 0 | 100 | 95-100 | 60-90 | 40-70 | <30 | NP-8 |
| | 9-34 | Loam, sandy clay loam. | CL | A-4, A-6 | 0 | 100 | 95-100 | 80-95 | 55-75 | 25-40 | 7-20 |
| | 34-65 | Clay loam, clay, silty clay. | CL, CH | A-7 | 0 | 100 | 95-100 | 90-100 | 80-95 | 41-55 | 20-30 |
| FrB---------- Freest | 0-10 | Fine sandy loam | SM, CL, ML, CL-ML | A-4 | 0 | 100 | 95-100 | 60-90 | 40-70 | <30 | NP-8 |
| | 10-38 | Loam, sandy clay loam. | CL | A-4, A-6 | 0 | 100 | 95-100 | 80-95 | 55-75 | 25-40 | 7-20 |
| | 38-65 | Clay loam, clay, silty clay. | CL, CH | A-7 | 0 | 100 | 95-100 | 90-100 | 80-95 | 41-55 | 20-30 |

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | | | | | Pct | |
| HaB---------- | 0-2 | Silt loam-------- | CL-ML, CL | A-4, A-6 | 0 | 95-100 | 95-100 | 80-100 | 70-90 | 20-35 | 5-15 |
| Halso | 2-6 | Clay loam, clay | ML, MH, CL, CH | A-7, A-6 | 0 | 95-100 | 95-100 | 85-100 | 70-95 | 35-60 | 10-30 |
| | 6-42 | Clay, silty clay | ML, MH | A-7 | 0 | 95-100 | 95-100 | 90-100 | 80-98 | 45-70 | 15-35 |
| | 42-80 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| HbD2---------- | 0-4 | Loam---------- | SM, ML | A-4 | 0 | 95-100 | 95-100 | 70-100 | 40-70 | <20 | NP |
| Halso | 4-44 | Clay, silty clay | ML, MH | A-7 | 0 | 95-100 | 95-100 | 90-100 | 80-98 | 45-70 | 15-35 |
| | 44-80 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| HoA---------- | 0-6 | Silty clay loam | CH, CL | A-7 | 0 | 100 | 100 | 80-95 | 55-95 | 45-55 | 25-35 |
| Houlka | 6-65 | Clay, silty clay, clay loam. | CH | A-7 | 0 | 100 | 100 | 95-100 | 80-97 | 52-75 | 30-50 |
| IaA---------- | 0-11 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4 | 0 | 95-100 | 95-100 | 70-95 | 40-65 | <25 | NP-5 |
| Izagora | 11-46 | Loam, clay loam, silty clay loam. | CL | A-4, A-6, A-7 | 0 | 95-100 | 95-100 | 85-100 | 60-95 | 25-45 | 8-25 |
| | 46-91 | clay loam, clay | CL, CH | A-6, A-7 | 0 | 95-100 | 95-100 | 90-100 | 70-95 | 35-60 | 20-40 |
| IjB*: | | | | | | | | | | | |
| Izagora--------- | 0-9 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4 | 0 | 95-100 | 95-100 | 70-95 | 40-65 | <25 | NP-5 |
| | 9-31 | Loam, clay loam, silty clay loam. | CL | A-4, A-6, A-7 | 0 | 95-100 | 95-100 | 85-100 | 60-95 | 25-45 | 8-25 |
| | 31-80 | Clay loam, clay | CL, CH | A-6, A-7 | 0 | 95-100 | 95-100 | 90-100 | 70-95 | 35-60 | 20-40 |
| Jedburg--------- | 0-8 | Fine sandy loam | SM, SC-SM, SC | A-4 | 0 | 100 | 95-100 | 60-95 | 40-75 | <30 | NP-10 |
| | 8-20 | Loam, silt loam | CL | A-6, A-4 | 0 | 100 | 95-100 | 85-100 | 70-95 | 25-40 | 9-20 |
| | 20-80 | Clay loam-------- | SC, CL | A-6, A-7-6 | 0 | 100 | 95-100 | 80-100 | 40-80 | 30-50 | 10-25 |
| KpD2---------- | 0-4 | Silty clay loam | CL | A-6, A-7 | 0 | 100 | 100 | 95-100 | 85-95 | 30-45 | 15-25 |
| Kipling | 4-43 | Silty clay, clay, silty clay loam. | CH, CL | A-7, A-6 | 0 | 100 | 100 | 95-100 | 85-95 | 38-70 | 22-45 |
| | 43-85 | Clay, silty clay | CH, CL | A-7 | 0 | 100 | 100 | 90-100 | 75-95 | 48-80 | 26-50 |
| LbA---------- | 0-3 | Silt loam-------- | ML, CL, CL-ML | A-4 | 0 | 100 | 100 | 85-98 | 60-85 | 20-35 | 3-10 |
| Lenoir | 3-65 | Clay, silty clay, clay loam. | CL, CH | A-6, A-7 | 0 | 100 | 100 | 85-99 | 55-95 | 40-65 | 11-35 |
| LdA---------- | 0-7 | Loam---------- | SM, ML | A-2, A-4 | 0 | 100 | 95-100 | 80-95 | 25-65 | <30 | NP-3 |
| Lucedale | 7-80 | Sandy clay loam, clay loam. | CL-ML, SC, CL, SC-SM | A-4, A-6, A-2 | 0 | 95-100 | 95-100 | 80-100 | 30-75 | 25-40 | 4-15 |
| LvB---------- | 0-3 | Fine sandy loam | ML, SM | A-4, A-2 | 0-5 | 87-100 | 84-100 | 80-100 | 30-60 | <20 | NP |
| Luverne | 3-32 | Clay loam, sandy clay, clay. | ML, MH | A-5, A-7, A-4 | 0-5 | 95-100 | 90-100 | 85-100 | 50-95 | 38-70 | 8-30 |
| | 32-65 | Stratified loamy sand to sandy clay loam. | SM, ML | A-4, A-6, A-2, A-7 | 0-5 | 90-100 | 85-100 | 70-100 | 25-65 | 28-49 | 3-16 |

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | | | | | Pct | |
| LvD2---------- Luverne | 0-6 | Fine sandy loam | ML, SM | A-4, A-2 | 0-5 | 87-100 | 84-100 | 80-100 | 30-60 | <20 | NP |
| | 6-41 | Clay loam, sandy clay, clay. | ML, MH | A-5, A-7, A-4 | 0-5 | 95-100 | 90-100 | 85-100 | 50-95 | 38-70 | 8-30 |
| | 41-70 | Stratified loamy sand to sandy clay loam. | SM, ML | A-4, A-6, A-2, A-7 | 0-5 | 90-100 | 85-100 | 70-100 | 25-65 | 28-49 | 3-16 |
| LvF---------- Luverne | 0-8 | Fine sandy loam | ML, SM | A-4, A-2 | 0-5 | 87-100 | 84-100 | 80-100 | 30-60 | <20 | NP |
| | 8-41 | Clay loam, sandy clay, clay. | ML, MH | A-5, A-7, A-4 | 0-5 | 95-100 | 90-100 | 85-100 | 50-95 | 38-70 | 8-30 |
| | 41-65 | Stratified loamy sand to sandy clay loam. | SM, ML | A-4, A-6, A-2, A-7 | 0-5 | 90-100 | 85-100 | 70-100 | 25-65 | 28-49 | 3-16 |
| MaA---------- Malbis | 0-12 | Silt loam-------- | SM, ML | A-4 | 0 | 100 | 97-100 | 91-97 | 40-62 | <30 | NP-5 |
| | 12-34 | Loam, sandy clay loam. | CL-ML, CL | A-4, A-6 | 0 | 99-100 | 95-100 | 80-100 | 55-70 | 21-35 | 5-11 |
| | 34-72 | Clay, clay loam | ML, CL | A-4, A-6, A-7 | 0 | 98-100 | 96-100 | 90-100 | 56-80 | 29-49 | 4-15 |
| MbB---------- Malbis | 0-7 | Fine sandy loam | SM, ML | A-4 | 0 | 100 | 97-100 | 91-97 | 40-62 | <30 | NP-5 |
| | 7-29 | Loam, sandy clay loam, clay loam. | CL-ML, CL | A-4, A-6 | 0 | 99-100 | 95-100 | 80-100 | 55-70 | 21-35 | 5-11 |
| | 29-70 | Sandy clay loam, clay loam, loam. | ML, CL | A-4, A-6, A-7 | 0 | 98-100 | 96-100 | 90-100 | 56-80 | 29-49 | 4-15 |
| MbC---------- Malbis | 0-6 | Fine sandy loam | SM, ML | A-4 | 0 | 100 | 97-100 | 91-97 | 40-62 | <30 | NP-5 |
| | 6-26 | Loam, sandy clay loam, clay loam. | CL-ML, CL | A-4, A-6 | 0 | 99-100 | 95-100 | 80-100 | 55-70 | 21-35 | 5-11 |
| | 26-66 | Sandy clay loam, clay loam, loam. | ML, CL | A-4, A-6, A-7 | 0 | 98-100 | 96-100 | 90-100 | 56-80 | 29-49 | 4-15 |
| MKA*: | | | | | | | | | | | |
| Mooreville------ | 0-4 | Silt loam-------- | CL-ML, CL, SC-SM, SC | A-4 | 0 | 100 | 100 | 80-100 | 40-85 | 20-30 | 5-10 |
| | 4-35 | Sandy clay loam, clay loam, loam. | CL, SC | A-6, A-7 | 0 | 100 | 100 | 80-95 | 45-80 | 28-50 | 15-30 |
| | 35-70 | Loam, sandy clay loam, clay loam. | SC, CL | A-6, A-7 | 0 | 100 | 100 | 80-95 | 45-80 | 28-50 | 15-30 |
| Mantachie------- | 0-6 | Loam---------- | CL-ML, SC-SM, SM, ML | A-4 | 0-5 | 95-100 | 90-100 | 60-85 | 40-60 | <20 | NP-5 |
| | 6-68 | Loam, sandy clay loam, sandy loam. | CL, SC, SC-SM, CL-ML | A-4, A-6 | 0-5 | 95-100 | 90-100 | 80-95 | 45-80 | 20-40 | 5-15 |
| Kinston--------- | 0-3 | Silt loam-------- | ML, CL, CL-ML | A-4, A-6 | 0 | 100 | 98-100 | 85-100 | 50-97 | 17-40 | 4-15 |
| | 3-70 | Loam, clay loam, sandy clay loam. | CL | A-4, A-6, A-7 | 0 | 100 | 95-100 | 75-100 | 60-95 | 20-45 | 8-22 |
| OkB---------- Oktibbeha | 0-3 | Clay loam-------- | CL | A-6, A-7 | 0 | 100 | 100 | 90-100 | 75-95 | 32-50 | 20-30 |
| | 3-14 | Clay---------- | CH | A-7 | 0 | 100 | 100 | 95-100 | 95-100 | 55-75 | 35-50 |
| | 14-35 | Clay---------- | CH | A-7 | 0 | 100 | 100 | 95-100 | 95-100 | 55-75 | 35-50 |
| | 35-70 | Clay, silty clay | CL, CH | A-7 | 0 | 100 | 100 | 90-100 | 90-100 | 42-65 | 30-45 |

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | | | | | Pct | |
| OtE2*: | | | | | | | | | | | |
| Oktibbeha------- | 0-4 | Clay loam-------- | CL | A-6, A-7 | 0 | 100 | 100 | 90-100 | 75-95 | 32-50 | 20-30 |
| | 4-43 | Clay---------- | CH | A-7 | 0 | 100 | 100 | 95-100 | 95-100 | 55-75 | 35-50 |
| | 43-80 | Clay, silty clay | CH | A-7 | 0 | 100 | 100 | 90-100 | 90-100 | 42-65 | 30-45 |
| Brantley-------- | 0-3 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4 | 0 | 95-100 | 95-100 | 95-100 | 36-55 | <30 | NP-7 |
| | 3-35 | Clay, clay loam, sandy clay. | CL, ML | A-7 | 0 | 95-100 | 95-100 | 90-100 | 60-75 | 41-50 | 16-22 |
| | 35-48 | Sandy clay loam, clay loam. | SC, SM, CL, ML | A-4, A-6 | 0 | 95-100 | 95-100 | 80-100 | 36-70 | 30-40 | 7-15 |
| | 48-70 | Fine sandy loam, sandy loam, sandy clay loam. | SM, SC, ML | A-2, A-4 | 0 | 95-100 | 95-100 | 70-100 | 30-60 | <38 | NP-9 |
| Pt*---------- Pits | 0-60 | Variable--------- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PvA---------- Poarch | 0-8 | Fine sandy loam | SM, SC-SM | A-4, A-2-4 | 0 | 95-100 | 95-100 | 70-95 | 30-50 | 15-25 | NP-5 |
| | 8-24 | Loam, fine sandy loam, sandy loam. | ML, CL-ML, CL | A-4 | 0 | 95-100 | 95-100 | 85-95 | 51-75 | 20-30 | NP-10 |
| | 24-65 | Loam, sandy clay loam. | ML, CL, CL-ML | A-4 | 0 | 85-100 | 85-100 | 85-95 | 51-75 | 20-30 | 2-10 |
| RvA---------- Riverview | 0-8 | Fine sandy loam | ML, SM, CL-ML, SC-SM | A-2, A-4 | 0 | 95-100 | 90-100 | 85-95 | 30-60 | <20 | NP-7 |
| | 8-48 | Sandy clay loam, silty clay loam, loam. | CL, ML, CL-ML | A-4, A-6 | 0 | 100 | 100 | 90-100 | 60-95 | 20-40 | 3-20 |
| | 48-70 | Loamy fine sand, sandy loam, sand. | SM, SC-SM | A-2, A-4 | 0 | 100 | 100 | 50-95 | 15-45 | <20 | NP-7 |
| SaF*: | | | | | | | | | | | |
| Saffell--------- | 0-11 | Gravelly sandy loam. | SM, SC-SM, GM, GM-GC | A-1, A-2, A-4 | 0-5 | 50-80 | 50-75 | 40-70 | 20-50 | <25 | NP-5 |
| | 11-49 | Very gravelly sandy clay loam, very gravelly fine sandy loam, very gravelly clay loam. | GC, GP-GC, GM-GC | A-2, A-1, A-4, A-6 | 0-10 | 25-55 | 25-50 | 20-50 | 12-40 | 20-40 | 4-15 |
| | 49-80 | Gravelly sandy loam, very gravelly sandy loam, gravelly loamy sand. | GM, GC, SM, SC | A-1, A-2, A-3 | 0-15 | 15-80 | 10-75 | 10-65 | 5-35 | <35 | NP-15 |
| Smithdale------- | 0-14 | Sandy loam------- | SM, SC-SM | A-4, A-2 | 0 | 100 | 85-100 | 60-95 | 28-49 | <20 | NP-5 |
| | 14-60 | Clay loam, sandy clay loam. | SC-SM, SC, CL, CL-ML | A-6, A-4 | 0 | 100 | 85-100 | 80-96 | 45-75 | 23-38 | 7-16 |
| | 60-80 | Sandy loam, loamy sand. | SM, ML, CL, SC | A-4 | 0 | 100 | 85-100 | 65-95 | 36-70 | <30 | NP-10 |

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | | | | | Pct | |
| SaF*: | | | | | | | | | | | |
| Luverne--------- | 0-14 | Sandy loam------- | ML, SM | A-4, A-2 | 0-5 | 87-100 | 84-100 | 80-100 | 30-60 | <20 | NP |
| | 14-42 | Clay loam, sandy clay, clay. | ML, MH | A-5, A-7, A-4 | 0-5 | 95-100 | 90-100 | 85-100 | 50-95 | 38-70 | 8-30 |
| | 42-47 | Clay loam, sandy clay loam. | ML, MH, SM | A-4, A-5, A-7 | 0-5 | 95-100 | 85-100 | 85-100 | 36-76 | 32-56 | 2-14 |
| | 47-65 | Stratified loamy sand to sandy clay loam. | SM, ML | A-4, A-6, A-2, A-7 | 0-5 | 90-100 | 85-100 | 70-100 | 25-65 | 28-49 | 3-16 |
| SeB2---------- Searcy | 0-4 | Sandy clay loam | CL, ML, SC-SM | A-4, A-6 | 0 | 95-100 | 95-100 | 80-95 | 50-75 | 22-38 | 3-16 |
| | 4-16 | Clay loam, sandy clay loam, clay. | CL, SC | A-6, A-4 | 0 | 95-100 | 95-100 | 80-100 | 36-70 | 30-40 | 11-17 |
| | 16-35 | Clay, sandy clay | CH, SC | A-7 | 0 | 95-100 | 95-100 | 90-100 | 60-75 | 41-50 | 15-22 |
| | 35-65 | Clay, sandy clay, silty clay. | CH, SC | A-7 | 0 | 95-100 | 95-100 | 90-100 | 60-90 | 45-60 | 20-35 |
| SmB*: | | | | | | | | | | | |
| Smithdale------- | 0-15 | Loamy sand------- | SM | A-2 | 0 | 100 | 85-100 | 50-75 | 15-30 | <20 | NP |
| | 15-42 | Clay loam, sandy clay loam. | SC-SM, SC, CL, CL-ML | A-6, A-4 | 0 | 100 | 85-100 | 80-96 | 45-75 | 23-38 | 7-16 |
| | 42-65 | Loam, sandy loam | SM, ML, CL, SC | A-4 | 0 | 100 | 85-100 | 65-95 | 36-70 | <30 | NP-10 |
| Boykin---------- | 0-25 | Loamy sand------- | SM, SP-SM | A-2, A-4 | 0 | 98-100 | 95-100 | 50-90 | 10-40 | <20 | NP |
| | 25-65 | Sandy loam, fine sandy loam, sandy clay loam. | SM, SC, SC-SM, CL | A-2, A-4, A-6 | 0 | 97-100 | 95-100 | 55-95 | 15-50 | 10-30 | NP-15 |
| SnA---------- Sucarnoochee | 0-9 | Silty clay loam | CL | A-4, A-6, A-7 | 0 | 98-100 | 95-100 | 90-100 | 80-95 | 25-45 | 7-25 |
| | 9-65 | Silty clay, clay | CH, MH | A-7 | 0 | 98-100 | 95-100 | 90-100 | 85-98 | 50-80 | 25-45 |
| SpE2*: | | | | | | | | | | | |
| Sumter---------- | 0-6 | Silty clay loam | CL | A-7, A-6 | 0 | 90-100 | 85-100 | 80-98 | 75-90 | 35-50 | 16-25 |
| | 6-31 | Silty clay, clay, silty clay loam. | CH, CL | A-7, A-6 | 0 | 85-100 | 78-98 | 75-95 | 75-95 | 35-55 | 16-32 |
| | 31-65 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Demopolis------- | 0-7 | Silty clay loam | CL, CL-ML | A-4, A-6, | 0-5 | 85-100 | 75-90 | 65-85 | 50-80 | 24-44 | 6-20 |
| | 7-13 | Loam, clay loam, silty clay loam. | CL, CL-ML, ML | A-4, A-6 | 0-5 | 85-100 | 75-98 | 60-85 | 50-95 | 24-44 | 6-20 |
| | 13-65 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SuE3*: | | | | | | | | | | | |
| Sumter---------- | 0-7 | Silty clay------- | CL | A-7, A-6 | 0 | 90-100 | 85-100 | 80-98 | 75-90 | 35-50 | 16-25 |
| | 7-30 | Silty clay, clay | CH, CL | A-7, A-6 | 0 | 85-100 | 78-98 | 75-95 | 75-95 | 35-55 | 16-32 |
| | 30-36 | Silty clay loam, silty clay. | CH, CL | A-6, A-7 | 0 | 80-100 | 65-98 | 60-95 | 55-95 | 35-55 | 16-32 |
| | 36-80 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Gullied land---- | 0-60 | Variable--------- | --- | --- | 0 | --- | --- | --- | --- | --- | --- |
| UbC*: | | | | | | | | | | | |
| Udorthents------ | 0-80 | Variable--------- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | | | | | Pct | |
| UbC*: | | | | | | | | | | | |
| Urban land------ | 0-6 | Variable--------- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| UnA---------- | 0-6 | Silty clay------- | CH, CL | A-7 | 0 | 100 | 94-100 | 90-100 | 75-95 | 41-65 | 20-40 |
| Una | 6-65 | Clay, silty clay loam, silty clay. | CH, CL | A-7 | 0 | 100 | 94-100 | 90-100 | 75-95 | 41-65 | 20-40 |
| UuB*: | | | | | | | | | | | |
| Urbo---------- | 0-3 | Silty clay loam-- | CL | A-6 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 15-25 |
| | 3-65 | Silty clay, clay loam, silty clay loam. | CL, CH | A-7 | 0 | 100 | 100 | 95-100 | 80-98 | 44-62 | 20-36 |
| Mooreville------ | 0-9 | Loam---------- | CL-ML, CL, SC-SM, SC | A-4 | 0 | 100 | 100 | 80-100 | 40-85 | 20-30 | 5-10 |
| | 9-49 | Sandy clay loam, clay loam, loam. | CL, SC | A-6, A-7 | 0 | 100 | 100 | 80-95 | 45-80 | 28-50 | 15-30 |
| | 49-65 | Loam, sandy clay loam, clay loam. | SC, CL | A-6, A-7 | 0 | 100 | 100 | 80-95 | 45-80 | 28-50 | 15-30 |
| Una---------- | 0-2 | Silty clay loam | CH, CL | A-7 | 0 | 100 | 94-100 | 90-100 | 75-95 | 41-65 | 20-40 |
| | 2-65 | Clay, silty clay loam, silty clay. | CH, CL | A-7 | 0 | 100 | 94-100 | 90-100 | 75-95 | 41-65 | 20-40 |
| VaA---------- | 0-5 | Silty clay------- | MH, CH | A-7 | 0 | 100 | 100 | 95-100 | 90-100 | 50-60 | 20-30 |
| Vaiden | 5-46 | Clay---------- | CH, MH | A-7 | 0 | 100 | 100 | 95-100 | 85-100 | 50-90 | 30-50 |
| | 46-70 | Clay, silty clay | CH | A-7 | 0 | 95-100 | 95-100 | 90-100 | 85-100 | 50-90 | 30-52 |
| VaB---------- | 0-4 | Silty clay------- | MH, CH | A-7 | 0 | 100 | 100 | 95-100 | 90-100 | 50-60 | 20-30 |
| Vaiden | 4-67 | Clay---------- | CH, MH | A-7 | 0 | 100 | 100 | 95-100 | 85-100 | 50-90 | 30-50 |
| | 67-80 | Clay, silty clay | CH | A-7 | 0 | 95-100 | 95-100 | 90-100 | 85-100 | 50-90 | 30-52 |
| WcB---------- | 0-4 | Clay---------- | CH | A-7 | 0 | 100 | 100 | 95-100 | 90-100 | 50-70 | 25-40 |
| Wilcox | 4-52 | Clay---------- | CH | A-7 | 0 | 100 | 100 | 90-100 | 85-100 | 60-80 | 39-55 |
| | 52-80 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| WcD2---------- | 0-3 | Clay---------- | CH | A-7 | 0 | 100 | 100 | 95-100 | 90-100 | 50-70 | 25-40 |
| Wilcox | 3-46 | Clay---------- | CH | A-7 | 0 | 100 | 100 | 90-100 | 85-100 | 60-80 | 39-55 |
| | 46-85 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 16.--Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permeability | Available water capacity | Soil reaction | Shrink-swell potential | Erosion factors K | Erosion factors T | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | g/cc | In/hr | In/in | pH | | | | Pct |
| AnA---------- Annemaine | 0-6 | 10-20 | 1.30-1.55 | 0.6-2.0 | 0.12-0.16 | 4.5-6.5 | Low---------- | 0.28 | 5 | .5-2 |
| | 6-14 | 35-50 | 1.30-1.45 | 0.06-0.2 | 0.14-0.18 | 4.5-5.5 | Moderate----- | 0.37 | | |
| | 14-38 | 35-60 | 1.25-1.40 | 0.06-0.2 | 0.14-0.18 | 4.5-5.5 | Moderate----- | 0.37 | | |
| | 38-43 | 20-35 | 1.30-1.60 | 0.2-0.6 | 0.14-0.18 | 4.5-5.5 | Low---------- | 0.37 | | |
| | 43-65 | 5-25 | 1.40-1.60 | 0.2-2.0 | 0.14-0.18 | 4.5-5.5 | Low---------- | 0.32 | | |
| AnB---------- Annemaine | 0-9 | 10-20 | 1.30-1.55 | 0.6-2.0 | 0.12-0.16 | 4.5-6.5 | Low---------- | 0.28 | 5 | .5-2 |
| | 9-16 | 35-50 | 1.30-1.45 | 0.06-0.2 | 0.14-0.18 | 4.5-5.5 | Moderate----- | 0.37 | | |
| | 16-37 | 35-60 | 1.25-1.40 | 0.06-0.2 | 0.14-0.18 | 4.5-5.5 | Moderate----- | 0.37 | | |
| | 37-49 | 20-35 | 1.30-1.60 | 0.2-0.6 | 0.14-0.18 | 4.5-5.5 | Low---------- | 0.37 | | |
| | 49-90 | 5-25 | 1.40-1.60 | 0.2-2.0 | 0.14-0.18 | 4.5-5.5 | Low---------- | 0.32 | | |
| ArC*: | | | | | | | | | | |
| Arundel--------- | 0-3 | 15-25 | 1.40-1.50 | 0.6-2.0 | 0.14-0.17 | 3.6-5.5 | Low---------- | 0.37 | 3 | .5-1 |
| | 3-34 | 35-78 | 1.55-1.65 | <0.06 | 0.12-0.18 | 3.6-4.4 | High--------- | 0.32 | | |
| | 34-80 | --- | --- | 0.01-0.06 | --- | --- | ---------- | ---- | | |
| Cantuche-------- | 0-4 | 10-20 | 1.30-1.50 | 0.6-2.0 | 0.06-0.13 | 3.6-5.5 | Low---------- | 0.20 | 2 | .5-1 |
| | 4-10 | 10-20 | 1.30-1.50 | 0.6-2.0 | 0.04-0.10 | 3.6-5.5 | Low---------- | 0.20 | | |
| | 10-80 | --- | --- | 0.00-0.06 | --- | --- | ---------- | ---- | | |
| ArF*: | | | | | | | | | | |
| Arundel--------- | 0-3 | 15-25 | 1.40-1.50 | 0.6-2.0 | 0.14-0.17 | 3.6-5.5 | Low---------- | 0.37 | 3 | .5-1 |
| | 3-33 | 35-78 | 1.55-1.65 | <0.06 | 0.12-0.18 | 3.6-4.4 | High--------- | 0.32 | | |
| | 33-80 | --- | --- | 0.01-0.06 | --- | --- | ---------- | ---- | | |
| Cantuche-------- | 0-4 | 10-20 | 1.30-1.50 | 0.6-2.0 | 0.06-0.13 | 3.6-5.5 | Low---------- | 0.20 | 2 | .5-1 |
| | 4-10 | 10-20 | 1.30-1.50 | 0.6-2.0 | 0.04-0.10 | 3.6-5.5 | Low---------- | 0.20 | | |
| | 10-80 | --- | --- | 0.00-0.06 | --- | --- | ---------- | ---- | | |
| BaA---------- Bama | 0-5 | 7-22 | 1.30-1.60 | 0.6-6.0 | 0.08-0.15 | 4.5-6.0 | Low---------- | 0.24 | 5 | .5-1 |
| | 5-42 | 18-32 | 1.40-1.55 | 0.6-2.0 | 0.12-0.18 | 4.5-5.5 | Low---------- | 0.32 | | |
| | 42-65 | 20-35 | 1.40-1.60 | 0.6-2.0 | 0.12-0.18 | 4.5-5.5 | Low---------- | 0.32 | | |
| BaB---------- Bama | 0-9 | 7-22 | 1.30-1.60 | 0.6-6.0 | 0.08-0.15 | 4.5-6.0 | Low---------- | 0.24 | 5 | .5-1 |
| | 9-50 | 18-32 | 1.40-1.55 | 0.6-2.0 | 0.12-0.18 | 4.5-5.5 | Low---------- | 0.32 | | |
| | 50-65 | 20-35 | 1.40-1.60 | 0.6-2.0 | 0.12-0.18 | 4.5-5.5 | Low---------- | 0.32 | | |
| BeB---------- Beatrice | 0-5 | 10-25 | 1.20-1.50 | 0.6-2.0 | 0.15-0.24 | 3.6-6.0 | Low---------- | 0.37 | 4 | .5-1 |
| | 5-41 | 60-80 | 1.05-1.40 | <0.06 | 0.12-0.18 | 3.6-5.0 | High--------- | 0.32 | | |
| | 41-80 | --- | --- | <0.06 | --- | --- | ---------- | ---- | | |
| BeC2---------- Beatrice | 0-2 | 10-25 | 1.20-1.50 | 0.6-2.0 | 0.15-0.24 | 3.6-6.0 | Low---------- | 0.37 | 4 | .5-1 |
| | 2-55 | 60-80 | 1.05-1.40 | <0.06 | 0.12-0.18 | 3.6-5.0 | High--------- | 0.32 | | |
| | 55-80 | --- | --- | <0.06 | --- | --- | ---------- | ---- | | |
| BgB---------- Bigbee | 0-4 | 1-10 | 1.40-1.50 | 6.0-20 | 0.05-0.10 | 4.5-6.0 | Low---------- | 0.10 | 5 | .5-2 |
| | 4-90 | 1-10 | 1.40-1.50 | 6.0-20 | 0.05-0.08 | 4.5-6.0 | Low---------- | 0.17 | | |
| BrB---------- Brantley | 0-10 | 8-21 | 1.35-1.65 | 0.6-2.0 | 0.10-0.15 | 4.5-6.5 | Low---------- | 0.28 | 5 | 1-4 |
| | 10-47 | 35-55 | 1.35-1.55 | 0.06-0.2 | 0.12-0.20 | 4.5-6.0 | Moderate----- | 0.28 | | |
| | 47-52 | 25-35 | 1.35-1.65 | 0.6-2.0 | 0.12-0.20 | 4.5-5.5 | Low---------- | 0.24 | | |
| | 52-70 | 10-25 | 1.40-1.65 | 0.6-2.0 | 0.10-0.15 | 4.5-5.5 | Low---------- | 0.20 | | |

See footnote at end of table.

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permeability | Available water capacity | Soil reaction | Shrink-swell potential | Erosion factors K | Erosion factors T | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | g/cc | In/hr | In/in | pH | | | | Pct |
| BtF2---------- | 0-8 | 27-35 | 1.35-1.60 | 0.6-2.0 | 0.12-0.18 | 4.5-5.5 | Low---------- | 0.28 | 5 | .5-2 |
| Brantley | 8-18 | 35-55 | 1.35-1.55 | 0.06-0.2 | 0.12-0.20 | 4.5-6.0 | Moderate----- | 0.28 | | |
| | 18-53 | 25-35 | 1.35-1.65 | 0.6-2.0 | 0.12-0.20 | 4.5-5.5 | Low---------- | 0.24 | | |
| | 53-65 | 10-25 | 1.40-1.65 | 0.6-2.0 | 0.10-0.15 | 4.5-5.5 | Low---------- | 0.20 | | |
| CaA---------- | 0-9 | 7-17 | 1.35-1.60 | 2.0-6.0 | 0.10-0.14 | 4.5-6.0 | Low---------- | 0.24 | 5 | .5-2 |
| Cahaba | 9-53 | 18-35 | 1.35-1.60 | 0.6-2.0 | 0.12-0.20 | 4.5-6.0 | Low---------- | 0.28 | | |
| | 53-90 | 4-20 | 1.40-1.70 | 2.0-20 | 0.05-0.10 | 4.5-6.0 | Low---------- | 0.24 | | |
| CbA---------- | 0-8 | 9-25 | 1.35-1.55 | 0.6-2.0 | 0.15-0.24 | 5.1-6.5 | Low---------- | 0.43 | 5 | .5-2 |
| Canton Bend | 8-43 | 35-45 | 1.20-1.50 | 0.06-0.2 | 0.14-0.18 | 5.1-5.5 | Moderate----- | 0.37 | | |
| | 43-65 | 6-27 | 1.40-1.60 | 0.6-2.0 | 0.11-0.18 | 5.1-5.5 | Low---------- | 0.32 | | |
| ChA---------- | 0-5 | 10-20 | 1.35-1.55 | 0.6-2.0 | 0.12-0.16 | 4.5-5.5 | Low---------- | 0.28 | 5 | .5-2 |
| Chrysler | 5-65 | 35-60 | 1.20-1.50 | 0.06-0.2 | 0.14-0.18 | 4.5-5.5 | Moderate----- | 0.32 | | |
| CoA---------- | 0-4 | 5-15 | 1.30-1.60 | 0.6-6.0 | 0.12-0.18 | 4.5-7.3 | Low---------- | 0.24 | 5 | 1-3 |
| Congaree | 4-70 | 18-35 | 1.20-1.50 | 0.6-2.0 | 0.12-0.20 | 4.5-7.3 | Low---------- | 0.37 | | |
| DwC*: | | | | | | | | | | |
| Demopolis------- | 0-7 | 17-35 | 1.35-1.60 | 0.2-0.6 | 0.10-0.17 | 7.4-8.4 | Moderate----- | 0.37 | 2 | 1-2 |
| | 7-17 | 20-35 | 1.40-1.65 | 0.2-0.6 | 0.03-0.06 | 7.4-8.4 | Low---------- | 0.32 | | |
| | 17-80 | --- | --- | 0.00-0.01 | --- | --- | ---------- | ---- | | |
| Watsonia-------- | 0-3 | 40-70 | 1.10-1.40 | <0.06 | 0.12-0.16 | 4.5-6.5 | High--------- | 0.32 | 2 | 2-5 |
| | 3-11 | 60-80 | 1.00-1.40 | <0.06 | 0.12-0.16 | 4.5-6.5 | High--------- | 0.32 | | |
| | 11-18 | 50-70 | 1.00-1.40 | <0.06 | 0.12-0.16 | 6.1-8.4 | High--------- | 0.37 | | |
| | 18-60 | --- | --- | 0.00-0.01 | --- | --- | ---------- | ---- | | |
| EsA---------- | 0-14 | 5-14 | 1.35-1.55 | 2.0-6.0 | 0.11-0.15 | 3.6-5.5 | Low---------- | 0.24 | 5 | .5-2 |
| Escambia | 14-38 | 8-18 | 1.35-1.55 | 0.6-2.0 | 0.15-0.20 | 3.6-5.5 | Low---------- | 0.24 | | |
| | 38-65 | 8-35 | 1.45-1.65 | 0.06-0.6 | 0.10-0.18 | 3.6-5.5 | Low---------- | 0.28 | | |
| FrA---------- | 0-9 | 3-10 | 1.40-1.50 | 0.6-2.0 | 0.10-0.15 | 4.5-5.5 | Low---------- | 0.28 | 5 | .5-2 |
| Freest | 9-34 | 10-25 | 1.40-1.50 | 0.2-0.6 | 0.15-0.18 | 4.5-6.0 | Moderate----- | 0.32 | | |
| | 34-65 | 27-50 | 1.40-1.55 | 0.06-0.2 | 0.15-0.18 | 4.5-7.3 | High--------- | 0.28 | | |
| FrB---------- | 0-10 | 3-10 | 1.40-1.50 | 0.6-2.0 | 0.10-0.15 | 4.5-5.5 | Low---------- | 0.28 | 5 | .5-2 |
| Freest | 10-38 | 10-25 | 1.40-1.50 | 0.2-0.6 | 0.15-0.18 | 4.5-6.0 | Moderate----- | 0.32 | | |
| | 38-65 | 27-50 | 1.40-1.55 | 0.06-0.2 | 0.15-0.18 | 4.5-7.3 | High--------- | 0.28 | | |
| HaB---------- | 0-2 | 9-35 | 1.25-1.55 | 0.6-2.0 | 0.14-0.20 | 3.6-5.5 | Low---------- | 0.32 | 4 | .5-2 |
| Halso | 2-6 | 35-70 | 1.20-1.50 | 0.06-0.2 | 0.12-0.18 | 3.6-5.5 | Moderate----- | 0.32 | | |
| | 6-42 | 40-70 | 1.10-1.40 | <0.06 | 0.12-0.18 | 3.6-5.5 | High--------- | 0.32 | | |
| | 42-80 | --- | --- | <0.06 | --- | --- | ---------- | ---- | | |
| HbD2---------- | 0-4 | 6-20 | 1.30-1.60 | 0.6-2.0 | 0.11-0.15 | 3.6-5.5 | Low---------- | 0.28 | 4 | .5-2 |
| Halso | 4-44 | 40-70 | 1.10-1.40 | <0.06 | 0.12-0.18 | 3.6-5.5 | High--------- | 0.32 | | |
| | 44-80 | --- | --- | <0.06 | --- | --- | ---------- | ---- | | |
| HoA---------- | 0-6 | 25-40 | 1.45-1.65 | 0.6-2.0 | 0.18-0.22 | 4.5-5.5 | Moderate----- | 0.28 | 5 | .5-2 |
| Houlka | 6-65 | 35-55 | 1.40-1.60 | <0.06 | 0.18-0.20 | 4.5-5.5 | High--------- | 0.32 | | |
| IaA---------- | 0-11 | 8-20 | 1.40-1.65 | 2.0-6.0 | 0.11-0.20 | 3.6-6.0 | Low---------- | 0.28 | 5 | .5-2 |
| Izagora | 11-46 | 18-30 | 1.40-1.60 | 0.6-2.0 | 0.12-0.20 | 3.6-5.5 | Low---------- | 0.32 | | |
| | 46-91 | 35-55 | 1.30-1.60 | 0.06-0.2 | 0.16-0.20 | 3.6-5.5 | Moderate----- | 0.32 | | |

See footnote at end of table.

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permeability | Available water capacity | Soil reaction | Shrink-swell potential | Erosion factors K | Erosion factors T | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | g/cc | In/hr | In/in | pH | | | | Pct |
| IjB*: | | | | | | | | | | |
| Izagora--------- | 0-9 | 8-20 | 1.40-1.65 | 2.0-6.0 | 0.11-0.20 | 3.6-6.0 | Low---------- | 0.28 | 5 | .5-2 |
| | 9-31 | 18-30 | 1.40-1.60 | 0.6-2.0 | 0.12-0.20 | 3.6-5.5 | Low---------- | 0.32 | | |
| | 31-80 | 35-55 | 1.30-1.60 | 0.06-0.2 | 0.16-0.20 | 3.6-5.5 | Moderate----- | 0.32 | | |
| Jedburg--------- | 0-8 | 10-18 | 1.40-1.50 | 2.0-6.0 | 0.11-0.17 | 4.5-6.0 | Low---------- | 0.32 | 5 | 1-3 |
| | 8-20 | 18-30 | 1.30-1.40 | 0.2-0.6 | 0.15-0.22 | 4.5-6.0 | Low---------- | 0.28 | | |
| | 20-80 | 20-40 | 1.20-1.40 | 0.2-0.6 | 0.12-0.20 | 4.5-6.0 | Low---------- | 0.28 | | |
| KpD2---------- Kipling | 0-4 | 28-32 | 1.30-1.45 | 0.06-0.2 | 0.20-0.22 | 3.6-6.0 | Moderate----- | 0.32 | 5 | .5-2 |
| | 4-43 | 36-60 | 1.37-1.41 | 0.06-0.2 | 0.20-0.22 | 3.6-8.4 | High--------- | 0.32 | | |
| | 43-85 | 40-60 | 1.57-1.60 | <0.06 | 0.18-0.20 | 5.1-8.4 | Very high---- | 0.32 | | |
| LbA---------- Lenoir | 0-3 | 6-20 | 1.30-1.50 | 0.6-2.0 | 0.14-0.18 | 3.5-5.5 | Low---------- | 0.37 | 5 | 2-4 |
| | 3-65 | 35-60 | 1.20-1.35 | 0.06-0.2 | 0.13-0.15 | 3.5-5.5 | Moderate----- | 0.32 | | |
| LdA---------- Lucedale | 0-7 | 1-10 | 1.40-1.55 | 0.6-2.0 | 0.15-0.20 | 5.1-6.5 | Low---------- | 0.24 | 5 | .5-2 |
| | 7-80 | 20-30 | 1.55-1.70 | 0.6-2.0 | 0.14-0.18 | 4.5-5.5 | Low---------- | 0.24 | | |
| LvB---------- Luverne | 0-3 | 7-20 | 1.35-1.65 | 2.0-6.0 | 0.11-0.15 | 3.6-5.5 | Low---------- | 0.24 | 5 | .5-2 |
| | 3-32 | 35-50 | 1.25-1.55 | 0.2-0.6 | 0.12-0.18 | 3.6-5.5 | Moderate----- | 0.28 | | |
| | 32-65 | 10-35 | 1.35-1.65 | 0.2-0.6 | 0.05-0.10 | 3.6-5.5 | Low---------- | 0.28 | | |
| LvD2---------- Luverne | 0-6 | 7-20 | 1.35-1.65 | 2.0-6.0 | 0.11-0.15 | 3.6-5.5 | Low---------- | 0.24 | 5 | .5-2 |
| | 6-41 | 35-50 | 1.25-1.55 | 0.2-0.6 | 0.12-0.18 | 3.6-5.5 | Moderate----- | 0.28 | | |
| | 41-70 | 10-35 | 1.35-1.65 | 0.2-0.6 | 0.05-0.10 | 3.6-5.5 | Low---------- | 0.28 | | |
| LvF---------- Luverne | 0-8 | 7-20 | 1.35-1.65 | 2.0-6.0 | 0.11-0.15 | 3.6-5.5 | Low---------- | 0.24 | 5 | .5-2 |
| | 8-41 | 35-50 | 1.25-1.55 | 0.2-0.6 | 0.12-0.18 | 3.6-5.5 | Moderate----- | 0.28 | | |
| | 41-65 | 10-35 | 1.35-1.65 | 0.2-0.6 | 0.05-0.10 | 3.6-5.5 | Low---------- | 0.28 | | |
| MaA---------- Malbis | 0-12 | 10-25 | 1.30-1.60 | 0.6-2.0 | 0.10-0.15 | 4.5-6.0 | Low---------- | 0.24 | 5 | .5-2 |
| | 12-34 | 18-33 | 1.30-1.70 | 0.6-2.0 | 0.12-0.20 | 4.5-5.5 | Low---------- | 0.28 | | |
| | 34-72 | 20-35 | 1.40-1.60 | 0.6-2.0 | 0.12-0.17 | 4.5-5.5 | Low---------- | 0.28 | | |
| MbB---------- Malbis | 0-7 | 10-25 | 1.30-1.60 | 0.6-2.0 | 0.10-0.15 | 4.5-6.0 | Low---------- | 0.24 | 5 | .5-2 |
| | 7-29 | 18-33 | 1.30-1.70 | 0.6-2.0 | 0.12-0.20 | 4.5-5.5 | Low---------- | 0.28 | | |
| | 29-70 | 20-35 | 1.40-1.60 | 0.6-2.0 | 0.12-0.17 | 4.5-5.5 | Low---------- | 0.28 | | |
| MbC---------- Malbis | 0-6 | 10-25 | 1.30-1.60 | 0.6-2.0 | 0.10-0.15 | 4.5-6.0 | Low---------- | 0.24 | 5 | .5-2 |
| | 6-26 | 18-33 | 1.30-1.70 | 0.6-2.0 | 0.12-0.20 | 4.5-5.5 | Low---------- | 0.28 | | |
| | 26-66 | 20-35 | 1.40-1.60 | 0.6-2.0 | 0.12-0.17 | 4.5-5.5 | Low---------- | 0.28 | | |
| MKA*: | | | | | | | | | | |
| Mooreville------ | 0-4 | 5-27 | 1.40-1.50 | 0.6-2.0 | 0.14-0.20 | 4.5-5.5 | Low---------- | 0.37 | 5 | .5-2 |
| | 4-35 | 18-35 | 1.40-1.50 | 0.6-2.0 | 0.14-0.18 | 4.5-5.5 | Moderate----- | 0.28 | | |
| | 35-70 | 10-40 | 1.40-1.60 | 0.6-2.0 | 0.14-0.18 | 4.5-5.5 | Moderate----- | 0.28 | | |
| Mantachie------- | 0-6 | 8-20 | 1.50-1.60 | 0.6-2.0 | 0.16-0.20 | 4.5-5.5 | Low---------- | 0.28 | 5 | 1-3 |
| | 6-68 | 18-34 | 1.50-1.60 | 0.6-2.0 | 0.14-0.20 | 4.5-5.5 | Low---------- | 0.28 | | |
| Kinston--------- | 0-3 | 5-27 | 1.30-1.50 | 0.6-2.0 | 0.14-0.20 | 4.5-6.0 | Low---------- | 0.37 | 5 | 2-5 |
| | 3-70 | 18-35 | 1.30-1.50 | 0.6-2.0 | 0.14-0.18 | 4.5-5.5 | Low---------- | 0.32 | | |
| OkB---------- Oktibbeha | 0-3 | 30-40 | 1.10-1.40 | 0.06-0.2 | 0.13-0.17 | 4.5-7.3 | Moderate----- | 0.32 | 5 | 2-7 |
| | 3-14 | 60-80 | 1.00-1.30 | 0.00-0.06 | 0.12-0.16 | 3.5-5.5 | Very high---- | 0.32 | | |
| | 14-35 | 60-80 | 1.00-1.30 | 0.00-0.06 | 0.12-0.16 | 3.5-6.5 | Very high---- | 0.32 | | |
| | 35-70 | 50-70 | 1.10-1.40 | 0.00-0.06 | 0.05-0.10 | 6.6-8.4 | Very high---- | 0.32 | | |

See footnote at end of table.

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permeability | Available water capacity | Soil reaction | Shrink-swell potential | Erosion factors K | Erosion factors T | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | g/cc | In/hr | In/in | pH | | | | Pct |
| OtE2*: | | | | | | | | | | |
| Oktibbeha | 0-4 | 30-40 | 1.10-1.40 | 0.06-0.2 | 0.13-0.17 | 4.5-7.3 | Moderate | 0.32 | 5 | 2-7 |
| | 4-43 | 60-80 | 1.00-1.30 | 0.00-0.06 | 0.12-0.16 | 3.5-6.5 | Very high | 0.32 | | |
| | 43-80 | 50-70 | 1.10-1.40 | 0.00-0.06 | 0.05-0.10 | 6.6-8.4 | Very high | 0.32 | | |
| Brantley | 0-3 | 8-21 | 1.35-1.65 | 0.6-2.0 | 0.10-0.15 | 4.5-6.5 | Low | 0.28 | 5 | 1-4 |
| | 3-35 | 35-55 | 1.35-1.55 | 0.06-0.2 | 0.12-0.20 | 4.5-6.0 | Moderate | 0.28 | | |
| | 35-48 | 25-35 | 1.35-1.65 | 0.6-2.0 | 0.12-0.20 | 4.5-5.5 | Low | 0.24 | | |
| | 48-70 | 10-25 | 1.40-1.65 | 0.6-2.0 | 0.10-0.15 | 4.5-5.5 | Low | 0.20 | | |
| Pt* Pits | 0-60 | --- | --- | --- | --- | --- | | | --- | --- |
| PvA Poarch | 0-8 | 5-15 | 1.35-1.55 | 2.0-6.0 | 0.10-0.15 | 4.5-5.5 | Low | 0.20 | 5 | .5-2 |
| | 8-24 | 8-18 | 1.35-1.55 | 0.6-2.0 | 0.10-0.20 | 4.5-5.5 | Low | 0.24 | | |
| | 24-65 | 10-25 | 1.45-1.65 | 0.2-0.6 | 0.10-0.20 | 4.5-5.5 | Low | 0.24 | | |
| RvA Riverview | 0-8 | 4-18 | 1.30-1.60 | 0.6-2.0 | 0.12-0.18 | 4.5-6.5 | Low | 0.24 | 5 | .5-2 |
| | 8-48 | 18-35 | 1.20-1.40 | 0.6-2.0 | 0.15-0.22 | 4.5-6.0 | Low | 0.24 | | |
| | 48-70 | 4-18 | 1.20-1.50 | 2.0-6.0 | 0.07-0.11 | 4.5-6.0 | Low | 0.17 | | |
| SaF*: | | | | | | | | | | |
| Saffell | 0-11 | 5-20 | 1.35-1.60 | 2.0-6.0 | 0.07-0.17 | 4.5-5.5 | Low | 0.20 | 5 | 1-2 |
| | 11-49 | 12-35 | 1.35-1.60 | 0.6-2.0 | 0.06-0.12 | 4.5-5.5 | Low | 0.28 | | |
| | 49-80 | 10-25 | 1.40-1.65 | 0.6-6.0 | 0.04-0.11 | 4.5-5.5 | Low | 0.17 | | |
| Smithdale | 0-14 | 2-15 | 1.40-1.50 | 2.0-6.0 | 0.14-0.16 | 4.5-5.5 | Low | 0.28 | 5 | .5-2 |
| | 14-60 | 18-33 | 1.40-1.55 | 0.6-2.0 | 0.15-0.17 | 4.5-5.5 | Low | 0.24 | | |
| | 60-80 | 12-27 | 1.40-1.55 | 2.0-6.0 | 0.14-0.16 | 4.5-5.5 | Low | 0.28 | | |
| Luverne | 0-14 | 7-20 | 1.35-1.65 | 2.0-6.0 | 0.11-0.15 | 3.6-5.5 | Low | 0.24 | 5 | .5-2 |
| | 14-42 | 35-50 | 1.25-1.55 | 0.2-0.6 | 0.12-0.18 | 3.6-5.5 | Moderate | 0.28 | | |
| | 42-47 | 20-40 | 1.35-1.65 | 0.2-0.6 | 0.12-0.18 | 3.6-5.5 | Low | 0.28 | | |
| | 47-65 | 10-35 | 1.35-1.65 | 0.2-0.6 | 0.05-0.10 | 3.6-5.5 | Low | 0.28 | | |
| SeB2 Searcy | 0-4 | 18-35 | 1.35-1.60 | 0.2-0.6 | 0.12-0.18 | 3.6-6.0 | Moderate | 0.24 | 5 | 1-4 |
| | 4-16 | 25-45 | 1.35-1.60 | 0.2-0.6 | 0.12-0.18 | 3.6-6.0 | Moderate | 0.24 | | |
| | 16-35 | 40-55 | 1.40-1.65 | 0.06-0.2 | 0.12-0.20 | 3.6-6.0 | Moderate | 0.28 | | |
| | 35-65 | 45-60 | 1.40-1.65 | 0.06-0.2 | 0.12-0.20 | 3.6-6.0 | High | 0.28 | | |
| SmB*: | | | | | | | | | | |
| Smithdale | 0-15 | 2-8 | 1.40-1.50 | 2.0-6.0 | 0.05-0.10 | 4.5-5.5 | Low | 0.17 | 5 | .5-2 |
| | 15-42 | 18-33 | 1.40-1.55 | 0.6-2.0 | 0.15-0.17 | 4.5-5.5 | Low | 0.24 | | |
| | 42-65 | 12-27 | 1.40-1.55 | 2.0-6.0 | 0.14-0.16 | 4.5-5.5 | Low | 0.28 | | |
| Boykin | 0-25 | 1-12 | 1.30-1.70 | 6.0-20 | 0.08-0.12 | 5.1-6.0 | Low | 0.10 | 5 | .5-1 |
| | 25-65 | 10-30 | 1.40-1.60 | 2.0-6.0 | 0.10-0.12 | 4.5-5.5 | Low | 0.24 | | |
| SnA Sucarnoochee | 0-9 | 30-40 | 1.20-1.50 | 0.06-0.2 | 0.15-0.20 | 6.6-8.4 | High | 0.32 | 5 | 2-7 |
| | 9-65 | 45-70 | 1.00-1.30 | <0.06 | 0.12-0.18 | 6.6-8.4 | High | 0.32 | | |
| SpE2*: | | | | | | | | | | |
| Sumter | 0-6 | 32-50 | 1.30-1.60 | 0.06-2.0 | 0.12-0.17 | 6.6-8.4 | High | 0.37 | 3 | 2-5 |
| | 6-31 | 35-57 | 1.15-1.55 | 0.06-2.0 | 0.12-0.17 | 7.4-8.4 | High | 0.37 | | |
| | 31-65 | --- | --- | 0.00-0.01 | --- | --- | | | | |

See footnote at end of table.

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permeability | Available water capacity | Soil reaction | Shrink-swell potential | Erosion factors K | Erosion factors T | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | g/cc | In/hr | In/in | pH | | | | Pct |
| SpE2*: | | | | | | | | | | |
| Demopolis------- | 0-7 | 17-35 | 1.35-1.60 | 0.2-0.6 | 0.10-0.17 | 7.4-8.4 | Moderate----- | 0.37 | 2 | 1-2 |
| | 7-13 | 20-35 | 1.40-1.65 | 0.2-0.6 | 0.03-0.06 | 7.4-8.4 | Low---------- | 0.32 | | |
| | 13-65 | --- | --- | 0.00-0.01 | --- | --- | ---------- | ---- | | |
| SuE3*: | | | | | | | | | | |
| Sumter---------- | 0-7 | 32-50 | 1.30-1.60 | 0.06-2.0 | 0.12-0.17 | 6.6-8.4 | High--------- | 0.37 | 2 | 2-5 |
| | 7-30 | 35-57 | 1.15-1.55 | 0.06-2.0 | 0.12-0.17 | 7.4-8.4 | High--------- | 0.37 | | |
| | 30-36 | 35-57 | 1.15-1.50 | 0.06-2.0 | 0.11-0.16 | 7.4-8.4 | Moderate----- | 0.32 | | |
| | 36-80 | --- | --- | 0.00-0.01 | --- | --- | ---------- | ---- | | |
| Gullied land---- | 0-60 | --- | --- | --- | --- | --- | ---------- | ---- | --- | --- |
| UbC*: | | | | | | | | | | |
| Udorthents------ | 0-80 | --- | --- | --- | --- | 3.6-5.5 | Low---------- | ---- | 5 | <.5 |
| Urban land------ | 0-6 | --- | --- | --- | --- | --- | ---------- | ---- | --- | --- |
| UnA---------- | 0-6 | 28-45 | 1.40-1.60 | <0.06 | 0.15-0.20 | 4.5-5.5 | High--------- | 0.32 | 5 | 2-5 |
| Una | 6-65 | 35-55 | 1.40-1.60 | <0.06 | 0.15-0.20 | 4.5-5.5 | High--------- | 0.28 | | |
| UuB*: | | | | | | | | | | |
| Urbo---------- | 0-3 | 28-35 | 1.40-1.50 | 0.06-0.2 | 0.19-0.21 | 4.5-5.5 | Moderate----- | 0.32 | 5 | 1-3 |
| | 3-65 | 35-55 | 1.45-1.55 | <0.06 | 0.18-0.20 | 4.5-5.5 | Moderate----- | 0.28 | | |
| Mooreville------ | 0-9 | 5-27 | 1.40-1.50 | 0.6-2.0 | 0.14-0.20 | 4.5-5.5 | Low---------- | 0.37 | 5 | .5-2 |
| | 9-49 | 18-35 | 1.40-1.50 | 0.6-2.0 | 0.14-0.18 | 4.5-5.5 | Moderate----- | 0.28 | | |
| | 49-65 | 10-40 | 1.40-1.60 | 0.6-2.0 | 0.14-0.18 | 4.5-5.5 | Moderate----- | 0.28 | | |
| Una---------- | 0-2 | 28-45 | 1.40-1.60 | <0.06 | 0.15-0.20 | 4.5-5.5 | High--------- | 0.32 | 5 | 2-5 |
| | 2-65 | 35-55 | 1.40-1.60 | <0.06 | 0.15-0.20 | 4.5-5.5 | High--------- | 0.28 | | |
| VaA---------- | 0-5 | 40-60 | 1.10-1.40 | 0.06-0.2 | 0.10-0.15 | 4.5-6.5 | High--------- | 0.32 | 5 | 1-5 |
| Vaiden | 5-46 | 60-75 | 1.00-1.30 | <0.06 | 0.10-0.15 | 4.5-6.5 | Very high---- | 0.32 | | |
| | 46-70 | 40-75 | 1.10-1.40 | <0.06 | 0.10-0.15 | 6.6-8.4 | Very high---- | 0.32 | | |
| VaB---------- | 0-4 | 40-60 | 1.10-1.40 | 0.06-0.2 | 0.10-0.15 | 4.5-6.5 | High--------- | 0.32 | 5 | 1-5 |
| Vaiden | 4-67 | 60-75 | 1.00-1.30 | <0.06 | 0.10-0.15 | 4.5-6.5 | Very high---- | 0.32 | | |
| | 67-80 | 40-75 | 1.10-1.40 | <0.06 | 0.10-0.15 | 6.6-8.4 | Very high---- | 0.32 | | |
| WcB---------- | 0-4 | 40-70 | 1.40-1.45 | 0.06-0.2 | 0.18-0.20 | 4.5-5.5 | High--------- | 0.37 | 4 | .5-2 |
| Wilcox | 4-52 | 60-85 | 1.40-1.55 | <0.06 | 0.15-0.18 | 3.6-5.5 | Very high---- | 0.28 | | |
| | 52-80 | --- | --- | <0.06 | --- | --- | ---------- | ---- | | |
| WcD2---------- | 0-3 | 40-70 | 1.40-1.45 | 0.06-0.2 | 0.18-0.20 | 4.5-5.5 | High--------- | 0.37 | 4 | .5-2 |
| Wilcox | 3-46 | 60-85 | 1.40-1.55 | <0.06 | 0.15-0.18 | 3.6-5.5 | Very high---- | 0.28 | | |
| | 46-85 | --- | --- | <0.06 | --- | --- | ---------- | ---- | | |

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 17.--Soil and Water Features

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

| Soil name and map symbol | Hydro-logic group | Flooding: Frequency | Flooding: Duration | Flooding: Months | High water table: Depth | High water table: Kind | High water table: Months | Bedrock: Depth | Bedrock: Hard-ness | Risk of corrosion: Uncoated steel | Risk of corrosion: Concrete |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ft | | | In | | | |
| AnA, AnB---------- Annemaine | C | Occasional | Brief----- | Dec-Apr | 1.5-2.5 | Apparent | Jan-Apr | >60 | --- | High----- | High. |
| ArC*, ArF*: | | | | | | | | | | | |
| Arundel---------- | C | None-------- | --- | --- | >6.0 | --- | --- | 20-40 | Soft | High----- | High. |
| Cantuche--------- | D | None-------- | --- | --- | >6.0 | --- | --- | 10-20 | Soft | Low------ | Moderate. |
| BaA, BaB---------- Bama | B | None-------- | --- | --- | >6.0 | --- | --- | >60 | --- | Low------ | Moderate. |
| BeB, BeC2--------- Beatrice | D | None-------- | --- | --- | >6.0 | --- | --- | >60 | --- | High----- | High. |
| BgB---------- Bigbee | A | Occasional | Brief----- | Dec-Apr | 3.5-6.0 | Apparent | Jan-Apr | >60 | --- | Low------ | Moderate. |
| BrB, BtF2--------- Brantley | C | None-------- | --- | --- | >6.0 | --- | --- | >60 | --- | High----- | High. |
| CaA---------- Cahaba | B | Rare-------- | --- | --- | >6.0 | --- | --- | >60 | --- | Moderate | Moderate. |
| CbA---------- Canton Bend | C | Occasional | Brief----- | Dec-Apr | >6.0 | --- | --- | >60 | --- | Moderate | Moderate. |
| ChA---------- Chrysler | C | Occasional | Brief----- | Dec-Apr | 1.5-3.0 | Apparent | Jan-Apr | >60 | --- | High----- | High. |
| CoA---------- Congaree | B | Frequent---- | Brief----- | Dec-Apr | 2.5-4.0 | Apparent | Dec-Apr | >60 | --- | Moderate | Moderate. |
| DwC*: | | | | | | | | | | | |
| Demopolis-------- | C | None-------- | --- | --- | >6.0 | --- | --- | 10-20 | Soft | Moderate | Low. |
| Watsonia--------- | D | None-------- | --- | --- | >6.0 | --- | --- | 10-20 | Soft | High----- | High. |
| EsA---------- Escambia | C | None-------- | --- | --- | 1.5-2.5 | Perched | Dec-Apr | >60 | --- | Moderate | High. |
| FrA, FrB---------- Freest | C | None-------- | --- | --- | 1.5-2.5 | Perched | Jan-Apr | >60 | --- | High----- | High. |
| HaB, HbD2--------- Halso | D | None-------- | --- | --- | >6.0 | --- | --- | 40-60 | Soft | High----- | High. |
| HoA---------- Houlka | D | Frequent---- | Brief----- | Dec-Apr | 1.0-2.0 | Perched | Dec-Apr | >60 | --- | High----- | High. |
| IaA---------- Izagora | C | Occasional | Brief----- | Dec-Apr | 2.0-3.0 | Perched | Jan-Apr | >60 | --- | Moderate | High. |

See footnote at end of table.

Table 17.--Soil and Water Features--Continued

| Soil name and map symbol | Hydro-logic group | Flooding: Frequency | Flooding: Duration | Flooding: Months | High water table: Depth | High water table: Kind | High water table: Months | Bedrock: Depth | Bedrock: Hard-ness | Risk of corrosion: Uncoated steel | Risk of corrosion: Concrete |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ft | | | In | | | |
| IjB*: | | | | | | | | | | | |
| Izagora | C | Occasional | Brief | Dec-Apr | 2.0-3.0 | Perched | Jan-Apr | >60 | --- | Moderate | High. |
| Jedburg | C | Occasional | Brief | Dec-Apr | 0.5-1.5 | Apparent | Dec-Apr | >60 | --- | High | High. |
| KpD2 Kipling | D | None | --- | --- | 1.5-3.0 | Perched | Jan-Apr | >60 | --- | High | High. |
| LbA Lenoir | D | Occasional | Brief | Dec-Apr | 1.0-2.5 | Apparent | Dec-Apr | >60 | --- | High | High. |
| LdA Lucedale | B | None | --- | --- | >6.0 | --- | --- | >60 | --- | Moderate | Moderate. |
| LvB, LvD2, LvF Luverne | C | None | --- | --- | >6.0 | --- | --- | >60 | --- | High | High. |
| MaA, MbB, MbC Malbis | B | None | --- | --- | 2.5-4.0 | Perched | Jan-Apr | >60 | --- | Moderate | Moderate. |
| MKA*: | | | | | | | | | | | |
| Mooreville | C | Frequent | Brief | Dec-Apr | 1.5-3.0 | Apparent | Jan-Apr | >60 | --- | Moderate | High. |
| Mantachie | C | Frequent | Brief | Dec-Apr | 1.0-1.5 | Apparent | Dec-Apr | >60 | --- | High | High. |
| Kinston | D | Frequent | Brief | Dec-Apr | 0-1.0 | Apparent | Dec-Jun | >60 | --- | High | High. |
| OkB Oktibbeha | D | None | --- | --- | >6.0 | --- | --- | >60 | --- | High | High. |
| OtE2*: | | | | | | | | | | | |
| Oktibbeha | D | None | --- | --- | >6.0 | --- | --- | >60 | --- | High | High. |
| Brantley | C | None | --- | --- | >6.0 | --- | --- | >60 | --- | High | High. |
| Pt* Pits | --- | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| PvA Poarch | B | None | --- | --- | 2.5-5.0 | Perched | Jan-Apr | >60 | --- | Low | High. |
| RvA Riverview | B | Occasional | Brief | Dec-Apr | 3.0-5.0 | Apparent | Jan-Apr | >60 | --- | Low | Moderate. |
| SaF*: | | | | | | | | | | | |
| Saffell | B | None | --- | --- | >6.0 | --- | --- | >60 | --- | Low | Moderate. |
| Smithdale | B | None | --- | --- | >6.0 | --- | --- | >60 | --- | Low | Moderate. |
| Luverne | C | None | --- | --- | >6.0 | --- | --- | >60 | --- | High | High. |
| SeB2 Searcy | C | None | --- | --- | 2.0-3.5 | Perched | Jan-Apr | >60 | --- | High | High. |
| SmB*: | | | | | | | | | | | |
| Smithdale | B | None | --- | --- | >6.0 | --- | --- | >60 | --- | Low | Moderate. |
| Boykin | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | Low | High. |

See footnote at end of table.

Table 17.--Soil and Water Features--Continued

| Soil name and map symbol | Hydro-logic group | Flooding: Frequency | Flooding: Duration | Flooding: Months | High water table: Depth | High water table: Kind | High water table: Months | Bedrock: Depth | Bedrock: Hard-ness | Risk of corrosion: Uncoated steel | Risk of corrosion: Concrete |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ft | | | In | | | |
| SnA---------- Sucarnoochee | D | Frequent---- | Brief----- | Dec-Apr | 0.5-1.5 | Perched | Jan-Apr | >60 | --- | High----- | Low. |
| SpE2*: | | | | | | | | | | | |
| Sumter---------- | C | None-------- | --- | --- | >6.0 | --- | --- | 20-40 | Soft | Moderate | Low. |
| Demopolis-------- | C | None-------- | --- | --- | >6.0 | --- | --- | 10-20 | Soft | Moderate | Low. |
| SuE3*: | | | | | | | | | | | |
| Sumter---------- | C | None-------- | --- | --- | >6.0 | --- | --- | 20-40 | Soft | Moderate | Low. |
| Gullied land----- | --- | None-------- | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| UbC*: | | | | | | | | | | | |
| Udorthents------- | C | None-rare--- | --- | --- | >6.0 | --- | --- | >60 | --- | High----- | High. |
| Urban land------- | --- | None-------- | --- | --- | >2.0 | --- | --- | >10 | --- | --- | --- |
| UnA---------- Una | D | Frequent---- | Long------ | Dec-Apr | +2-0.5 | Perched | Dec-Jun | >60 | --- | High----- | High. |
| UuB*: | | | | | | | | | | | |
| Urbo---------- | D | Frequent---- | Brief----- | Dec-Apr | 1.0-2.0 | Perched | Jan-Apr | >60 | --- | High----- | High. |
| Mooreville------- | C | Frequent---- | Brief----- | Dec-Apr | 1.5-3.0 | Apparent | Jan-Apr | >60 | --- | Moderate | High. |
| Una---------- | D | Frequent---- | Long------ | Dec-Apr | +2-0.5 | Perched | Dec-Jun | >60 | --- | High----- | High. |
| VaA, VaB---------- Vaiden | D | None-------- | --- | --- | 1.0-2.0 | Perched | Jan-Apr | >60 | --- | High----- | High. |
| WcB, WcD2--------- Wilcox | D | None-------- | --- | --- | 1.5-3.0 | Perched | Jan-Apr | 40-60 | Soft | High----- | High. |

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 18.--Physical Analyses of Selected Soils

| Soil name and sample number | Depth | Horizon | Particle-size distribution (Percent less than 2.0 mm) Sand (2.0-0.05 mm) | Silt (0.05-0.002 mm) | Clay (<0.002 mm) |
|---|---|---|---|---|---|
| | In | | | | |
| Annemaine:[1, 2] | | | | | |
| (S71AL-66-13) | 0-5 | Ap | 56.2 | 33.0 | 10.8 |
| | 5-9 | E | 51.6 | 36.8 | 11.6 |
| | 9-16 | Bt1 | 19.5 | 25.1 | 55.4 |
| | 16-37 | Bt2 | 24.5 | 22.3 | 53.2 |
| | 37-49 | BC | 51.4 | 15.3 | 33.3 |
| | 49-74 | C1 | 61.0 | 15.3 | 23.7 |
| | 74-90 | C2 | 56.5 | 23.6 | 19.9 |
| Bama:[1, 2] | | | | | |
| (S89AL-131-4) | 0-5 | Ap | 62.9 | 31.1 | 6.0 |
| | 5-42 | Bt1 | 38.8 | 28.6 | 32.6 |
| | 42-65 | Bt2 | 47.8 | 26.0 | 26.2 |
| Brantley:[2, 3] | | | | | |
| (S94AL-131-1) | 0-5 | A | 62.3 | 16.0 | 21.7 |
| | 5-8 | BA | 62.2 | 7.2 | 30.6 |
| | 8-18 | Bt1 | 53.8 | 8.2 | 38.0 |
| | 18-25 | Bt2 | 58.5 | 8.9 | 32.6 |
| | 25-31 | Bt3 | 63.4 | 8.4 | 28.2 |
| | 31-42 | Bt4 | 61.1 | 9.0 | 29.9 |
| | 42-48 | Bt5 | 65.4 | 8.2 | 26.4 |
| | 48-53 | C1 | 69.5 | 6.5 | 24.0 |
| | 53-65 | C2 | 80.6 | 4.6 | 14.8 |
| Cahaba:[1, 2] | | | | | |
| (S71AL-66-9) | 0-5 | Ap | 78.1 | 14.3 | 7.6 |
| | 5-9 | AB | 62.2 | 21.7 | 16.1 |
| | 9-18 | Bt1 | 56.4 | 22.4 | 21.2 |
| | 18-53 | Bt2 | 53.0 | 21.6 | 25.4 |
| | 53-80 | C1 | 66.0 | 16.6 | 17.4 |
| | 80-90 | C2 | 73.9 | 11.1 | 15.0 |
| Chrysler:[1, 2] | | | | | |
| (S88AL-131-1) | 0-5 | Ap | 45.7 | 39.7 | 14.6 |
| | 5-10 | Bt1 | 25.7 | 34.1 | 40.2 |
| | 10-18 | Bt2 | 15.6 | 22.2 | 62.2 |
| | 18-23 | Bt3 | 17.6 | 20.4 | 62.0 |
| | 23-35 | Bt4 | 24.1 | 21.5 | 54.4 |
| | 35-51 | Bt5 | 12.6 | 35.8 | 51.6 |
| | 51-65 | Bt6 | 20.8 | 23.9 | 55.3 |
| Izagora:[1, 2] | | | | | |
| (S71AL-66-8) | 0-6 | Ap1 | 59.2 | 33.0 | 7.8 |
| | 6-11 | Ap2 | 57.6 | 39.7 | 8.7 |
| | 11-18 | Bt1 | 39.8 | 41.6 | 18.6 |
| | 18-30 | Bt2 | 34.3 | 43.7 | 22.0 |
| | 30-46 | Bt3 | 31.2 | 30.0 | 38.8 |
| | 46-63 | Bt4 | 26.9 | 30.7 | 42.4 |
| | 63-91 | Bt5 | 33.6 | 36.7 | 39.7 |
| Lenoir:[1, 2] | | | | | |
| (S89AL-131-3) | 0-3 | A | 19.3 | 56.5 | 24.2 |
| | 3-13 | Bt | 10.9 | 49.2 | 39.9 |
| | 13-29 | Btg1 | 7.4 | 40.1 | 52.5 |
| | 29-41 | Btg2 | 5.7 | 37.0 | 57.3 |
| | 41-65 | Btg3 | 7.3 | 35.3 | 57.4 |

See footnotes at end of table.

Table 18.--Physical Analyses of Selected Soils--Continued

| Soil name and sample number | Depth | Horizon | Particle-size distribution (Percent less than 2.0 mm) Sand (2.0-0.05 mm) | Silt (0.05-0.002 mm) | Clay (<0.002 mm) |
|---|---|---|---|---|---|
| | In | | | | |
| Lucedale:[1, 2] | | | | | |
| (S92AL-131-3) | 0-7 | Ap | 47.9 | 32.3 | 19.8 |
| | 7-16 | Bt1 | 45.6 | 26.1 | 28.3 |
| | 16-42 | Bt2 | 45.4 | 23.2 | 31.4 |
| | 42-80 | Bt3 | 49.4 | 20.9 | 29.7 |
| Luverne:[4, 5] | | | | | |
| (S90AL-131-3) | 0-6 | Ap | 56.2 | 21.4 | 22.4 |
| | 6-16 | Bt1 | 32.7 | 15.8 | 51.5 |
| | 16-28 | Bt2 | 35.8 | 18.3 | 45.9 |
| | 28-38 | Bt3 | 39.4 | 20.5 | 40.1 |
| | 38-55 | Bt4 | 44.4 | 21.8 | 33.8 |
| | 55-61 | BC | 44.1 | 21.8 | 34.1 |
| | 61-68 | C1 | 71.1 | 12.9 | 16.0 |
| | 68-118 | C2 | 48.9 | 21.8 | 29.3 |
| | 118-126 | C3 | 74.8 | 11.0 | 14.2 |
| Malbis:[5, 6] | | | | | |
| (S81AL-131-1) | 0-5 | Ap | 58.9 | 37.7 | 3.4 |
| | 5-10 | E | 38.9 | 51.8 | 9.3 |
| | 10-27 | Bt | 36.0 | 39.9 | 24.1 |
| | 27-39 | Btv1 | 40.8 | 37.8 | 21.4 |
| | 39-48 | Btv2 | 37.2 | 33.0 | 29.8 |
| | 48-57 | Btv3 | 37.2 | 32.5 | 30.3 |
| | 57-80 | B't1 | 38.8 | 24.1 | 37.1 |
| | 80-100 | B't2 | 40.9 | 20.4 | 38.7 |
| Saffell:[1, 2] | | | | | |
| (S89AL-131-1) | 0-5 | A | 63.5 | 29.5 | 7.0 |
| | 5-11 | E | 63.8 | 28.3 | 7.9 |
| | 11-23 | Bt1 | 55.4 | 22.8 | 21.8 |
| | 23-37 | Bt2 | 60.5 | 19.5 | 20.0 |
| | 37-49 | BC | 79.4 | 6.7 | 13.9 |
| | 49-61 | C1 | 83.1 | 3.9 | 13.0 |
| | 61-80 | C2 | 84.9 | 3.2 | 11.9 |
| Sumter:[1, 2] | | | | | |
| (S90AL-131-6) | 0-7 | Ap | 6.4 | 48.3 | 45.3 |
| | 7-20 | Bk1 | 8.0 | 51.8 | 40.2 |
| | 20-26 | Bk2 | 16.8 | 45.4 | 37.8 |
| | 26-38 | C | 41.8 | 28.7 | 29.5 |
| | 38-60 | Cr | 44.2 | 45.8 | 10.0 |
| Una:[1, 2] | | | | | |
| (S88AL-131-6) | 0-2 | A1 | 5.8 | 47.9 | 46.3 |
| | 2-6 | A2 | 4.4 | 44.9 | 50.7 |
| | 6-20 | Bg1 | 7.3 | 42.9 | 49.8 |
| | 20-42 | Bg2 | 5.5 | 34.2 | 60.3 |
| | 42-55 | Bg3 | 7.7 | 31.7 | 60.6 |
| | 55-65 | Bg4 | 6.9 | 32.8 | 60.3 |

See footnotes at end of table.

Table 18.--Physical Analyses of Selected Soils--Continued

| Soil name and sample number | Depth | Horizon | Particle-size distribution (Percent less than 2.0 mm) Sand (2.0-0.05 mm) | Silt (0.05-0.002 mm) | Clay (<0.002 mm) |
|---|---|---|---|---|---|
| | In | | | | |
| Wilcox:[1, 2] (S90AL-131-1) | 0-4 | Ap | 8.1 | 32.1 | 59.8 |
| | 4-17 | Btss | 2.2 | 14.4 | 83.4 |
| | 17-41 | Bss1 | 2.3 | 13.1 | 84.6 |
| | 41-52 | Bss2 | 0.8 | 13.2 | 86.0 |
| | 52-64 | Cr1 | 0.8 | 15.3 | 83.9 |
| | 64-70 | Cr2 | 0.1 | 14.7 | 85.2 |

[1] This is the typical pedon for the series in Wilcox County. For the description and location of the soil, see the section "Soil Series and Their Morphology."

[2] Analyses by the Agronomy and Soils Clay Mineralogy Laboratory, Auburn University, and the Alabama Agricultural Experiment Station, Auburn, Alabama.

[3] This pedon is in an area of Brantley sandy clay loam, 15 to 35 percent slopes, eroded. It is about 100 feet south and 300 feet east of the northwest corner of sec. 27, T. 12 N., R. 10 E.

[4] This pedon is in an area of Luverne fine sandy loam, 15 to 35 percent slopes. It is about 1.5 miles south of the Fatama Fire Tower, in the NW 1/4 of sec. 2, T. 10 N., R. 8 E.

[5] Analyses by the National Soil Survey Laboratory, Natural Resources Conservation Service, Lincoln, Nebraska.

[6] This pedon is in an area of Malbis fine sandy loam, 2 to 5 percent slopes. It is at the Lower Coastal Plains Experiment Station in the SE 1/4, NE 1/4, SE 1/4 of sec. 12, T. 12 N., R. 7 E.

Table 19.--Chemical Analyses of Selected Soils

(TR means trace)

| Soil name and sample number | Depth | Horizon | Extractable bases Ca | K | Mg | Na | Extractable aluminum | Cation-exchange capacity | Base saturation | Reaction |
|---|---|---|---|---|---|---|---|---|---|---|
| | In | | Meq/100g | | | | Meq/100g | Meq/100g | Pct | pH |
| Annemaine:[1, 2] | | | | | | | | | | |
| (S71AL-66-13) | 0-5 | Ap | 3.00 | 0.26 | 0.66 | --- | --- | 7.36 | 53 | 5.3 |
| | 5-9 | E | 0.99 | 0.38 | 0.52 | --- | --- | 5.73 | 33 | 4.9 |
| | 9-16 | Bt1 | 0.88 | 0.78 | 3.54 | --- | --- | 17.04 | 30 | 4.8 |
| | 16-37 | Bt2 | 0.24 | 0.55 | 2.30 | --- | --- | 15.73 | 19 | 4.9 |
| | 37-49 | BC | 0.18 | 0.24 | 1.05 | --- | --- | 12.51 | 11 | 4.8 |
| | 49-74 | C1 | 0.12 | 0.15 | 0.59 | --- | --- | 8.06 | 10 | 4.9 |
| | 74-90 | C2 | 0.18 | 0.14 | 0.52 | --- | --- | 7.80 | 10 | 4.8 |
| Bama:[1, 2] | | | | | | | | | | |
| (S89AL-131-1) | | | | | | | | | | |
| | 0-5 | Ap | 1.44 | 0.43 | 0.48 | 0.10 | 0.10 | 69.70 | 53 | 5.5 |
| | 5-42 | Bt1 | 1.90 | 0.22 | 0.79 | 0.11 | 0.40 | 19.84 | 50 | 5.4 |
| | 42-65 | Bt2 | 0.34 | 0.07 | 0.49 | 0.11 | 2.10 | 17.80 | 20 | 4.7 |
| Brantley:[2, 3] | | | | | | | | | | |
| (S94AL-131-1) | 0-5 | A | 11.94 | 0.44 | 2.74 | 0.09 | 0.19 | 25.74 | 67 | 5.4 |
| | 5-8 | BA | 5.52 | 0.34 | 2.04 | 0.04 | 4.32 | 17.66 | 52 | 5.0 |
| | 8-18 | Bt1 | 5.79 | 0.33 | 1.75 | 0.06 | 6.69 | 19.54 | 54 | 5.0 |
| | 18-25 | Bt2 | 4.53 | 0.25 | 1.26 | 0.04 | 7.91 | 17.72 | 48 | 4.9 |
| | 25-31 | Bt3 | 2.95 | 0.21 | 0.91 | 0.04 | 7.44 | 15.50 | 38 | 4.9 |
| | 31-42 | Bt4 | 3.35 | 0.24 | 1.01 | 0.05 | 8.27 | 16.84 | 41 | 4.9 |
| | 42-48 | Bt5 | 3.03 | 0.20 | 0.76 | 0.06 | 8.03 | 15.40 | 37 | 4.8 |
| | 48-53 | C1 | 3.17 | 0.22 | 0.74 | 0.06 | 5.94 | 14.00 | 37 | 4.7 |
| | 53-65 | C2 | 4.16 | 0.21 | 0.50 | 0.06 | 1.50 | 10.10 | 39 | 5.1 |
| Cahaba:[1, 2] | | | | | | | | | | |
| (S71AL-66-9) | 0-5 | Ap | 2.40 | 0.30 | 0.66 | --- | --- | 5.92 | 56 | 5.7 |
| | 5-9 | AB | 3.60 | 0.17 | 0.52 | --- | --- | 7.09 | 60 | 5.5 |
| | 9-18 | Bt1 | 5.16 | 0.13 | 0.66 | --- | --- | 8.59 | 69 | 5.7 |
| | 18-53 | Bt2 | 1.96 | 0.12 | 0.92 | --- | --- | 7.88 | 38 | 4.8 |
| | 53-80 | C1 | 0.32 | 0.09 | 0.33 | --- | --- | 4.34 | 17 | 4.6 |
| | 80-90 | C2 | 0.28 | 0.08 | 0.72 | --- | --- | 4.60 | 23 | 4.6 |
| Chrysler:[1, 2] | | | | | | | | | | |
| (S88AL-131-1) | 0-5 | Ap | 2.86 | 0.18 | 1.09 | 0.09 | 0.37 | 12.12 | 52 | 5.5 |
| | 5-10 | Bt1 | 0.64 | 0.18 | 1.33 | 0.10 | 3.53 | 11.70 | 32 | 5.1 |
| | 10-18 | Bt2 | 0.44 | 0.20 | 2.05 | 0.12 | 7.79 | 17.22 | 19 | 5.1 |
| | 18-23 | Bt3 | 0.15 | 0.19 | 1.67 | 0.14 | 9.07 | 18.07 | 15 | 5.2 |
| | 23-35 | Bt4 | 0.04 | 0.14 | 1.33 | 0.14 | 9.70 | 17.18 | 12 | 5.2 |
| | 35-51 | Bt5 | 0.03 | 0.14 | 1.21 | 0.16 | 12.19 | 18.40 | 11 | 5.0 |
| | 51-65 | Bt6 | 0.04 | 0.15 | 1.22 | 0.14 | 14.13 | 20.72 | 10 | 4.9 |
| Izagora:[1, 2] | | | | | | | | | | |
| (S71AL-66-8) | 0-6 | Ap1 | 3.48 | 0.16 | 0.66 | --- | --- | 7.10 | 60 | 5.8 |
| | 6-11 | Ap2 | 2.72 | 0.07 | 0.52 | --- | --- | 6.19 | 53 | 5.8 |
| | 11-18 | Bt1 | 3.24 | 0.08 | 0.66 | --- | --- | 7.34 | 54 | 5.2 |
| | 18-30 | Bt2 | 2.24 | 0.08 | 0.98 | --- | --- | 7.78 | 42 | 4.9 |
| | 30-46 | Bt3 | 1.06 | 0.12 | 1.77 | --- | --- | 10.79 | 27 | 4.9 |
| | 46-63 | Bt4 | 0.98 | 0.13 | 1.64 | --- | --- | 14.59 | 18 | 4.8 |
| | 63-91 | Bt5 | 0.32 | 0.18 | 1.31 | --- | --- | 14.77 | 12 | 4.6 |

See footnotes at end of table

Table 19.--Chemical Analyses of Selected Soils--Continued

| Soil name and sample number | Depth | Horizon | Extractable bases Ca | K | Mg | Na | Extract-able aluminum | Cation-exchange capacity | Base saturation | Reaction |
|---|---|---|---|---|---|---|---|---|---|---|
| | In | | ---------Meq/100g--------- | | | | --Meq/100g--- | -Meq/100g- | Pct | pH |
| Lenoir:[1, 2] | | | | | | | | | | |
| (S89AL-131-3) | 0-3 | A | 1.09 | 0.18 | 0.74 | 0.13 | 3.59 | 11.55 | 31 | 4.6 |
| | 3-13 | Bt | 1.86 | 0.12 | 1.33 | 0.21 | 6.11 | 14.01 | 37 | 5.0 |
| | 13-29 | Btg1 | 0.96 | 0.15 | 1.09 | 0.33 | 14.11 | 19.32 | 19 | 5.0 |
| | 29-41 | Btg2 | 0.49 | 0.22 | 1.34 | 0.68 | 20.45 | 24.81 | 16 | 4.8 |
| | 41-65 | Btg3 | 0.55 | 0.20 | 1.61 | 1.10 | 21.40 | 25.64 | 34 | 4.6 |
| Lucedale:[1, 2] | | | | | | | | | | |
| (S92AL-131-3) | 0-7 | Ap | 3.22 | 0.53 | 1.15 | 0.12 | 0.19 | 8.34 | 65 | 6.2 |
| | 7-16 | Bt1 | 1.80 | 0.33 | 0.50 | 0.11 | 0.00 | 5.19 | 47 | 5.9 |
| | 16-42 | Bt2 | 1.11 | 0.14 | 0.16 | 0.10 | 1.07 | 4.99 | 30 | 5.0 |
| | 42-80 | Bt3 | 0.73 | 0.12 | 0.42 | 0.10 | 1.33 | 4.97 | 23 | 4.8 |
| Luverne:[4, 5] | | | | | | | | | | |
| (S90AL-131-2) | 0-6 | Ap | 3.2 | 0.5 | 3.3 | 0.1 | 1.6 | 15.5 | 46 | 4.8 |
| | 6-16 | Bt1 | 4.0 | 0.5 | 6.9 | 0.2 | 8.8 | 30.1 | 39 | 4.9 |
| | 16-28 | Bt2 | 1.4 | 0.4 | 6.0 | 0.2 | 11.3 | 27.1 | 30 | 4.7 |
| | 28-38 | Bt3 | 0.7 | 0.4 | 6.7 | 0.2 | 11.8 | 26.2 | 31 | 4.5 |
| | 38-55 | Bt4 | --- | --- | --- | --- | 11.8 | 18.1 | --- | 4.7 |
| | 55-61 | BC | 0.4 | 0.3 | 6.8 | 0.3 | 11.6 | 25.7 | 30 | 4.4 |
| | 61-68 | C1 | 0.4 | 0.2 | 3.1 | 0.1 | 5.2 | 13.5 | 28 | 4.6 |
| | 68-118 | C2 | 0.5 | 0.3 | 6.3 | 0.2 | 9.6 | 22.9 | 32 | 4.7 |
| | 118-126 | C3 | 0.5 | 0.2 | 3.2 | TR | 4.9 | 13.0 | 30 | 4.8 |
| Malbis:[5, 6] | | | | | | | | | | |
| (S81AL-131-1) | 0-5 | Ap | 4.7 | 0.1 | 0.6 | 0.20 | 2.5 | 5.9 | 69 | 6.3 |
| | 5-10 | E | 1.6 | TR | 0.1 | TR | 0.7 | 2.4 | 71 | 6.0 |
| | 10-27 | Bt | 1.7 | 0.1 | 0.5 | TR | 5.1 | 6.5 | 31 | 4.9 |
| | 27-39 | Btv1 | 0.3 | 0.1 | 0.6 | --- | 4.3 | 5.0 | 19 | 4.8 |
| | 39-48 | Btv2 | 0.2 | 0.1 | 0.5 | --- | 7.0 | 7.1 | 10 | 4.8 |
| | 48-57 | Btv3 | 0.1 | 0.1 | 0.3 | --- | 7.6 | 7.3 | 6 | 4.7 |
| | 57-80 | B't1 | TR | 0.1 | 0.2 | --- | 8.8 | 7.9 | 3 | 4.6 |
| | 80-100 | B't2 | 0.1 | 0.1 | 0.2 | --- | 9.1 | 9.5 | 4 | 4.5 |
| Saffell:[1, 2] | | | | | | | | | | |
| (S89AL-131-1) | 0-5 | A | 1.63 | 0.10 | 0.42 | 0.07 | 0.03 | 4.14 | 59 | 5.9 |
| | 5-11 | E | 0.74 | 0.08 | 0.33 | 0.10 | 0.00 | 2.12 | 59 | 6.0 |
| | 11-23 | Bt1 | 0.52 | 0.11 | 0.64 | 0.10 | 2.31 | 5.41 | 28 | 5.0 |
| | 23-37 | Bt2 | 0.20 | 0.11 | 0.50 | 0.10 | 2.48 | 4.43 | 19 | 4.8 |
| | 37-49 | BC | 0.11 | 0.07 | 0.39 | 0.11 | 1.55 | 2.82 | 21 | 4.8 |
| | 49-61 | C1 | 0.17 | 0.05 | 0.26 | 0.08 | 0.72 | 1.77 | 23 | 4.7 |
| | 61-80 | C2 | 0.25 | 0.05 | 0.19 | 0.08 | 0.71 | 1.75 | 36 | 4.9 |
| Sumter:[1, 2] | | | | | | | | | | |
| (S90AL-131-6) | 0-7 | Ap | 29.64 | 0.55 | 1.16 | 0.13 | --- | 39.44 | 80 | 7.8 |
| | 7-20 | Bk1 | 22.98 | 0.28 | 0.20 | 0.14 | --- | 25.88 | 91 | 8.1 |
| | 20-26 | Bk2 | 22.46 | 0.61 | 0.20 | 0.15 | --- | 25.68 | 91 | 8.1 |
| | 26-38 | C | 21.72 | 0.52 | 0.27 | 0.16 | --- | 23.11 | 98 | 8.2 |
| | 38-60 | Cr | 12.40 | 0.44 | 0.37 | 0.10 | --- | 6.18 | --- | 7.5 |
| Una:[1, 2] | | | | | | | | | | |
| (S88AL-131-6) | 0-2 | A1 | 1.99 | 0.44 | 0.89 | 0.28 | 7.17 | 25.60 | 33 | 4.3 |
| | 2-6 | A2 | 2.07 | 0.46 | 0.89 | 0.24 | 7.71 | 27.26 | 36 | 4.3 |
| | 6-20 | Bg1 | 1.20 | 0.19 | 0.30 | 0.35 | 11.66 | 19.22 | 23 | 4.4 |
| | 20-42 | Bg2 | 1.66 | 0.22 | 0.37 | 0.47 | 14.19 | 24.15 | 29 | 4.3 |
| | 42-55 | Bg3 | 1.63 | 0.18 | 0.36 | 0.53 | 15.05 | 25.90 | 38 | 4.3 |
| | 55-65 | Bg4 | 1.47 | 0.25 | 0.33 | 0.58 | 14.03 | 22.83 | 34 | 4.4 |

See footnotes at end of table

Table 19.--Chemical Analyses of Selected Soils--Continued

| Soil name and sample number | Depth | Horizon | Extractable bases Ca | K | Mg | Na | Extract-able aluminum | Cation-exchange capacity | Base saturation | Reaction |
|---|---|---|---|---|---|---|---|---|---|---|
| | In | | Meq/100g | | | | Meq/100g | Meq/100g | Pct | pH |
| Wilcox:[1, 2] | | | | | | | | | | |
| (S90AL-131-1) | 0-4 | Ap | 5.96 | 0.81 | 4.19 | 0.20 | --- | 32.08 | 15 | 5.2 |
| | 4-17 | Bt | 6.19 | 1.09 | 7.40 | 0.44 | --- | 43.61 | 19 | 4.7 |
| | 17-41 | Bss1 | 6.88 | 1.15 | 11.06 | 0.86 | --- | 44.51 | 24 | 4.4 |
| | 41-52 | Bss2 | 8.47 | 1.45 | 13.97 | 1.37 | --- | 44.91 | 28 | 4.0 |
| | 52-64 | Cr1 | 9.94 | 1.86 | 17.49 | 1.64 | --- | 44.87 | 33 | 4.3 |
| | 64-70 | Cr2 | 10.73 | 1.62 | 19.47 | 1.77 | --- | 43.93 | 34 | 4.8 |

[1] This is the typical pedon for the series in Wilcox County. For the description and location of the soil, see the section "Soil Series and Their Morphology."

[2] Analyses by the Agronomy and Soils Clay Mineralogy Laboratory, Auburn University, and the Alabama Agricultural Experiment Station, Auburn, Alabama.

[3] This pedon is in an area of Brantley sandy clay loam, 15 to 35 percent slopes, eroded. It is about 100 feet south and 300 feet east of the NW 1/4 of sec. 2, T. 10 N., R. 8 E.

[4] This pedon is in an area of Luverne fine sandy loam, 15 to 35 percent slopes. It is about 1.5 miles south of the Fatama Fire Tower, in the NW 1/4 of sec. 2, T. 10 N., R. 8 E.

[5] Analyses by the National Soil Survey Laboratory, Natural Resources Conservation Service, Lincoln, Nebraska.

[6] This pedon is in an area of Malbis fine sandy loam, 2 to 5 percent slopes. It is at the lower Coastal Plains Experiment Station in the SE 1/4, NE 1/4, SE 1/4 of sec. 12, T. 12 N., R. 7 E.

Table 20.--Engineering Index Test Data

(LL means liquid limit; PI, plasticity index; MD, maximum dry density; OM, optimum moisture; and NP nonplastic. These soils are the typical pedons for the series in Wilcox County. For the description and location of the pedons, see the section "Soil Series and Their Morphology." Analyses by the Alabama Highway Department, Bureau of Materials and Tests, Montgomery, Alabama)

| Soil name, report number, horizon, and depth in inches | Classification | | Grain-size distribution | | | | LL | PI | Moisture density | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Percentage passing sieve-- | | | | | | | |
| | AASHTO | Unified | No. 4 | No. 10 | No. 40 | No. 200 | | | MD | OM |
| | | | | | | | | Pct | Lb/ cu ft | Pct |
| Annemaine: | | | | | | | | | | |
| (S71AL-66-13) | | | | | | | | | | |
| Ap-------0 to 5 | A-4(0) | SM-SC | 100 | 100 | 99 | 39 | NP | NP | 109 | 14 |
| Bt1------9 to 16 | A-7-6(10) | CL | 100 | 100 | 100 | 63 | 42 | 18 | 104 | 17 |
| Bt2-----16 to 37 | A-7-6(4) | ML | 100 | 100 | 100 | 52 | 41 | 14 | 107 | 18 |
| BC------37 to 49 | A-4(0) | SC | 100 | 100 | 100 | 38 | 32 | 8 | 111 | 16 |
| C1------49 to 74 | A-6(2) | ML | 100 | 100 | 100 | 40 | 38 | 13 | 110 | 16 |
| C2------74 to 90 | A-2-4(0) | SM-SC | 100 | 100 | 100 | 27 | NP | NP | 111 | 15 |
| Bama: | | | | | | | | | | |
| (S89AL-131-4) | | | | | | | | | | |
| Ap-------0 to 5 | A-4(0) | SM-SC | 100 | 100 | 99 | 44 | NP | NP | 118 | 8 |
| Bt1------5 to 42 | A-6(11) | CL | 100 | 100 | 99 | 66 | 39 | 19 | 115 | 15 |
| Bt2-----42 to 65 | A-6(5) | CL | 100 | 100 | 100 | 58 | 33 | 13 | 116 | 15 |
| Cahaba: | | | | | | | | | | |
| (S71AL-66-9) | | | | | | | | | | |
| Ap-------0 to 5 | A-4(0) | SM-SC | 100 | 100 | 95 | 42 | NP | NP | 111 | 9 |
| Bt1------9 to 18 | A-6(9) | CL | 100 | 100 | 97 | 63 | 36 | 18 | 114 | 14 |
| Bt2-----18 to 53 | A-6(7) | CL | 100 | 100 | 98 | 65 | 37 | 15 | 112 | 16 |
| C1------53 to 80 | A-2-4(0) | SC | 99 | 98 | 73 | 30 | 31 | 8 | 118 | 12 |
| Chrysler: | | | | | | | | | | |
| (S88AL-131-1) | | | | | | | | | | |
| AP-------0 to 5 | A-4(0) | ML | 100 | 99 | 97 | 52 | NP | NP | 101 | 17 |
| Bt2-----10 to 18 | A-7-5(28) | MH | 100 | 100 | 99 | 85 | 63 | 28 | 92 | 27 |
| Bt4-----23 to 35 | A-7-5(20) | MH | 100 | 100 | 98 | 78 | 58 | 24 | 95 | 24 |
| Bt5-----35 to 51 | A-7-5(27) | MH | 100 | 100 | 99 | 86 | 60 | 27 | 94 | 26 |
| Izagora: | | | | | | | | | | |
| (S71AL-66-8) | | | | | | | | | | |
| Ap1------0 to 6 | A-4(0) | CL-ML | 100 | 100 | 97 | 68 | 23 | 3 | 110 | 12 |
| Bt2-----18 to 30 | A-4(3) | CL-ML | 100 | 100 | 98 | 69 | 24 | 9 | 121 | 13 |
| Bt3-----30 to 46 | A-6(12) | CL | 100 | 100 | 98 | 74 | 38 | 17 | 113 | 15 |
| Bt4-----46 to 63 | A-7-6(15) | CL | 100 | 100 | 99 | 74 | 47 | 22 | 102 | 18 |
| Bt5-----63 to 91 | A-7-6(17) | CL | 100 | 100 | 99 | 76 | 49 | 23 | 101 | 20 |
| Lenoir: | | | | | | | | | | |
| (S89AL-131-3) | | | | | | | | | | |
| Bt-------3 to 13 | A-7-6(23) | CL | 100 | 100 | 100 | 90 | 43 | 18 | 102 | 21 |
| Btg1----13 to 29 | A-7-6(32) | CH | 100 | 100 | 100 | 94 | 53 | 30 | 97 | 22 |
| Btg2----29 to 41 | A-7-6(42) | CH | 100 | 100 | 100 | 95 | 66 | 37 | 95 | 24 |
| Btg3----41 to 65 | A-7-6(46) | CH | 100 | 100 | 100 | 95 | 70 | 41 | 96 | 23 |

Table 21.--Classification of the Soils

| Soil name | Family or higher taxonomic class |
|---|---|
| Annemaine | Fine, mixed, semiactive, thermic Aquic Hapludults |
| Arundel | Fine, smectitic, thermic Typic Hapludults |
| Bama | Fine-loamy, siliceous, subactive, thermic Typic Paleudults |
| Beatrice | Very-fine, smectitic, thermic Vertic Hapludults |
| Bigbee | Thermic, coated Typic Quartzipsamments |
| Boykin | Loamy, siliceous, active, thermic Arenic Paleudults |
| Brantley | Fine, mixed, active, thermic Ultic Hapludalfs |
| Cahaba | Fine-loamy, siliceous, semiactive, thermic Typic Hapludults |
| Canton Bend | Fine, mixed, semiactive, thermic Ultic Hapludalfs |
| Cantuche | Loamy-skeletal, mixed, active, acid, thermic, shallow Typic Udorthents |
| Chrysler | Fine, mixed, semiactive, thermic Aquic Paleudults |
| Congaree | Fine-loamy, mixed, active, nonacid, thermic Typic Udifluvents |
| Demopolis | Loamy, carbonatic, thermic, shallow Typic Udorthents |
| Escambia | Coarse-loamy, siliceous, semiactive, thermic Plinthaquic Paleudults |
| Freest | Fine-loamy, siliceous, active, thermic Aquic Paleudalfs |
| Halso | Fine, smectitic, thermic Vertic Hapludults |
| *Houlka | Fine, smectitic, thermic Aeric Epiaquerts |
| Izagora | Fine-loamy, siliceous, semiactive, thermic Aquic Paleudults |
| Jedburg | Fine-loamy, siliceous, semiactive, thermic Aeric Paleaquults |
| Kinston | Fine-loamy, siliceous, semiactive, acid, thermic Typic Fluvaquents |
| Kipling | Fine, smectitic, thermic Vertic Paleudalfs |
| Lenoir | Fine, mixed, semiactive, thermic Aeric Paleaquults |
| Lucedale | Fine-loamy, siliceous, subactive, thermic Rhodic Paleudults |
| Luverne | Fine, mixed, semiactive, thermic Typic Hapludults |
| Malbis | Fine-loamy, siliceous, subactive, thermic Plinthic Paleudults |
| Mantachie | Fine-loamy, siliceous, active, acid, thermic Aeric Endoaquepts |
| Mooreville | Fine-loamy, siliceous, active, thermic Fluvaquentic Dystrochrepts |
| Oktibbeha | Very-fine, smectitic, thermic Chromic Dystruderts |
| Poarch | Coarse-loamy, siliceous, semiactive, thermic Plinthic Paleudults |
| Riverview | Fine-loamy, mixed, active, thermic Fluventic Dystrochrepts |
| Saffell | Loamy-skeletal, siliceous, semiactive, thermic Typic Hapludults |
| Searcy | Fine, mixed, active, thermic Aquic Paleudalfs |
| Smithdale | Fine-loamy, siliceous, subactive, thermic Typic Hapludults |
| Sucarnoochee | Fine, smectitic, thermic Chromic Epiaquerts |
| Sumter | Fine-silty, carbonatic, thermic Rendollic Eutrochrepts |
| Udorthents | Typic Udorthents |
| Una | Fine, mixed, active, acid, thermic Typic Epiaquepts |
| *Urbo | Fine, mixed, active, acid, thermic Vertic Epiaquepts |
| Vaiden | Very-fine, smectitic, thermic Aquic Dystruderts |
| Watsonia | Clayey, smectitic, thermic, shallow Leptic Hapluderts |
| Wilcox | Very-fine, smectitic, thermic Chromic Dystruderts |

* The soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.