United States
Department of
Agriculture

Soil
Conservation
Service

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

Soil Survey of Sumter County, Alabama

How To Use This Soil Survey

General Soil Map

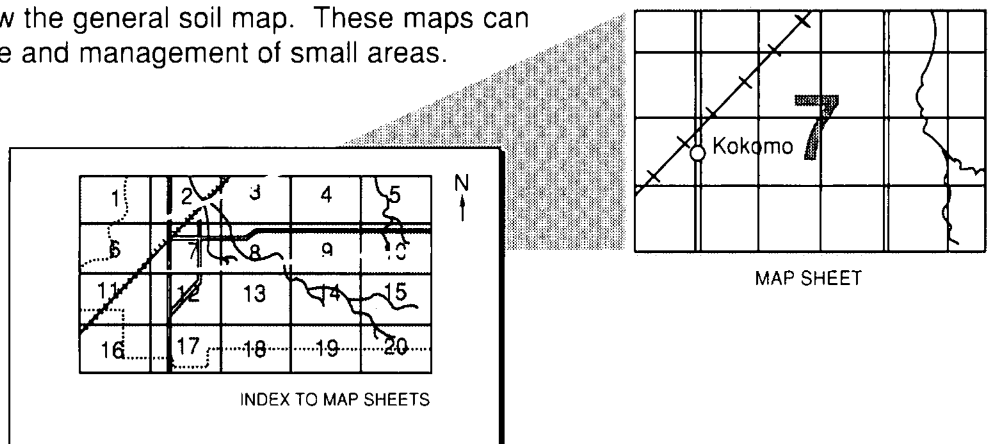
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

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.

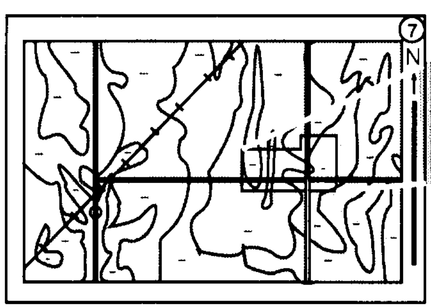
Detailed Soil Maps

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

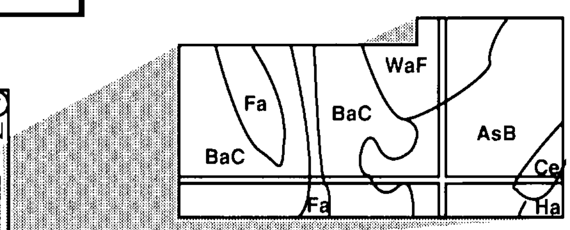
To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



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



MAP SHEET



AREA OF INTEREST

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 **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **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 Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1985. Soil names and descriptions were approved in 1985. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1985. This soil survey was made cooperatively by the Soil Conservation Service, the Alabama Agricultural Experiment Station, The Alabama Cooperative Extension Service, the Alabama Soil and Water Conservation Committee, and the Alabama Department of Agriculture and Industries. It is part of the technical assistance furnished to the Sumter 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.

All programs and services of the Soil Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: Bahiagrass is one of the main perennial grasses grown in Sumter County for pasture. The soil is Luverne sandy loam, 2 to 5 percent slopes. Many ponds for livestock use are in the county.

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Soil Series

Issued September 1989

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Summary of Tables

Foreword

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

This soil survey is designed for many different users. Farmers, 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 insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to 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 Soil Conservation Service or the Cooperative Extension Service.

Ernest V. Todd
State Conservationist
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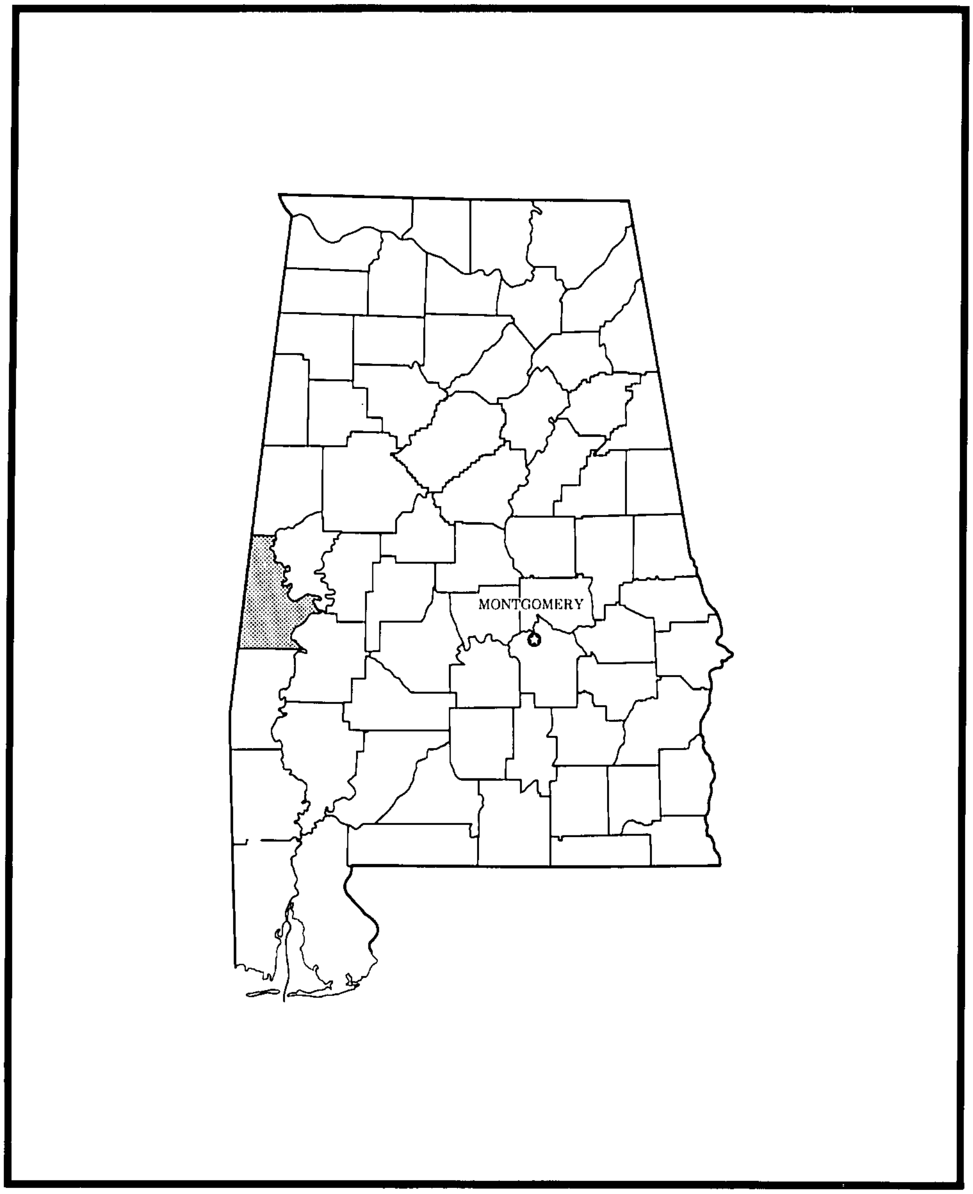

Location of Sumter County in Alabama.

Soil Survey of Sumter County, Alabama

By MacArthur C. Harris, Soil Conservation Service

Fieldwork by MacArthur C. Harris and Johnny C. Trayvick,
Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
In cooperation with
Alabama Agricultural Experiment Station and
Alabama Soil and Water Conservation Committee

SUMTER COUNTY is in the west-central part of the state and covers an area of about 907 square miles, or 580,555 acres. Livingston, the county seat, is near the center of the county. The population of the county in 1980 was about 16,900 *(25)*.

The Alabama-Mississippi state line forms the west boundary of the county, and the Tombigbee River, with its large irregular bends, forms the east boundary. Pickens County forms the north border, and Choctaw County forms the south boundary.

Farming is the main economic enterprise in Sumter County. The climate is favorable for grain and livestock farming. The major crops are corn, soybeans, wheat, and grass hay. Small timber industries include plywood manufacturing, pulp wood, and saw timber.

The county is in two major land resource areas. The central to northern part is mainly Blackland Prairie. The southern and eastern part is mainly Southern Coastal Plain.

Blackland Prairie soils are mostly clayey. They are on rough, undulating to steep ridges and hills. The Coastal Plain soils are mostly medium textured and are on side slopes that are undulating to rolling and gently sloping to steep. Soils of the Coastal Plain along the Tombigbee River are mostly level to undulating terraces.

This soil survey updates a soil survey of Sumter County published in 1904 and updated in 1941, and it provides additional information on the soils of Sumter County.

General Nature of the Survey Area

The history and land use of Sumter County and the climate are described in this section.

History and Land Use

Settlers came to Sumter County in 1831 from the Southern Atlantic states, primarily from the central and eastern parts of North Carolina. During the early 1830's, most agriculture was subsistence farming, mainly corn and potatoes grown for home use. By 1840, cotton was the principal cash crop.

Before the infestation of the boll weevil, the clayey soils of the Blackland Prairie were the most desirable soils for production of cotton. Fair to good yields were produced on soils of the Coastal Plain and river bottom lands. Sandy soils were not considered good for cotton production. Most farming was done without a commercial fertilizer; however, a few farmers used a side dressing of nitrate of soda.

After the boll weevil infestation in the early 1900's, some very important and lasting changes occurred in agricultural practices. Most of the clayey soils, which took longer to warm up or were too wet during planting time, were taken out of cotton production and used for hay and pasture. The sandy soils were used for truck crops.

In 1980 the principal crops of Sumter County were soybeans and small grains, mostly wheat.

Climate

Prepared by the National Climatic Data Center, Asheville, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Livingston, Alabama, in the period 1951 to 1980. 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 at Livingston on January 19, 1977, is 2 degrees. In summer the average temperature is 80 degrees, and the average daily maximum temperature is 92 degrees. The highest recorded temperature, which occurred at Livingston on July 9, 1977, is 106 degrees.

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

The total annual precipitation is 56 inches. Of this, 26 inches, or 46 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 20 inches. The heaviest 1-day rainfall during the period of record was 6.42 inches at Livingston on April 13, 1974. Thunderstorms occur on about 61 days each year, and most occur in summer.

Snowfall is rare. In 99 percent of the winters, there is no measurable snowfall. In 1 percent, the snowfall, usually of short duration, is more than 1 inch.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 65 percent of the time possible in summer and 55 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 9 miles per hour, in spring.

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

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; 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 from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

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

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

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

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were 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 were 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 state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

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

Survey Procedures

The general procedures followed in making this soil survey are described in the Soil Conservation Service National Soil Handbook. The soil surveys of Sumter County published in 1904 and 1941 and the geology of Sumter County were among the references used.

Before the actual fieldwork began, preliminary boundaries of landforms were plotted stereoscopically on quadcentered aerial photographs at a scale of 1:80,000 and enlarged to a scale of 1:24,000. U.S. Geological Survey topographic maps and aerial photographs were studied to relate land and image features.

Traverses on foot and by vehicle were mostly made at intervals of about one-fourth mile, but they were made at closer intervals in areas of high variability. Soil examinations along the traverse were made 100 to 800 yards apart, depending on the landscape and soil pattern *(14)*. Observation of such things as 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 hand auger or a spade to a depth of about 6 feet or to bedrock if the bedrock was at a depth of less than 6 feet. The pedons described as typical were observed and studied in excavations.

Three delineations or less of each map unit were chosen to be representative of the map unit. They were transected to determine the composition of the map unit and to record the kind of vegetation. The point-intercept method of transecting *(13)* was used in open areas. A random transect method *(16)* was used in forested areas and in areas of limited accessibility.

Samples for chemical and physical analysis were taken from the site of the typical pedon of the major soils in the survey area. The analyses were made by the Agronomy and Soil Laboratory, Auburn University, Auburn, Alabama. The results of the analyses are stored in a computerized data file at the laboratory. The results and the laboratory procedures can be obtained from the laboratory.

After completion of the soil mapping on quadcentered aerial photographs, map unit delineations were transferred by hand to aerial photographs at a scale of 1:24,000. Surface drainage was mapped in the field. Cultural features were transferred from U.S. Geological Survey 7.5-minute series topographic maps and were recorded from visual observations.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

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

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

General Soil Map Units

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

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

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

The soils in the survey area vary widely in their suitability for major land uses. Table 4 shows the extent of the map units shown on the general soil map. It lists the suitability of each, in relation to that of the other map units, for major land uses and shows soil properties that limit use. Soil suitability ratings are based on the practices commonly used in the survey area to overcome soil limitations. These ratings reflect the ease of overcoming the limitations. They also reflect the problems that will persist even if such practices are used.

Each map unit is rated for *cultivated crops, pasture and hayland, woodland, urban uses,* and *recreation areas*. Cultivated crops are those grown extensively in the survey area. Pasture and hayland refers to areas of native or introduced grasses or legumes. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Intensive recreation areas are campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic. Extensive recreation areas are those used for nature study and as wilderness.

1. Alamuchee-Annemaine-Mooreville

Nearly level, deep, well drained and moderately well drained soils that have a loamy or clayey subsoil; on flood plains and broad stream terraces

The landscape, characterized by little relief, is low terraces and flood plains of major streams and rivers. Slopes range from 0 to 2 percent. Depressions, narrow sloughs, and shallow drainageways are common within the area. Soils on the flood plains are subject to frequent flooding, and soils on low terraces are occasionally flooded. The natural vegetation is mostly hardwood and pines. A few farmsteads are on the higher terraces.

This map unit makes up about 20 percent of the survey area. It is about 32 percent Alamuchee soils, 22 percent Annemaine soils, 22 percent Mooreville soils, and 24 percent soils of minor extent.

The Alamuchee soils are on broad flood plains and are subject to frequent flooding. These soils are deep and well drained. Typically, they have a brown sandy loam surface layer and a dark yellowish brown sandy loam, loam, and sandy clay loam subsoil. The substratum is stratified yellowish brown and dark yellowish brown loam and sandy loam.

The Annemaine soils are on low terraces and are subject to occasional flooding. These soils are deep and moderately well drained. Typically, they have a dark brown sandy loam surface layer and a yellowish red clay loam and clay subsoil that has yellowish brown, gray, and red mottles. The substratum is very pale brown loamy sand.

The Mooreville soils are on narrow flood plains and are subject to frequent flooding. These soils are deep and moderately well drained. Typically, they have a brown loam surface layer and a yellowish brown sandy clay loam and silty clay loam subsoil that has mottles in shades of yellow, brown, gray, and red. The substratum is mottled gray, strong brown, and red loam.

Of minor extent are the Bigbee, Cahaba, Houlka, and Minter soils. The Bigbee and Cahaba soils are at a slightly higher elevation than the major soils of this map unit, and the Houlka and Minter soils are in depressions on terraces and in low parts of flood plains.

About 20 percent of the acreage of this map unit has been cleared. Most cleared areas are used for soybeans, but a few areas are used as pasture or hayland.

The soils in this map unit are poorly suited to well suited to use as cropland, hayland, and pasture. Frequent flooding is the main concern in managing areas of the Alamuchee and Mooreville soils for crops or pasture. Short-season crops, such as soybeans and grain sorghum, can be grown on these soils in some years. The choice of pasture plants and period of grazing are limited. Although flooding may delay planting in some years, areas of the Annemaine soils and similar soils on low terraces have few limitations for cultivated crops, pasture, or hay.

The soils in this map unit are well suited to use as woodland. Potential productivity of loblolly pine and hardwoods is high. Common trees include loblolly pine, sweetgum, water oak, green ash, yellow poplar, and American sycamore. Wetness from a seasonal high water table and flooding restricts the use of logging equipment late in winter and early in spring. Harvesting and planting operations should be done when the soil is dry.

The soils in this map unit are poorly suited to building site development and sanitary facilities. Flooding is a severe hazard that is difficult to overcome.

These soils are poorly suited to intensive and extensive recreation areas because of flooding. Intensive recreation areas should be located on Annemaine soils because they flood less often and for shorter periods than the Alamuchee and Mooreville soils.

2. Kipling-Demopolis-Sucarnoochee

Nearly level to steep, deep and shallow, somewhat poorly drained and well drained soils that have a clayey or loamy subsoil; on uplands and flood plains

The landscape, characterized by prominent relief, is dissected hills that have gently sloping ridgetops, steep side slopes, and nearly level flood plains. Slopes range from 0 to 25 percent. The drainage pattern is dendritic. Streams are shallow and have narrow to broad flood plains. The natural vegetation is eastern redcedar and pine on the uplands and mixed hardwoods on the flood plains. A few farm structures and dwellings are on the ridgetops. Most roads are on the ridges.

This map unit makes up about 31 percent of the survey area. It is about 35 percent Kipling soils, 28 percent Demopolis soils, 17 percent Sucarnoochee soils, and 20 percent soils of minor extent.

The Kipling soils are nearly level to steep and are on broad to narrow ridgetops and long side slopes. These soils are deep and somewhat poorly drained. Typically, they have a dark grayish brown loam surface layer. The subsoil is yellowish brown clay loam in the upper part. The lower part is clay that is mottled gray, yellow, red, and brown. The substratum is clay that is mottled in shades of yellow and brown.

The Demopolis soils are nearly level to steep and are on broad to narrow ridgetops and short side slopes. These soils are shallow and well drained. Typically, they have a dark grayish brown loam surface layer. The underlying material is light gray extremely channery silty clay loam underlain by light gray soft chalk. Exposed chalk is common in eroded areas of this soil.

The Sucarnoochee soils are nearly level and somewhat poorly drained. These soils are on broad to narrow flood plains. Typically, the surface and subsurface layers are dark grayish brown silty clay. The subsoil is gray and very dark gray clay that has mottles in shades of yellow and brown.

Of minor extent are the Okolona, Sumter, and Vaiden soils on the smooth ridgetops and gently sloping toe slopes.

About 35 percent of the acreage of this map unit has been cleared and is used for pasture and cultivated crops. The rest is woodland.

The soils in this map unit are fairly suited to poorly suited to cultivated crops, pasture, and hay. The main limitations are the sloping topography, poor tilth, wetness of the Kipling and Sucarnoochee soils, and the depth to bedrock of the Demopolis soils. Flooding is an additional concern in areas of the Sucarnoochee soils. Erosion is a concern if the Kipling and Demopolis soils are tilled. Crop rotation, cover crops, water disposal systems, and contour farming help control erosion.

These soils are well suited to poorly suited to use as woodland. Kipling soils in hilly areas are well suited to loblolly pine, and productivity is high. Demopolis soils are not suited to loblolly pine, but productivity of eastern redcedar is moderate. Sucarnoochee soils are suited to hardwoods, and productivity of sweetgum is high. Flooding and wetness late in winter and early in spring restrict the use of logging equipment in areas of the Sucarnoochee soils. Steepness of slope, the clayey texture, and wetness are limitations to the use of logging equipment in areas of the Kipling and Demopolis soils. Erosion is a hazard along logging roads and skid trails.

These soils are poorly suited to building site development and sanitary facilities. Erosion, depth to bedrock, high shrink-swell potential, very slow permeability, and the hazard of flooding along the drainageways are the major limitations. These limitations are difficult to overcome.

The soils in this map unit are poorly suited to intensive recreation areas and fairly suited to extensive recreation areas. The main limitations are wetness, the clayey texture, slope, and slow permeability. Flooding is a hazard on the Sucarnoochee soils.

3. Wilcox-Mayhew

Nearly level to gently sloping, deep, somewhat poorly drained and poorly drained soils that have a clayey subsoil; on broad upland plateaus

The landscape, characterized by little relief, is nearly level to gently sloping, very broad ridgetops and gently sloping side slopes. Slopes range from 0 to 5 percent. Streams are deeply incised, narrow, and winding. The natural vegetation is mixed hardwoods and pines. Many areas have been clearcut and replanted to loblolly pine. A few farm structures are in some of the open areas on the gently sloping ridgetops. Most roads are on the ridges.

This map unit makes up about 14 percent of the survey area. It is about 64 percent Wilcox soils, 32 percent Mayhew soils, and 4 percent soils of minor extent.

The Wilcox soils are nearly level to gently sloping and are on slightly convex ridgetops and side slopes. These soils are deep and somewhat poorly drained. Typically they have a dark brown silty clay surface layer. The upper part of the subsoil is yellowish red silty clay that has gray mottles, and the lower part is mottled gray, red, and brown clay. The substratum is gray and grayish brown soft, acid shale.

The Mayhew soils are nearly level and are on broad, smooth ridgetops. These soils are deep and poorly drained. Typically, they have a dark grayish brown silty clay loam surface layer. The upper part of the suboil is gray clay, and the lower part is mottled gray and brown silty clay and gray clay. The subsoil is underlain by olive gray and black, soft, acid shale.

Of minor extent are the Alamuchee, Luverne, Mooreville, and Sucarnoochee soils. The Alamuchee, Mooreville, and Sucarnoochee soils are in the drainageways, and the Luverne soils are on adjacent side slopes.

About 15 percent of the acreage of this map unit has been cleared. Most cleared areas are in cultivated crops or pasture.

The soils in this map unit are fairly suited to cultivated crops and pasture. The main limitations are wetness and poor tilth. Erosion is a concern in areas of Wilcox soils that are used for cultivated crops. Drainage is needed in areas of Mayhew soils; however, many areas do not have a suitable outlet. Crop rotation using a sod crop part of the time helps to maintain tilth and organic matter content. Conservation tillage, cover crops, grassed waterways, and contour farming help to control runoff and reduce erosion.

These soils are well suited to use as woodland. Common trees include loblolly pine, shortleaf pine, sweetgum, and water oak. Productivity of loblolly pine is high. The clayey texture and wetness are limitations to the use of logging equipment during rainy periods. Harvesting and planting operations should be done during the summer and fall.

The soils in this map unit are poorly suited to building site development and sanitary facilities because of wetness, very slow permeability, the clayey texture, and high shrink-swell potential. These limitations are difficult to overcome.

These soils are poorly suited to intensive and extensive recreation areas. The main limitations are wetness, the clayey texture, very slow permeability, and high shrink-swell potential.

4. Savannah-Smithdale-Escambia

Nearly level to gently sloping, deep, moderately well drained, well drained, and somewhat poorly drained soils that have a loamy subsoil; on broad terraces and uplands

The landscape, characterized by little relief, is dominated by broad, nearly level to gently sloping ridgetops and gently sloping side slopes. It is mostly dissected by intermittent streams. The drainage pattern is dendritic. Slopes range from 0 to 5 percent. The natural vegetation is mixed hardwoods and pines. Farm structures are common in some open areas, mainly in areas of Savannah or Smithdale soils.

This map unit makes up about 13 percent of the survey area. It is about 37 percent Savannah soils, 25 percent Smithdale soils, 12 percent Escambia soils, and 26 percent soils of minor extent.

The Savannah soils are moderately well drained and are on smooth, nearly level ridgetops and gently sloping side slopes. Typically, they have a yellowish brown loam surface layer. The subsoil is strong brown loam overlying a mottled yellowish brown, strong brown, light gray, and yellowish red loam and clay loam fragipan.

The Smithdale soils are well drained and are on smooth, gently sloping ridges and side slopes. Typically, they have a dark brown loamy sand surface layer and a yellowish red loamy sand subsurface layer. The subsoil is yellowish red sandy clay loam and sandy loam.

The Escambia soils are somewhat poorly drained and are in nearly level depressions. Typically, they have a very dark gray sandy loam surface layer. The upper part of the subsoil is pale brown and light yellowish brown sandy loam that has mottles in shades of brown and gray. The lower part is mottled yellowish brown, gray, strong brown, and yellowish red sandy loam and sandy clay loam. Plinthite is in the lower part of the subsoil.

Of minor extent are the Alamuchee and Mooreville soils in drainageways.

About 20 percent of the acreage of this map unit has been cleared. Most of the cleared areas are used for cultivated crops, pasture, or hay.

The soils in this map unit are well suited to cultivated crops (fig. 1), pasture, and hay. Erosion and wetness are the major concerns in use and management. Areas of Escambia soils are wet for long periods during winter and spring, and some areas are difficult to drain because a suitable outlet is not available. The wetter areas are poorly suited to pasture during these seasons. Crop rotation, using a sod crop part of the time, helps to control erosion and maintain good tilth and organic matter content.

The soils in this map unit are well suited to use as woodland. Common trees include loblolly pine, sweetgum, and mixed hardwoods. Productivity of loblolly pine is moderate to high. Wetness restricts the use of logging equipment in areas of the Escambia soils during the wet seasons. Erosion is a hazard along logging roads and skid trails in the more sloping areas of Savannah and Smithdale soils.

The Smithdale soils are well suited to building site development and most sanitary facilities, and the Escambia and Savannah soils are poorly suited to these

Figure 1.—Cultivated crops, such as corn, grow well on Savannah loam, 0 to 2 percent slopes.

uses. Wetness and slow permeability are the main limitations of the Escambia and Savannah soils. These limitations can be overcome by surface drainage and deep drainage if suitable outlets are available.

The soils in the map unit range from well suited to poorly suited to use as intensive and extensive recreation areas. Wetness and slow permeability are the main limitations to the use of the Escambia soils. Savannah and Smithdale soils have few limitations for these uses.

5. Luverne-Troup

Gently sloping to steep, deep, well drained soils that have a clayey subsoil or a thick sandy subsurface layer and a loamy subsoil; on uplands

The landscape, characterized by prominent relief, is dissected uplands that have moderately wide, gently sloping ridgetops separated by moderately steep to steep side slopes. Slopes range from 2 to 25 percent. The drainage pattern is dendritic. Well-defined stream channels, most intermittent, wind through narrow flood plains. The natural vegetation is mostly mixed hardwoods and pines. Farm structures are few and generally on the wider ridgetops. Most roads are on the ridges.

This map unit makes up about 22 percent of the survey area. It is about 60 percent Luverne soils, 13 percent Troup soils, and 27 percent soils of minor extent.

The Luverne soils are on sloping to steep side slopes (fig. 2) and on narrow, gently sloping ridgetops. Typically, these soils have a brown sandy loam surface layer. The upper part of the subsoil is reddish brown and yellowish red clay, and the lower part is mottled red and strong brown clay loam. The substratum is stratified sandy loam, loam, sandy clay loam, and clay loam. It is mottled in shades of yellow, red, brown, and gray.

The Troup soils are on smooth, gently sloping ridgetops and on upper parts of sloping to steep side slopes. Typically, these soils have a dark yellowish brown loamy sand surface layer and a strong brown and reddish yellow loamy sand subsurface layer. The subsoil is strong brown sandy clay loam.

Of minor extent are the Mayhew and Wilcox soils on uplands and the Alamuchee and Mooreville soils in the drainageways.

About 10 percent of the acreage of this map unit has been cleared. Most cleared areas are used as pasture, but small isolated areas are in cultivated crops. The remaining acreage is in mixed hardwoods and loblolly pine.

The soils in this map unit are fairly suited to pasture, hay, and cultivated crops in the gently sloping areas, but they are not suited to these uses on the steeper

Figure 2.—This rough, steep area of Luverne sandy loam, 5 to 25 percent slopes, has been clearcut.

landscapes. Erosion, slope, and droughtiness are the major concerns in management. Cover crops, crop rotation, terraces and waterways, and contour farming help maintain productivity and control erosion. In some areas, ponds are needed to provide water for livestock.

These soils are well suited to use as woodland. Common trees include loblolly pine, shortleaf pine, and mixed hardwoods. Potential productivity of loblolly pine is moderate to moderately high. The steep slopes restrict the use of logging and planting equipment, and erosion is a hazard along the logging roads and skid trails. The thick sandy surface layer of the Troup soils limits equipment use during dry periods.

The soils in this map unit are fairly suited to building site development and sanitary facilities. Slope, slow permeability, and the moderate shrink-swell potential of the Luverne soils and the thick sandy surface layer of the Troup soils are the major limitations. These limitations are difficult to overcome.

These soils are fairly suited to poorly suited to intensive and extensive recreation areas. The main limitations are the slope, slow permeability, and moderate shrink-swell potential of the Luverne soils and the thick sandy surface layer of the Troup soils.

Detailed Soil Map Units

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

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

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

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

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

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

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Demopolis-Kipling complex, 3 to 20 percent slopes, eroded, is an example.

An *undifferentiated group* is made up of two or more soils 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 in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Troup and Smithdale soils, 5 to 20 percent slopes, is an undifferentiated group in this survey area.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, nearly level, is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

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

AmA—Alamuchee-Mooreville complex, 0 to 2 percent slopes, frequently flooded. This complex consists of soils that are deep, well drained and moderately well drained. These soils are on flood plains of rivers and tributaries on the Coastal Plain throughout the county. Areas of the Alamuchee and Mooreville soils are too intricately mixed or too small to be mapped separately at the selected scale. The areas of these soils are irregular in shape and range from 500 to 1,000 acres. Individual areas of each soil are 10 to 30 acres.

The Alamuchee soil and similar soils make up about 50 percent of this complex. Typically, the Alamuchee soil has a brown sandy loam surface layer about 5 inches thick. The subsoil is dark yellowish brown sandy loam and loam to a depth of 34 inches and yellowish brown sandy clay loam to a depth of 52 inches. The substratum is stratified yellowish brown loam and sandy loam to a depth of 65 inches.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid

Organic matter content: low to moderately low
Natural fertility: medium
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: good
High water table: 36 to 48 inches below the surface in winter and spring
Shrink-swell potential: low
Flooding: frequent

The Mooreville soils and similar soils make up about 35 percent of this complex. Typically, the surface layer is brown loam about 6 inches thick. The subsoil to a depth of 18 inches is yellowish brown sandy clay loam that has a few mottles in shades of brown, gray, and red. To a depth of 42 inches, the subsoil is mottled gray, yellowish brown, strong brown, and red silty clay loam. The substratum is mottled gray, strong brown, and red loam to a depth of more than 60 inches.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: low to moderately low
Natural fertility: medium
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: good
High water table: 18 to 36 inches below the surface in winter and late in spring
Shrink-swell potential: moderate
Flooding: frequent

Included in mapping are a few areas of Annemaine, Bigbee, Cahaba, and Minter soils. These soils are contrasting soils and their use and management differ from that of the Alamuchee and Mooreville soils. The included soils make up about 15 percent of this complex.

Most areas of the Alamuchee and Moorville soils are in mixed hardwood. In a few areas, these soils are used as pasture.

These soils are poorly suited to cultivated crops because the frequent flooding is difficult to overcome.

These soils are fairly suited to pasture and hay, especially warm-season grasses. Frequent flooding late in winter and early in spring is the main management concern. Proper grazing, weed control, and fertilization are needed for maximum forage production. Adequate surface drainage reduces damage to forages from deposition of sediment. When the soil is wet, the hooves of cattle easily cut and trample the sod and compact the soil. Grazing should be deferred to periods when the soil is dry.

These soils are well suited to the production of loblolly pine, sweetgum, and water oak. American sycamore and green ash are also on these soils. On the basis of a 50-year site curve, the site index for loblolly pine on these soils is 100. The understory is mainly greenbrier, panicums, American beautyberry, muscadine grape, blackgum, and poison oak. Because of wetness, the seedling mortality, plant competition, and equipment use limitation are concerns in managing these soils for production. Seedling mortality can be reduced if trees are planted on beds or if the planting rate is increased. Plant competition is severe and can prevent natural or artificial reforestation. It can be controlled by site preparation to eliminate unwanted vegetation. Limitations for the use of equipment are moderate on Mooreville soil and severe on Alamuchee soil. Management activities should be conducted during seasons when the soil is dry.

These soils are poorly suited to residential and industrial use. Wetness and the hazard of flooding are severe limitations that are difficult to overcome.

The Alamuchee and Mooreville soils are in capability subclass Vw. The woodland ordination symbol is 11W.

AnA—Annemaine sandy loam, 0 to 2 percent slopes, occasionally flooded. This soil is deep and moderately well drained. It is on low, nearly level stream terraces of the Coastal Plain throughout the county. Slopes are smooth and convex. The areas of this soil are irregular in shape and range from 30 to 100 acres.

Typically, the surface layer is dark brown sandy loam about 6 inches thick. The subsoil is yellowish red clay loam to a depth of 18 inches, and to a depth of about 30 inches, it is yellowish red clay that has mottles in shades of brown and gray. The next layer is strong brown sandy clay loam to a depth of 42 inches. The substratum is very pale brown loamy sand to a depth of 60 inches.

Important soil properties:

Permeability: slow
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: medium
Tilth and workability: good
High water table: 18 to 30 inches below the surface
Shrink-swell potential: moderate
Flooding: occasional

Included in mapping are small areas of Bigbee, Cahaba, and Houlka soils. These soils make up about 10 percent of the map unit, but individual areas are less than 5 acres. These soils are contrasting soils and their use and management differ from that of the Annemaine soil.

About half the acreage of the Annemaine soil is in crops and pasture. The rest is used as woodland.

This soil is well suited to cultivated crops. The seasonal high water table and flooding are concerns, and planting is delayed in some years.

This soil is well suited to use as pasture and hayland (fig. 3). Flooding is a hazard late in winter and early in spring in some years; however, it is of minor concern during the growing season.

The Annemaine soil is well suited to the production of loblolly pine. Shortleaf pine, sweetgum, and water oak are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The understory vegetation is mainly gallberry, American holly, palmetto, greenbrier, waxmyrtle, sweetbay, and huckleberry. The moderate equipment use limitation and plant competition are concerns in managing this soil for timber production. The equipment limitation is caused by wetness, and management activities should be conducted during seasons when the soil is dry. Plant competition prevents natural or artificial reforestation, but it can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial use because flooding, which generally is not practical to prevent. Houses and other structures, however, can be built on pilings or mounds above the expected flood levels.

This Annemaine soil is in capability subclass IIw. The woodland ordination symbol is 9W.

BgA—Bigbee loamy sand, 0 to 2 percent slopes, occasionally flooded. This soil is deep and well drained. It is on nearly level flood plains throughout the county. Slopes are smooth and convex. The areas of

Figure 3.—Bermudagrass on Annemaine sandy loam, 0 to 2 percent slopes, occasionally flooded, provides summer grazing for livestock. The pond is in an area of Houlka silty clay, 0 to 2 percent slopes, occasionally flooded.

this soil are irregular in shape and range from 20 to 200 acres.

Typically, the surface layer is very dark grayish brown loamy sand about 10 inches thick. The underlying material is dark brown, strong brown, and yellowish brown loamy sand to a depth of 65 inches.

Important soil properties:

Permeability: rapid
Available water capacity: low
Soil reaction: strongly acid or very strongly acid
Organic matter content: low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: good
High water table: 42 to 60 inches below the surface late in winter and early in spring
Shrink-swell potential: low
Flooding: occasional

Included in mapping are a few small areas of Alamuchee, Annemaine, Cahaba, and Mooreville soils. These soils are contrasting soils and their use and management differ from that of the Bigbee soil. Also included are soils similar to the Bigbee soil but are more clayey. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

The Bigbee soil is used primarily as woodland. In some areas, it is used for pasture or hay.

This soil is poorly suited to cultivated crops because of the low available water capacity.

This soil is well suited to pasture and hay; however, because of the low available water capacity, it is best suited to deep-rooted plants, such as bahiagrass and bermudagrass. Deferred grazing during dry periods helps keep the soil in good condition.

The Bigbee soil is well suited to the production of loblolly and longleaf pine. On the basis of a 50-year site curve, the site index for loblolly pine is 80. The understory vegetation is grassleaf goldaster, post oak, threeawn, little bluestem, and water oak. Moderate equipment use limitations, seedling mortality, and plant competition are concerns in managing this soil for timber production. The sandy texture of the soil restricts the use of wheeled equipment, especially when the soil is very dry. Harvesting operations should be planned during seasons when the soil is moist. Seedling mortality caused by droughtiness can be partly overcome by increasing the tree planting rate. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to most types of building site development and to the construction of sanitary facilities. Seepage and the hazard of flooding are severe limitations that are difficult to overcome. This soil is a probable source of sand.

This Bigbee soil is in capability subclass IIIs. The woodland ordination symbol is 8S.

CaA—Cahaba sandy loam, 0 to 2 percent slopes, occasionally flooded. This soil is deep and well drained. It is on nearly level stream terraces throughout the county. Slopes are smooth and convex. The areas of this soil are irregular in shape and range from 10 to 100 acres.

Typically, the surface layer is dark brown sandy loam to a depth of about 7 inches. The subsoil is yellowish red sandy clay loam to a depth of 23 inches, and to a depth of about 38 inches, it is a yellowish red sandy loam that has yellowish brown mottles. The substratum is yellowish brown loamy sand to a depth of more than 60 inches.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: low to moderately low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: medium
Tilth and workability: good
High water table: none within a depth of 60 inches
Shrink-swell potential: low
Flooding: occasional

Included in mapping are a few small areas of Alamuchee, Annemaine, Bigbee, and Mooreville soils. These soils are contrasting soils and their use and management differ from that of the Cahaba soil. Also included are soils that are similar to the Cahaba soil but are moderately well drained. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

Most areas of the Cahaba soil have been cleared and are used primarily as cropland or pasture. In a few areas, this soil is used as woodland.

This soil is well suited to cultivated crops. Occasional flooding is the major concern late in winter and early in spring, but it seldom effects the production of crops.

This soil is well suited to use as pasture and hayland. Occasional flooding is of minor concern most of the year, but winter and spring forages can be damaged by flooding in some years.

The Cahaba soil is well suited to the production of loblolly pine. Shortleaf pine, sweetgum, water oak, American sycamore, and yellow poplar are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The understory vegetation is mainly little bluestem, greenbrier, panicums, American holly, longleaf uniola, flowering dogwood, and lespedeza. Moderate plant competition is a concern in managing this soil for timber production. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial use because of flooding, which generally is not practical to prevent. Houses and other structures, however, can be built on pilings or mounds above expected flood levels.

The Cahaba soil is in capability subclass IIw. The woodland ordination symbol is 9A.

DkE2—Demopolis-Kipling complex, 3 to 20 percent slopes, eroded. This complex consists of soils that are shallow and deep, undulating to hilly, and well drained and somewhat poorly drained. These soils are on the Blackland Prairie. In most areas, the surface layer of these soils 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 few to common rills and shallow gullies. Slopes are complex and convex. Areas of the Demopolis and Kipling soils are too intricately mixed or too small to be mapped separately at the selected scale. The areas of this map unit range from 200 to 1,000 acres. Individual areas of each soil are 2 to 10 acres.

The Demopolis soil and similar soils are well drained. They make up about 60 percent of this complex. Typically, the Demopolis soil has a yellowish brown channery loam surface layer about 5 inches thick with about 20 percent, by volume, chalk channers. The underlying material to a depth of 9 inches is light brownish gray extremely channery silty clay loam that has about 80 percent, by volume, light gray and yellowish brown chalk channers. To a depth of 60 inches, it is light gray chalk that has streaks of brownish yellow along bedding planes.

Important soil properties:

Permeability: moderately slow
Available water capacity: very low
Soil reaction: mildly alkaline or moderately alkaline
Organic matter content: moderately low
Natural fertility: low
Depth to bedrock: 4 to 16 inches
Root zone: same as depth to bedrock
Surface runoff: medium to rapid
Tilth and workability: fair
High water table: none within a depth of 6 feet
Shrink-swell potential: low
Flooding: none

The Kipling soil and similar soils are somewhat poorly drained. They make up about 20 percent of this complex. Typically, the Kipling soil has a very dark grayish brown loam surface layer about 2 inches thick. The subsoil, to a depth of 38 inches, is clay. To a depth of 7 inches, it is yellowish red with strong brown and yellowish brown mottles. Below that, the subsoil is mottled yellowish red, strong brown, yellowish brown, light brownish gray, and dark red. The substratum to a depth of 60 inches is light yellowish brown chalk that has brownish yellow streaks along bedding planes.

Important soil properties:

Permeability: very slow
Available water capacity: high
Soil reaction: extremely acid to strongly acid in the surface layer and subsoil and moderately alkaline to very strongly acid in the substratum
Organic matter content: low to moderately low
Natural fertility: low to moderately low
Depth to bedrock: 3 to 6.5 feet
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: fair
High water table: 18 to 36 inches below the surface late in winter and early in spring
Shrink-swell potential: high to very high
Flooding: none

Included in mapping are a few small areas of Sucarnoochee, Sumter, and Vaiden soils. Also included are soils that are similar to the Demopolis and Kipling soils but have a darker surface layer. Some of these soils contain more than 60 percent clay. Sucarnoochee and Vaiden soils are contrasting soils and use and management are different from that of the Demopolis and Kipling soils. The included soils make up about 20 percent of this complex.

Most areas of the Demopolis and Kipling soils have been cleared and are used primarily as pasture (fig. 4). A few areas are used for soybeans or johnsongrass hay. The uncleared areas consist mainly of eastern redcedar.

These soils are not suited to cultivated crops. Erosion is a severe hazard if these soils are cultivated. Other limitations include depth to bedrock, complex slopes, and poor tilth. The use of equipment is also limited. If these soils are used for cultivated crops, erosion can be reduced by stripcropping, farming on the contour, and by using a close-growing sod crop in crop rotations.

These soils are fairly suited to use as pasture and hayland. Droughtiness, depth to bedrock, and slope are the main limitations. Drought-tolerant grasses should be planted and grazing should be limited during periods of high soil moisture content to reduce soil compaction and to protect the sod.

These soils are fairly suited to the production of eastern redcedar. On the basis of a 50-year site curve, the site index for eastern redcedar is 40. Although the Kipling soil is well suited to loblolly pine, it is not suited to pine in areas of this map unit because it is

Figure 4.—This area of the Demopolis-Kipling complex, 3 to 20 percent slopes, eroded, has been cleared and planted to fescue.

intermingled with the Demopolis soil, which is too calcareous for growing pine. Other species that grow on these soils include osageorange and hackberry. The understory vegetation is mainly johnsongrass, panicums, hackberry, Macartney rose, and sedges. The moderate erosion hazard, equipment use limitation, and plant competition are concerns in managing these soils for timber production. Conservation practices are needed to control soil erosion. These practices include site preparation methods to minimize soil disturbance. Because of the clayey texture of these soils, management activities should be conducted during seasons when the soils are dry. Plant competition can prevent natural or artificial regeneration, but it can be controlled by site preparation to eliminate unwanted vegetation. Seedling mortality is severe on the Demopolis soil because of droughtiness, but it can be reduced if planting rates are increased.

These soils are poorly suited to residential and industrial uses. Depth to bedrock, slope, moderately slow to very slow permeability, and high to very high shrink-swell potential are severe limitations. These limitations can be partly overcome or avoided by locating in areas of deeper soils, by building above the bedrock and using additional fill, by using special designs to conform with the natural slope, and by adding extra reinforcement in foundations.

The Demopolis soil is in capability subclass VIe, and the Kipling soil is in capability subclass IVe. The woodland ordination symbol is 4D for the Demopolis soil and 9C for the Kipling soils.

DsB—Demopolis-Sumter complex, 1 to 3 percent slopes. This complex consists of soils that are well drained and are on the Blackland Prairie. The Demopolis soil is mainly on side slopes and is shallow and nearly level to gently sloping. The Sumter soil is on ridgetops and is moderately deep and nearly level. Areas of the Demopolis and Sumter soils are too intricately mixed or too small to be mapped separately at the selected scale. The areas of this map unit range from 200 to 1,000 acres. Individual areas of each soil are 2 to 10 acres.

The Demopolis soil and similar soils make up about 57 percent of this complex. Typically, the surface layer is dark grayish brown loam about 6 inches thick. It has about 5 percent, by volume, platy chalk channers. The underlying material to a depth of 14 inches is light gray extremely channery silty clay loam that has about 75 percent, by volume, chalk channers. To a depth of more than 60 inches, it is light gray soft chalk that has few to common brown and yellow streaks along bedding planes.

Important soil properties:

Permeability: moderately slow
Available water capacity: very low
Soil reaction: mildly alkaline or moderately alkaline
Organic matter content: moderately low
Natural fertility: low
Depth to bedrock: 4 to 16 inches
Root zone: same as depth to bedrock
Surface runoff: medium to rapid
Tilth and workability: fair
High water table: none within a depth of 6 feet
Shrink-swell potential: low
Flooding: none

The Sumter soil and similar soils make up about 23 percent of this complex. Typically, the surface layer is dark grayish brown silt loam to a depth of 6 inches. The subsurface layer, to a depth of 9 inches, is dark grayish brown silt loam that has 5 to 8 percent, by volume, calcium carbonate concretions. The subsoil, to a depth of 23 inches, is grayish brown silty clay loam that has about 25 percent, by volume, calcium carbonate concretions. The substratum to a depth of more than 60 inches is light gray chalk that has few to common streaks of brown and yellow along bedding planes.

Important soil properties:

Permeability: slow
Available water capacity: low
Soil reaction: mildly alkaline or moderately alkaline
Organic matter content: moderate to high
Natural fertility: medium
Depth to bedrock: 20 to 40 inches
Root zone: same as depth to bedrock
Surface runoff: medium to rapid
Tilth and workability: fair
High water table: none within a depth of 6 feet
Shrink-swell potential: high
Flooding: none

Included in mapping are a few small areas of Kipling and Vaiden soils. These soils are contrasting soils and their use and management differ from that of the Demopolis and Sumter soils. Also included are areas of Gullied land and some soils that are similar to the Sumter soil but are not calcareous throughout. The included soils make up about 20 percent of this complex, but individual areas are less than 5 acres.

Most areas of the Demopolis and Sumter soils have been cleared and are used primarily as pasture. In a few areas, the Sumter soil is used for soybeans and johnsongrass hay. The uncleared areas are native grass and eastern redcedar.

These soils are poorly suited to most cultivated crops because of the shallow depth to bedrock. Erosion is a hazard if these soils are cultivated, but it can be partly overcome by planting close-growing crops in the crop rotation, by using conservation tillage, and by farming on the contour.

These soils are well suited to use as pasture and hayland and have only a a few limitations for this use.

The Demopolis and Sumter soils are fairly suited to the production of eastern redcedar. Osageorange and hackberry are also on these soils. On the basis of a 50-year site curve, the site index for eastern redcedar is 40. The understory vegetation is mainly johnsongrass, panicums, hackberry, Macartney rose, and sedges. The moderate erosion hazard, equipment use limitation, and plant competition and the severe seedling mortality are concerns in managing these soils for timber production. The erosion hazard is caused by the shallowness to chalk; therefore, management activities to control erosion should include site preparation methods that minimize soil disturbance. Management activities should be conducted during seasons when the soil is dry. To offset seedling mortality caused by droughtiness, tree planting rates can be increased. Plant competition, which reduces natural or artificial reforestation, can be controlled by site preparation to eliminate unwanted vegetation.

These soils are poorly suited to residential and industrial use. The hazard of erosion, depth to bedrock, moderately slow to slow permeability, and high shrink-swell potential are severe limitations. These limitations can be partly overcome or avoided by building above the bedrock and using additional fill material, by using specially designed or alternate sewage disposal systems, and by adding extra reinforcement in floor footings.

The Demopolis soil is in capability subclass IVe, and the Sumter soil is in capability subclass IIe. The woodland ordination symbol is 4D for the Demopolis soil and 4C for the Sumter soil.

EsA—Escambia sandy loam, 0 to 2 percent slopes. This soil is deep and somewhat poorly drained. It is on Coastal Plain uplands throughout the county. Slopes are smooth and slightly concave. The areas of this soil are irregular in shape and range from 100 to 1,000 acres.

Typically, the surface layer is very dark gray sandy loam about 3 inches thick. The subsoil to a depth of 8 inches is pale brown sandy loam that has yellowish brown mottles, and to a depth of 23 inches, it is light yellowish brown sandy loam that has gray, yellowish brown, and strong brown mottles. The lower part of the subsoil to a depth of 65 inches is mottled yellowish brown, gray, yellowish red, and strong brown sandy loam and sandy clay loam that is 10 to 17 percent nodular plinthite.

Important soil properties:

Permeability: moderate to moderately slow
Available water capacity: moderate
Soil reaction: strongly acid to extremely acid
Organic matter content: low to moderately low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: good
High water table: 18 to 30 inches below the surface in winter and early in spring
Shrink-swell potential: low
Flooding: none

Included in mapping are a few small areas of Savannah and Smithdale soils. Smithdale soils, which make up about 5 percent of the map unit, are contrasting soils and use and management differ from the Escambia soil. Also included are some soils that are well drained or moderately well drained and have less than 5 percent plinthite and some soils that are similar to the Escambia soil but are poorly drained. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 10 acres.

Most areas of the Escambia soil are forested, mainly in loblolly pine (fig. 5). A few small areas have been cleared and are used for cultivated crops and pasture.

This soil is well suited to cultivated crops; however, wetness early in spring can delay tillage and planting operations. If a suitable outlet is available, surface or tile drainage, or both, can remove excess water. Conservation tillage, crop residue on the soil, and regular additions of other organic matter improve fertility and help maintain soil tilth and the content of organic matter.

This soil is well suited to use as pasture and hayland. Wetness, however, is the major limitation, and water-tolerant pasture plants should be used. Excessive water on the surface can be removed by shallow ditches if a suitable outlet is available. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition.

The Escambia soil is well suited to the production of loblolly pine. Shortleaf pine, sweetgum, and water oak are also on this soil. On the basis of a 50-year site curve, the site index of loblolly pine is 90. The understory vegetation is sweetgum, huckleberry, blackgum, southern waxmyrtle, muscadine grape, winter oak, greenbrier, and common persimmon. The moderate equipment use limitation and windthrow hazard are concerns in managing this soil for timber production. The equipment limitation is caused by wetness; therefore, management activities should be conducted during seasons when the soil is dry. The windthrow hazard caused by the high water table can be reduced if trees are not heavily thinned.

This soil is poorly suited to residential and industrial use because of wetness and moderately slow permeability. Wetness can be reduced by installing drain tile around footings. Excess surface water can be removed by shallow ditches and by providing the proper grade.

The Escambia soil is in capability subclass IIw. The woodland ordination symbol is 9W.

GdE3—Gullied land-Demopolis complex, 3 to 20 percent slopes, severely eroded. This complex consists of areas of Gullied land and Demopolis soil on gently sloping to steep uplands of the Blackland Prairie. The Demopolis soils is shallow and well drained. Slopes are generally choppy and convex. Areas of Gullied land and the Demopolis soil are too intricately mixed or too small to be mapped separately at the selected scale. The areas of this map unit range from 10 to 100 acres, and individual areas of Gullied land and the Demopolis soil range from 2 to 10 acres.

Gullied land and similar areas make up about 75 percent of the complex. Typically, these areas support little or no vegetation. Chalk is exposed in a network of U-shaped and V-shaped gullies (fig. 6). In some areas, loose chalk channers 0.5 inch to 12 inches long are on the surface. The chalk is white to gray and has yellow and brown streaks along the natural fractures.

The Demopolis soil and similar soils make up about 20 percent of this complex. Typically, the surface layer is yellowish brown silty clay loam about 2 inches thick. The underlying material to a depth of 6 inches is light brownish gray extremely channery silty clay loam that has 80 to 85 percent, by volume, light gray and light yellowish brown chalk channers. To a depth of 60 inches, it is light gray chalk.

Important soil properties:

Permeability: moderately slow
Available water capacity: very low
Soil reaction: mildly alkaline or moderately alkaline
Organic matter content: low
Natural fertility: low
Depth to bedrock: 4 to 16 inches below the surface
Root zone: same as depth to bedrock
Surface runoff: rapid
Tilth and workability: poor

Figure 5.—Loblolly pines are planted on beds of Escambia sandy loam, 0 to 2 percent slopes.

High water table: none within a depth of 60 inches
Shrink-swell potential: low
Flooding: none

Included in mapping are a few small areas of Kipling and Sumter soils. These soils are contrasting soils and their use and management differ from that of the Gullied land and Demopolis soil. The included soils make up about 5 percent of this complex.

Most areas of this complex are idle. Vegetative cover is sparse and consists mostly of eastern redcedar and native grasses.

The soil in this complex is not suited to cultivated crops because of the deep gullies, droughtiness, depth to bedrock, and the severe hazard of erosion. These limitations are very difficult to overcome. The expense of smoothing, shaping, and filling is generally not practical.

This soil is poorly suited to use as pasture and hayland because of the deep gullies, droughtiness, and depth to bedrock. These limitations can be partly overcome by smoothing, shaping, filling, and planting drought-tolerant pasture forage. The areas on steeper slopes are best suited to native grasses.

The soil in this complex is poorly suited to the production of eastern redcedar. Osageorange and hackberry are also on this soil. The sparse understory vegetation is mainly johnsongrass, panicums, hackberry, Macartney rose, and sedges. On the basis of a 50-year site curve, the site index for eastern redcedar on this Demopolis soil is 40. The moderate erosion hazard, equipment use limitation, and plant competition and the severe seedling mortality are concerns in managing the soil in this complex for timber production. Deep gullies limit the use of equipment in most areas. Management

Figure 6.—Gullied land-Demopolis complex, 3 to 20 percent slopes, severely eroded, supports very little vegetation. The trees in the background are on knolls of the Demopolis soil.

activities to control soil erosion should include site preparation methods that minimize soil disturbances and should be conducted during seasons when the soil is dry. Plant competition, which prevents natural or artificial regeneration, can be controlled by site preparation to eliminate unwanted vegetation. Seedling mortality caused by droughtiness can be offset by increasing tree planting rates.

The soil in this complex is poorly suited to residential and industrial use. Deep gullies, depth to bedrock, and slope are severe limitations for most uses. These limitations are difficult to overcome. Most areas require extensive filling and shaping to make them suitable as building sites. Revegetating disturbed areas on construction sites helps to control erosion. Structures to divert runoff are needed if buildings and roads are constructed. Septic tank absorption fields will not function properly because of the depth to bedrock.

The Gullied land is in capability subclass VIIe and is not assigned a woodland ordination symbol. The Demopolis soil is in capability subclass VIe, and the woodland ordination symbol is 4D.

HoA—Houlka silty clay, 0 to 2 percent slopes, occasionally flooded. This soil is deep and somewhat poorly drained. It is on flood plains adjacent to Blackland Prairie uplands throughout the county. Slopes are smooth and slightly convex. Areas of this soil generally are long and narrow, but may be broad. They range from 50 to 500 acres.

Typically, the surface layer is very dark grayish brown silty clay about 5 inches thick. The subsoil, to a depth of 42 inches, is gray silty clay in the upper part and light brownish gray clay in the middle and lower parts. Mottles in shades of yellow and brown are common. The substratum to a depth of 60 inches is light brownish gray clay that has a few mottles in shades of yellow and brown.

Important soil properties:

Permeability: very slow

Available water capacity: high
Soil reaction: strongly acid or very strongly acid
Organic matter content: low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: fair
High water table: 12 to 24 inches below the surface in winter and early in spring
Shrink-swell potential: high
Flooding: occasional

Included in mapping are a few small areas of Annemaine, Kipling, Minter, and Sucarnoochee soils. These soils are contrasting soils and their use and management differ from that of the Houlka soil. The included soils make up about 15 percent of the map unit, but individual areas are less than 5 acres.

Most areas of the Houlka soil have been cleared and are used primarily for cultivated crops, mainly soybeans. In some areas, this soil is used as pasture.

This soil is fairly suited to cultivated crops. Poor tilth and wetness are the main limitations, and flooding is a hazard. In some years, flooding late in winter and early in spring delays early spring tillage operations. A drainage system is needed for most cultivated crops. This soil is sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. Erosion is not a major concern on this soil, but some areas are subject to scouring by floodwaters. Cover crops and residue management improve tilth and help maintain organic matter content.

This soil is well suited to warm-season pasture and hay plants and poorly suited to cool-season forages. Because of flooding and wetness, the choice of pasture plants and period of grazing are restricted during the winter and early in spring. If this soil is wet, grazing can cause soil compaction and damage to the plant community. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition. Proper grazing, weed control, and fertilizer are needed for maximum quality of forage and hay.

This Houlka soil is well suited to the production of loblolly pine. Sweetgum, green ash, American sycamore, and water oak are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 100. This soil is also well suited to deciduous trees, and potential productivity is high. American sycamore, water oak, green ash, eastern cottonwood, and sweetgum are recommended trees to plant. The understory vegetation is mainly greenbrier, panicums, blackberry, honeysuckle, flowering dogwood, and winged elm. Moderate equipment use limitation, seedling mortality, and plant competition are concerns for managing this soil for timber production. The clayey texture and wetness of this soil limit the use of equipment and increase seedling mortality. Management activities should be conducted during seasons when the soil is dry. Seedling mortality is offset if the tree planting rate is increased. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial use. Wetness, very slow permeability, high shrink-swell potential, and the hazard of flooding are severe limitations that are difficult to overcome.

This Houlka soil is in capability subclass IIw. The woodland ordination symbol is 11W.

KpA—Kipling loam, 0 to 1 percent slopes. This soil is deep and somewhat poorly drained. It is on broad terraces and uplands of the Blackland Prairie. Slopes are generally smooth and convex. The areas of this soil are irregular in shape and range from 40 to 1,000 acres.

Typically, the surface layer is dark grayish brown loam about 5 inches thick. The subsoil to a depth of 11 inches is yellowish brown clay loam that has mottles in shades of gray and red. It is mottled gray, yellowish red, strong brown, and yellowish brown clay to a depth of 42 inches. The substratum to a depth of 65 inches is mottled yellowish brown, gray, and strong brown clay.

Important soil properties:

Permeability: very slow
Available water capacity: high
Soil reaction: extremely acid to strongly acid in the surface layer and subsoil and moderately alkaline to very strongly acid in the substratum
Organic matter content: low to moderately low
Natural fertility: low
Depth to bedrock: 3.5 to 6 feet
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: fair
High water table: 18 to 36 inches below the surface late in winter and early in spring
Shrink-swell potential: high to very high
Flooding: none

Included in mapping are a few small areas of Demopolis, Okolona, Sucarnoochee, Sumter, and Vaiden soils. Also included are soils that are similar to the Kipling soil; but some are shallow to chalk, some contain more clay, and others are moderately well drained. Demopolis, Okolona, Sucarnoochee, and Sumter soils are contrasting soils and their use and management differ from that of the Kipling soil. These contrasting soils make up about 10 percent of the included soils. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 10 acres.

Most areas of the Kipling soils have been cleared and are used primarily as pasture (fig. 7). In some areas, this soil is used for soybeans, wheat, and other grain crops, and in a few small areas, it is used as woodland.

This soil is fairly suited to most cultivated crops. Wetness is the main limitation. The soil is slow to warm in the spring, and tillage operations may be delayed because of wetness. Proper row arrangement, field ditches, and vegetated outlets are needed to remove excess surface water. Traffic pans develop easily if this soil is tilled when wet, but they can be broken by chiseling or deep plowing. Conservation tillage and residue management improve tilth and help maintain organic matter content.

This soil is well suited to use as pasture and hayland. Improved bermudagrass, bahiagrass, johnsongrass, and tall fescue grow well on this soil. Grazing during periods when this soil has a high moisture content can cause soil compaction and damage the plant community. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition.

This Kipling soil is well suited to the production of loblolly pine. Sweetgum and water oak are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The understory vegetation is pinehill bluestem, common carpetgrass, panicums, blackberry, blackgum, greenbrier, persimmon, poison-ivy, and sumac. The moderate equipment use limitation, seedling mortality, and plant competition are concerns in managing this soil for timber production. The equipment use limitation is caused by wetness; therefore, management activities should be conducted during seasons when the soil is dry. Seedling mortality caused by wetness can be reduced if trees are planted on beds or if the planting rate is increased. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

Figure 7.—Kipling loam, 0 to 1 percent slopes, is well suited to use as pasture.

This soil is poorly suited to residential and industrial use. Wetness, very slow permeability, and high shrink-swell potential are severe limitations for most uses. Low strength is a severe limitation for roads. Measures to overcome these limitations include the use of specially designed sewage disposal systems to overcome the wetness and very slow permeability and the use of proper engineering designs for building foundations and for roads and streets.

The Kipling soil is in capability subclass IIIw. The woodland ordination symbol is 9C.

KpB2—Kipling silty clay loam, 1 to 5 percent slopes, eroded. This soil is deep and somewhat poorly drained. It is on uplands of the Blackland Prairie. Slopes are generally smooth and convex. 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. The areas of this soil are irregular in shape and range from 10 to 500 acres.

Typically, the surface layer is dark brown silty clay loam about 7 inches thick. The subsoil to a depth of 11 inches is yellowish red clay that has mottles in shades of brown and red. It is mottled yellowish brown, gray, and yellowish red clay to a depth of 30 inches. The substratum to a depth of 42 inches is gray clay that has common mottles in shades of brown and red. To a depth of more than 65 inches, the substratum is light gray chalk that has few to many mottles in shades of brown, gray, white, and yellow along bedding planes.

Important soil properties:

Permeability: very slow
Available water capacity: high
Soil reaction: extremely acid to strongly acid in the surface layer and subsoil and moderately alkaline to strongly acid in the substratum
Organic matter content: low to moderately low
Natural fertility: low
Depth to bedrock: 3.5 to 6 feet
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: poor
High water table: 18 to 36 inches below the surface late in winter and early in spring
Shrink-swell potential: high to very high
Flooding: none

Included in mapping are a few small areas of Demopolis, Okolona, Sucarnoochee, Sumter, and Vaiden soils. Demopolis, Okolona, and Sucarnoochee soils are contrasting soils and their use and management differ from that of the Kipling soil. These contrasting soils make up about 10 percent of the included soils. Also included are soils that are similar to the Kipling soil but that are shallow to chalk. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

Most areas of this Kipling soil have been cleared and are used primarily as pasture or hayland. In some areas, this soil is used for soybeans, johnsongrass, and small grains. In a few small areas, it is used for loblolly pine.

This soil is fairly suited to most cultivated crops; however, poor tilth and wetness are limitations. Erosion is a severe hazard if this soil is cultivated. Sheet and rill erosion are evident in most areas, and ephemeral gullies are common. The surface layer of this soil is friable, but it is difficult to keep in good tilth where cultivation has mixed some of the clayey subsoil into the plow layer. Limiting tillage for seedbed preparation and weed control reduces runoff and erosion. All tillage should be on the contour or across the slope, and drainageways should be shaped and seeded to perennial grass. Maintaining crop residue on or near the surface reduces runoff and helps to maintain soil tilth and organic matter content.

This soil is well suited to use as pasture and hayland. Improved bermudagrass, bahiagrass, johnsongrass, and tall fescue grow well on this soil. Management concerns include proper fertilization and weed control. Grazing should be limited to periods when the soil has a moderate to low moisture content.

The Kipling soil is well suited to the production of loblolly pine. Sweetgum and water oak are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The understory vegetation is pinehill bluestem, common carpetgrass, panicums, blackberry, blackgum, greenbrier, persimmon, poison-ivy, and sumac. The moderate equipment use limitation, seedling mortality, and plant competition are concerns in managing this soil for timber production. The equipment use limitation is caused by wetness; therefore, management activities should be conducted during seasons when the soil is dry. Seedling mortality is also caused by wetness, and it can be reduced by increasing the planting rate. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial use. Wetness, very slow permeability, low strength, and high shrink-swell potential are severe limitations for most uses. These limitations are difficult to overcome. Corrective measures include the use of specially designed sewage systems to overcome the wetness and very slow permeability of this soil and the use of proper engineering designs for building foundations and roads and streets.

This Kipling soil is in capability subclass IIIe. The woodland ordination symbol is 9C.

KuC—Kipling-Urban land complex, 1 to 8 percent slopes. This complex consists of Kipling soil and Urban land on convex ridgetops and side slopes of the

Blackland Prairie. Areas of the Kipling soil and Urban land are too intricately mixed or too small to be mapped separately at the selected scale. Slopes are smooth and convex. The areas are irregular in shape and range from 100 to 500 acres.

The Kipling soil and similar soils make up about 60 percent of the complex. Typically, the surface layer is dark yellowish brown silty clay loam about 6 inches thick. The subsoil to a depth of 18 inches is yellowish red silty clay that has strong brown and light brownish gray mottles. To a depth of 38 inches, it is strong brown clay that has yellowish red and light brownish gray mottles. The substratum to a depth of 60 inches is light gray chalk that has yellow and brown mottles along bedding planes.

Important soil properties:

Permeability: very slow
Available water capacity: high
Soil reaction: extremely acid to strongly acid in the surface layer and subsoil and moderately alkaline to strongly acid in the substratum
Organic matter content: low to moderately low
Natural fertility: low
Depth to bedrock: 3 to 6 feet
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: fair
High water table: 18 to 36 inches below the surface late in winter and early in spring
Shrink-swell potential: high to very high
Flooding: none

The Urban land part makes up about 30 percent of this complex. It consists of areas covered by houses, streets, driveways, buildings, parking lots, and other structures that obscure or alter the soils so that identification is not possible.

Included in mapping are a few small areas of Okolona, Sucarnoochee, Sumter, and Vaiden soils. These soils are contrasting soils and their use and management differ from that of the Kipling soil. Also included are soils that are similar to the Kipling soil but are shallow to chalk. The included soils make up about 10 percent of the map unit, but individual areas are generally less than 5 acres.

Most areas of this map unit are used for residential and commercial facilities. A few areas are idle.

The Kipling soil, or open part of the map unit, is fairly suited to parks, open space, and lawns and gardens. If the soil is disturbed or left bare, soil erosion is a hazard, especially on slopes of more than 4 percent.

The Kipling soil has severe limitations for building sites, sanitary facilities, and local roads and streets. Slope is a moderate limitation for some uses. Septic tank absorption fields do not function properly during rainy periods because of very slow permeability and wetness. Lagoons or self-contained sewage disposal systems can be used to dispose of sewage properly. 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.

This complex is not assigned to a capability subclass and does not have a woodland ordination symbol.

LvB—Luverne sandy loam, 2 to 5 percent slopes. This soil is deep and well drained. It is on ridgetops of Coastal Plain uplands. Slopes are complex and convex. The areas of this soil are irregular in shape and range from 10 to 50 acres.

Typically, the surface layer is brown sandy loam about 4 inches thick. The subsurface layer is light yellowish brown sandy loam about 4 inches thick. The subsoil is red clay to a depth of 22 inches, and to a depth of 33 inches, it is red clay loam that has yellow and brown mottles. The substratum is stratified red, yellow, gray, and brown sandy loam, sandy clay loam, and clay loam to a depth of 60 inches.

Important soil properties:

Permeability: moderately slow
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: medium to rapid
Tilth and workability: good
High water table: none within a depth of 6 feet
Shrink-swell potential: low in the surface layer and moderate in the subsoil
Flooding: none

Included in mapping are a few small areas of Smithdale and Wilcox soils. These soils are contrasting soils and their use and management are different from that of the Luverne soil. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

This Luverne soil is used primarily as woodland. About 5 percent of the acreage of this soil has been cleared and is used for cultivated crops, pasture, or hay.

This soil is fairly suited to cultivated crops, and moderate yields can be obtained. Slope and the moderate hazard of erosion are limitations. Conservation tillage, contour farming, and cover crops reduce runoff and help control erosion. Terraces also help control erosion, but because of the complex shape of the surface in some areas, construction of terraces is difficult. Good tilth is best maintained by returning crop residue to the soil.

This soil is well suited to use as pasture and hayland and has no significant management concerns for these uses. Proper grazing, weed control, and fertilizer are needed for maximum quality of forage.

The Luverne soil is well suited to the production of loblolly pine. Shortleaf pine, sweetgum, and water oak are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The understory vegetation is mainly greenbrier, poison oak, longleaf uniola, huckleberry, little bluestem, waxmyrtle, muscadine grape, and flowering dogwood. The moderate equipment use limitation and plant competition are concerns in managing this soil for timber production. The clayey subsoil restricts the use of equipment when the soil is wet; therefore, management activities should be planned during seasons when the soil is dry. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is fairly suited to most urban uses. It has moderate limitations for building site development because of the moderate shrink-swell potential of the subsoil. This limitation can be overcome by proper design and reinforcement of the foundations. Septic tank absorption fields may not function properly during rainy periods because of moderately slow permeability. Increasing the size of the absorption field helps to compensate for the moderately slow permeability. Low strength is a limitation if this soil is used for local roads and streets. Roads and streets should be designed to offset the limited ability of this soil to support a load.

This Luverne soil is in capability subclass IIIe. The woodland ordination symbol is 9C.

LvE—Luverne sandy loam, 5 to 25 percent slopes. This soil is deep and well drained. It is on uplands of the Coastal Plain. Slopes are generally smooth and convex. The areas of this soil are irregular in shape and range from 500 to 1,000 acres.

Typically, the surface layer is brown sandy loam about 4 inches thick. The subsoil is reddish brown clay to a depth of 14 inches, yellowish red clay to a depth of 19 inches, and mottled red and strong brown clay loam to a depth of 28 inches. The substratum to a depth of 60 inches is mottled in shades of yellow, brown, gray, and red and is stratified loam, sandy loam, sandy clay loam, and clay loam.

Important soil properties:

Permeability: moderately slow
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: medium to rapid
Tilth and workability: fair
High water table: none within a depth of 60 inches
Shrink-swell potential: low in the surface layer and moderate in the subsoil
Flooding: none

Included in mapping are a few small areas of Smithdale and Wilcox soils. Small and medium V-shaped gullies are commonly included on steeper slopes. Smithdale and Wilcox soils and gullied areas are contrasting soils and their use and management differ from that of the Luverne soil. The included soils and gullies make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

The Luverne soil is used mostly as woodland. A few small areas have been cleared and are used for pasture and wildlife food plots.

This soil is not suited to cultivated crops because of the steep, complex slopes and the severe hazard of erosion. If this soil is used for cultivated crops, conservation practices, such as contour farming, stripcropping, terraces, and water disposal systems, are needed to control runoff and reduce soil loss by erosion.

This soil is poorly suited to use as pasture and hayland because of the steepness of slope and severe hazard of erosion. These limitations can be partly overcome by selecting the less sloping areas and by maintaining a plant cover on the soil with proper fertilization and weed control.

This soil is well suited to the production of loblolly pine. Shortleaf pine, sweetgum, and water oak are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The understory vegetation is mainly greenbrier, poison oak, pinehill bluestem, waxmyrtle, muscadine grape, and flowering dogwood. The moderate equipment use limitation, erosion hazard, and plant competition are concerns in managing this soil for timber production. The clayey subsoil limits the use of equipment when the soil is wet; therefore, management activities should be planned during seasons when the soil is dry. Because of steepness of slope, management activities should include conservation practices to control erosion. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial use because of the moderately slow permeability, slope, low strength, and moderate shrink-swell potential. The steepness of slope and moderately slow permeability are concerns when installing septic tank absorption fields. Length of absorption lines should be increased, and the lines should be installed on the contour. Buildings and roads can be designed to offset the effects of shrinking and swelling and of low strength. Access roads must be designed to control surface runoff and help stabilize cut-slopes.

The Luverne soil is in capability subclass VIIe. The woodland ordination symbol is 9C.

MaA—Mayhew silty clay loam, 0 to 2 percent slopes. This soil is deep and poorly drained. It is on uplands of the Coastal Plain. Slopes are smooth and slightly convex. The areas of this soil are irregular in shape and range from 100 to 1,000 acres.

Typically, the surface layer is dark grayish brown silty clay loam about 7 inches thick. The subsoil to a depth of 21 inches is gray clay that has light olive brown mottles. It is mottled gray, yellowish brown, and strong brown silty clay to a depth of 27 inches and is gray clay to a depth of 44 inches. The substratum is mottled olive gray and black soft, acid, clayey shale to a depth of more than 60 inches.

Important soil properties:

Permeability: very slow
Available water capacity: high
Soil reaction: medium acid to extremely acid
Organic matter content: moderately low to moderate
Natural fertility: low
Depth to bedrock: soft shale 40 to 60 inches below the surface
Root zone: same as depth to bedrock
Surface runoff: slow to medium
Tilth and workability: poor
High water table: 0 to 12 inches below the surface late in winter and early in spring
Shrink-swell potential: moderate in the surface layer and high in the subsoil
Flooding: none

Included in mapping are a few small areas of Kipling, Sucarnoochee, and Wilcox soils. Also included are soils that are similar to the Mayhew soil but are not dominantly gray in the upper part of the subsoil and are less clayey. Sucarnoochee and Kipling soils are contrasting soils and their use and management differ from that of the Mayhew soils. These contrasting soils make up about 5 to 10 percent of the included soils. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

About 10 percent of the acreage of this Mayhew soil has been cleared and is used primarily for soybeans, grain sorghum (fig. 8), and wheat. In a few areas, this soil is used as pasture.

This soil is fairly suited to cultivated crops. The main limitations are wetness and poor tilth. Wetness delays tillage and planting operations in most years. Proper row arrangements, field ditches, and vegetated outlets are needed to remove excess surface water. This soil is sticky when wet and hard when dry, and it becomes cloddy if it is tilled when too wet or too dry. Maintaining crop residue on or near the surface reduces runoff and helps to maintain soil tilth and organic matter content.

This soil is fairly suited to use as pasture and hayland. The main limitation is wetness. Excessive water on the surface can be removed by shallow ditches. Grazing should be limited during periods of high soil moisture to reduce soil compaction and to protect the sod. Proper grazing, weed control, and fertilizer are needed for maximum quality of forage.

The Mayhew soil is well suited to the production of loblolly pine. Water oak and sweetgum are also on this soil. On the basis of a 50-year site curve, the site index is 90 for loblolly pine. The understory vegetation is longleaf uniola, pinehill bluestem, plumegrass, muscadine grape, greenbrier, Japanese honeysuckle, poison-ivy, and sumac. The moderate equipment use limitation, seedling mortality, and severe plant competition are concerns in managing this soil for timber production. Because wetness causes the equipment use limitation and seedling mortality, management activities should be conducted during seasons when the soil is dry. Seedling mortality can also be overcome by planting seedlings on beds or by increasing the planting rate. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial use because of wetness, very slow permeability, and high shrink-swell potential. Drainage is needed if roads and building foundations are constructed. Septic tank absorption fields do not function properly during rainy periods because of wetness and very slow permeability. Lagoons or self-contained sewage disposal units can be used to dispose of sewage properly. If buildings are constructed on this soil, the proper design of foundations and footings and the diversion of runoff away from buildings can prevent structural damage as a result of shrinking and swelling.

The Mayhew soil is in capability subclass IIIw. The woodland ordination symbol is 9W.

MnA—Minter clay loam, 0 to 2 percent slopes, frequently flooded. This soil is deep and poorly drained. It is on low stream terraces throughout the county. Slopes are slightly concave. The areas of this soil are irregular in shape and range from 20 to 500 acres.

Typically, the surface layer is gray clay loam about 6 inches thick. The subsurface layer, to a depth of 12 inches, is gray loam that has strong brown mottles. The subsoil is gray clay to a depth of 34 inches, clay loam to a depth of 55 inches, and dark gray silty clay loam to a depth of 60 inches. It has yellowish red and strong brown mottles throughout.

Important soil properties:

Permeability: very slow
Available water capacity: moderate
Soil reaction: strongly acid to extremely acid
Organic matter content: low
Natural fertility: low
Depth to bedrock: more than 60 inches

Figure 8.—Grain sorghum is one of the main crops grown on Mayhew silty clay loam, 0 to 2 percent slopes.

Root zone: same as depth to bedrock
Surface runoff: slow to very slow
Tilth and workability: fair
High water table: 3 feet above the surface to 12 inches below the surface late in winter and early in spring
Shrink-swell potential: moderate
Flooding: frequent

Included in mapping are a few small areas of Annemaine and Houlka soils. These soils are contrasting soils and their use and management differ from that of the Minter soil. Also included are soils that are similar to the Minter soil except they are better drained. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

The Minter soil is used mainly as woodland. A few small areas are in native pasture.

This soil is not suited to cultivated crops, pasture, or hay because of ponding, wetness, and the hazard of frequent flooding. Areas of this soil that are protected from flooding and can be adequately drained may be suitable for cultivated crops and warm-season pasture and hay plants.

The Minter soil is fairly suited to the production of baldcypress. Sweetgum, green ash, and water tupelo are also on this soil. On the basis of a 50-year site curve, the site index for baldcypress is 70. The understory vegetation is mainly sedges, greenbrier, switchcane, and saw palmetto. The severe equipment use limitation, seedling mortality, and windthrow hazard caused by frequent flooding and wetness are concerns in managing this soil for timber production. Management activities should be conducted during seasons when the soil is dry. Trees can be planted on beds or the planting rate can be increased to offset seedling mortality. The windthrow hazard caused by the shallow rooting depth can be reduced if trees are not heavily thinned.

This soil is not suited to residential and industrial use because of the very slow permeability, wetness, low strength, and the hazard of flooding. These limitations are very difficult to overcome. Control of flooding is generally not feasible; however, buildings can be placed on pilings or mounds to elevate them above the expected flood level.

The Minter soil is in capability subclass Vw. The woodland ordination symbol is 7W.

OkB—Okolona silty clay, 0 to 3 percent slopes. This soil is deep and well drained. It is on uplands of the Blackland Prairie. Slopes are smooth and convex. The areas of this soil are irregular in shape and range from 50 to 500 acres.

Typically, the surface layer is dark olive gray silty clay about 6 inches thick. The subsurface layer is dark olive gray silty clay to a depth of 17 inches. The subsoil is dark olive gray silty clay to a depth of 28 inches, olive clay to a depth of 36 inches, and mottled dark grayish brown, light olive brown, and olive gray clay to a depth of 60 inches.

Important soil properties:

Permeability: very slow
Available water capacity: high
Soil reaction: neutral to moderately alkaline
Organic matter content: moderately low to moderate
Natural fertility: medium
Depth to bedrock: 48 to more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: poor
High water table: 48 to 72 inches below the surface late in winter and early in spring
Shrink-swell potential: very high
Flooding: none

Included in mapping are a few small areas of Demopolis, Kipling, Sucarnoochee, and Sumter soils. These soils are contrasting soils and their use and management differ from that of the Okolona soil. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 10 acres.

Most areas of the Okolona soil have been cleared and are used for cultivated crops, mainly soybeans and wheat. In some areas, this soil is used as pasture or hayland.

This soil is well suited to cultivated crops, pasture, and hay; however, the clayey texture, poor tilth, and moderate hazard of erosion are limitations. This soil is sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. Crop rotation and crop residue management reduce erosion. Rotation grazing, proper fertilization, and weed control help to maintain an adequate stand of desired plants.

This soil is well suited to the production of eastern redcedar. Hackberry and osageorange are also on this soil. On the basis of a 50-year site curve, the site index for eastern redcedar is 40. The understory vegetation is mainly johnsongrass, panicums, hackberry, Macartney rose, and sedges. The moderate equipment use limitation and seedling mortality caused by the clayey texture are concerns in managing this soil for timber production. Management activities should be conducted during seasons when the soil is dry. The tree planting rate can be increased to offset seedling mortality.

This soil is poorly suited to use for building sites, sanitary facilities, and most other urban uses. The very high shrink-swell potential is a severe limitation if this soil is used for building sites. The effects of shrinking and swelling can be minimized by using proper engineering designs. Septic tank absorption fields do not function properly during rainy periods because of the very slow permeability of the soil. Lagoons or self-contained sewage disposal units can be used to dispose of sewage properly. Roads should be designed to offset the limited ability of the soil to support a load.

This Okolona soil is in capability subclass IIe. The woodland ordination symbol is 4C.

PIT—Pits, nearly level. These miscellaneous areas are on uplands and terraces of the Coastal Plain. Pit bottoms are smooth and slightly concave to slightly convex. Most areas are horseshoe-shaped and have a 5- to 25-foot high wall on the sides. The areas of this map unit range from 5 to 20 acres.

Pits are open excavations from which soil and part of the underlying material have been removed for use at another location. The excavated areas left after the Annemaine, Cahaba, Savannah, Smithdale, and Troup soils have been removed for fill material are either borrow pits, gravel pits, or sand pits. Some of these pits are partly filled with water in winter and spring.

Included in mapping are a few small areas of Annemaine, Cahaba, Savannah, Smithdale, and Troup soils. These soils generally support sparse vegetation. The included soils make up about 15 percent of the map unit.

Most areas of this map unit are idle and are generally bare of vegetation. Some areas have been planted to loblolly pine.

These areas are not suited to cultivated crops, pasture, or hay because of the low available water capacity, the very low organic matter content and natural fertility, the shallow root zone, and the soil reaction. Extensive filling and shaping and the addition of topsoil, fertilizer, and lime are needed to reclaim these areas.

These areas are poorly suited to trees because of the severe erosion hazard and seedling mortality caused by droughtiness. Trees that survive have a very slow growth rate.

These areas are not suited to most urban uses. An onsite investigation is needed when considering these areas for development. Extensive filling, shaping, and smoothing would be necessary to make these areas suitable for building sites.

Pits are not assigned a capability subclass and do not have a woodland ordination symbol.

SaA—Savannah loam, 0 to 2 percent slopes. This soil is deep and moderately well drained. It is on uplands and terraces of the Coastal Plain. The areas of this soil are irregular in shape and range from 20 to 100 acres.

Typically, the surface layer is yellowish brown loam about 9 inches thick. The subsoil is yellowish brown sandy clay loam to a depth of 18 inches. To a depth of more than 60 inches, it is a mottled yellowish brown, gray, and yellowish red sandy clay loam fragipan that is firm, compact, and brittle in about 65 percent of the matrix.

Important soil properties:

Permeability: moderate in the upper part of the subsoil and moderately slow in the fragipan
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: moderately low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: medium
Tilth and workability: good
High water table: 18 to 36 inches below the surface late in winter and early in spring
Shrink-swell potential: low
Flooding: none

Included in mapping are a few small areas of Escambia and Smithdale soils. These soils are contrasting soils and their use and management are different from that of the Savannah soil. Also included are soils that are similar to the Savannah soil but do not have a fragipan. The included soils make up about 15 percent of the map unit, but individual areas are less than 5 acres.

Most areas of the Savannah soil have been cleared and are used primarily for cultivated crops. In a few areas, this soil is used for timber production, pasture, or hay.

This soil is well suited to commonly grown cultivated crops (fig. 9); however, wetness is a concern late in winter and early in spring and can delay tillage operations in some years. Traffic pans develop easily but can be broken up by deep plowing or chiseling. Cover crops and residue management reduce erosion, improve tilth, and maintain organic matter content. Most crops respond well to fertilizer and lime.

This soil is well suited to use as pasture and hayland, and there are no management concerns if the soil is used for warm-season grasses and legumes. If the soil is wet, grazing can cause excessive soil compaction and damage to the plant community. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition.

The Savannah soil is well suited to the production of loblolly pine. Shortleaf pine, sweetgum, and water oak are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The understory vegetation consists of panicums, longleaf uniola, pinehill bluestem, American beautyberry, blackberry, flowering dogwood, greenbrier, huckleberry, Japanese honeysuckle, poison-ivy, and sumac. The moderate equipment use limitation, windthrow hazard, and plant competition are concerns in managing this soil for timber production. The equipment use limitation is caused by wetness; therefore, management activities should be conducted during seasons when the soil is dry. The fragipan prevents the tap root of pines from penetrating to greater depths, which causes the windthrow hazard. Heavy thinnings should be avoided to reduce windthrow. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is well suited to residential and industrial use; however, wetness and the moderately slow permeability in the fragipan are limitations to some uses. These limitations can be partly overcome by installing subsurface drainage and by using an alternative to the conventional underground sewage disposal systems.

The Savannah soil is in capability subclass IIw. The woodland ordination symbol is 9W.

SaB—Savannah loam, 2 to 5 percent slopes. This soil is deep and moderately well drained. It is on Coastal Plain uplands and terraces. Slopes are long, smooth, and convex. The areas of this soil are irregular in shape and range from 10 to 100 acres.

Typically, the surface layer is yellowish brown loam about 4 inches thick. The subsoil is strong brown loam to a depth of 18 inches. To a depth of 65 inches, is a mottled strong brown, light gray, and yellowish red loam and clay loam fragipan that is firm, compact, and brittle in about 60 to 70 percent of the matrix.

Important soil properties:

Permeability: moderate in the upper part of the subsoil and moderately slow in the fragipan
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: moderately low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: medium
Tilth and workability: good
High water table: 18 to 36 inches below the surface late in winter and early in spring
Shrink-swell potential: low
Flooding: none

Included in mapping are a few small areas of Escambia and Smithdale soils. Also included are soils that are similar to the Savannah soil but do not have a

Figure 9.—Corn is planted by conventional tillage on Savannah loam, 0 to 2 percent slopes.

fragipan. These soils are contrasting soils and their use and management differ from that of the Savannah soil. The included soils make up about 15 percent of this map unit, but individual areas are generally less than 5 acres.

Most areas of the Savannah soil have been cleared and are used primarily for cultivated crops, pasture, or hay. In a few areas, this soil is used for timber production.

This soil is well suited to cultivated crops commonly grown in the area. Erosion, however, is a major management concern, and wetness can delay tillage operations in some years. Traffic pans develop easily but can be broken up by deep plowing or chiseling. Crop rotation, contour farming, conservation tillage, terraces, water disposal systems, and cover crops help control erosion and improve the tilth and organic matter content of this soil.

This soil is well suited to use as pasture and hayland (fig. 10) and has no significant management limitation for these uses. Erosion is a hazard when the soil is bare during establishment of pasture. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition.

The Savannah soil is well suited to the production of loblolly pine. Shortleaf pine, sweetgum, and water oak are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The understory vegetation consists of panicums, longleaf uniola, pinehill bluestem, American beautyberry, blackberry, flowering dogwood, greenbrier, huckleberry, Japanese honeysuckle, poison-ivy, and sumac. The moderate equipment use limitation, windthrow hazard, and plant competition are concerns in managing this soil for timber production. The equipment use limitation is caused by wetness; therefore, management activities should be conducted during seasons when the soil is dry. The fragipan prevents the tap root of pines from penetrating to greater depths, which causes the windthrow hazard. Heavy thinnings should be avoided to reduce windthrow. Competition from undesirable plants

Figure 10.—Savannah loam, 2 to 5 percent slopes, is well suited to such pasture plants as this improved bermudagrass. Escambia sandy loam, 0 to 2 percent slopes, is in the depressions.

reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is well suited to residential and industrial use; however, wetness and the moderately slow permeability in the fragipan are limitations to some uses. These limitations can be partly overcome by installing subsurface drainage systems and by using an alternative to the conventional underground sewage disposal systems.

The Savannah soil is in capability subclass IIe. The woodland ordination symbol is 9W.

SbB—Savannah-Urban land complex, 1 to 5 percent slopes. This complex consists of Savannah soil and Urban land on gently sloping terraces and uplands of the Coastal Plain. Areas of the Savannah soil and Urban land are too intricately mixed or too small to be mapped separately at the selected scale. Slopes are smooth and convex. The areas of this map unit are irregular in shape and range from 100 to 500 acres.

The Savannah soil and similar soils make up about 55 percent of this complex. Typically, the surface layer is yellowish brown sandy loam about 2 inches thick. The subsoil is yellowish brown sandy clay loam to a depth of 16 inches. To a depth of more than 60 inches, it is a mottled yellowish brown, light gray, and yellowish red sandy clay loam fragipan that is firm, compact, and brittle in about 60 to 65 percent of the matrix.

Important soil properties:

Permeability: moderate in the upper part of the subsoil and moderately slow in the fragipan
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: moderately low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock

Surface runoff: medium
Tilth and workability: good
High water table: 18 to 36 inches below the surface late in winter and early in spring
Shrink-swell potential: low
Flooding: none

The Urban land part makes up about 25 percent of the complex. It consists of areas covered by houses, streets, driveways, buildings, parking lots, or other structures that obscure or alter the soils so that identification is not possible.

Included in mapping are a few small areas of Escambia, Luverne, Smithdale, and Wilcox soils. These soils are contrasting soils and their use and management differ from that of the Savannah soil. Included in places are soils that are similar to the Savannah soil but do not have a fragipan. The included soils make up about 20 percent of the map unit, but individual areas are generally less than 5 acres.

Most areas of this map unit are used for residential and commercial facilities. A few areas are idle.

The Savannah soil, or open part of the map unit, is well suited to vegetable gardens, lawns, most trees and shrubs, parks, and open space. Soil erosion is a hazard, especially on slopes of more than 4 percent, where the soil is disturbed or left bare.

The Savannah soil is well suited to most residential and industrial uses. This soil has severe limitations for sanitary facilities because of the moderately slow permeability and wetness. It has moderate limitations for building sites and local streets and roads because of wetness and low strength. These limitations can be overcome by installing subsurface drainage and by using an alternative to conventional underground sewage disposal systems. Roads and streets should be designed to offset the limited ability of this soil to support a load.

This complex is not assigned a capability subclass nor a woodland ordination symbol.

SmB—Smithdale loamy sand, 1 to 5 percent slopes. This soil is deep and well drained. It is on Coastal Plain uplands. Slopes are smooth and convex. The areas of this soil are irregular in shape and range from 10 to 200 acres.

Typically, the surface layer is dark brown loamy sand about 8 inches thick. The subsurface layer is yellowish red loamy sand to a depth of 11 inches. The subsoil is yellowish red sandy clay loam to a depth of 45 inches and yellowish red sandy loam to a depth of 65 inches.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: low to moderately low
Natural fertility: low
Depth to bedrock: more than 6 feet
Root zone: same as depth to bedrock
Surface runoff: slow to medium
Tilth and workability: good
High water table: none within a depth of 6 feet
Shrink-swell potential: low
Flooding: none

Included in mapping are a few small areas of Savannah and Troup soils. These soils are contrasting soils and their use and management differ from that of the Smithdale soil. Also included are soils that are similar to the Smithdale soil but have a coarser-textured subsoil. The included soils make up about 10 percent of the map unit, but individual areas are generally less than 5 acres.

The Smithdale soil is used mainly as woodland, but about 10 percent of the acreage is in cultivated crops. In a few areas, this soil is used for pasture or hay.

This soil is well suited to cultivated crops. Erosion is the major concern in management. Contour farming, terraces and water disposal systems, crop rotation, stripcropping, and residue management help control erosion and increase the organic matter content of this soil. Most crops respond well to lime and fertilizer.

This soil is well suited to use as pasture and hayland and there are no significant concerns in management. Proper grazing, weed control, and fertilizer are needed for maximum quality of forage.

The Smithdale soil is well suited to the production of loblolly pine. Longleaf pine, shortleaf pine, and mixed hardwoods are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The understory vegetation is longleaf uniola, pinehill bluestem, panicums, flowering dogwood, muscadine grape, greenbrier, huckleberry, poison-ivy, and sumac. The moderate plant competition, which prevents adequate natural or artificial reforestation, is the main concern in managing this soil for timber production. Plant competition can be controlled by site preparation to eliminate unwanted vegetation. Management that minimizes the risk of erosion is important in harvesting timber. Proper design of road drainage systems and care in the placement of culverts help control erosion.

This soil is well suited to most residential and industrial uses, and there are few significant concerns in management.

The Smithdale soil is in capability subclass IIIe. The woodland ordination symbol is 8A.

SrA—Sucarnoochee silty clay, 0 to 2 percent slopes, frequently flooded. This soil is deep and somewhat poorly drained. It is on flood plains of the Blackland Prairie. Slopes are smooth and convex. The areas of this soil are generally long and narrow, but can be broad. They range from 100 to 1,000 acres.

Typically, the surface layer is dark grayish brown silty clay about 9 inches thick. The subsurface layer, to a depth of 22 inches, is dark grayish brown silty clay that has yellowish brown mottles. The subsoil to a depth of 65 inches is gray and very dark gray clay that has mottles in shades of brown, yellow, and gray. During dry periods, this soil has cracks about 1 centimeter wide extending to more than 20 inches below the surface.

Important soil properties:

Permeability: very slow
Available water capacity: high
Soil reaction: neutral to moderately alkaline
Organic matter content: moderate to high
Natural fertility: medium
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: slow to very slow
Tilth and workability: poor
High water table: 6 to 18 inches below the surface in winter and early in spring
Shrink-swell potential: high
Flooding: frequent

Included in mapping are a few small areas of Alamuchee, Houlka, and Mooreville soils. These soils are contrasting soils and their use and management differ from that of the Sucarnoochee soil. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 10 acres.

Most areas of the Sucarnoochee soil have been cleared and are used primarily as pasture. In some areas, this soil is used for soybeans or small grains. A few small areas remain in mixed hardwood forest.

This soil is poorly suited to cultivated crops because of flooding, wetness, and poor tilth. In most years, planting dates are delayed and crops are damaged by floods. A drainage system is needed for most cultivated crops. This soil is difficult to keep in good tilth and can be worked only within a narrow range of moisture content. It becomes cloddy if farmed when it is too wet or too dry.

This soil is fairly suited to use as pasture and hayland; however, wetness and the hazard of flooding are limitations. Wetness limits the choice of plants and the period of grazing. This soil is better suited to warm-season grasses and legumes. Excessive water on the surface can be removed by shallow ditches. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition.

The Sucarnoochee soil is well suited to the production of sweetgum and green ash. American sycamore and water oak are also on this soil. On the basis of a 50-year site curve, the site index for sweetgum is 100. The understory vegetation is mainly panicums, pinehill bluestem, longleaf uniola, sedge, johnsongrass, switchgrass, osageorange, honeylocust, blackberry, and hackberry. The severe equipment use limitation, moderate seedling mortality, and severe plant competition are concerns in managing this soil for timber production. The equipment use limitation is caused by flooding and wetness; therefore, management activities should be conducted during seasons when this soil is dry. Seedling mortality is also caused by wetness and flooding. Trees can be planted on beds, or the planting rate can be increased. Plant competition, which prevents adequate natural or artificial reforestation, can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial use. Wetness, very slow permeability, high shrink-swell potential, low strength for local roads and streets, and the hazard of flooding are severe limitations that are difficult to overcome.

The Sucarnoochee soil is in capability subclass IVw. The woodland ordination symbol is 10W.

SuB2—Sumter silty clay loam, 1 to 5 percent slopes, eroded. This soil is moderately deep and well drained. It is on uplands of the Blackland Prairie. Slopes are generally smooth and convex. In most areas, the present 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. The areas of this soil are irregular in shape and range from 20 to 100 acres.

Typically, the surface layer is dark grayish brown silty clay loam about 5 inches thick. The subsoil to a depth of 15 inches is light yellowish brown silty clay loam that has about 7 percent calcium carbonate concretions. To a depth of 29 inches, it is light yellowish brown silty clay that has light gray and brownish yellow mottles and about 20 percent chalk channers and 15 percent calcium carbonate concretions. The substratum to a depth of more than 60 inches is light gray chalk that has mottles of gray, pinkish gray, and yellowish brown on fractures of bedding planes.

Important soil properties:

Permeability: slow
Available water capacity: low
Soil reaction: mildly alkaline or moderately alkaline
Organic matter content: moderate
Natural fertility: low to medium
Depth to bedrock: 20 to 40 inches to soft chalk
Root zone: same as depth to bedrock
Surface runoff: medium to rapid
Tilth and workability: fair
High water table: none within a depth of 6 feet
Shrink-swell potential: high to moderate
Flooding: none

Included in mapping are a few small areas of Demopolis, Kipling, and Vaiden soils. The soils are contrasting soils and their use and management differ from that of the Sumter soil. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

Most areas of the Sumter soil have been cleared and are used primarily for cultivated crops, pasture, or hay. A few small areas are idle, or they are in woodland consisting of eastern redcedar, hackberry, and osageorange.

This soil is fairly suited to cultivated crops; however, erosion is a severe hazard. This hazard can be overcome by planting and maintaining cover crops for most of the year (fig. 11). Sheet and rill erosion are evident in most areas, and ephemeral gullies are common. The surface layer of this soil is friable, but it is difficult to keep in good tilth where cultivation has mixed some of the clayey subsoil into the plow layer. Limiting tillage for seedbed preparation and weed control reduces runoff and erosion. All tillage should be on the contour or across the slope, and waterways should be shaped and seeded to perennial grasses.

This soil is well suited to use as pasture and hayland. Erosion is a severe hazard while the soil is bare during establishment of pasture. All tillage should be on the contour. Fertilizer and good pasture management help maintain good stands of desired grasses and legumes. This soil is suited to improved bermudagrass, bahiagrass, johnsongrass, and tall fescue.

The Sumter soil is well suited to the production of eastern redcedar. Osageorange and hackberry are also on this soil. On the basis of a 50-year site curve, the site index for eastern redcedar is 40. The understory vegetation is mainly johnsongrass, panicums, hackberry, Macartney rose, and sedges. The moderate erosion hazard, equipment use limitation, and plant competition

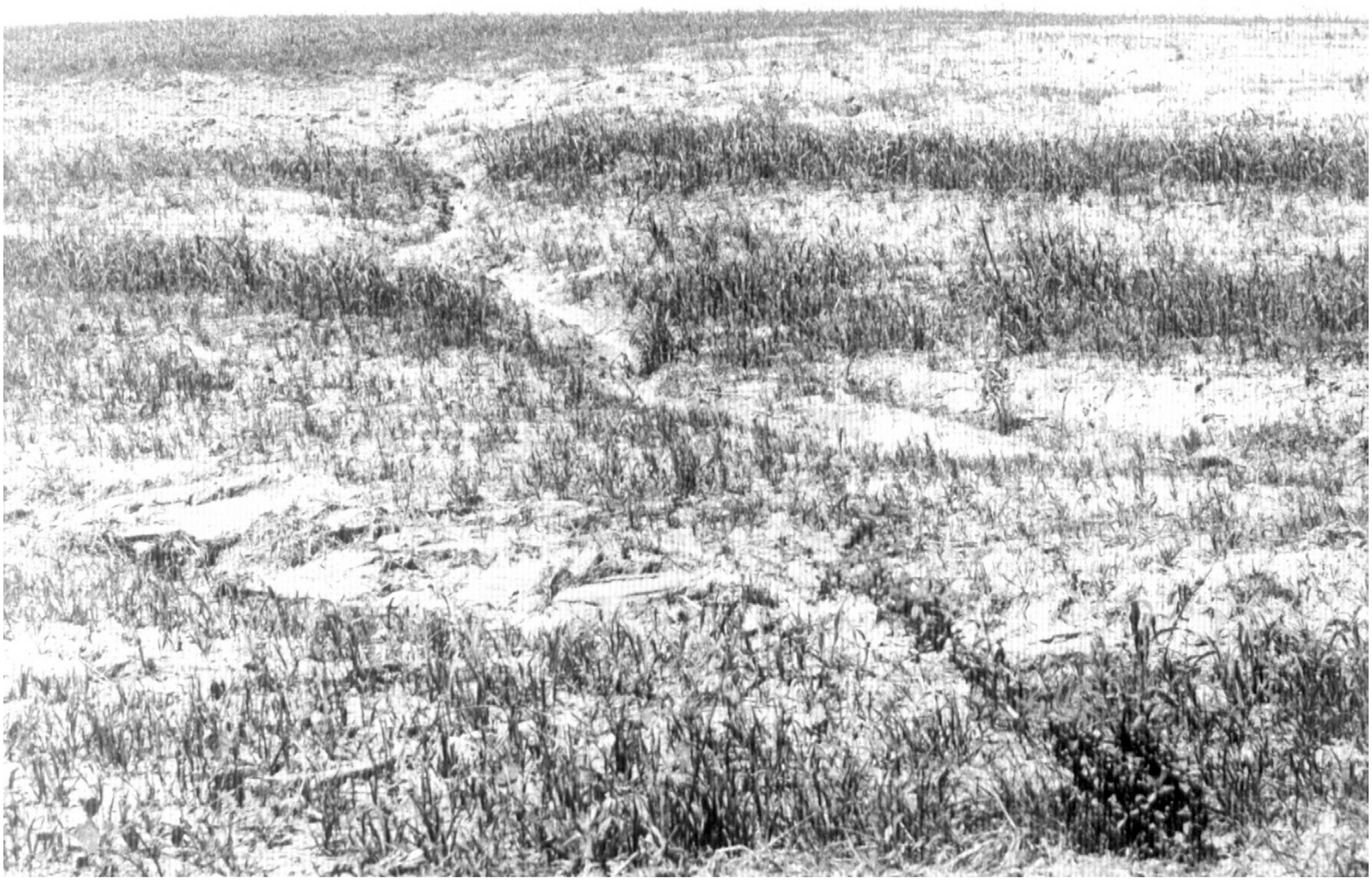

Figure 11.—Sheet and rill erosion is common in areas of Sumter silty clay loam, 1 to 5 percent slopes, eroded. Wheat is planted as a cover crop to help control erosion.

and the severe seedling mortality are concerns in managing this soil for timber production. The erosion hazard is caused by the depth to chalk. Management activities to control erosion should include site preparation methods that minimize soil disturbance and should be planned during seasons when the soil is dry. Seedling mortality caused by droughtiness can be offset by increasing the tree planting rates. Plant competition, which reduces natural or artificial reforestation, can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial use because of the depth to bedrock, high shrink-swell potential, and low strength for local streets and roads. Proper engineering designs can compensate for these limitations.

The Sumter soil is in capability subclass IIIe. The woodland ordination symbol is 4C.

SuC2—Sumter silty clay loam, 5 to 8 percent slopes, eroded. This soil is moderately deep and well drained. It is on uplands of the Blackland Prairie, mainly in the northern part of the county. In most areas, the present 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 smooth and convex. The areas of this soil are irregular in shape and range from 30 to 100 acres.

Typically, the surface layer is dark olive gray silty clay loam about 2 inches thick. The subsoil is olive gray silty clay to a depth of 22 inches. The substratum to a depth of more than 60 inches is light gray chalk that has yellowish brown mottles on fractures of bedding planes.

Important soil properties:

Permeability: slow
Available water capacity: low
Soil reaction: mildly alkaline or moderately alkaline
Organic matter content: moderate
Natural fertility: low to medium
Depth to bedrock: 20 to 40 inches to soft chalk
Root zone: same as depth to bedrock
Surface runoff: medium to rapid
Tilth and workability: fair
High water table: none within a depth of 6 feet
Shrink-swell potential: high
Flooding: none

Included in mapping are a few small areas of Demopolis and Kipling soils. These soils are contrasting soils and their use and management differ from that of the Sumter soil. Also included are soils that are similar to the Sumter soil except they contain less calcium carbonate. The included soils make up about 15 percent of this map unit, but individual areas are generally less than 5 acres.

Most areas of the Sumter soil have been cleared and are used primarily for cultivated crops, pasture, or hay.

This soil is poorly suited to cultivated crops because of steepness of slope, poor tilth, and depth to bedrock. Erosion is a severe hazard if this soil is cultivated. Sheet and rill erosion are evident in most areas, and shallow gullies are common. The surface layer of this soil is friable, but it is difficult to keep in good tilth where cultivation has mixed some of the clayey subsoil into the plow layer. Limiting tillage for seedbed preparation and weed control reduces runoff and erosion. All tillage should be on the contour or across the slope, and waterways should be shaped and seeded to perennial grasses.

This soil is well suited to use as pasture and hayland. It has few limitations, but erosion is a severe hazard while the soil is bare during establishment of pasture. All tillage should be on the contour. This soil is suited to improved bermudagrass, bahiagrass, johnsongrass, and tall fescue. Fertilizer and good pasture management help maintain good stands of desired grasses and legumes.

The Sumter soil is well suited to the production of eastern redcedar. Osageorange and hackberry are also on this soil. On the basis of a 50-year site curve, the site index for eastern redcedar is 40. The understory vegetation is mainly johnsongrass, panicums, hackberry, Macartney rose, and sedges. The moderate erosion hazard, equipment use limitation, and plant competition and the severe seedling mortality are concerns in managing this soil for timber production. The erosion hazard is caused by the depth to chalk. Management activities to control erosion should include site preparation methods planned during seasons when the soil is dry. Seedling mortality is caused by droughtiness, but it can be offset if tree planting rates are increased. Plant competition, which reduces natural or artificial reforestation, can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial uses because of depth to bedrock, high shrink-swell potential, and low strength for local roads and streets. Proper engineering designs can compensate for these limitations.

The Sumter soil is in capability subclass IVe. The woodland ordination symbol is 4C.

SvB—Sumter very cobbly silt loam, 1 to 5 percent slopes. This soil is moderately deep and well drained. It is on uplands of the Blackland Prairie. Slopes are generally smooth and convex. The areas of this soil are irregular in shape and range from 5 to 20 acres.

Typically, the surface layer is very dark gray very cobbly silt loam about 8 inches thick. It is about 55 percent, by volume, cobbles. The subsurface layer, to a depth of 12 inches, is dark grayish brown silty clay loam that has pale yellow mottles and about 9 percent calcium carbonate concretions. The subsoil, to a depth of 32 inches, is light yellowish brown silty clay that has light olive brown mottles and about 20 percent pale yellow chalk channers. The substratum to a depth of more than 60 inches is pale yellow chalk that has yellowish brown mottles along bedding planes.

Important soil properties:

Permeability: slow
Available water capacity: low
Soil reaction: mildly alkaline or moderately alkaline
Organic matter content: moderate
Natural fertility: low to medium
Depth to bedrock: 20 to 40 inches to soft chalk
Root zone: same as depth to bedrock
Surface runoff: medium to rapid
Tilth and workability: poor
High water table: none within a depth of 72 inches
Shrink-swell potential: low in the surface and subsurface layers and high in the subsoil
Flooding frequency: none

Included in mapping are a few small areas of Demopolis, Kipling, Okolona, and Vaiden soils. These soils are contrasting soils and their use and management differ from that of the Sumter soil. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

Most areas of Sumter soil have been cleared and are used primarily as pasture or hayland. In some areas, this soil is used for cultivated crops. A few small areas are woodland.

This soil is not suited to cultivated crops. Tillage and preparation of an adequate seedbed are difficult because of the very cobbly surface layer. Soil moisture is low in most years because of the high cobble content.

This soil is poorly suited to use as pasture and hayland. The high content of cobbles on and throughout the surface layer makes establishment of desired plants difficult and interferes with mowing and hay harvesting operations.

The Sumter soil is well suited to the production of eastern redcedar. Osageorange and hackberry are also on this soil. On the basis of a 50-year site curve, the site index for eastern redcedar is 40. The understory vegetation is mainly johnsongrass, panicums, hackberry, Macartney rose, and sedges. The moderate erosion hazard, equipment limitation, and plant competition and the severe seedling mortality are concerns in managing this soil for timber production. The erosion hazard is because of the depth to chalk. Management activities to control erosion should include site preparation methods to minimize soil disturbance and management activities should be planned during seasons when the soil is dry. Seedling mortality caused by droughtiness can be offset if tree planting rates are increased. Plant competition, which reduces natural or artificial reforestation, can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial use. Depth to bedrock, slow permeability, high shrink-swell potential, low strength for local streets and roads, and high content of cobbles on the surface are severe limitations for most uses. Proper engineering designs can compensate for these limitations although they are difficult to overcome.

The Sumter soil is in capability subclass VIs. The woodland ordination symbol is 3F.

TrB—Troup loamy sand, 0 to 5 percent slopes. This soil is deep and well drained. It is on uplands of the Coastal Plain. Slopes are smooth and convex. The areas of this soil are irregular in shape and range from 10 to 100 acres.

Typically, the surface layer is dark yellowish brown loamy sand about 7 inches thick. The subsurface layer, to a depth of 54 inches, is loamy sand. It is strong brown to a depth of about 36 inches and reddish yellow below that. The subsoil is strong brown sandy clay loam to a depth of at least 75 inches.

Important soil properties:

Permeability: rapid in the surface and subsurface layers and moderate in the subsoil
Available water capacity: low
Soil reaction: strongly acid or very strongly acid
Organic matter content: low to very low
Natural fertility: low
Depth to bedrock: more than 6 feet
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: good
High water table: none within a depth of 6 feet
Shrink-swell potential: very low to low
Flooding: none

Included in mapping are a few small areas of Luverne and Smithdale soils. Also included are soils that are similar to the Troup soil but have a loamy sand surface layer more than 80 inches thick. Smithdale and Luverne soils are contrasting soils and their use and management differ from that of the Troup soil. The included soils make up about 5 percent of the map unit, but individual areas are generally less than 5 acres.

The Troup soil is mostly used as woodland consisting of pine and mixed hardwoods. About 5 percent of the acreage of this soil has been cleared and is used primarily as pasture or hayland.

This soil is fairly suited to cultivated crops and is well suited to grasses and legumes for pasture and hay. Droughtiness is a limitation, and the leaching of plant nutrients is a concern in this soil. Split applications of commercial fertilizer is recommended. Erosion is a slight to moderate hazard if this soil is tilled. Terraces are not recommended on this sandy soil; however, most slopes are long and smooth and can be plowed on the contour.

This soil is well suited to the production of loblolly pine. Shortleaf pine is also on this soil. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation is mainly greenbrier, little bluestem, huckleberry, blackjack oak, hickory, and flowering dogwood. The moderate equipment use limitation, seedling mortality, and plant competition are concerns in managing this soil for timber production. Because the thick, sandy surface and subsurface layers restrict the use of wheeled equipment when the soil is very dry, harvesting operations should be conducted when the soil is moist. Seedling mortality caused by droughtiness, can be partly overcome by increasing the tree planting rate. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil has slight limitations for most urban uses; however, it has severe limitations for sewage lagoons because of seepage, moderate limitations for sanitary landfills because the soil is too sandy, and severe limitations for shallow excavations because cutbanks cave.

The Troup soil is in capability subclass IIIs. The woodland ordination symbol is 8S.

TSE—Troup and Smithdale soils, 5 to 20 percent slopes. These soils are deep and well drained. They are on uplands of the Coastal Plain. Slopes are long and complex. Each soil is in areas large enough to be mapped separately but were not because of the present and expected use of these soils. Some areas are mostly Troup soil, some are mostly Smithdale soil, and others contain both soils in proportions that differ from one area to another. The areas of these soils are irregular in shape and range from 200 to 1,000 acres.

The Troup soil and similar soils make up about 33 percent of this map unit. Typically, the surface layer is dark grayish brown loamy sand about 5 inches thick. The subsurface layer is strong brown loamy sand to a depth of 50 inches. The subsoil is yellowish red sandy clay loam to a depth of 60 inches.

Important soil properties:

Permeability: rapid in the surface and subsurface layers and moderate in the subsoil
Available water capacity: low
Soil reaction: strongly acid or very strongly acid
Organic matter content: low to very low
Natural fertility: low
Depth to bedrock: more than 6 feet
Root zone: same as depth to bedrock
Surface runoff: slow
Tilth and workability: good
High water table: none within a depth of 6 feet
Shrink-swell potential: very low to low
Flooding: none

Smithdale soil and similar soils make up 27 percent of this map unit. Typically, the surface layer is brown loamy sand to a depth of 7 inches. The subsurface layer is yellowish brown loamy sand to a depth of 16 inches. The subsoil is yellowish red sandy clay loam to a depth of 42 inches and yellowish red sandy loam to a depth of 60 inches.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: low to moderately low
Natural fertility: low
Depth to bedrock: more than 6 feet
Root zone: same as depth to bedrock
Surface runoff: slow to medium
Tilth and workability: good
High water table: none within a depth of 6 feet
Shrink-swell potential: low
Flooding: none

Included in mapping are a few small areas of Alamuchee, Luverne, and Mooreville soils and soils that have 20 to 40 inches of loamy sand above the subsoil. Also included are soils that are similar to the Troup and Smithdale soils but that are sandy throughout. The included soils make up about 40 percent of this map unit. The Alamuchee, Luverne, and Mooreville soils are contrasting soils and their use and management differ from that of Troup and Smithdale soils. These contrasting soils make up about 30 percent of the included soils.

Most of the acreage of the Troup and Smithdale soils is woodland consisting of pine and mixed hardwoods. About 10 percent of the acreage has been cleared and is used primarily as pasture or hayland. In a few of the less sloping areas, these soils are used for cultivated crops.

These soils are not suited to cultivated crops because the steep slopes make the hazard of erosion severe if these soils are tilled. Droughtiness and the leaching of plant nutrients are also concerns. Terraces are not recommended on sandy soils, and in most areas, the slopes are too steep for properly designed terraces.

These soils are poorly suited to use as pasture and hayland. Steep complex slopes, droughtiness, and the severe hazard of erosion are the main limitations. The steep slopes limit equipment use. Leaching of plant nutrients is a concern, and split applications of commercial fertilizer is recommended. These soils are best suited to drought-resistant plants, such as coastal bermudagrass and bahiagrass.

These soils are well suited to the production of loblolly pine (fig. 12). Shortleaf pine is also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 80 on the Troup soil and 85 on the Smithdale soil. The understory vegetation is mainly little bluestem, longleaf uniola, lespedeza, honeysuckle, blackberry, dogwood, and tickclover. Because of the thick sandy surface and subsurface layers and the steepness of slope of the Troup soil, use of equipment and seedling mortality are concerns in managing this soil for timber production. Management activities to control erosion should included site preparation methods that minimize soil disturbance. The sandy texture of the Troup soil restricts the use of wheeled equipment, especially when the soil is very dry; therefore, management activities should be conducted when the soil is moist. Tracked equipment should be used on steep slopes. Seedling mortality caused by droughtiness can be partly overcome by increasing the tree planting rate. The moderate plant competition on the Troup and Smithdale soils, which reduces growth and natural or artificial reforestation, can be controlled by site preparation to eliminate unwanted vegetation.

These soils have slight to severe limitations for most urban uses because of the sandy texture of the Troup soil and the steep slopes of the Troup and Smithdale soils. Erosion is a major concern if these soils are disturbed and left bare. Excavation and filling may be necessary to alter some of the slopes; however, the Troup soil is likely to cave.

The Troup soil is in capability subclass VIIs, and the Smithdale soil is in capability subclass VIe. The woodland ordination symbol is 8S for the Troup soil and 8A for the Smithdale soil.

Figure 12.—The loblolly pine plantation on Troup and Smithdale soils, 5 to 20 percent slopes, has been clearcut. After site preparation is completed, pines will be planted.

TuB—Typic Udorthents, loamy, 0 to 4 percent slopes. This soil is deep and well drained. It is on terraces and flood plains along the Tombigbee River. Some areas adjacent to the river channel are subject to frequent flooding. Slopes are smooth and convex. The areas of this soil are oblong to rectangular and range from 20 to 150 acres.

This soil is uneven accumulations of material from dredge and fill operations along the Tombigbee River. This material has been pumped, by dredging operations, into generally rectangular-shaped holding basins. These basins are surrounded by a constructed dike or levee and then filled with the dredged material. Some areas of this soil have been removed for use at another location. Some of these sites, along with additional soils, continue to receive soil material from the ongoing dredging operations. Although areas of this soil are on flood plains, most areas are seldom if ever flooded because of the levee that encloses them.

The composition of this map unit is more variable than that of other map units in the survey area. In a representative area, the soil is thinly stratified white or pale brown sand, loamy sand, and sandy loam that has common thin to thick strata of finer textured material. The soil material extends to a depth of more than 60 inches.

Included in mapping are gravel, chalk channers, silts and clays, and small areas of Alamuchee, Bigbee, and Mooreville soils. The Alamuchee, Bigbee, and Mooreville soils are contrasting soils, and their use and management differ from that of the Typic Udorthents, loamy. Also included are some non-soil materials. The included materials make up about 20 percent of the map unit, but individual areas of these materials are generally less than 5 acres.

Areas of the Typic Udorthents, loamy, are mostly idle. Some areas have a sparse covering of grasses, forbs, and a few widely scattered trees.

This soil is not suited to cultivated crops, pasture, or hay because of the very low available water capacity, very low natural fertility, and very strongly acid reaction. Most areas of this soil are isolated from nearby farming operations and do not have an access road. Many areas are inaccessible during floods.

This soil is fairly suited to the production of loblolly pine. Longleaf pine can also be grown on this soil. The understory vegetation is mainly panicums, blackberry, greenbrier, and sedges. The moderate seedling mortality and plant competition are concerns in managing this soil for timber production. Seedling mortality caused by droughtiness can be offset by increasing the tree planting rate. Competition from undesirable plants reduces growth and natural and artificial regeneration. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is not suited to residential and industrial use. Flooding is a concern in some locations, and most areas have very limited access during the wet seasons of the year.

Typic Udorthents, loamy, is not asigned to a capability subclass and does not have a woodland ordination symbol.

VaA—Vaiden silty clay loam, 0 to 1 percent slopes. This soil is deep and somewhat poorly drained. It is on uplands of the Blackland Prairie. Slopes are smooth and slightly convex. The areas of this soil are irregular in shape and range from 20 to 100 acres.

Typically, the surface layer is dark brown silty clay loam about 6 inches thick. The subsoil is yellowish brown clay to a depth of 18 inches and is mottled yellowish brown, gray, and yellowish red clay to a depth of 34 inches. The substratum to a depth of 60 inches is clay. Ped faces are gray and the interior of peds is mottled grayish brown, yellowish brown, gray, and light olive brown.

Important soil properties:

Permeability: very slow
Available water capacity: moderate
Soil reaction: very strongly acid to medium acid in the surface layer and subsoil and very strongly acid to moderately alkaline in the substratum
Organic matter content: low to moderately low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: slow to rapid
Tilth and workability: poor
High water table: 12 to 24 inches below the surface late in winter and early in spring
Shrink-swell potential: high to very high
Flooding: none

Included in mapping are a few small areas of Demopolis, Kipling, Okolona, and Sumter soils. Demopolis, Okolona, and Sumter soils are contrasting soils and their use and management differ from that of the Vaiden soil. The contrasting soils make up about 10 percent of the included soils. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

Most areas of the Vaiden soil have been cleared and are used primarily for cultivated crops, pasture, or hay. In a few areas, the soil is used for timber production.

This soil is fairly suited to most cultivated crops. Wetness, the clayey texture, and poor tilth are the main limitations. Wetness often delays planting and harvesting crops. Proper row arrangement, field ditches, and vegetated outlets are needed to remove excess surface water. This soil is difficult to keep in good tilth and can be worked only within a narrow range of moisture content. It becomes cloddy if farmed when it is too wet or too dry. Returning crop residue to the soil improves fertility and helps to maintain tilth.

This soil is fairly suited to use as pasture and hayland. Wetness limits the choice of plants and period of grazing. Improved bermudagrass, bahiagrass, tall fescue, and johnsongrass are suitable plants. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition.

The Vaiden soil is well suited to the production of loblolly pine. Shortleaf pine, sweetgum, and water oak are also on this soil. On the basis of a 50-year site curve, the site index for loblolly pine is 80. The understory vegetation is mainly greenbrier, panicums, blackberry, honeysuckle, huckleberry, flowering dogwood, and winged elm. The moderate equipment use limitation, seedling mortality, and plant competition caused by the clayey texture and wetness are concerns in managing this soil for timber production. Management activities should be conducted when the soil is dry. Seedling mortality can be offset if tree planting rates are increased. Plant competition, which reduces natural or artificial reforestation, can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial use. Wetness, very slow permeability, low strength, and high shrink-swell potential are severe limitations (fig. 13). Wetness and very slow permeability can be partly overcome by installing specially designed or alternative sewage disposal systems. The effects of shrinking and swelling can be minimized by using proper engineering designs. Roads and streets should be designed to offset the limited ability of this soil to support a load.

The Vaiden soil is in capability subclass IIIw. The woodland ordination symbol is 8C.

WcB—Wilcox silty clay, 2 to 5 percent slopes. This soil is deep and somewhat poorly drained. It is on uplands of the Coastal Plain. Slopes are smooth and convex. The areas of this soil are irregular in shape and range from 100 to 1,000 acres.

Typically, the surface layer is dark brown silty clay about 4 inches thick. The subsoil to a depth of 14 inches is yellowish red silty clay that has light brownish gray and strong brown mottles. It is mottled light brownish gray, red, and strong brown clay to a depth of 41 inches. The substratum is gray and grayish brown, soft, acid, clayey shale to a depth of 65 inches.

Important soil properties:

Permeability: very slow
Available water capacity: high
Soil reaction: strongly acid to extremely acid
Organic matter content: low to moderately low
Natural fertility: low
Depth to bedrock: 30 to 50 inches to soft shale
Root zone: same as depth to bedrock
Surface runoff: slow to rapid
Tilth and workability: poor
High water table: 18 to 36 inches below the surface late in winter and early in spring
Shrink-swell potential: high
Flooding: none

Included in mapping are a few small areas of Kipling, Luverne, and Mayhew soils. Luverne and Kipling soils are contrasting soils and their use and management differ from that of the Wilcox soil. The contrasting soils make up about 10 percent of the included soils. Also included are soils that are similar to the Wilcox soil but contain less clay in the upper part of the subsoil. The included soils make up about 15 percent of the map unit, but individual areas are generally less than 5 acres.

Most of the acreage of the Wilcox soil is woodland, mainly pine with some mixed hardwoods. About 15 percent of the acreage has been cleared and is used primarily for soybeans and wheat (fig. 14). In a few small areas, this soil is used as pasture or hayland.

This soil is fairly suited to cultivated crops and small grains. The soil has poor tilth and can be worked only within a narrow range of moisture content. It becomes cloddy if it is farmed when too wet or too dry. Erosion is a concern if this soil is tilled. Conservation tillage, cover crops, and crop rotations reduce runoff and help control erosion.

This soil is fairly suited to use as pasture and hayland. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition.

The Wilcox soil is well suited to the production of loblolly pine. Shortleaf pine, water oak, and sweetgum are also on this soil. On the basis of a 50-year site curve, the mean site index for loblolly pine is 95. The understory vegetation is pinehill bluestem, panicums, blackberry, flowering dogwood, American holly, huckleberry, smooth sumac, and waxmyrtle. The moderate equipment use limitation and seedling mortality and the severe plant competition are concerns in managing this soil for timber production. The equipment use limitation is caused by wetness and the clayey surface layer; therefore, management activities should be conducted when the soil is dry. Seedling mortality caused by the clayey texture of the soil can be offset if the planting rate for trees is increased. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

This soil is poorly suited to residential and industrial uses. Wetness, very slow permeability, depth to bedrock, and high shrink-swell potential are severe limitations. Septic tank absorption fields do not function properly during rainy periods because of wetness and very slow

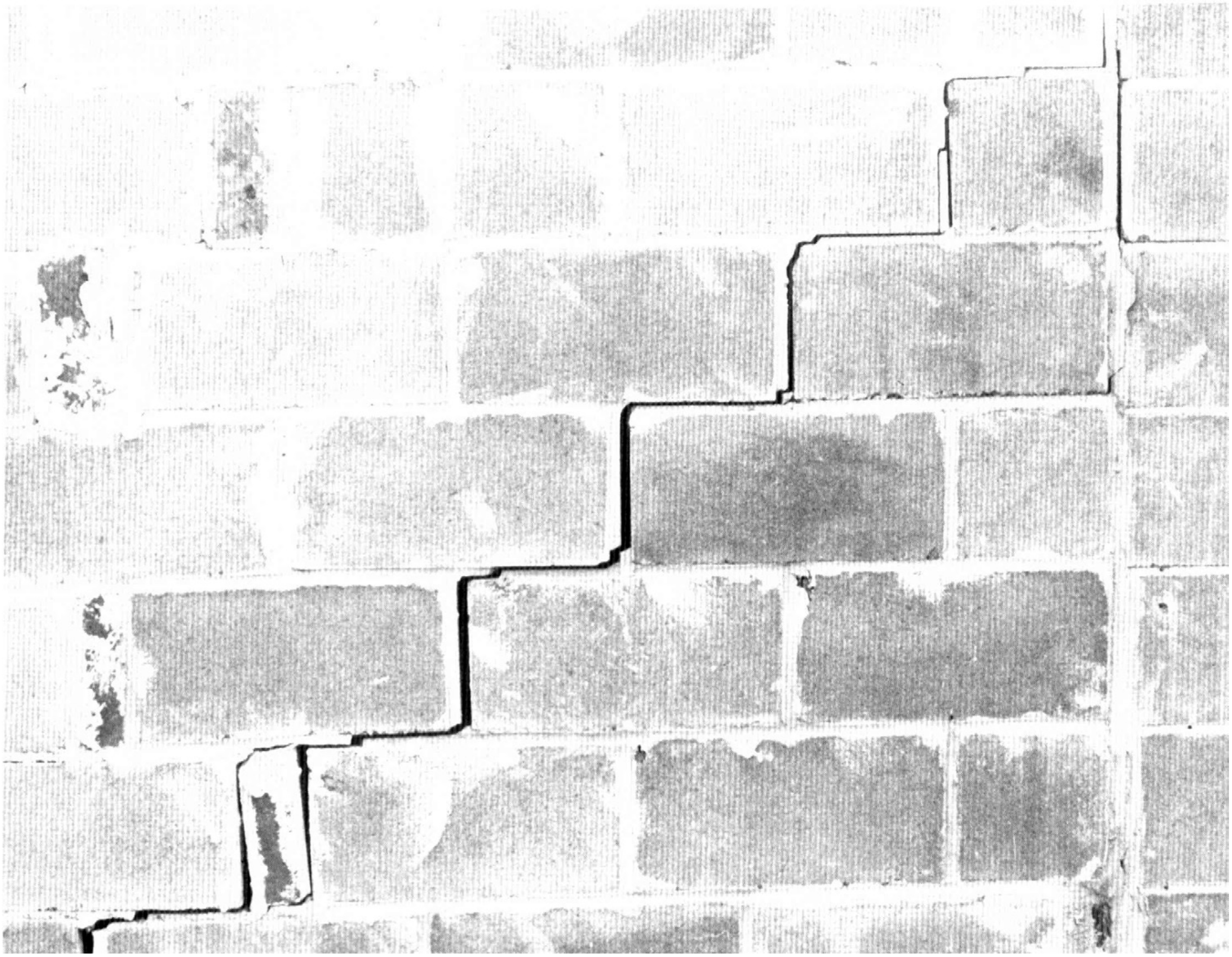

Figure 13.—Vaiden silty clay loam, 0 to 1 percent slopes, shrinks when it is dry and swells as it becomes wet. This can damage structures and plant roots.

permeability. Lagoons or self-contained sewage disposal units can be used to dispose of sewage properly. If buildings are constructed on this soil, proper designs for foundations and footings and diversion of runoff from the buildings prevent structural damage as a result of shrinking and swelling.

The Wilcox soil is in capability subclass IIIe. The woodland ordination symbol is 10C.

WuC2—Wilcox-Luverne complex, 5 to 8 percent slopes, eroded. The soils in this complex are deep. They are on Coastal Plain uplands mainly in the southern half of the county. The Wilcox soil is somewhat poorly drained, and the Luverne soil is well drained. In most areas, the present surface layer of these soils 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 few to common rills and gullies. Slopes are smooth and convex. Areas of the Wilcox and Luverne soils are too intricately mixed or too small to be mapped separately at the selected scale. The areas of this map unit are irregular in shape and range from 100 to 500 acres. Individual areas of each soil range from 5 to 20 acres.

The Wilcox soil and similar soils make up about 70 percent of the complex. Typically, the surface layer is

Figure 14.—Soybeans is one of the main crops grown on Wilcox silty clay, 2 to 5 percent slopes.

dark yellowish brown silty clay about 3 inches thick. The subsoil is yellowish red clay to a depth of 11 inches and mottled red, yellow, brown, and gray clay to a depth of 42 inches. The substratum is mottled gray and grayish brown, soft, acid shale to a depth of 60 inches.

Important soil properties:

Permeability: very slow
Available water capacity: high
Soil reaction: strongly acid to extremely acid
Organic matter content: low to moderately low
Natural fertility: low
Depth to bedrock: 30 to 50 inches to soft shale
Root zone: same as depth to bedrock
Surface runoff: medium to rapid
Tilth and workability: poor
High water table: 18 to 36 inches below the surface late in winter and early in spring
Shrink-swell potential: high
Flooding: none

The Luverne soil and similar soils make up about 18 percent of The complex. Typically, the surface layer is dark yellowish brown sandy loam about 4 inches thick. The subsoil is red clay to a depth of 19 inches, and to a depth of 46 inches, it is red clay that has brown, yellow, and gray mottles. The substratum to a depth of 60 inches is stratified red, yellow, gray, and brown loamy sand, sandy loam, sandy clay loam, and clay.

Important soil properties:

Permeability: moderately slow
Available water capacity: moderate
Soil reaction: strongly acid or very strongly acid
Organic matter content: low
Natural fertility: low
Depth to bedrock: more than 60 inches
Root zone: same as depth to bedrock
Surface runoff: medium to rapid
Tilth and workability: fair
High water table: none within a depth of 6 feet
Shrink-swell potential: low in surface layer and moderate in subsoil
Flooding: none

Included in mapping are a few small areas of Alamuchee, Mooreville, Kipling, Mayhew, Smithdale, and Sucarnoochee soils. These soils are contrasting soils and their use and management differ from that of the Wilcox and Luverne soils. Also included are soils that are similar to Wilcox and Luverne soils but contain less clay and have a thicker solum. The included soils make up about 12 percent of the complex.

Most of the acreage of the Wilcox and Luverne soils is woodlands consisting of pine and mixed hardwoods. About 5 percent of the acreage has been cleared and is used primarily as pasture. A small acreage is in cultivated crops.

These soils are not suited to cultivated crops. Slope, poor tilth, and depth to bedrock are the main limitations. Erosion is a severe hazard if these soils are tilled. Sheet and rill erosion are evident in most areas, and shallow gullies are common. The surface layer of these soils is friable, but it is difficult to keep in good tilth where cultivation has mixed some of the clayey subsoil into the plow layer. Limiting tillage for seedbed preparation and weed control reduces runoff and erosion. All tillage should be on the contour or across the slope, and waterways should be shaped and seeded to perennial grasses.

These soils are fairly suited to use as pasture and hayland. Erosion is a severe hazard while the soil is bare during establishment of pasture. All tillage should be on the contour. Management activities include the application of agricultural limestone and commercial fertilizer and the control of weeds and shrubs.

The Wilcox and Luverne soils are well suited to the production of loblolly pine. Shortleaf pine, sweetgum, and water oak are also on these soils. On the basis of a 50-year site curve, the site index for loblolly pine is 95 for the Wilcox soil and 90 for the Luverne soil. The understory vegetation is pinehill bluestem, panicums, blackberry, flowering dogwood, American holly, huckleberry, smooth sumac, waxmyrtle, greenbrier, and muscadine grape. The moderate equipment use limitation is a concern in managing these soils for timber production. This limitation is caused by the clayey texture of the soils. Management activities should be conducted when the soils are dry. The moderate seedling mortality on the Wilcox soil caused by the clayey surface texture is also a concern. The tree planting rate can be increased to offset seedling mortality. Plant competition is moderate on the Luverne soil and severe on the Wilcox soil. Competition from undesirable plants reduces growth and natural or artificial reforestation. Plant competition can be controlled by site preparation to eliminate unwanted vegetation.

These soils are poorly suited to residential and industrial use. The Wilcox soil has severe limitations for urban uses because of the very slow permeability, high shrink-swell potential, seasonal high water table, and clayey surface layer. The Luverne soil has severe limitations for septic tank absorption fields because of the moderately slow permeability. It has moderate limitations for most other uses. The limitations for urban use are more easily overcome on the Luverne soil than on the Wilcox soil, so areas of the Luverne soil or of the included soils that are well suited should be selected for building sites.

This complex is in capability subclass VIe. The woodland ordination symbol is 10C for the Wilcox soil and 9C for the Luverne soil.

Prime Farmland

In this section, prime farmland is defined and discussed, and the prime farmland soils in Sumter County are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. The moisture supply, of course, must be adequate, and the growing season has to be sufficiently long. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be in use as cropland, pasture, or woodland, or they may be in other uses. They either are used for producing food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water control structures. Public land is land not available for farming in national forests, national parks, military reservations, and state parks.

Prime farmland soils usually get an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not subject to frequent flooding during the growing season. The slope ranges mainly from 0 to 5 percent.

The following map units, or soils, make up prime farmland in Sumter County, Alabama. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 5. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Soils that have limitations, such as a high water table or flooding, may qualify as prime farmland if these limitations are overcome by such measures as drainage or flood control. In the following list, the measures needed to overcome the limitations of a map unit, if any, are shown in parentheses after the map unit name. Onsite evaluation is necessary to determine if the limitations have been overcome by the corrective measures.

AnA Annemaine sandy loam, 0 to 2 percent slopes, occasionally flooded
CaA Cahaba sandy loam, 0 to 2 percent slopes, occasionally flooded
EsA Escambia sandy loam, 0 to 2 percent slopes
HoA Houlka clay loam, 0 to 2 percent slopes, occasionally flooded
KpA Kipling loam, 0 to 1 percent slopes
KpB2 Kipling silty clay loam, 1 to 5 percent slopes, eroded
LvB Luverne sandy loam, 2 to 5 percent slopes, eroded
OkB Okolona silty clay, 0 to 3 percent slopes
SaA Savannah loam, 0 to 2 percent slopes
SaB Savannah loam, 2 to 5 percent slopes
SmB Smithdale loamy sand, 1 to 5 percent slopes
VaA Vaiden silty clay loam, 0 to 1 percent slopes
WcB Wilcox silty clay, 2 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 avoid misuse of land.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, moisture relationships, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where 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, Soil Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified; the system of land capability classification used by the Soil Conservation Service is explained; the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under 'Detailed Soil Map Units'. Specific information can be obtained from the Sumter County Office of the Soil Conservation Service or the Cooperative Extension Service.

In 1980, about 60,000 acres of cropland and 134,500 acres of pasture were in Sumter County *(21)*. During 1985, about 2,500 acres of corn, 16,700 acres of soybeans, 7,800 acres of sorghum, and 5,000 acres of wheat were planted and 11,700 acres of hay was harvested *(1)*. A small acreage in the southwest section of the county is used for truck crops. The acreage of cultivated crops has been decreasing slightly for several years. In Blackland Prairie sections, the trend is toward conversion of marginal cropland to hayland.

The soils in Sumter County have good potential for increased production of food and fiber. About 100,000 acres of potentially good cropland is used as woodland *(21)*. Yields can be increased on land currently being cultivated if the most recent technology is applied. This soil survey can help land users make sound land management decisions and can facilitate the application of crop production technology.

Field crops suited to the soils and climate of Sumter County include many that are not commonly grown because of economic considerations. Soybeans is the main row crop, but grain sorghum, vegetable crops, and similar crops can be grown if economic conditions are favorable.

Speciality crops grown in the county include sweet potatoes, peas, okra, melons, and turnips. Cahaba, Smithdale, and Troup soils are well suited to specialty crops, and if economic conditions were suitable, more could be grown. Wheat and oats are the only close-growing crops planted for grain production; however, barley and rye can be grown. Information and suggestions for growing specialty crops can be obtained from the Sumter County Offices of the Cooperative Extension Service and the Soil Conservation Service.

Soil erosion is a major concern on about half of the cropland of Sumter County. Soils that have slope of more than 2 percent generally have the highest potential hazard of erosion. The Kipling, Luverne, Okolona, Savannah, Smithdale, Sumter, Troup, and Wilcox soils are some of the sloping soils being cultivated. Erosion control practices are needed on these soils.

Soil erosion can reduce production significantly and lead to increased 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 to soils that have a clayey subsoil, such as the Kipling, Luverne, and Okolona soils, and to soils, such as the Savannah soils, that have a fragipan that restricts rooting depth. Sediment from soil erosion causes offsite damages. Control of erosion on farmland minimizes the pollution of streams by sediment and improves the quality of water for municipal use, for recreation, and for fish and wildlife.

Erosion control practices provide protective surface cover, increase water infiltration, and reduce water runoff. A cropping system that keeps plant cover on the soil for extended periods can hold soil erosion losses to amounts that do not reduce the productive capacity of the soils. A cropping system that consists of perennial grasses and legumes is very effective in controlling erosion. It can also provide nitrogen, increase the rooting depth, and improve soil tilth for the crops that follow in the rotation.

Conservation tillage, stripcropping, and crop residue on the surface increase water filtration and reduce the hazards of runoff and erosion. No-tillage production of corn, soybeans, and other crops effectively reduces erosion in sloping areas, especially where topographic conditions are unfavorable for terracing and contouring. No-tillage farming can be adapted to most soils in Sumter County.

Terraces and diversions help control runoff and reduce erosion. They are most practical on deep, well drained soils, such as the Cahaba, Luverne, Savannah, and Smithdale soils. The Troup soil is not suitable for terracing because it is subject to severe erosion when water is concentrated on the surface. Soils that have complex slopes or a very clayey subsoil are also poorly suited to terraces. Grassed waterways or underground tile outlets are essential to safely drain concentrated water from fields where terraces and diversions are installed. Diversions can be used to intercept surface runoff from adjacent hilly uplands and to divert the water around fields to vegetated disposal areas.

Contour farming is very effective in reducing erosion on cultivated cropland when used in conjunction with a water disposal system. This practice is better suited to soils that have smooth, uniform slopes, such as the Cahaba, Savannah, and Smithdale soils.

Information on the design of erosion control practices is available at the local office of the Soil Conservation Service.

Sumter County has an adequate amount of rainfall for crops commonly grown. Prolonged droughts are rare; however, the distribution of rainfall during spring and summer is usually such that periods of drought occur during the growing season of most years. Irrigation is needed during these droughts to reduce plant stress, but only the sandy Coastal Plain soils are suited to irrigation. Soils on the Blackland Prairie, such as the Kipling, Okolona, Sumter, and Vaiden soils have a slow infiltration rate that limits irrigation potential.

Most soils used for crops in Sumter County have a sandy loam or silty clay loam surface layer that is light or dark in color and low in organic matter content. The structure of these soils ranges from weak to strong, and intense rainstorms often cause the formation of a weak crust on the surface. The crust is hard when dry and somewhat impervious to water. It reduces infiltration of water and increases runoff. Regular additions of crop residue, manure, and other organic material improve soil structure and reduce crust formation, thereby improving the infiltration of water.

The use of heavy equipment during tillage compacts the subsurface layer of Coastal Plain soils, such as the Cahaba, Smithdale, and Savannah soils. These layers are normally 2 to 12 inches below the soil surface. They are called traffic pans, and they restrict infiltration of water and growth of plant roots.

Soil tilth is an important factor in plant growth as it influences the rate of infiltration of water into the soil. Soils that have good tilth have a granular and porous surface layer. Tilth is affected by past farming operations and by the degree of erosion that has occurred. Incorporation of crop residue and other organic matter into the plow layer can improve the tilth.

Drainage is needed on some cropland and pastureland in the county. Many soils are too wet in their natural state for production of crops and pasture plants. Drainage of these soils increases yields and facilitates management. Wetness is a problem on the Escambia, Mayhew, Houlka, and Minter soils. In many areas, soils cannot be drained because of inadequate outlets. The most common type of drainage system is surface ditches; however, underground tile systems are used more than in the past because they do not interfere with tillage. A drainage system needs to be planned and designed by a technician knowledgeable in soils and thoroughly trained in drainage survey and design.

Soil fertility is naturally low in most soils in the county. Soils on flood plains are higher in natural fertility than the soils on uplands. Demopolis, Okolona, Sucarnoochee, and Sumter soils are neutral to alkaline in the surface layer; the other soils in the county are naturally acid. The acid soils require applications of agricultural limestone to raise and maintain the pH level sufficiently for optimum use of commercial fertilizer by plants. Leaching is a concern in the sandy Troup soils. Crops respond well to applications of fertilizer; however, because soils vary in their natural level of phosphorous and potassium all additions of lime and fertilizer should be based on a current soil test. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

Pasture and hay crops are important in Sumter County. Bahiagrass, dallisgrass, fescue, hybrid bermudagrass, and johnsongrass are the main perennial grasses grown for pasture and hay. White clover is generally planted with perennial cool-season grasses. Rye, ryegrass, and wheat are grown for annual cool-season grass forages. Millets, sorghums, and hybrid forage sorghums provide most of the annual warm-season grass forage. These annuals are normally grown on cropland for temporary grazing. Arrowleaf clover, crimson clover, ball clover, red clover, and other cool-season forage legumes grow on most soils in the county, especially if agricultural limestone is applied to the acid soils in proper amounts. Well drained soils, such as the Okolona or Sumter soils, are well suited to alfalfa, a cool-season legume.

Several management practices are needed on all soils that are used for pasture and hay. These practices include proper grazing, controlling weeds, applying fertilizer, rotation grazing, and scattering of animal droppings. The Alamuchee, Houlka, Mayhew, Minter, Mooreville, and Sucarnoochee soils are better suited to summer grazing because they are wet or they are subject to flooding in winter and early in spring. Overgrazing and lack of fertilization are the greatest problems associated with pasture production and can cause weak plants and poor stands that are quickly infested with weeds. The best way to prevent weeds from becoming established is to maintain a dense ground cover of desired pasture plants.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that insures 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 table 6 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 Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major, and generally expensive, landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, 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. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable 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 limitation is risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *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.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w, s,* or *c.*

The acreage of soils in each capability class and subclass is shown in table 7. The capability classification of each map unit is given in the section "Detailed Soil Map Units."

Woodland Management and Productivity

Jerry Johnson, forester, Soil Conservation Service, helped prepare this section.

Sumter County has 367,500 acres of commercial forest land, which is 62 percent of the land area in the county. Forest acreage decreased 4 percent from 1972 to 1982, primarily because it was converted to cropland or pasture. Private landowners own about 66 percent of the forest land, industry owns 33 percent, and 1 percent is public forest land *(26).*

Forest land in Sumter County consists of 114,500 acres of loblolly-shortleaf pine, 84,300 acres of oak-pine; 114,500 acres of oak-hickory; 48,200 acres of oak-gum-cypress; and 6,000 acres of nonstocked forest land. About 301,000 acres are best suited to pine, about 12,000 acres are best suited to upland hardwoods, and about 54,000 acres are best suited to bottom land hardwoods *(22).* About 301,000 acres of the soils in Sumter County has a site index of 80 or above for loblolly pine.

Forestry makes a major contribution to the economy of Sumter County and ranks first in production value of agricultural commodities. In 1985, the value of forest products at the first processing point was 13,843,000 dollars *(1, 2).*

Soils vary in their ability to produce trees. Depth, fertility, texture, and the available water capacity influence tree growth. Elevation, aspect, and climate determine the kinds of trees that can grow on a site. Available water capacity and depth of the root zone are major influences of tree growth. Elevation and aspect are of particular importance in mountainous areas.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to fertilization than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special efforts to reforest. In the section "Detailed soil map units," each map unit in the survey area suitable for producing timber presents information about productivity, limitations for harvesting timber, and management concerns for producing timber. The common forest understory plants are also listed. Table 8 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate*, and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

The first tree listed for each soil under the column "Common trees" is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

Table 8 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation for use and management. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the soil. The letter *S* indicates a dry, sandy soil. The letter *F* indicates a soil that has a large amount of coarse fragments in the soil profile. The letter *A* indicates a soil that has no significant restrictions or limitations for forest use and management. If a soil has more than one limitation, the priority is as follows: W, C, S, and F.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation activities or harvesting operations expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of *moderate* or *severe* indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning of harvesting and reforestation operations, or use of specialized equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, or susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment must be used. On the steepest slopes, even tracked equipment cannot operate; more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by soil wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are steep enough that wheeled equipment cannot be operated safely across the slope, if soil wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts ground-based equipment, or if special equipment is needed to avoid or reduce soil compaction. The rating is *severe* if slopes are steep enough that tracked equipment cannot be operated safely across the slope, if soil wetness restricts equipment use for more than 6 months per year, if stoniness restricts ground-based equipment, or if special equipment is needed to avoid or reduce soil compaction. Ratings of *moderate* or *severe* indicate a need to choose the most suitable equipment and to carefully plan the timing of harvesting and other management operations.

Ratings of *seedling mortality* refer to the probability of death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall as influenced by kinds of soil or topographic features. *Seedling mortality* is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth and duration of the water table, rock fragments in the surface layer, rooting depth, and the aspect of the slope. Mortality generally is greatest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of *moderate* or *severe* indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing surface drainage, or providing artificial shade for seedings. Reinforcement planting is often needed if the risk is *moderate* or *severe*.

Ratings of *windthrow hazard* consider the likelihood of trees being uprooted by the wind. Restricted rooting depth is the main reason for windthrow. Rooting depth can be restricted by a high water table, fragipan, or bedrock, or by a combination of such factors as soil wetness, texture, structure, and depth. The risk is *slight* if strong winds cause trees to break but do not uproot them; *moderate* if strong winds cause an occasional tree to be blown over and many trees to break; and *severe* if moderate or strong winds commonly blow trees over. Ratings of *moderate* or *severe* indicate the need for care in thinning or possibly not thinning. Specialized equipment may be needed to avoid damage to shallow root systems in partial cutting operations. A plan for periodic salvage of windthrown trees and the maintenance of a road and trail system may be needed.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. *Plant competion* becomes more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants reduces adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants reduces natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. A *moderate* or *severe* rating indicates the need for site preparation to ensure the development of an adequately stocked stand. Managers must plan site preparation measures to ensure reforestation without delays.

The potential productivity of *common trees* on a soil is expressed as a *site index*. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate.

The soils that are commonly used to produce timber have the yield predicted in cubic feet. The yield is predicted at the point where mean annual increment culminates.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands. The procedure and technique for determining site index are given in the site index tables used for the Sumter County soil survey *(5, 6, 7, 8, 9, 10, 17, 18, 24)*.

The *productivity class* represents an expected volume produced by the most important trees, expressed in cubic feet per acre per year. Cubic feet per acre can be converted to board feet by multiplying by a factor of about 5. For example, if the soil can be expected to produce 110 cubic feet per acre per year at the point where mean annual increment culminates, about 568 board feet per acre per year can be expected to be produced.

Trees to plant are those that are used for reforestation or, if suitable conditions exist, natural regeneration. They are suited to the soils and will produce a commercial wood crop. Desired product, topographic position (such as a low, wet area), and personal preference are three factors of many that can influence the choice of trees to use for reforestation.

Recreation

In table 9, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. 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 use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, 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 by a combination of these measures.

The information in table 9 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 gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes, stones, or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over 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

Robert E. Waters, biologist, Soil Conservation Service, helped prepare this section.

Because of the county's geographic location, climate, land use, and other characteristics, it supports a variety of game animals, nongame wildlife, and furbearers. Common game species are bobwhite quail, cottontail rabbit, ducks, gray squirrel, mourning dove, white-tailed deer, and wild turkey. Common nongame wildlife includes armadillos, snakes, blackbirds, bluebirds, blue jay, cardinal, crows, egrets, herons, meadowlark, mockingbird, sparrows, thrushes, vireos, warblers, and woodpeckers. Common furbearers in the county include beaver, bobcat, coyote, foxes, mink, muskrat, otter, and raccoon. Endangered species include the bald eagle and American alligator.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential to produce the elements of wildlife habitat and their potential as habitat for these general kinds of wildlife—openland, woodland, and wetland. 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 of habitat or habitat for a specific kind of wildlife 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 of habitat or habitat for a specific kind of wildlife 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 element of habitat or habitat for a specific kind of wildlife. 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 of habitat or habitat for a specific kind of wildlife 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 flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, soybeans, grain sorghum, rye, 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, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bahiagrass, johnsongrass, clover, lespedezas, chufa, and bermudagrass.

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 flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, panicums, butterfly pea, and ragweed.

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, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, persimmon, greenbrier, blueberry, wild grape, and honeysuckle. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, 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, cedar, 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, wild millet, wildrice, cordgrass, rushes, sedges, reeds, barnyard grass, pondweed, cattails, and water shield.

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, waterfowl feeding areas, and 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. The 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, herons, shore birds, muskrat, mink, beaver, otter, turtles, rails, and kingfishers.

Aquaculture

H.D. Kelly, biologist, Soil Conservation Service, helped prepare this section.

Aquaculture is the controlled production and harvest of animals or plants grown in or upon water. In Sumter County, catfish farming (channel catfish) and sport fish production (bass and bream) are the most widely practiced segments of aquaculture. The channel catfish is generally produced either in cages in ponds or in open ponds. Open pond culture is the only method used in Sumter County. Pond culture of catfish currently exceeds

490 acres, and more than 2,700 acres of bass and bream ponds are in the county.

Other species of fish are being studied for pond production, and the future growth of fish farming promises to be an excellent source of additional income for those who possess land that has suitable physical features.

Ponds are the foundation for fish farming, thus the soils will determine the success of fish farming or other aquacultural practices. The soils of Sumter County are named or otherwise grouped and the known qualities or characteristics of each soil are described and displayed in tables that indicate soil use limitations. These tables are of considerable value when considering pond sites. The degree and kind of soil limitations for pond or reservoir areas and the embankments, dikes, or levees are in table 14. Flooding frequency and water table levels are in table 17. These tables and a soil map can help in evaluating a selected location for its pond-building and water-retaining potential. Map units can also include soils that have different soil limiting features; therefore, knowledge of soil characteristics and pond design and construction is important in determining a pond site's true potential. In Sumter County, the Kipling, Mayhew, Okolona, Vaiden, Wilcox, Sumter, and Savannah soils are generally good soils for pond construction.

Access is an important consideration in evaluating a site for pond construction; building construction is another. Depending upon the size and planned use of the site, road systems must be planned to accommodate harvest trucks, large trucks for commercial operations, and smaller trucks for fingerling farms. Feed trucks or similar equipment also need 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. The limitations of soils for roads or building sites are in table 11.

Another factor of aquaculture is the way in which soil influences water quality. Several variables of water quality affect the production of fish. Total alkalinity is one of the variables that is directly influenced by the soil. Total alkalinity values of 30 parts per million to 150 parts per million are preferred. Fish production can be acceptable in ponds of low alkalinity values, less than 20 parts per million, if the fish are well fed. Other complicating factors, however, affect fish production when alkalinity values are below 20 parts per million.

Agricultural lime can often prevent production problems associated with low alkalinity values; however, soil analysis of the pond basin should be made before the basin is limed and filled with water. Applications of lime, based upon the results of the analysis, should be made before water is added. To maintain desirable levels of alkalinity, annual applications of lime, even in ponds full of water, should range from 20 to 25 percent of that originally applied. The value of proper alkalinity levels in fish culture cannot be overemphasized. Many soils suitable for pond construction in Sumter County require applications of lime; however, ponds constructed within the drainage basin of calcareous soils generally will not require additional lime.

The selection and evaluation of a good site for a pond or a fish farm is only the beginning of the fish farming process. The source and amounts of water must also be considered. For example, if runoff water is to be used, the watershed must also be evaluated. The local Soil Conservation Service or Cooperative Extension Service office can provide sources of technical assistance in solving site and production problems.

Fish farming requires money and hard work and should be evaluated from the standpoint of diversifying the use and conservation of soil and water resources as well as providing some income for the landowner.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: 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, and 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 must 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 to 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 kind 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, a cemented pan, 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 the 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, shrink-swell potential, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 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 or to a cemented pan, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost-action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, reaction, depth to a high water table, depth to bedrock or to a cemented pan, 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 the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan 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.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of 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, bedrock, and cemented pans 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 needs to be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, depth to a 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 type 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 type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as 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 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, 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 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 the depth to the water table is 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. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 13, 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 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 water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant-available nutrients as it decomposes.

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; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured 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 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, to a cemented pan, 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 potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, 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, or 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 or to a cemented pan. 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 reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind 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 or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or 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 characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, 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 "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 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, SP-SM.

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 larger than 3 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.

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, or component, 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 influence the soil's adsorption of cations, moisture retention, 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 earth-moving 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 movement of water through the soil 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, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

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 in each major soil layer is stated in inches of water per inch of soil. 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 change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

In table 16, 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 of 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 used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the intake of water when the soils 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 high shrink-swell potential, soils that have a permanent 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 covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (there is a near 0 to 5 percent chance of flooding in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (there is a 5 to 50 percent chance of flooding in any year). *Frequent* means that flooding occurs often under normal weather conditions (there is more than a 50 percent chance of flooding in any year). *Common* is used when classification as occasional or frequent does not affect interpretations. Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. November-May, for example, means that flooding can occur during the period November through May. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding 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 absence of distinctive horizons, which are characteristic of soils that are not subject to flooding.

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 depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 17 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 highest. A water table that is seasonally high for less than 1 month is not indicated in table 17.

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.

The two numbers in the "High water table-Depth" column 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 the water table exists 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 specified as 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 creates a severely corrosive environment. 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 the amount of sulfates in the saturation extract.

Physical and Chemical Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are given in table 18 and the results of chemical analysis in table 19. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by Agronomy and Soils Mineralogy Laboratory, Auburn University, and the National Soil Survey Laboratory, Soil 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 oven-dry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(12, 23)*.

Sand—(0.05-2.0 mm fraction) weight percentages of materials less than 2 mm (3A1).
Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all materials less than 2 mm (3A1).
Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of materials less than 2 mm (3A1).
Carbonate clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of materials less than 2 mm (3A1a).
Extractable bases—Method of Hajek, Adams, and Cape.
Extractable acidity—Method of Hajek, Adams, and Cape.
Cation-exchange capacity—sum of cations (5A3a).
Cation-exchange capacity—ammonium acetate, pH 7.0 (5A6a).
Cation-exchange capacity—ammonium chloride (5A7a).
Base saturation—method of Hajek, Adams, and Cape.
Reaction (pH)—1:1 water dilution (8C1a).

Engineering Index Test Data

Table 20 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by 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 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 423 (ASTM); Plasticity index—T 90 (AASHTO), D 424 (ASTM); Moisture density, Method A—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 *(20)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 21 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten 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; 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 *Udults*, 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 is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, slope, and soil reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is clayey, mixed, thermic Typic Hapludults.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series. An example is the Luverne series, which is a member of the clayey, mixed, thermic family of Typic Hapludults.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the *Soil Survey Manual (19)*. Many of the technical terms used in the descriptions are defined in *Soil Taxonomy (20)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Alamuchee Series

The Alamuchee series consists of deep, well drained, moderately permeable soils on river and stream terraces throughout the Coastal Plain. The soils formed in loamy alluvium. Slopes range from 0 to 2 percent.

Alamuchee soils are associated on the landscape with Annemaine, Bigbee, and Mooreville soils. Annemaine soils are at a higher elevation than the Alamuchee soils and contain more than 35 percent clay in the argillic horizon. Bigbee soils are at a slightly higher elevation and have a sandy control section. Mooreville soils have gray mottles within 24 inches of the surface.

Typical pedon of Alamuchee sandy loam, in an area of Alamuchee-Mooreville complex, 0 to 2 percent slopes, frequently flooded; in mixed hardwoods 2 miles southwest of Whitfield, 2,000 feet south and 550 feet east of the northwest corner of sec. 18, T. 16 N., R. 1 W.

A—0 to 5 inches; brown (10YR 4/3) sandy loam; weak fine subangular blocky structure; very friable; many fine and medium roots; very strongly acid; clear smooth boundary.

Bw1—5 to 13 inches; dark yellowish brown (10YR 4/4) sandy loam; weak medium subangular blocky structure; very friable; many fine and medium roots; very strongly acid; clear smooth boundary.

Bw2—13 to 34 inches; mottled dark yellowish brown (10YR 4/4, 4/6) loam; weak medium subangular blocky structure; very friable; common fine and medium roots; very strongly acid; gradual smooth boundary.

Bw3—34 to 52 inches; yellowish brown (10YR 5/4) sandy clay loam; weak medium subangular blocky structure; very friable; few fine roots; few very fine flakes of mica; strongly acid; gradual smooth boundary.

C—52 to 65 inches; stratified yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/4) loam and sandy loam; massive; very friable; common very fine flakes of mica; common streaks of very pale brown (10YR 7/3) silt; very strongly acid.

The solum is 40 to more than 60 inches thick. The soil contains less than 5 percent coarse fragments throughout. The reaction is very strongly acid or strongly acid throughout the solum except where lime has been added.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. Where value and chroma are 3 or less, the A horizon is less than 7 inches thick. The texture is sandy loam, fine sandy loam, loam, silt loam, or silty clay loam. Some pedons have a buried A horizon that has the same range in color and texture as the A horizon. This horizon is as much as 12 inches thick and is at a depth of 12 to 36 inches below the surface.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 8. Some pedons have mottles in shades of brown, yellow, or gray below a depth of 30 inches. The texture is dominantly loam or sandy clay loam, but some pedons have a thin layer of clay loam or silty clay loam. Clay content of the control section ranges from 20 to 35 percent, and silt content ranges from 20 to 40 percent. Some pedons have a buried Bt horizon below a depth of about 25 inches that has the same range in color and texture as the Bw horizon, and some pedons have a BC horizon that also has the same range in color and texture as the Bw horizon.

The C horizon has hue of 7.5YR to 10YR, value of 4 or 5, and chroma of 4 to 6 with mottles in shades of red, brown, or gray; or it is mottled in shades of red, brown, and gray. The texture is sandy loam, loam, sandy clay loam, or clay loam. This horizon commonly is stratified with these textures.

Annemaine Series

The Annemaine series consists of deep, moderately well drained, slowly permeable soils on stream terraces throughout the county. The soils formed in loamy and sandy sediments. Slopes range from 0 to 2 percent.

Annemaine soils are associated on the landscape with Alamuchee, Bigbee, Cahaba, and Minter soils. Alamuchee soils are frequently flooded and have a loamy control section. Bigbee soils are at a slightly higher elevation than the Annemaine soils and have a sandy control section. Cahaba soils are on landforms similar to those of the Annemaine soils and have a fine-loamy argillic horizon. Minter soils are in lower positions on the landscape, are poorly drained, and have a gray clay argillic horizon.

Typical pedon of Annemaine sandy loam, 0 to 2 percent slopes, occasionally flooded; in a pine plantation 0.75 mile southeast of Bellamy, 1,400 feet north and 1,900 feet east of the southwest corner of sec. 37, T. 12 N., R. 1 W.

Ap—0 to 6 inches; dark brown (10YR 4/3) sandy loam; weak medium granular structure; friable; common fine and medium roots; few fine flakes of mica; very strongly acid; clear wavy boundary.

Bt1—6 to 18 inches; yellowish red (5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; common fine flakes of mica; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—18 to 30 inches; yellowish red (5YR 4/6) clay; common medium distinct yellowish brown (10YR 5/6), light brownish gray (10YR 6/2), and red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; common fine flakes of mica; few thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

BC—30 to 42 inches; strong brown (7.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine flakes of mica; few thin patchy clay films on faces of some peds; very strongly acid; abrupt wavy boundary.

2C—42 to 60 inches; very pale brown (10YR 7/4) loamy sand; single grained; loose; strongly acid.

The solum is 40 to 60 inches thick. The reaction is very strongly acid or strongly acid throughout. The clay content of the control section ranges from 35 to 50 percent, and silt content is less than 30 percent.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. The texture is fine sandy loam, sandy loam, or loam.

The upper part of the Bt horizon has hue of 2.5YR to 5YR, value of 4 or 5, and chroma of 6 to 8. The lower part of the Bt horizon has colors similar to those of the upper part and has mottles in shades of brown, gray, and red. The texture of the Bt horizon is clay or clay loam.

The BC horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 6 or 8, or it is mottled in shades of red, yellow, and gray. The texture is sandy clay loam, loam, or clay loam. Some pedons do not have a BC horizon.

The 2C or C horizon has hue of 5YR to 10YR, value of 5 to 8, and chroma of 2 to 8; or it is mottled in shades of yellow, brown, red, and gray. The texture is loamy sand, sandy loam, or sandy clay loam, or the horizon is stratified with these textures.

Bigbee Series

The Bigbee series consists of deep, well drained, rapidly permeable soils on flood plains and low stream terraces throughout the county. The soils formed in loamy and sandy alluvium. Slopes range from 0 to 2 percent.

Bigbee soils are associated on the landscape with Alamuchee, Annemaine, Cahaba, Mooreville, and Minter soils. Annemaine, Cahaba, and Minter soils have an argillic horizon. Alamuchee and Mooreville soils contain more than 18 percent clay in the 10- to 40-inch control section.

Typical pedon of Bigbee loamy sand, 0 to 2 percent slopes, occasionally flooded; in a ryegrass pasture 4.5 miles southeast of Bellamy, 1,000 feet north and 175 feet east of the southwest corner of sec. 22, T. 17 N., R. 1 W.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; many fine roots; few fine mica flakes; strongly acid; clear smooth boundary.

C1—10 to 25 inches; dark brown (7.5YR 4/4) loamy sand; single grained; loose; many fine roots; common fine pockets of uncoated sand grains; few fine mica flakes; few medium and fine charcoal fragments; strongly acid; gradual wavy boundary.

C2—25 to 40 inches; strong brown (7.5YR 5/6) loamy sand; single grained; loose; few fine roots; common fine pockets of uncoated sand grains; few fine mica flakes; few fine charcoal fragments; strongly acid; gradual wavy boundary.

C3—40 to 65 inches; yellowish brown (10YR 6/6) loamy sand; single grained; loose; common pockets of uncoated sand grains; few fine mica flakes; few fine charcoal fragments; very strongly acid.

The reaction of the Bigbee soils is strongly acid or very strongly acid throughout except where lime has been added. These soils have a seasonal high water table between 40 and 60 inches below the surface for 1 to 2 months each year.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. The texture is loamy sand or loamy fine sand.

The upper part of the C horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. The lower part of the C horizon has hue of 10YR, value of 6 or 8, and chroma of 2 to 6. Brown or yellow mottles are in some pedons. Few to common pockets of clean sand grains are throughout the C horizon in some pedons. The texture of the C horizon is loamy sand or sand.

Cahaba Series

The Cahaba series consists of deep, well drained, moderately permeable soils on stream terraces throughout the county. The soils formed in loamy and sandy fluvial sediments. Slopes range from 0 to 2 percent.

Cahaba soils are associated on the landscape with Alamuchee, Annemaine, Bigbee, Minter, and Mooreville soils. Alamuchee and Mooreville soils do not have an argillic horizon. Annemaine soils have a clayey argillic horizon, and Bigbee soils have a sandy control section.

Typical pedon of Cahaba sandy loam, 0 to 2 percent slopes, occasionally flooded; in a soybean field 1 mile northeast of Gainesville; 1,400 feet west and 1,200 feet north of the southeast corner of sec. 1, T. 21 N., R. 2 W.

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

Bt—7 to 23 inches; yellowish red (5YR 4/6) sandy clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; few thin patchy clay films on faces of peds; strongly acid; gradual smooth boundary.

BC—23 to 38 inches; yellowish red (5YR 4/6) sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; friable; some sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.

C—38 to 60 inches; yellowish brown (10YR 5/8) loamy sand; single grained; loose; very strongly acid.

The solum is 36 to 46 inches thick. The reaction is strongly acid or very strongly acid except where lime has been added.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. The texture is sandy loam, fine sandy loam, or loam.

Some pedons have an E horizon that has hue of 7.5YR, value of 5, and chroma of 6 or 8. The texture is sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. The texture is sandy clay loam or loam. In some pedons, the lower part of the Bt horizon contains mottles in shades of brown or yellow.

The BC horizon has hue of 5YR, value of 4 or 5, and chroma of 6. Mottles in shades of brown or yellow are in some pedons. The texture is sandy loam. Some pedons do not have a BC horizon.

The C horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 5 to 8. The texture is loamy sand, sandy loam, or fine sandy loam. This horizon is commonly stratified with these textures. Mottles in shades of brown and yellow are in some pedons.

Demopolis Series

The Demopolis series consists of shallow, well drained, moderately slowly permeable soils on uplands of the Blackland Prairie. The soils formed in chalky marine deposits. Slopes range from 1 to 20 percent.

Demopolis soils are associated on the landscape with Kipling, Okolona, Sucarnoochee, and Sumter soils. Kipling, Okolona, Sucarnoochee, and Sumter soils have a solum that is more than 20 inches thick. In addition, Sucarnoochee soils are on flood plains and are frequently flooded.

Typical pedon of Demopolis loam, in an area of Demopolis-Sumter complex, 1 to 3 percent slopes; 2.25 miles southeast of Epes; 1,550 feet east and 1,625 feet south of the northwest corner of sec. 33, T. 20 N., R. 1 W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) loam; moderate medium granular structure; friable, slightly sticky; about 5 percent, by volume, chalk channers; common fine roots; mildly alkaline; abrupt smooth boundary.

C—6 to 14 inches; light gray (10YR 7/2) extremely channery silty clay loam; moderate medium granular structure; friable; slightly sticky; about 75 percent, by volume, chalk channers; few fine roots in soil material and along bedding planes; calcareous, moderately alkaline; abrupt smooth boundary.

Cr—14 to 60 inches; light gray (10YR 7/2) soft chalk; few to common brown and yellow mottles along bedding planes; horizontal platy rock structure; can be cut with spade; calcareous, moderately alkaline.

Depth to soft chalk ranges from 4 to 20 inches. The reaction is mildly alkaline or moderately alkaline throughout.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. The texture is loam, clay loam, silty clay loam, or their channery analogs. Chalk channers range from 5 to 20 percent, by volume.

The C horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2. Some pedons have mottles in shades of brown and yellow. The texture is extremely channery silt loam, extremely channery silty clay loam, extremely channery loam, or their very channery analogs. Chalk channers 2 to 150 millimeters long range from 50 to 85 percent, by volume.

The Cr horizon is level bedded, soft chalk that has platy structure. It has hue of 10YR to 5Y, value of 5 to 8, and chroma of 1 or 2. Mottles are in shades of brown and yellow. Chalk has a hardness ranging from 1 to 3 on Mohs scale.

Escambia Series

The Escambia series consists of deep, somewhat poorly drained, moderately slowly permeable soils on Coastal Plain uplands. The soils formed in sandy and loamy marine sediments. Slopes range from 0 to 2 percent.

Escambia soils are associated on the landscape with Savannah soils. Savannah soils have a fine-loamy control section and a fragipan.

Typical pedon of Escambia sandy loam, 0 to 2 percent slopes; in a pine plantation 3 miles southwest of Livingston; 1,500 feet north and 1,600 feet east of the southwest corner of sec. 7, T. 18 N., R. 2 W.

Ap—0 to 3 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; friable; many fine roots; few pockets of uncoated sand grains; extremely acid; clear smooth boundary.

Bt1—3 to 8 inches; pale brown (10YR 6/3) sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; few fine roots; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

Bt2—8 to 23 inches; light yellowish brown (10YR 6/4) sandy loam; common medium distinct gray (10YR 6/1), yellowish brown (10YR 5/6), and strong brown (7.5YR 5/6) mottles; weak fine and medium subangular blocky structure; friable; few fine roots; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

Btv1—23 to 50 inches; mottled yellowish brown (10YR 5/6), gray (10YR 6/1), strong brown (7.5YR 5/6), and yellowish red (5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; 17 percent, by volume, 2 to 60 mm nodular plinthite; 4 percent, by volume, 2 to 20 mm nodular ironstone pebbles; very strongly acid; gradual wavy boundary.

Btv2—50 to 65 inches; prominently mottled yellowish brown (10YR 5/6), gray (10YR 6/1), strong brown (7.5YR 5/6), yellowish red (5YR 4/6), and red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; few thin patchy clay films on ped faces; 10 percent, by volume, plinthite nodules; very strongly acid.

The solum is more than 60 inches thick. The reaction ranges from strongly acid to extremely acid throughout except where lime has been added. Depth to horizons that have more than 5 percent plinthite ranges from about 20 to 28 inches.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2. The texture is fine sandy loam, sandy loam, or loam.

Some pedons have a BE horizon that has hue of 2.5Y, value of 6, and chroma of 3. Mottles in shades of brown are in this horizon in some pedons. The texture is sandy loam or loam.

The Bt horizon has hue of 10YR or 2.5Y, value of 6, and chroma of 3 or 4. Mottles in shades of brown, yellow, and gray range from few to common. The texture is loam or sandy loam.

The Btv horizon is mottled in shades of brown, gray, red, and yellow. The texture is sandy loam or sandy clay loam. Nodular plinthite averages about 5 to 20 percent, by volume.

Houlka Series

The Houlka series consists of deep, somewhat poorly drained, very slowly permeable soils on nearly level flood plains adjacent to Blackland Prairie uplands. The soils formed in clayey alluvium. Slopes range from 0 to 2 percent.

Houlka soils are associated on the landscape with Minter and Sucarnoochee soils. Minter soils are at a slightly lower elevation, have an argillic horizon, and are poorly drained. Sucarnoochee soils have cracks extending below a depth of 20 inches and do not have an argillic horizon.

Typical pedon of Houlka silty clay, 0 to 2 percent slopes, occasionally flooded; in a cultivated field, 0.5 mile east of Gainesville; 600 feet south and 1,400 feet east of the northwest corner of sec. 12, T. 21 N., R. 2 W.

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) silty clay; weak medium granular structure; friable, slightly sticky and slightly plastic; common fine roots; medium acid; abrupt smooth boundary.

Bg1—5 to 12 inches; gray (10YR 5/1) silty clay; common medium distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm, slightly sticky and slightly plastic; few fine roots; few to common pressure faces on some peds; root and worm channels filled with very dark grayish brown (10YR 3/2) silty clay; strongly acid; clear smooth boundary.

Bg2—12 to 32 inches; light brownish gray (10YR 6/2) clay; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; moderate fine and medium subangular blocky structure; firm, very sticky and very plastic; few fine roots; few pressure faces on some peds; few root and worm channels filled with very dark grayish brown (10YR 3/2) silty clay; very strongly acid; gradual wavy boundary.

Bg3—32 to 42 inches; light brownish gray (10YR 6/2) clay; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; firm, very sticky and very plastic; few pressure faces on some peds; very strongly acid; gradual wavy boundary.

Cg—42 to 60 inches; light brownish gray (10YR 6/2) clay; few fine distinct strong brown (7.5YR 5/6), yellowish brown (10YR 5/6), and grayish brown (10YR 5/2) mottles; massive; very sticky and very plastic; few nonintersecting slickensides; very strongly acid.

The solum is 30 to 50 inches thick. The reaction is strongly acid or very strongly acid throughout except where lime has been added.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2; or it is neutral and has value of 3 or 4. The texture is silty clay loam, silty clay, or clay.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2; is neutral and has value of 4 to 6; or is mottled in shades of gray and brown. The texture is clay, silty clay, or silty clay loam.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2, or it is neutral and has value of 4 to 7. It has mottles in shades of brown and gray. The texture is clay, silty clay, or silty clay loam.

Kipling Series

The Kipling series consists of deep, somewhat poorly drained, very slowly permeable soils on broad terraces and uplands of the Blackland Prairie. The soils formed in clayey sediment. Slopes range from 0 to 20 percent.

Kipling soils are associated on the landscape with Demopolis, Okolona, Sumter, and Sucarnoochee soils. Demopolis soils have a solum less than 20 inches thick. Okolona soils have intersecting slickensides in the 10- to 40-inch control section. Sumter soils are calcareous. Sucarnoochee soils have intersecting slickensides and are frequently flooded.

Typical pedon of Kipling loam, 0 to 1 percent slopes; in a pasture 3.5 miles southeast of Gainesville; 1,450 feet west and 2,225 feet north of the southeast corner of sec. 25, T. 21 N., R. 2 W.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; friable; few cracks about 1 cm wide; many fine roots; medium acid; abrupt smooth boundary.

Bt1—5 to 11 inches; yellowish brown (10YR 5/6) clay loam; common medium distinct gray (10YR 6/1) and yellowish red (5YR 4/8) mottles; moderate medium subangular blocky structure; firm, plastic and sticky; few cracks about 1 cm wide; common fine roots; few thin patchy clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt2—11 to 42 inches; mottled gray (10YR 6/1), yellowish red (5YR 4/8), strong brown (7.5YR 5/6), and yellowish brown (10YR 5/6) clay; moderate medium subangular blocky structure; few to common nonintersecting slickensides; firm, plastic and sticky; few cracks about 1 cm wide extending to a depth of about 22 inches; common thin patchy clay films on faces of peds; extremely acid; gradual wavy boundary.

C—42 to 65 inches; mottled yellowish brown (10YR 5/6), gray (10YR 6/1), and strong brown (7.5YR 5/6) clay; medium to coarse intersecting slickensides form wedge-shaped aggregates that part to medium angular blocky structure; firm, very plastic and sticky; few fine roots; few black concretions; neutral.

The solum is 30 to 50 inches thick. Except where lime has been added, the reaction ranges from extremely acid to strongly acid in the solum and from very strongly acid to moderately alkaline in the substratum. Depth to calcareous clays or chalk ranges from about 36 to 80 inches.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. The texture is loam, fine sandy loam, silt loam, or silty clay loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8, with few to many mottles in shades of brown, gray, red, and yellow; or it is mottled in shades of yellow, brown, gray, and red. The texture is clay loam, silty clay, silty clay loam, or clay. This horizon has few to many nonintersecting slickensides.

The C horizon is mottled in shades of brown, gray, red, and yellow. The texture is clay or silty clay. This horizon has few to many calcium carbonate and manganese concretions and has common coarse intersecting slickensides.

Luverne Series

The Luverne series consists of deep, well drained, moderately slowly permeable soils on Coastal Plain uplands extending from the south-central to the southern part of the county. The soils formed in stratified marine sediment. Slopes range from 2 to 25 percent.

Luverne soils are associated on the landscape with Mayhew, Smithdale, and Wilcox soils. Smithdale soils are in higher positions on the landscape than the Luverne soils and have less than 35 percent clay in the argillic horizon. Mayhew and Wilcox soils are underlain by soft, acid, clayey shales and are in lower positions on the landscape.

Typical pedon of Luverne sandy loam, 5 to 25 percent slopes; in cutover mixed hardwood and pine woodland 2.1 miles south of County Road 42; 600 feet south and 1,800 feet east of the northwest corner of sec. 30, T. 16 N., R. 1 W.

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

Bt1—4 to 14 inches; reddish brown (5YR 4/4) clay; moderate medium subangular blocky structure; firm; common fine roots; few fine mica flakes; thin continuous clay film on faces of peds; few light brownish gray (10YR 6/2) soft shale fragments; very strongly acid; gradual smooth boundary.

Bt2—14 to 19 inches; yellowish red (5YR 4/6) clay; few fine distinct yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few thin patchy clay films on faces of peds; common fine roots; common fine mica flakes; 5 percent, by volume, soft shale fragments; very strongly acid; clear smooth boundary.

BC—19 to 28 inches; mottled red (2.5YR 4/6) and strong brown (7.5YR 5/6) clay loam; weak medium and coarse subangular blocky structure; firm; common fine roots; few fine mica flakes; few thin patchy clay films on vertical faces of peds; 15 percent, by volume, soft shale fragments; very strongly acid; clear smooth boundary.

C1—28 to 35 inches; mottled red (2.5YR 4/6), strong brown (7.5YR 5/6), light yellowish brown (10YR 6/4), and gray (5Y 6/1) stratified sandy loam, loam, and sandy clay loam; moderate medium platy structure; friable; few fine roots; many fine mica flakes; 50 percent, by volume, soft clayey shale fragments; very strongly acid; clear smooth boundary.

C2—35 to 60 inches; mottled gray (10YR 6/1), light brownish gray (10YR 6/2), red (2.5YR 4/6), and yellowish brown (10YR 5/6) stratified sandy loam, sandy clay loam, and clay loam; weak medium and thick platy structure; friable; few fine roots; common fine mica flakes; 50 percent, by volume, soft clayey shale fragments; very strongly acid.

The solum is 24 to 50 inches thick. The reaction is strongly acid or very strongly acid throughout except where lime has been added. Soft clayey shale fragments range from none to common throughout the Bt horizon and underlying material.

The A or Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. The texture is sandy loam.

Some pedons have an E horizon that has hue of 10YR, value of 6, and chroma of 4 to 6. The texture is sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. In some pedons, the lower part of this horizon has mottles in shades of brown, yellow, and red. The texture is sandy clay, clay, and clay loam.

The BC horizon has colors similar to those of the Bt horizon with mottles in shades of brown, yellow, and red; or is mottled in shades of brown, yellow, and red. The texture is sandy clay loam or clay loam.

The C horizon is mottled in shades of brown, gray, yellow, and red. It is stratified loamy sand, sandy loam, sandy clay loam, clay loam, or clay.

Mayhew Series

The Mayhew series consists of deep, poorly drained, very slowly permeable soils on Coastal Plain uplands extending from the west-central to the southeastern part of the county. The soils formed in acidic, clayey sediment underlain by soft, acid, clayey shale. Slopes range from 0 to 2 percent.

Mayhew soils are associated on the landscape with Kipling, Vaiden, and Wilcox soils. Kipling and Vaiden soils are at a higher elevation than the Mayhew soils and are underlain by calcareous material. Wilcox soils are mottled red and gray in the upper part of the argillic horizon.

Typical pedon of Mayhew silty clay loam, 0 to 2 percent slopes; in a loblolly pine plantation 3.5 miles southwest of Emelle; 100 feet south and 2,050 feet east of the northwest corner of sec. 25, T. 20 N., R. 4 W.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silty clay loam; weak fine subangular blocky structure; friable; common fine and medium roots; very strongly acid; abrupt smooth boundary.

Btg1—7 to 21 inches; gray (10YR 5/1) clay; few fine distinct light olive brown (2.5Y 5/4) mottles; moderate medium subangular blocky structure; firm, very plastic and very sticky; common fine and medium roots; few fine manganese concretions; thin continuous clay film on faces of most peds; extremely acid; gradual wavy boundary.

Btg2—21 to 27 inches; mottled gray (10YR 6/1), yellowish brown (10YR 5/6), and strong brown (7.5YR 5/6) silty clay; moderate medium subangular blocky structure; firm, very plastic and very sticky; common fine roots; thin continuous clay films on faces of peds; few nonintersecting slickensides; extremely acid; gradual wavy boundary.

BCg—27 to 44 inches; gray (10YR 6/1) clay; few fine distinct olive yellow (2.5Y 6/6) mottles; strong medium angular blocky structure; firm, very plastic and very sticky; common slickensides; few soft shale fragments; extremely acid; gradual wavy boundary.

Cg—44 to 60 inches; mottled olive gray (5Y 5/2) and black (N 2/0) soft acid clayey shale; extremely acid.

The solum is about 40 to more than 60 inches thick. The reaction ranges from medium acid to extremely acid except where lime has been added.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2. The texture is silty clay loam, silt loam, or loam.

The upper part of the Btg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. Mottles in shades of brown are in some pedons. The lower part of the Btg horizon is mottled in shades of brown, gray, and yellow. Soft shale fragments range from none to 10 percent, by volume. The texture of the Btg horizon is silty clay or clay.

The BCg and Cg horizon have the same range in colors as that of the Btg horizon, or they are mottled in shades of gray, yellow, and brown. The texture is silty clay or clay. In some pedons, the Cg horizon is soft, acid, clayey shale. Some pedons do not have a BCg horizon.

Minter Series

The Minter series consists of deep, poorly drained, very slowly permeable soils in nearly level depressions on low stream terraces throughout the county. The soils formed in loamy and clayey alluvium. Slopes are 0 to 2 percent.

Minter soils are associated on the landscape with Annemaine, Alamuchee, Cahaba, Houlka, and Mooreville soils. Annemaine and Cahaba soils are at a higher elevation than the Minter soils and have a red argillic horizon. The Alamuchee soils are well drained, and Mooreville soils are moderately well drained. These soils are fine-loamy. Houlka soils are somewhat poorly drained and do not have an argillic horizon.

Typical pedon of Minter clay loam, 0 to 2 percent slopes, frequently flooded; in mixed hardwoods 5 miles east of Coatopa; 2,000 feet west of the northeast corner of sec. 4, T. 17 N., R. 1 E.

A1—0 to 6 inches; gray (10YR 6/1) clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium granular structure; friable; many fine roots; extremely acid; clear smooth boundary.

A2—6 to 12 inches; gray (10YR 6/1) loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; pockets of light gray (10YR 7/2) clean sand grains; very strongly acid; clear wavy boundary.

Btg1—12 to 34 inches; gray (10YR 6/1) clay; common medium distinct strong brown (7.5YR 5/6) and yellowish red (5YR 4/8) mottles; weak and moderate medium subangular blocky structure; firm, sticky and plastic; few fine roots; common thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg2—34 to 55 inches; gray (10YR 5/1) clay loam; common medium prominent strong brown (7.5YR 5/6) and yellowish red (5YR 4/8) mottles; moderate fine subangular blocky structure; firm, sticky and plastic; few fine black concretions; few mica flakes; few thin clay films on faces of peds; extremely acid; gradual wavy boundary.

Btg3—55 to 60 inches; dark gray (10YR 4/1) silty clay loam; common medium prominent strong brown (7.5YR 5/6) and yellowish red (5YR 4/8) mottles; pockets of gray (10YR 6/1) fine sand; moderate fine subangular blocky structure; firm, sticky and plastic; few mica flakes; few thin patchy clay films on faces of peds; extremely acid.

The solum is more than 60 inches thick. The reaction ranges from strongly acid to extremely acid except where lime has been added.

The A horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 1 or 2; or it is neutral and has value of 4 to 6. Most pedons have mottles in shades of brown or gray. The texture is loam, silty clay loam, or clay loam. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1; or it is neutral and has value of 5 or 6. Most pedons have mottles in shades of brown and yellow. The texture is loam or silty clay loam. Some pedons do not have an A2 horizon.

The Btg horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1, or value of 6 and chroma of 1 or 2. It has few to many mottles in shades of brown, yellow, and red. The texture is clay loam, silty clay loam, silty clay, or clay.

Mooreville Series

The Mooreville series consists of deep, moderately well drained, moderately permeable soils on flood plains of streams on the Coastal Plain. The soils formed in loamy alluvium. Slopes range from 0 to 2 percent.

Mooreville soils are associated on the landscape with Alamuchee, Annemaine, and Minter soils. Alamuchee soils are at a slightly higher elevation than the Mooreville soils and do not have gray mottles within 24 inches of the surface. Annemaine soils are at a higher elevation and have a red clayey argillic horizon. Minter soils are in depressions and nearly level areas at a lower elevation on the landscape. They are poorly drained and have a clayey argillic horizon.

Typical pedon of Mooreville loam, in an area of Alamuchee-Mooreville complex, 0 to 2 percent slopes, frequently flooded; 2 miles southwest of Whitfield; 1,400 feet north and 1,200 feet east of the southwest corner of sec. 18, T. 16 N., R. 1 W.

A—0 to 6 inches; brown (10YR 5/3) loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; clear smooth boundary.

Bw1—6 to 18 inches; yellowish brown (10YR 5/6) sandy clay loam; few fine distinct light brownish gray (10YR 6/2), strong brown (7.5YR 5/6), and yellowish red (5YR 4/6) mottles; weak medium subangular blocky structure; friable; many fine and medium roots; few fine black concretions; very strongly acid; gradual wavy boundary.

Bw2—18 to 42 inches; mottled gray (10YR 6/1), yellowish brown (10YR 5/6), strong brown (7.5YR 5/6), and red (2.5YR 4/8) silty clay loam; moderate medium subangular blocky structure; firm; few fine black concretions; very strongly acid; gradual wavy boundary.

C—42 to 60 inches; mottled gray (10YR 6/1), strong brown (7.5YR 5/6), and red (2.5YR 4/8) loam; massive; friable; very strongly acid.

The solum is 42 to 60 inches thick. The reaction is strongly acid or very strongly acid except where lime has been added.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. The texture is loam or silt loam.

The upper part of the Bw horizon has hue of 10YR, value of 4, and chroma of 3 or 4; or value of 5 and chroma of 3 to 8. Most pedons have mottles in shades of gray, yellow, brown, or red. The lower part of the Bw horizon has the same range in colors as that of the upper part, or it is mottled in shades of gray and brown. Some pedons have a grayish matrix with mottles in shades of brown and gray. The texture of the Bw horizon is loam, sandy clay loam, or silty clay loam.

The C horizon is mottled in shades of gray, brown, and red; or it has a grayish matrix with mottles in shades of brown. The texture is loam, sandy loam, sandy clay loam, or clay loam.

Okolona Series

The Okolona series consists of deep, well drained, very slowly permeable soils on uplands of the Blackland Prairie. They formed in calcareous clayey alluvium. Slopes range from 0 to 3 percent.

Okolona soils are associated on the landscape with Demopolis, Kipling, Sucarnoochee, Sumter, and Vaiden soils. Demopolis soils have a solum less than 20 inches thick. Kipling and Vaiden soils have a yellowish brown argillic horizon that is mottled with gray. Sucarnoochee soils are on flood plains and are frequently flooded. Sumter soils are calcareous throughout and do not have intersecting slickensides.

Typical pedon of Okolona silty clay, 0 to 3 percent slopes; 1.5 miles south of Gainesville; 2,100 feet north and 1,500 feet east of the southwest corner of sec. 14, T. 21 N., R. 2 W.

Ap—0 to 6 inches; dark olive gray (5Y 3/2) silty clay; moderate medium granular structure; firm, slightly plastic and sticky; many fine and medium roots; neutral; abrupt wavy boundary.

A—6 to 17 inches; dark olive gray (5Y 3/2) silty clay; medium coarse prismatic structure parting to moderate fine angular blocky; very firm, sticky and plastic; common fine and medium roots; few fine and very fine dark brown and black concretions; few cracks filled with Ap material; neutral; gradual smooth boundary.

Bw1—17 to 28 inches; dark olive gray (5Y 3/2) silty clay; common medium faint very dark gray (5Y 3/1) mottles; moderate medium prismatic structure parting to moderate fine and medium angular and subangular blocky; firm, very plastic and very sticky; common fine roots; mildly alkaline; gradual wavy boundary.

Bw2—28 to 36 inches; olive (5Y 4/3) clay; few fine distinct light olive brown (2.5Y 5/4) mottles; intersecting slickensides form wedge-shaped aggregates that part to strong fine angular blocky structure; very firm, very plastic and very sticky; few fine black concretions; few fine calcium carbonate nodules; calcareous, slightly effervescent, moderately alkaline; gradual wavy boundary.

Bw3—36 to 60 inches; mottled dark grayish brown (2.5Y 4/2), light olive brown (2.5Y 5/4), and olive gray (5Y 5/2) clay; intersecting slickensides form wedge-shaped aggregates that part to strong fine and medium angular blocky structure; very firm, very plastic and very sticky; common fine black concretions; about 15 to 20 percent, by volume, common medium calcium carbonate nodules; calcareous, mildly alkaline.

The solum is 40 to more than 60 inches thick. The reaction ranges from neutral to moderately alkaline throughout. Depth to chalk ranges from 40 to more than 60 inches. Cycles of microknolls and microbasins are repeated at 7 to 15 feet intervals. Cracks to the surface are 1 to 1.5 centimeters wide and 20 to 24 inches deep in pastures and plowed fields (fig. 15).

The A or Ap horizon has hue of 10YR, 2.5Y, or 5Y, value of 2 or 3, and chroma of 1 to 3. The texture is silty clay or clay.

The Bw horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4; or it is mottled in shades of brown and gray. The texture is clay. Most pedons contain few to common calcium carbonate nodules and manganese concretions.

Savannah Series

The Savannah series consists of deep, moderately well drained, moderately slowly permeable soils on Coastal Plain uplands and terraces throughout the county. The soils formed in loamy marine or fluvial deposits, and they have a fragipan. Slopes range from 0 to 5 percent.

Savannah soils are associated on the landscape with Escambia and Smithdale soils. Escambia soils are at a slightly lower elevation than the Savannah soils, have a coarse-loamy control section, and are somewhat poorly drained. Smithdale soils are on adjacent uplands. Neither of the soils has a fragipan.

Typical pedon of Savannah loam, 2 to 5 percent slopes; in a loblolly pine plantation 1 mile south of Livingston; 1,800 feet west and 1,600 feet south of the northeast corner of sec. 32, T. 19 N., R. 2 W.

A—0 to 4 inches; yellowish brown (10YR 5/4) loam; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.

Bt—4 to 18 inches; strong brown (7.5YR 5/6) loam; weak fine subangular blocky structure; friable; common fine roots; few patchy clay films on faces of peds; strongly acid; gradual smooth boundary.

Bx1—18 to 33 inches; mottled strong brown (7.5YR 5/6), yellowish red (5YR 4/6), yellowish brown (10YR 5/6), and light gray (10YR 7/2) loam; weak very coarse prismatic structure; very firm; compact and brittle in about 65 percent of mass; few fine and medium roots in gray seams between prisms; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

Bx2—33 to 48 inches; mottled yellowish brown (10YR 5/6), yellowish red (5YR 4/6), strong brown (7.5YR 5/6), and light gray (10YR 7/2) clay loam; weak to moderate coarse prismatic structure; very firm, compact and brittle in about 70 percent of mass; few fine pores; few thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bx3—48 to 65 inches; mottled yellowish brown (10YR 5/6), yellowish red (5YR 4/6), strong brown (7.5YR 5/6), and light gray (10YR 7/2) clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; very firm, compact and brittle in about 60 to 65 percent of mass; few thin patchy clay films on faces of peds; very strongly acid.

The solum is more than 65 inches thick. The reaction is strongly acid or very strongly acid throughout except where lime has been added. Depth to the fragipan ranges from 16 to 30 inches.

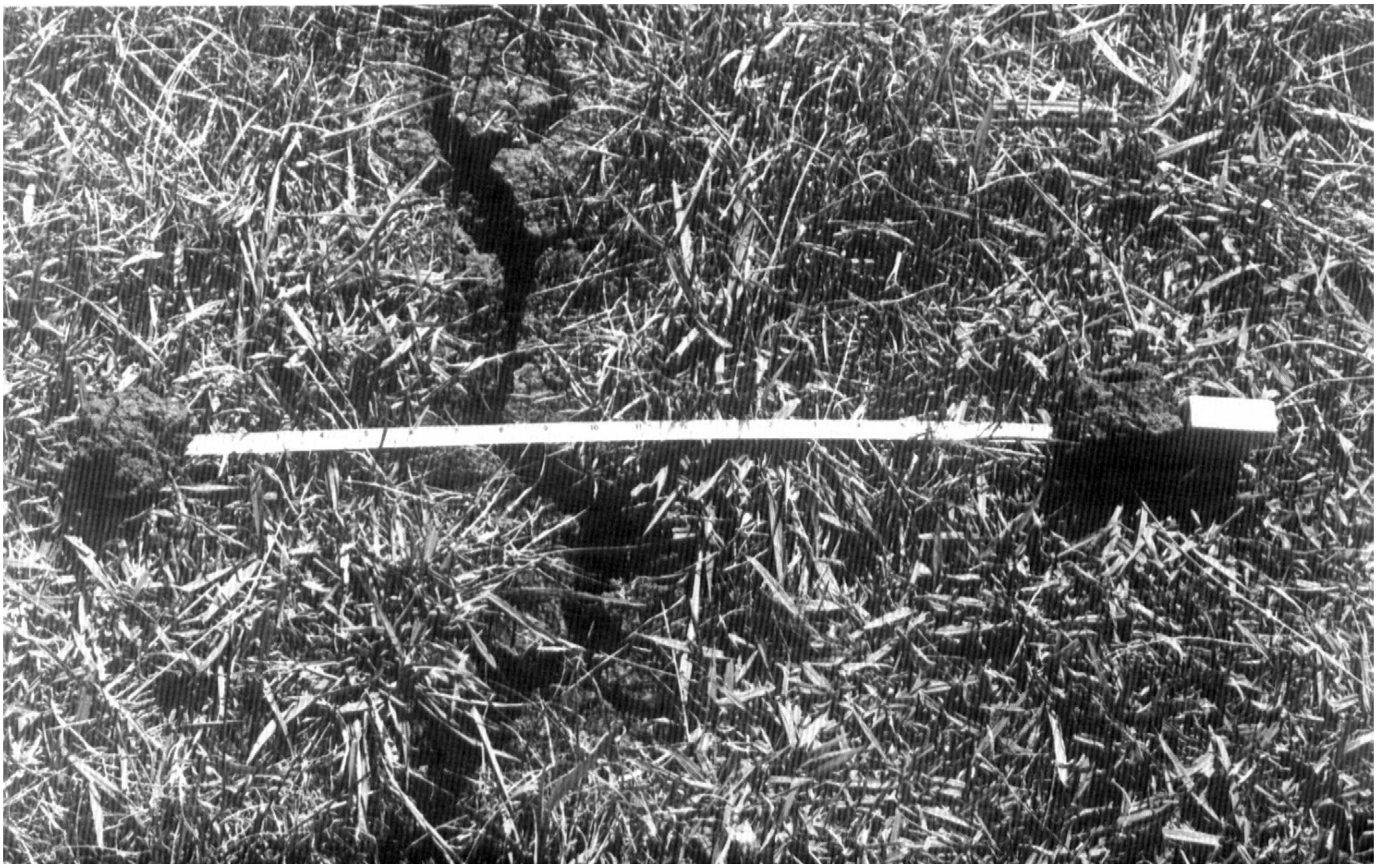

Figure 15.—Cracks are common in pasture or cropland areas of Okolona silty clay, 0 to 3 percent slopes.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 3 or 4. The texture is loam, fine sandy loam, or sandy loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 5, and chroma of 4 to 8. Texture is loam, sandy clay loam, or clay loam. Some pedons have few to common fine black concretions.

The upper part of the Bx horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8, with mottles in shades of gray and red; or it is mottled in shades of brown, yellow, gray, and red. The lower part of the Bx horizon is mottled in shades of brown, yellow, gray, and red. The texture of the Bx horizon is loam, clay loam, or sandy clay loam.

Smithdale Series

The Smithdale series consists of deep, well drained, moderately permeable soils on Coastal Plain uplands throughout the county. The soils formed in loamy marine sediment. Slopes range from 1 to 5 percent.

Smithdale soils are associated on the landscape with Luverne, Savannah, and Troup soils. Luverne and Troup soils are in positions similar to those of the Smithdale soils. Luverne soils have more than 35 percent clay in the control section. Savannah soils are on terraces at a lower elevation and have a fragipan. Troup soils have a sandy epipedon 40 inches or more thick.

Typical pedon of Smithdale loamy sand, 1 to 5 percent slopes; in a pine plantation 1 mile northwest of Derby; 2,250 feet north and 1,200 feet east of the southwest corner of sec. 9, T. 16 N., R. 2 W.

Ap—0 to 8 inches; dark brown (7.5YR 4/4) loamy sand; weak fine granular structure; very friable; many fine and medium roots; medium acid; clear smooth boundary.

BA—8 to 11 inches; yellowish red (5YR 4/6) loamy sand; few fine distinct dark brown (7.5YR 4/4) stains around root channels; weak fine granular structure; very friable; common fine and medium roots; strongly acid; gradual wavy boundary.

Bt1—11 to 45 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; few thin patchy clay films on ped faces; strongly acid; gradual wavy boundary.

Bt2—45 to 65 inches; yellowish red (5YR 5/8) sandy loam; weak fine granular structure; very friable; few fine roots; few thin patchy clay films on some ped faces; sand grains coated and bridged with clay; strongly acid.

The solum is more than 60 inches thick. The reaction is strongly acid or very strongly acid throughout except where lime has been added.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 6. The texture is fine sandy loam, sandy loam, or loamy sand.

The BA horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. Mottles in shades of yellow or brown are in some pedons. The texture is loamy sand or sandy loam.

The upper part of the Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. Few to common mottles in shades of brown and yellowish brown are in some pedons. The texture is loam or sandy clay loam. The lower part of the Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. Mottles in shades of yellow and brown and pockets of pale brown clean sand grains are in some pedons. The texture is sandy loam or loam.

Sucarnoochee Series

The Sucarnoochee series consists of deep, somewhat poorly drained, very slowly permeable soils on flood plains of the Blackland Prairie extending from the northwest to the eastern part of the county. The soils formed in calcareous, clayey alluvium. Slopes range from 0 to 2 percent.

Sucarnoochee soils are associated on the landscape with Demopolis, Houlka, Kipling, Okolona, Sumter, and Vaiden soils. Demopolis, Kipling, Okolona, Sumter, and Vaiden soils are on adjacent uplands and are not subject to flooding. Houlka soils do not have intersecting slickensides within 40 inches of the surface.

Typical pedon of Sucarnoochee silty clay, 0 to 2 percent slopes, frequently flooded; in a pasture 2 miles south of Gainesville, 1,600 feet south and 600 feet west of the northeast corner of sec. 27, T. 21 N., R. 2 W.

Ap—0 to 9 inches; dark grayish brown (2.5Y 4/2) silty clay; moderate fine and medium granular structure; firm, very sticky and very plastic; many fine roots; few cracks filled with gray (10YR 5/1) silty clay loam; moderately alkaline; clear wavy boundary.

AB—9 to 22 inches; dark grayish brown (2.5Y 4/2) silty clay; common fine distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm, very sticky and plastic; common fine roots; few large intersecting slickensides; moderately alkaline; gradual wavy boundary.

Bw1—22 to 32 inches; gray (10YR 5/1) clay; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; wedge-shaped aggregates formed by intersecting slickensides parting to moderate fine angular blocky structure; extremely firm, very sticky and very plastic; few fine roots; few fine manganese concretions; mildly alkaline; gradual wavy boundary.

Bw2—32 to 65 inches; very dark gray (5Y 3/1) clay; common medium distinct gray (N 5/0), yellowish brown (10YR 5/6), and strong brown (7.5YR 5/6) mottles; wedge-shaped aggregates formed by intersecting slickensides parting to moderate fine angular blocky structure; extremely firm, very sticky and very plastic; few fine roots; few calcium carbonate nodules; few fine manganese concretions; neutral.

The solum is more than 60 inches thick. The reaction ranges from neutral to moderately alkaline throughout. Depth to intersecting slickensides ranges from 9 to 27 inches. Clay content of the control section ranges from 40 to 60 percent, and silt content is more than 30 percent. Surface configuration in undisturbed areas consists of microknolls 2 to 8 inches above microbasins at intervals of 4 to 10 feet.

The A or Ap horizon has hue of 10YR to 5Y, value of 3 or 4, and chroma of 2 or 3. If the value is 3 or less, this horizon is less than 12 inches thick. The texture is silty clay loam, silty clay, or clay.

The AB horizon has hue of 10YR to 5Y, value of 3 or 4, and chroma of 1 to 3. If the chroma is 1, this horizon is more than 12 inches below the surface. Depth to distinct or prominent mottles is less than 20 inches below the surface. The texture is silty clay loam, silty clay, or clay.

The Bw horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 or 2. Common to many mottles are in shades of brown or yellow. Many pedons are mottled in shades of brown, gray, and yellow. The texture is silty clay or clay. Common to many intersecting slickensides form wedge-shaped aggregates that part to moderate or strong subangular blocky or angular blocky structure. In most pedons, this horizon has few to common calcium carbonate nodules and manganese concretions.

Sumter Series

The Sumter series consists of moderately deep, well drained, slowly permeable soils on uplands of the Blackland Prairie. The soils formed in calcareous clays and chalk of the Blackland Prairie. Slopes range from 1 to 8 percent.

Sumter soils are associated on the landscape with Demopolis, Kipling, Okolona, and Sucarnoochee soils. Demopolis soils have a solum less than 20 inches thick. Kipling soils have an acid argillic horizon. Okolona soils are deeper than the Sumter soils and have less than 40 percent calcium carbonate equivalent. Sucarnoochee soils are on flood plains and are somewhat poorly drained.

Typical pedon of Sumter silt loam in an area of Demopolis-Sumter complex, 1 to 3 percent slopes; 2.25 miles southeast of Epes; 1,600 feet east and 1,600 feet south of the northwest corner of sec. 33, T. 20 N., R. 1 W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; common fine roots; mildly alkaline, calcareous; abrupt smooth boundary.

AB—6 to 9 inches; dark grayish brown (10YR 4/2) silt loam; common medium distinct grayish brown (2.5Y 5/2) mottles; weak medium granular structure; friable; few fine roots; 5 to 8 percent, by volume, calcium carbonate concretions; moderately alkaline, calcareous; clear smooth boundary.

Bw—9 to 23 inches; light yellowish brown (2.5Y 6/4) silty clay loam; common medium distinct light gray (2.5Y 7/2) mottles; weak fine angular blocky structure; firm; few fine roots along bedding planes; 25 percent, by volume, calcium carbonate concretions; moderately alkaline, calcareous; gradual wavy boundary.

Cr—23 to 60 inches; light gray (5Y 7/2) chalk; few to common streaks of brown and yellow mottles along bedding planes; platy rock structure; moderately alkaline, calcareous.

The solum is 20 to 40 inches thick. The reaction is mildly alkaline or moderately alkaline throughout. The Sumter soils are calcareous throughout.

The A and AB horizons have hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 or 2. Texture is silt loam or silty clay loam. Some pedons have a very cobbly surface layer that is 35 to 60 percent, by volume, cobbles 3 to 10 inches in diameter. Content of chalk channers or calcium carbonate nodules ranges up to 15 percent. Some pedons do not have an AB horizon.

The upper part of the Bw horizon has hue of 2.5Y or 5Y, value of 5 to 7, and chroma of 3 to 6. The texture is silty clay loam, silty clay, or clay. Content of calcium carbonate nodules or chalk channers ranges from 2 to 25 percent. The lower part of the Bw horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 3 to 6. The texture is silty clay loam, silty clay, or clay. Some pedons have 5 to 25 percent, by volume, calcium carbonate nodules or chalk channers.

Some pedons have a BC horizon that has the same range in color and texture as that of the lower part of the BW horizon.

The Cr horizon has hue of 2.5Y or 5Y, value 5 to 7, and chroma of 1 to 3. Few to common mottles in shades of brown and yellow are along bedding planes and cracks. This horizon is chalk or clayey marl.

Troup Series

The Troup series consists of deep, well drained, moderately permeable soils on Coastal Plain uplands. The soils formed in thick, unconsolidated beds of sandy and loamy marine sediments. Slopes range from 0 to 20 percent.

Troup soils are associated on the landscape with Luverne and Smithdale soils. Smithdale and Luverne soils are on adjacent gently sloping ridgetops and do not have a thick sandy epipedon.

Typical pedon of Troup loamy sand, 0 to 5 percent slopes; in a pine plantation 2 miles north of Ward; 2,400 feet north and 700 feet east of the southwest corner of sec. 2, T. 16 N., R. 3 W.

A—0 to 7 inches; dark yellowish brown (10YR 4/4) loamy sand; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.

E1—7 to 36 inches; strong brown (7.5YR 5/6) loamy sand; single grained; loose; common fine roots; very strongly acid; gradual smooth boundary.

E2—36 to 54 inches; reddish yellow (7.5YR 6/6) loamy sand; single grained; loose; pockets of uncoated sand grains; strongly acid; gradual wavy boundary.

Bt—54 to 75 inches; strong brown (7.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; strongly acid.

The solum ranges in thickness from 50 to more than 80 inches. The reaction is strongly acid or very strongly acid throughout except where lime has been added.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. The texture is loamy sand, loamy fine sand, or fine sand.

The E horizon has hue of 7.5YR or 10YR, value of 5 to 8, and chroma of 4 to 8. The texture is loamy sand or loamy fine sand. Some pedons have pockets of uncoated sand grains.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 to 7, and chroma of 4 to 8. The texture is sandy loam or sandy clay loam.

Vaiden Series

The Vaiden series consists of deep, somewhat poorly drained, very slowly permeable soils on uplands of the Blackland Prairie. The soils formed in thick beds of acid clays underlain by marl or chalk. Slopes are 0 to 1 percent.

Vaiden soils are associated on the landscape with Demopolis, Kipling, Okolona, and Sumter soils. Demopolis soils have chalk at a depth of less than 20 inches. Kipling soils have less than 60 percent clay in the control section. Okolona soils are alkaline throughout and do not have an argillic horizon that has distinct or prominent mottles within 20 inches of the surface. Sumter soils are calcareous throughout.

Typical pedon of Vaiden silty clay loam, 0 to 1 percent slopes; in a soybean field; 3 miles northeast of Hamner; 1,900 feet north and 600 feet east of southwest corner of sec. 24, T. 21 N., R. 3 W.

Ap—0 to 6 inches; dark brown (10YR 4/3) silty clay loam; moderate medium granular structure; friable, slightly sticky and plastic; common fine roots; few fine black concretions; strongly acid; abrupt smooth boundary.

Bt1—6 to 18 inches; yellowish brown (10YR 5/6) clay; common medium distinct light brownish gray (10YR 6/2), light yellowish brown (10YR 6/4), and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm, very sticky and very plastic; common fine roots; strongly acid; gradual wavy boundary.

Bt2—18 to 34 inches; mottled yellowish brown (10YR 5/6), gray (10YR 6/1), and yellowish red (5YR 4/8) clay; moderate medium angular blocky structure; firm, very sticky and very plastic; few fine roots; few nonintersecting slickensides; few black concretions; strongly acid; gradual wavy boundary.

Cg1—34 to 43 inches; gray (5Y 6/1) ped faces; mottled grayish brown (2.5Y 5/2) and yellowish brown (10YR 5/6) clay interiors; many coarse intersecting slickensides that part to weak fine angular blocky structure; firm, very sticky and plastic; common black concretions; slightly acid; gradual wavy boundary.

Cg2—43 to 60 inches; gray (5Y 6/1) ped faces; gray (10YR 5/1) and light olive brown (2.5Y 5/4) clay interiors; many coarse intersecting slickensides that part to weak fine angular blocky structure; firm, very sticky and plastic; common fine black concretions; about 20 to 30 percent, by volume, calcium carbonate nodules; calcareous, mildly alkaline.

Depth to alkaline material ranges from 3 to 6 feet. The reaction ranges from medium acid to very strongly acid throughout the solum except where lime has been added. It ranges from very strongly acid to moderately alkaline in the substratum.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The texture is silty clay loam or clay.

The upper part of the Bt horizon has hue of 10YR, value of 4 or 5, and chroma of 4 to 6 with mottles in shades of brown and gray; or is mottled in shades of yellow, gray, brown, and red. The lower part of the Bt horizon is mottled in shades of yellow, brown, gray, and red. The texture of the Bt horizon is clay or silty clay.

The Cg horizon has gray ped faces with the ped interiors mottled in shades of yellow, brown, and olive. The texture is clay or silty clay. Content of black concretions and calcium carbonate nodules range from 5 to 35 percent.

Some pedons have a Cr horizon that is a gray or olive chalk or marl.

Wilcox Series

The Wilcox series consists of deep, somewhat poorly drained, very slowly permeable soils on Coastal Plain uplands extending from the west central to the southeastern part of the county. The soils formed in acid, clayey shale marine sediment. Slopes range from 2 to 8 percent.

Wilcox soils are associated on the landscape with Kipling, Mayhew, and Vaiden soils. Kipling and Vaiden soils are underlain by clayey marl or chalk. Mayhew soils have a gray argillic horizon.

Typical pedon of Wilcox silty clay, 2 to 5 percent slopes; in a loblolly pine plantation 6 miles south of Bellamy; 400 feet north and 500 feet east of the southwest corner of sec. 8, T. 16 N., R. 1 W.

A—0 to 4 inches; dark brown (10YR 4/3) silty clay; moderate fine granular structure; friable; common fine roots; few worm casts; very strongly acid; abrupt smooth boundary.

Bt1—4 to 14 inches; yellowish red (5YR 4/6) silty clay; common medium distinct light brownish gray (10YR 6/2) mottles and few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm, plastic and sticky; common fine roots; few worm casts; few patchy clay films on faces of peds; extremely acid; gradual wavy boundary.

Bt2—14 to 41 inches; mottled light brownish gray (10YR 6/2), red (2.5YR 4/6), and strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; very firm, very plastic and very sticky; few fine roots; few thin patchy clay films on faces of peds; few nonintersecting slickensides; extremely acid; gradual wavy boundary.

C—41 to 65 inches; gray (10YR 5/1) and grayish brown (2.5Y 5/2) soft acid clayey shale; common medium prominent red (2.5YR 4/6) and strong brown (7.5YR 5/6) mottles; weak thick platy structure to massive; very firm; extremely acid.

The solum is 30 to 50 inches thick. The reaction ranges from strongly acid to extremely acid except where lime has been added.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 3. The texture is silt loam, silty clay loam, or silty clay.

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. Few to common mottles are in shades of brown and gray. The lower part of the Bt horizon is mottled in shades of brown, gray, and red. A few shale fragments are in some pedons. The texture of the Bt horizon is silty clay or clay.

The C horizon has a gray matrix with red and brown mottles, or it is mottled in shades of gray, red, and brown. This horizon is soft, acid, clayey shale that can be cut with a spade.

Formation of the Soils

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: A, E, B, and C.

The A horizon, or surface layer, is the horizon of maximum accumulation of organic matter. The content of organic matter varies in different soils because of differences in relief, wetness, and inherent fertility.

The E horizon, or subsurface layer, is the horizon of maximum loss of soluble or suspended material. Troup soils have both an A horizon and an E horizon. Other soils, such as the Sumter soils, have an A horizon but do not have an E horizon.

The B horizon, or subsoil, lies immediately below the A or E horizon. It is the horizon of maximum accumulation of dissolved or suspended material such as iron or clay. In very young soils, such as the Bigbee soils, the B horizon has not yet developed.

The C horizon, or the substratum, has been affected very little by soil forming processes, but it may be somewhat modified by weathering.

Gleying is the chemical reduction and transfer of iron. It is evident in the wet soils of the county. Gleying is indicated by gray in the subsoil and gray mottles in other horizons, which indicates the reduction and loss of iron. Some horizons have mottles in shades of red and concretions, indicating a segregation of iron as in the Escambia soils.

Leaching of carbonates and bases has occurred in most of the Coastal Plain soils in the county. This contributes to the development of the horizons and to the inherent low fertility and acid reaction of these soils.

In uniform materials, the difference in natural soil drainage generally is closely associated with slope or relief. Soil drainage in turn, affects the color and natural drainage of the soil. Soils, such as the Smithdale soils, that formed under good drainage conditions have a subsoil that is uniformly bright in color. Soils that formed under poor drainage conditions, such as the Minter soils, are grayish. Soils that formed where drainage is intermediate have a subsoil that is mottled with gray and brown. Escambia and Savannah soils are examples. The gray colors persist even after the soils are artificially drained.

In steep areas, geological erosion removes the surface layer of the soils. In low-lying or depressional areas, soil material often accumulates and adds to the thickness of the surface layer. In other areas, the formation of soil material and rate of removal are in equilibrium with soil development. Relief, or the lack of it, also relates to the eluviation of clay from the E horizon to the Bt horizon.

Factors of Soil Formation

In this section, the major factors and processes that have affected the formation and morphology of the soils of Sumter County are described. Soil, as used in this discussion, is a natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effects of climate and living matter acting on earthy parent material as conditioned by relief over periods of time.

Soils are formed through the interaction of five major factors: climate, plant and animal life, parent material, relief, and time. The relative influence of each factor varies from place to place, and in some places, one factor dominates in the formation of a soil and determines most of its properties.

Climate

Climate influences the variety of plants and largely determines the type of weathering that takes place. The warm, humid climate of Sumter County has favored strong weathering and rapid leaching of the soils. Almost all of the soils are acid. Because of weathering and leaching, the natural level of plant nutrients is low in most of the soils.

Soil temperatures vary somewhat throughout the county. Temperature influences the rate of physical and chemical reactions in the soil. The well drained Cahaba and Bigbee soils on terraces of the Tombigbee River are slightly warmer than the soils of the rest of the county. The Smithdale soils on north- and east-facing slopes at the highest elevations are cooler. More detailed information on the climate is available in the section, "General Nature of the Survey Area."

Plant and Animal Life

Trees, grasses, rodents, earthworms, micro-organisms, and other forms of plant and animal life are important factors in the processes of soil formation. Climate and relief acting on parent material throughout a period of time affect the degree to which plant and animal life contribute to soil formation. If the effects of climate and relief are favorable, plants and animals can grow.

As a result of root penetration, water and air can move into the soil more rapidly. This improves soil structure and contributes to more chemical reactions. Roots also help in recycling needed plant nutrients. Plant nutrients are returned to the surface and are not lost in the ground water by leaching if there are sufficient roots to take these nutrients up as they pass through the soil. The coarser textured soils, such as the Bigbee and Troup soils, generally have sparse vegetation in wooded areas. Leaching has removed all but trace amounts of plant nutrients from these soils. Grasses reduce leaching more than certain trees and recycle calcium more efficiently than trees. Most of the soils in Sumter County formed under forest vegetation. As a result, soils, such as the Savannah soils, developed a light color surface layer. The Okolona soils have a darker surface layer that was influenced by the presence of grasses during the development of these soils.

Most animal life in the soil is in the surface layer. Earthworms and rodents continuously mix the soil. This helps water infiltration, which in turn helps chemical weathering. The micro-organisms, such as fungi and bacteria, help the weathering of the parent material, which affects the amount of minerals in the soil. Micro-organisms also help break down organic matter and return organic acids and inorganic acids as plant nutrients into the soil. The nutrients are then used by the plants or they are leached out of the soil.

Parent Material

Parent material is material from which a soil forms. It influences the mineral and chemical composition of the soil and, to a large extent, the rate at which soil formation takes place. Most of the parent material in Sumter County consists of water-deposited sediment. The texture varies and is related to the energy of the water at the time of deposition. Bigbee soils are brown and coarse textured. They have been recently deposited by water from the Tombigbee River. Some of the soils in Sumter County formed mainly in residuum. Demopolis soils formed in weathered chalk.

Relief

The relief, or shape of the landscape, in Sumter County ranges from level to steep. The elevation ranges from about 40 feet above sea level in the southeastern part of the county near the Tombigbee River to about 440 feet near Belmont in the eastern part of the county. Much of the nearly level relief is on flood plains and terraces and on the Pleistocene and Holocene formations south of Livingston. The elevation of the Pleistocene and Holocene Formations ranges from about 92 feet at McDowell to about 150 feet at Warsaw in the northeastern part of the county. Relatively smooth ridgetops, referred to as old high river terraces, are west of the Pleistocene and Holocene Formations and parallel to the Tombigbee River. The recent Tombigbee River alluvium is about 100 feet in elevation at the Pickens County line, north of Sumter County, and falls to about 40 feet at the Choctaw County line to the south. All of the upland soil formations decrease in elevation from north to south. Except for the gently sloping soils on the Blackland Prairie in the northern part of the county, most of the remaining areas of the county are highly dissected with narrow ridges and sloping to moderately steep side slopes. The nearly level to moderately sloping, clayey Vaiden, Kipling, Okolona, Demopolis, and Sumter soils are in the central and northern parts of the county in the upper Cretaceous grouping of Demopolis and Mooreville chalk formations. These soils are about 300 to 400 feet higher in elevation than the river terrace soils in the south.

Relief influences soil formation. It controls surface drainage and affects the percolation of water through the soil. Relief affects the depth of soil, the plant and animal life, and some of the soil-forming processes. Soils on steeper slopes, such as Demopolis soils, are more subject to erosion because of concentrated rapid runoff. These soils are generally not as deep as other soils. The Houlka and Minter soils are in depressions and are generally wet. The Smithdale and Troup soils are on higher, convex surfaces and are better drained. Differences in relief cause free water to leave well drained soils and to accumulate in the poorly drained soils.

Time

Time is required for the parent material to be changed into a soil. The change takes place slowly. Maturity of a soil determines the degree of profile development. Soils that formed in similar parent material can differ in maturity. Those that show little or no evidence of profile development are immature. Those having well expressed horizons are mature. The Savannah and Smithdale soils formed in loamy material. The Alamuchee soils are on flood plains and are still accumulating material deposited by floodwater. These soils are younger than the Smithdale soils and have only weakly expressed horizons. Smithdale soils on uplands are mature. The time since deposition has been long enough for the development of a well defined profile.

Geology

Sumter County is underlain by material of sedimentary origin representing the Cretaceous, Tertiary, and Quaternary geologic periods. The Cretaceous and Tertiary formations consist of sediment deposits in shallow marine, estaurine, and deltaic environments. The formations are exposed in a series of northwest- to southeast-trending bands; the older formations crop out in the northeast part of the county and exposures become progressively younger toward the southwest. The formations slope gently to the southwest. The average dip of the Cretaceous units is about 45 feet per mile, and the average dip of the Tertiary units is about 30 feet per mile. The landscape of the area is largely controlled by the geology, with low ridges, or cuestas, where the surface formations are fine clastics or carbonates. Quaternary sediment overlies the older formations unconformably and is closely related to existing stream patterns.

The Cretaceous formations consist of the Prairie Bluff Chalk, the Ripley Formation, the Demopolis Chalk, and to a lesser extent the Mooreville Chalk, which together make up the Selma Group. The Demopolis Chalk is the thickest of the formations, ranging up to 520 feet in thickness. It overlies the Mooreville Chalk and crops out in the northern part of the county in a band about 8 miles wide. Exposures of the chalk vary from light gray to white. The lower part of the Demopolis Chalk consists of about 30 feet of thinly bedded marly chalk. This is overlain by a relatively pure chalk facies containing 75 to 95 percent calcium carbonate, which is of potential economic value for cement production. This material is presently quarried near Epes west of U.S. Highway 11 near the banks of the Tombigbee River.

Locally, the beds of the Demopolis Chalk, Ripley Formation, and Prairie Bluff Chalk are disrupted by a zone of faulting known as the "Livingston Fault Zone." This zone extends southeast from the vicinity of Sumterville, in the western part of the county, for about 22 miles into the east-central part of the county. It consists of a set of blocks that have been displaced along parallel faults by a vertical movement ranging from a few inches to more than 100 feet. There is no evidence of recent movement along these faults.

Tertiary formations are exposed mainly in the southwestern part of Sumter County where they overlie the Cretaceous formations unconformably. The Tertiary formations of the Paleocene Midway Group and the Eocene Wilcox Group. The Paleocene Midway Group contains the Clayton Formation, the Porters Creek Formation, and the Naheola Formation. The Eocene Wilcox Group contains the Nanafalia Formation and the Tuscahoma Sand. The Tertiary formations consist primarily of interbedded shales, silts, sands, and gravels.

The Porters Creek Formation is up to 450 feet thick and is mainly marine clay that is dark brown to black when unweathered. The clay is used in the making of light-weight aggregate and is being quarried south of Livingston. The Porters Creek Formation crops out in a belt 5 to 8 miles wide, extending from the west-central margin of the county to the southeast corner and forming the "flatwoods" part of the county. Other Tertiary strata of economic significance include a lignite-bearing member of the Naheola Formation and coarsely clastic beds in several formations that are potential sources of sand and gravel.

The Quaternary formations are mainly high terrace deposits, alluvium, and low terrace deposits. The formations are lenticular deposits of unconsolidated sand, gravel, silt, and clay deposited in the channels and flood plains of Pleistocene and recent streams. The high terrace deposits are adjacent to the valleys of the Tombigbee River and its major tributaries. These terrace deposits are generally less than 50 feet thick. Alluvium and low terrace deposits occur along all major streams and larger tributaries throughout the county. High terrace, low terrace, and alluvial deposits have similar characteristics and therefore are mapped as a single unit *(11, 15)*.

Alluvial deposits in streams draining the Cretaceous formations in Sumter County consist mainly of silt and clay, whereas deposits along streams in the Tertiary formations contain large amounts of sand and varying amounts of gravel. Areas along the Tombigbee River are of potential economic value for sand and gravel, and some areas are being quarried.

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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.

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.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

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—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

Broad-base terrace. A ridge-type terrace built to control erosion by diverting runoff along the contour at a nonscouring velocity. The terrace is 10 to 20 inches high and 15 to 30 feet wide and has gently sloping sides, a rounded crown, and a dish-shaped channel along the upper side. It may be nearly level or have a grade toward one or both ends.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of a standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

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.

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.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a fragment.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels, i.e., clay coating, clay skin.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil 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 are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

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. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazingland 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 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.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods.

Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

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 the activities of man or other animals or of a catastrophe in nature, such as fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay are in the soil. The soil is not a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The movement of water into the soil is rapid.

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.*

Fine textured soil. Sandy clay, silty clay, and clay.

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.

Foot slope. The inclined surface at the base of a hill.

Fragile (in tables). The soil is easily damaged by use or disturbance.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

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 Vertisols—clayey soils having a high coefficient of expansion and contraction 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 and mottles.

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 up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 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 (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case 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 at the surface of a mineral soil.

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 O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

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 A or B horizon. 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, the Arabic numeral 2 precedes the letter C.

R layer.—Consolidated rock (unweathered bedrock) beneath the soil. The rock commonly underlies a C horizon, but 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-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

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. This contrasts 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

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.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

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 that are 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

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.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Sandy loam and fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, and 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. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are 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 the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Narrow-base terrace. A terrace no more than 4 to 8 feet wide at the base. A narrow-base terrace is similar to a broad-base terrace, except for the width of the ridge and channel.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Open space. A relatively undeveloped green or wooded area provided mainly within an urban area to minimize feelings of congested living.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

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 to move through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 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. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed 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 red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

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 filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poor outlets (in tables). In these areas, surface or subsurface drainage outlets are difficult or expensive to install.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of the 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 degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly 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

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

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 is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Rippable bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 draw bar horsepower rating.

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). There is a 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.

Salty water (in tables.) Water is too salty for consumption by livestock.

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-size particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

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; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil 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 or of the underlying material. 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. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

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 feet.

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). The soil mass is 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.

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 (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
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 underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally it is indicative of an old weathered surface. In a cross section, thickness of the line can be one fragment or more. It generally overlies material that weathered in place, and it is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

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 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 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. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

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.

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

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 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, such as zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Unstable fill (in tables). There is a risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Variegation. Refers to patterns of contrasting colors that are assumed to be inherited from the parent material rather than to be the result of poor drainage.

Weathering. All physical and chemical changes produced by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of course 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. This 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 sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Data recorded in the period 1951-80 at Livingston, 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----	56.6	33.5	45.1	78	11	99	5.26	3.23	7.12	8	0.7
February---	61.8	36.3	49.1	82	15	126	4.93	2.61	6.96	7	0.1
March------	68.2	42.9	55.6	85	23	225	7.27	4.24	9.96	9	0.0
April------	77.3	50.7	64.0	89	31	426	5.80	2.92	8.29	6	0.0
May--------	83.9	58.8	71.4	94	40	663	4.00	1.89	5.82	6	0.0
June-------	90.7	65.9	78.3	101	50	849	3.85	1.56	5.70	6	0.0
July-------	92.8	69.3	81.1	101	60	964	5.95	3.90	7.80	9	0.0
August-----	92.3	68.4	80.4	99	58	942	3.35	1.76	4.73	6	0.0
September--	87.6	63.4	75.5	98	46	765	3.35	1.05	5.22	5	0.0
October----	78.0	49.7	63.9	93	28	436	2.82	0.78	4.45	4	0.0
November---	87.4	40.4	53.9	85	18	161	3.67	1.89	5.21	5	0.0
December---	59.7	34.9	47.3	80	14	81	5.66	2.79	8.15	8	0.2
Yearly:											
Average--	76.4	51.2	63.8	---	---	---	---	---	---	---	---
Extreme--	---	---	---	103	11	---	---	---	---	---	---
Total----	---	---	---	---	---	5,731	55.93	44.82	66.38	79	1.0

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 °F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Data recorded in the period 1951-80 at Livingston, 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--	March 15	March 28	April 11
2 years in 10 later than--	March 7	March 21	April 6
5 years in 10 later than--	February 18	March 6	March 28
First freezing temperature in fall:			
1 year in 10 earlier than--	November 6	October 29	October 17
2 years in 10 earlier than--	November 13	November 4	October 22
5 years in 10 earlier than--	November 27	November 14	November 2

TABLE 3.--GROWING SEASON

[Data recorded in the period 1951-80 at Livingston, 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	249	227	196
8 years in 10	260	236	204
5 years in 10	283	254	219
2 years in 10	312	277	238
1 year in 10	>365	>365	>365

TABLE 4.--SUITABILITY AND LIMITATIONS OF MAP UNITS ON THE GENERAL SOIL MAP FOR MAJOR LAND USES

Map unit	Extent of area	Cultivated crops	Pasture and hayland	Woodland	Urban uses	Intensive recreation areas	Extensive recreation areas
	Pct						
1. Alamuchee-Annemaine-Mooreville	20	Well suited to poorly suited: floods.	Well suited to poorly suited: floods.	Well suited: floods.	Poorly suited: floods.	Poorly suited: floods.	Poorly suited: floods.
2. Kipling-Demopolis-Sucarnoochee	31	Fairly suited to poorly suited: slope, wetness, poor tilth.	Fairly suited to poorly suited: slope, wetness, floods.	Well suited to poorly suited: too clayey, too alkaline.	Poorly suited: floods, high shrink-swell, depth to rock.	Poorly suited: floods, too clayey, slope.	Fairly suited: floods, too clayey, slope.
3. Wilcox-Mayhew	14	Fairly suited: wetness, poor tilth.	Fairly suited: wetness.	Well suited: too clayey.	Poorly suited: wetness, too clayey, high shrink-swell.	Poorly suited: wetness, too clayey, shrink-swell.	Poorly suited: wetness, too clayey.
4. Savannah-Smithdale-Escambia	13	Well suited-----	Well suited----	Well suited------	Well suited to poorly suited: wetness, percs slowly.	Well suited to poorly suited: wetness, percs slowly.	Well suited: wetness.
5. Luverne-Troup	22	Well suited to not suited: slope, droughty.	Well suited to not suited: slope, droughty.	Well suited: droughty.	Fairly suited: slope, percs slowly, shrink-swell, too sandy.	Fairly suited to poorly suited: slope, percs slowly, too sandy.	Fairly suited to poorly suited: slope, percs slowly, too sandy.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AmA	Alamuchee-Mooreville complex, 0 to 2 percent slopes, frequently flooded	75,555	13.0
AnA	Annemaine sandy loam, 0 to 2 percent slopes, occasionally flooded	25,985	4.5
BgA	Bigbee loamy sand, 0 to 2 percent slopes, occasionally flooded	3,210	0.6
CaA	Cahaba sandy loam, 0 to 2 percent slopes, occasionally flooded	8,585	1.5
DkE2	Demopolis-Kipling complex, 3 to 20 percent slopes, eroded	72,035	12.4
DsB	Demopolis-Sumter complex, 1 to 3 percent slopes	13,320	2.3
EsA	Escambia sandy loam, 0 to 2 percent slopes	8,990	1.6
GdE3	Gullied land-Demopolis complex, 3 to 20 percent slopes, severely eroded	685	0.1
HoA	Houlka silty clay, 0 to 2 percent slopes, occasionally flooded	11,825	2.0
KpA	Kipling loam, 0 to 1 percent slopes	15,645	2.7
KpB2	Kipling silty clay loam, 1 to 5 percent slopes, eroded	33,770	5.8
KuC	Kipling-Urban land complex, 1 to 8 percent slopes	435	0.1
LvB	Luverne sandy loam, 2 to 5 percent slopes	9,740	1.7
LvE	Luverne sandy loam, 5 to 25 percent slopes	67,925	11.7
MaA	Mayhew silty clay loam, 0 to 2 percent slopes	26,495	4.6
MnA	Minter clay loam, 0 to 2 percent slopes, frequently flooded	9,175	1.6
OkB	Okolona silty clay, 0 to 3 percent slopes	4,420	0.8
PIT	Pits, nearly level	570	0.1
SaA	Savannah loam, 0 to 2 percent slopes	8,305	1.4
SaB	Savannah loam, 2 to 5 percent slopes	20,985	3.6
SbB	Savannah-Urban land complex, 1 to 5 percent slopes	1,265	0.2
SmB	Smithdale loamy sand, 1 to 5 percent slopes	11,795	2.0
SrA	Sucarnoochee silty clay, 0 to 2 percent slopes, frequently flooded	32,035	5.5
SuB2	Sumter silty clay loam, 1 to 5 percent slopes, eroded	1,335	0.2
SuC2	Sumter silty clay loam, 5 to 8 percent slopes, eroded	205	*
SvB	Sumter very cobbly silt loam, 1 to 5 percent slopes	125	*
TrB	Troup loamy sand, 0 to 5 percent slopes	1,670	0.3
TSE	Troup and Smithdale soils, 5 to 20 percent slopes	44,635	7.7
TuB	Typic Udorthents, loamy, 0 to 4 percent slopes	1,185	0.2
VaA	Vaiden silty clay loam, 0 to 1 percent slopes	2,515	0.4
WcB	Wilcox silty clay, 2 to 5 percent slopes	51,650	8.9
WuC2	Wilcox-Luverne complex, 5 to 8 percent slopes, eroded	8,795	1.5
	Water	5,690	1.0
	Total	580,555	100.0

* Less than 0.1 percent.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Land capability	Corn	Soybeans	Wheat	Grain sorghum	Grass hay	Bahiagrass	Tall fescue
		Bu	Bu	Bu	Bu	Tons	AUM*	AUM*
AmA------------- Alamuchee-Mooreville	Vw	---	---	---	---	---	8.0	8.0
AnA------------- Annemaine	IIw	100	40	40	100	6.0	10.0	8.5
BgA------------- Bigbee	IIIs	50	15	25	50	4.5	7.5	---
CaA------------- Cahaba	IIw	90	40	45	90	6.0	9.5	7.0
DkE2:								
Demopolis------	VIe	---	---	---	---	3.5	5.0	4.5
Kipling--------	IVe	---	---	---	---	4.5	6.0	6.0
DsB:								
Demopolis------	IVe	---	---	---	---	---	4.0	4.0
Sumter---------	IIe	---	30	30	---	5.0	---	6.0
EsA------------- Escambia	IIw	100	40	30	100	5.5	9.5	9.0
GdE3:								
Gullied land---	VIIIe	---	---	---	---	---	---	---
Demopolis------	VIe	---	---	---	---	---	---	---
HoA------------- Houlka	IIw	80	40	40	80	4.0	---	10.0
KpA------------- Kipling	IIIw	60	30	35	80	5.0	7.0	8.0
KpB2------------ Kipling	IIIe	60	25	35	60	5.0	7.0	6.5
KuC------------- Kipling-Urban land	---	---	---	---	---	---	---	---
LvB------------- Luverne	IIIe	75	35	20	50	4.5	8.5	6.5
LvE------------- Luverne	VIIe	---	---	---	---	4.0	5.5	---
MaA------------- Mayhew	IIIw	---	30	30	80	4.0	8.0	8.0
MnA------------- Minter	Vw	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Wheat	Grain sorghum	Grass hay	Bahiagrass	Tall fescue
		Bu	Bu	Bu	Bu	Tons	AUM*	AUM*
OkB------------- Okolona	IIe	80	40	45	80	4.0	6.5	9.0
PIT. Pits								
SaA------------- Savannah	IIw	80	35	40	85	6.0	9.0	8.0
SaB------------- Savannah	IIe	75	35	40	80	6.0	9.0	8.0
SbB------------- Savannah-Urban land	---	---	---	---	---	---	---	---
SmB------------- Smithdale	IIIe	70	30	30	80	5.0	8.0	---
SrA------------- Sucarnoochee	IVw	---	35	---	80	6.0	6.0	6.0
SuB2------------ Sumter	IIIe	---	25	---	---	5.0	---	7.0
SuC2------------ Sumter	IVe	---	20	---	---	4.5	---	6.0
SvB------------- Sumter	VIs	---	---	---	---	---	---	---
TrB------------- Troup	IIIs	60	25	30	60	4.0	7.0	---
TSE:								
Troup----------	VIIs	---	---	---	---	4.0	6.5	---
Smithdale------	VIe	---	---	---	---	4.0	6.5	---
TuB. Typic Udorthents								
VaA------------- Vaiden	IIIw	45	30	---	80	4.0	7.0	8.0
WcB------------- Wilcox	IIIe	40	30	30	60	4.0	8.0	7.5
WuC2------------ Wilcox-Luverne	VIe	---	---	---	---	4.0	6.0	5.5

* 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.

TABLE 7.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	---	---	---	---
II	93,224	29,534	63,690	---
III	157,825	108,290	44,655	4,880
IV	60,881	28,846	32,035	---
V	84,730	---	84,730	---
VI	81,735	81,610	---	125
VII	92,474	67,925	---	24,549
VIII	541	541	---	---

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	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
AmA:										
Alamuchee	11W	Slight	Severe	Moderate	Slight	Severe	Loblolly pine	100	154	Loblolly pine, sweetgum, American sycamore, water oak, green ash.
							Sweetgum	100	---	
							American sycamore	110	---	
							Water oak	100	---	
							Green ash	90	---	
Mooreville	11W	Slight	Moderate	Severe	Slight	Severe	Loblolly pine	100	154	Loblolly pine, green ash, sweetgum, American sycamore, water oak.
							Green ash	90	---	
							Sweetgum	100	---	
							Water oak	100	---	
AnA: Annemaine	9W	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, sweetgum, water oak.
							Shortleaf pine	80	---	
							Sweetgum	80	---	
							Water oak	90	---	
BgA: Bigbee	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine	80	110	Loblolly pine, longleaf pine.
							Longleaf pine	70	---	
CaA: Cahaba	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, sweetgum, water oak, American sycamore, yellow-poplar.
							Shortleaf pine	80	---	
							Yellow-poplar	100	---	
							Sweetgum	90	---	
							Water oak	---	---	
							American sycamore	100	---	
DkE2:										
Demopolis	4D	Moderate	Moderate	Severe	Severe	Moderate	Eastern redcedar	40	43	Eastern redcedar.
							Osageorange	---	---	
							Hackberry	---	---	
Kipling	9C	Slight	Slight	Moderate	Moderate	Moderate	Eastern redcedar	40	43	Eastern redcedar.
							Osage-orange	---	---	
							Hackberry	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Produc- tivity class*	
DsB:										
Demopolis----------	4D	Slight	Slight	Severe	Severe	Moderate	Eastern redcedar----	40	43	Eastern redcedar.
							Osageorange---------	---	---	
							Hackberry-----------	---	---	
Sumter-------------	4C	Slight	Slight	Moderate	Moderate	Moderate	Eastern redcedar----	40	43	Eastern redcedar.
							Osageorange---------	---	---	
							Hackberry-----------	---	---	
EsA---------------- Escambia	9W	Slight	Moderate	Slight	Moderate	Slight	Loblolly pine-------	90	131	Loblolly pine, sweetgum, water oak.
							Shortleaf pine------	80	---	
							Sweetgum------------	90	---	
							Water oak-----------	90	---	
GdE3:										
Gullied land.										
Demopolis----------	4D	Moderate	Moderate	Severe	Severe	Moderate	Eastern redcedar----	40	43	Eastern redcedar.
							Osageorange---------	---	---	
							Hackberry-----------	---	---	
HoA---------------- Houlka	11W	Slight	Moderate	Moderate	Moderate	Moderate	Loblolly pine-------	100	154	Sweetgum, eastern cottonwood, cherrybark oak, American sycamore, green ash.
							Sweetgum------------	100	---	
							Green ash-----------	85	---	
							Water oak-----------	100	---	
							Nuttall oak---------	---	---	
							American sycamore---	110	9	
KpA, KpB2---------- Kipling	9C	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	90	131	Loblolly pine, water oak, sweetgum.
							Sweetgum------------	90	---	
							Water oak-----------	90	---	
LvB---------------- Luverne	9C	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine-------	90	131	Loblolly pine, sweetgum, water oak.
							Shortleaf pine------	80	---	
							Sweetgum------------	90	---	
							Water oak-----------	---	---	
LvE---------------- Luverne	9C	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine-------	90	131	Loblolly pine, sweetgum, water oak.
							Shortleaf pine------	80	---	
							Sweetgum------------	90	---	
							Water oak-----------	90	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
MaA---------------- Mayhew	9W	Slight	Moderate	Moderate	Moderate	Severe	Loblolly pine------- Water oak----------- Sweetgum------------	90 90 90	131 --- ---	Loblolly pine, sweetgum, water oak.
MnA---------------- Minter	7W	Slight	Severe	Severe	Severe	Slight	Baldcypress--------- Water tupelo-------- Sweetgum------------ Green ash-----------	70 70 --- ---	104 --- --- ---	Baldcypress.
OkB---------------- Okolona	4C	Slight	Moderate	Moderate	Slight	Slight	Eastern redcedar---- Osageorange--------- Hackberry-----------	40 --- ---	43 --- ---	Eastern redcedar.
SaA, SaB----------- Savannah	9W	Slight	Moderate	Slight	Moderate	Moderate	Loblolly pine------- Shortleaf pine------ Sweetgum------------ Water oak-----------	90 80 90 ---	131 --- --- ---	Loblolly pine, sweetgum, water oak.
SmB---------------- Smithdale	8A	Slight	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine------	85 80	120 ---	Loblolly pine.
SrA---------------- Sucarnoochee	10W	Slight	Severe	Moderate	Slight	Severe	Sweetgum------------ American sycamore--- Green ash----------- Water oak-----------	100 110 90 100	138 --- --- ---	American sycamore, sweetgum, water oak, green ash.
SuB2, SuC2--------- Sumter	4C	Slight	Slight	Moderate	Moderate	Moderate	Eastern redcedar---- Osageorange--------- Hackberry-----------	40 --- ---	43 --- ---	Eastern redcedar.
SvB---------------- Sumter	3F	Slight	Severe	Severe	Moderate	Moderate	Eastern redcedar---- Osageorange--------- Hackberry-----------	40 --- ---	43 --- ---	Eastern redcedar.
TrB---------------- Troup	8S	Slight	Slight	Moderate	Slight	Moderate	Loblolly pine------- Shortleaf pine------	80 70	110 ---	Loblolly pine.
TSE:										
Troup--------------	8S	Slight	Slight	Moderate	Slight	Moderate	Loblolly pine------- Shortleaf pine------	80 70	110 ---	Loblolly pine.
Smithdale----------	8A	Slight	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine------	85 70	120 ---	Loblolly pine, longleaf pine, slash pine.

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
VaA---------------- Vaiden	8C	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	80	110	Loblolly pine.
							Shortleaf pine------	70	---	
							Water oak-----------	---	---	
							Sweetgum------------	---	---	
WcB---------------- Wilcox	10C	Slight	Moderate	Moderate	Slight	Severe	Loblolly pine-------	95	142	Loblolly pine, sweetgum, water oak.
							Shortleaf pine------	85	---	
							Sweetgum------------	95	---	
							Water oak-----------	95	---	
WcC2: Wilcox------------	10C	Slight	Moderate	Moderate	Slight	Severe	Loblolly pine-------	95	142	Loblolly pine, sweetgum, water oak.
							Shortleaf pine------	85	---	
							Sweetgum------------	95	---	
							Water oak-----------	95	---	
Luverne-----------	9C	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine-------	90	131	
							Shortleaf pine------	80	---	
							Sweetgum------------	90	---	
							Water oak-----------	90	---	

* Productivity class is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

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
AmA:					
Alamuchee	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
Mooreville	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: flooding.
AnA: Annemaine	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
BgA: Bigbee	Severe: flooding.	Moderate: too sandy.	Moderate: too sandy, flooding.	Moderate: too sandy.	Moderate: droughty, flooding.
CaA: Cahaba	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
DkE2:					
Demopolis	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Slight	Severe: small stones, thin layer.
Kipling	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
DsB:					
Demopolis	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: erodes easily.	Severe: thin layer.
Sumter	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: small stones.	Severe: erodes easily.	Moderate: thin layer.
EsA: Escambia	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
GdE3:					
Gullied land.					
Demopolis	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.	Severe: thin layer.
HoA: Houlka	Severe: flooding, wetness, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: too clayey.	Severe: too clayey.
KpA: Kipling	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
KpB2 Kipling	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
KuC:					
Kipling	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Urban land.					
LvB Luverne	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight	Slight.
LvE Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
MaA Mayhew	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
MnA Minter	Severe: flooding, ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, flooding, percs slowly.	Severe: ponding, erodes easily.	Severe: ponding, flooding.
OkB Okolona	Severe: percs slowly, too clayey.	Severe: too clayey, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey.	Severe: too clayey.
PIT. Pits					
SaA Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
SaB Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
SbB:					
Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
Urban land.					
SmB Smithdale	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SrA: Sucarnoochee	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness, flooding.	Severe: wetness, too clayey.	Severe: wetness, flooding, too clayey.
SuB2: Sumter	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Severe: erodes easily.	Moderate: thin layer.
SuC2: Sumter	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: thin layer.
SvB: Sumter			Severe: large stones.		Severe: large stones.
TrB: Troup	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
TSE:					
Troup	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
TuB. Typic Udorthents					
VaA: 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, erodes easily.	Severe: too clayey.
WuC2:					
Wilcox	Severe: percs slowly, too clayey.	Severe: too clayey, percs slowly.	Severe: slope, too clayey, percs slowly.	Severe: too clayey, erodes easily.	Severe: too clayey.
Luverne	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Slight.

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
AmA:										
Alamuchee	Fair	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Mooreville	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
AnA Annemaine	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BgA Bigbee	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.
CaA Cahaba	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
DkE2:										
Demopolis	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Kipling	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
DsB:										
Demopolis	Poor	Poor	Poor	Poor	Poor	Poor	Very poor.	Poor	Poor	Very poor.
Sumter	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
EsA Escambia	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
GdE3:										
Gullied land.										
Demopolis	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
HoA Houlka	Good	Good	Fair	Good	Fair	Fair	Good	Good	Good	Fair.
KpA Kipling	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
KpB2 Kipling	Fair	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
KuC:										
Kipling	Fair	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
Urban land.										
LvB Luverne	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LvE Luverne	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

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
MaA-----Mayhew	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
MnA-----Minter	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Good	Good	Poor	Poor	Good.
OkB-----Okolona	Good	Good	Fair	Poor	Good	Poor	Very poor.	Good	Good	Very poor.
PIT. Pits										
SaA, SaB-----Savannah	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SbB:										
Savannah-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
SmB-----Smithdale	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SrA-----Sucarnoochee	Poor	Fair	Poor	Good	Fair	Fair	Fair	Poor	Fair	Fair.
SuB2, SuC2-----Sumter	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
SvB. Sumter										
TrB-----Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
TSE:										
Troup-----	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Smithdale-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TuB. Typic Udorthents										
VaA-----Vaiden	Fair	Fair	Fair	Good	Good	Poor	Fair	Fair	Good	Poor.
WcB-----Wilcox	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
WuC2:										
Wilcox-----	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
Luverne-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

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; it 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
AmA:						
Alamuchee	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Mooreville	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding.	Severe: flooding.
AnA: Annemaine	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding.	Moderate: wetness, flooding.
BgA: Bigbee	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
CaA: Cahaba	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
DkE2:						
Demopolis	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: small stones, thin layer.
Kipling	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
DsB:						
Demopolis	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock.	Moderate: depth to rock.	Severe: thin layer.
Sumter	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: thin layer.
EsA: Escambia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
GdE3:						
Gullied land.						
Demopolis	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: thin layer.
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: too clayey.
KpA, KpB2: Kipling	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.

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
KuC:						
Kipling----------	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
Urban land.						
LvB--------------- Luverne	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
LvE--------------- Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
MaA--------------- Mayhew	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, low strength.	Severe: wetness.
MnA--------------- Minter	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
OkB--------------- Okolona	Severe: cutbanks cave.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Severe: too clayey.
PIT. Pits						
SaA, SaB---------- Savannah	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
SbB:						
Savannah---------	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness, droughty.
Urban land.						
SmB--------------- Smithdale	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
SrA--------------- 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, too clayey.
SuB2, SuC2-------- Sumter	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: thin layer.
SvB--------------- Sumter	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Severe: large stones.
TrB--------------- Troup	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.

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
TSE:						
Troup------------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Smithdale--------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
TuB. Typic Udorthents						
VaA--------------- Vaiden	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, shrink-swell.	Severe: too clayey.
WcB--------------- Wilcox	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Severe: too clayey.
WuC2:						
Wilcox-----------	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Severe: too clayey.
Luverne----------	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.

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; it 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
AmA:					
Alamuchee----------	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
Mooreville---------	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
AnA----------------- Annemaine	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack.
BgA----------------- Bigbee	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Poor: seepage, too sandy.
CaA----------------- Cahaba	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding.	Fair: thin layer.
DkE2:					
Demopolis----------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
Kipling------------	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
DsB:					
Demopolis----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
Sumter-------------	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, hard to pack.
EsA----------------- Escambia	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
GdE3:					
Gullied land.					
Demopolis----------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.

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
HoA----------------- Houlka	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
KpA----------------- Kipling	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
KpB2---------------- Kipling	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
KuC: Kipling------------	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
Urban land.					
LvB----------------- Luverne	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----------	Poor: too clayey, hard to pack.
LvE----------------- Luverne	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
MaA----------------- Mayhew	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
MnA----------------- Minter	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
OkB----------------- Okolona	Severe: percs slowly.	Slight-----------	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
PIT. Pits					
SaA, SaB------------ Savannah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
SbB: Savannah-----------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Urban land.					
SmB----------------- Smithdale	Slight-----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.

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
SrA: Sucarnoochee	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
SuB2, SuC2, SvB: Sumter	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, hard to pack.
TrB: Troup	Slight	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Poor: seepage.
TSE:					
Troup	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, too sandy.	Severe: seepage.	Poor: seepage.
Smithdale	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
TuB. Typic Udorthents					
VaA: Vaiden	Severe: wetness, percs slowly.	Slight	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.
WuC2:					
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.
Luverne	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.

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; it does not eliminate the need for onsite investigation]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AmA:				
Alamuchee	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Mooreville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
AnA Annemaine	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
BgA Bigbee	Good	Probable	Improbable: too sandy.	Poor: too sandy.
CaA Cahaba	Good	Probable	Improbable: too sandy.	Fair: too clayey.
DkE2:				
Demopolis	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Kipling	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
DsB:				
Demopolis	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Sumter	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	
EsA Escambia	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
GdE3:				
Gullied land.				
Demopolis	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
HoA Houlka	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
KpA, KpB2 Kipling	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
KuC:				
Kipling	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				
LvB Luverne	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
LvE Luverne	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
MaA Mayhew	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
MnA Minter	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
OkB Okolona	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
PIT. Pits				
SaA, SaB Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
SbB:				
Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Urban land.				
SmB Smithdale	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
SrA Sucarnoochee	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
SuB2, SuC2 Sumter	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.
SvB Sumter	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
TrB Troup	Good	Probable	Improbable: too sandy.	Fair: too sandy.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
TSE:				
Troup	Good	Probable	Improbable: too sandy.	Fair: too sandy, slope.
Smithdale	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
TuB. Typic Udorthents				
VaA Vaiden	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
WcB Wilcox	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
WuC2:				
Wilcox	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Luverne	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.

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; it does not eliminate the need for onsite investigation]

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
AmA:						
Alamuchee	Moderate: seepage.	Severe: piping.	Deep to water	Flooding	Favorable	Favorable.
Mooreville	Moderate: seepage.	Severe: wetness.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
AnA: Annemaine	Moderate: seepage.	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
BgA: Bigbee	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake.	Too sandy	Droughty.
CaA: Cahaba	Severe: seepage.	Moderate: thin layer, piping.	Deep to water	Favorable	Favorable	Favorable.
DkE2:						
Demopolis	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Kipling	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Wetness, percs slowly, slope.	Wetness, percs slowly.	Percs slowly.
DsB:						
Demopolis	Severe: depth to rock.	Severe: thin layer.	Deep to water	Depth to rock, erodes easily.	Depth to rock, erodes easily.	Erodes easily, depth to rock.
Sumter	Moderate: seepage, depth to rock.	Severe: thin layer.	Deep to water		Depth to rock, erodes easily.	Erodes easily, depth to rock.
EsA: Escambia	Moderate: seepage.	Severe: wetness.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
GdE3:						
Gullied land.						
Demopolis	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
HoA: Houlka	Slight	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
KpA: Kipling	Slight	Severe: hard to pack.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.

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
KpB2: Kipling	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Wetness, percs slowly, slope.	Wetness, percs slowly.	Percs slowly.
KuC: Kipling	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Wetness, percs slowly, slope.	Wetness, percs slowly.	Percs slowly.
Urban land.						
LvB: Luverne	Moderate: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Favorable	Favorable.
LvE: Luverne	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Slope	Slope.
MaA: Mayhew	Slight	Severe: hard to pack, wetness.	Percs slowly	Wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
MnA: Minter	Slight	Severe: ponding.	Ponding, percs slowly, flooding.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
OkB: Okolona	Slight	Severe: hard to pack.	Deep to water	Slow intake, percs slowly.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
PIT. Pits						
SaA: Savannah	Moderate: seepage.	Severe: piping.	Favorable	Wetness	Erodes easily, wetness.	Erodes easily, rooting depth.
SaB: Savannah	Moderate: seepage, slope.	Severe: piping.	Slope	Slope, wetness.	Erodes easily, wetness.	Erodes easily, rooting depth.
SbB: Savannah	Moderate: seepage, slope.	Severe: piping.	Slope	Slope, wetness, droughty.	Wetness	Rooting depth.
Urban land.						
SmB: Smithdale	Severe: seepage.	Severe: piping.	Deep to water	Fast intake, slope.	Favorable	Favorable.
SrA: Sucarnoochee	Slight	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
SuB2, SuC2: Sumter	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Percs slowly, depth to rock.	Depth to rock, erodes easily.	Erodes easily, depth to rock.

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
SvB: Sumter	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Percs slowly, depth to rock, slope.	Large stones, depth to rock.	Large stones, erodes easily.
TrB: Troup	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake.	Too sandy	Droughty.
TSE:						
Troup	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.
Smithdale	Severe: seepage, slope.	Severe: piping.	Deep to water	Fast intake, slope.	Slope	Slope.
TuB. Typic Udorthents						
VaA: Vaiden	Slight	Severe: hard to pack, wetness.	Percs slowly	Wetness, slow intake, percs slowly.	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.
WuC2:						
Wilcox	Moderate: depth to rock, slope.	Moderate: hard to pack.	Percs slowly, slope.	Slope, wetness, slow intake.	Erodes easily, wetness.	Erodes easily, percs slowly.
Luverne	Moderate: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Favorable	Favorable.

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	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
AmA:											
Alamuchee	0-5	Sandy loam	ML, CL-ML, SM, SM-SC	A-2, A-4	0	98-100	95-100	70-90	30-70	<30	NP-7
	5-52	Sandy clay loam, clay loam, loam.	CL, CL-ML, SC, SM-SC	A-4, A-6	0	98-100	95-100	80-95	40-75	22-38	5-20
	52-65	Loam, sandy loam, sandy clay loam.	CL, CL-ML, SC, SM-SC	A-2, A-4, A-6	0	98-100	95-100	80-95	34-60	21-37	5-20
Mooreville	0-6	Loam	CL-ML, CL, SM-SC, SC	A-4	0	100	100	80-100	40-85	20-30	5-10
	6-42	Sandy clay loam, clay loam, loam.	CL, SC	A-6, A-7	0	100	100	80-95	45-80	28-50	15-30
	42-60	Loam, sandy clay loam, clay loam.	SC, CL	A-6, A-7	0	100	100	80-95	45-80	28-50	15-30
AnA Annemaine	0-6	Sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	70-95	40-75	<20	NP-5
	6-18	Clay, clay loam	CL	A-6, A-7	0	95-100	95-100	85-100	65-98	30-50	10-25
	18-30	Clay, silty clay	CH, MH, CL, ML	A-7, A-6	0	95-100	95-100	90-100	60-99	40-70	13-35
	30-42	Sandy clay loam, loam, clay loam.	SC, CL	A-4, A-6, A-2	0	95-100	95-100	80-100	35-80	20-35	NP-15
	42-60	Sandy clay loam, fine sandy loam, sandy loam.	SM, SM-SC, SC	A-2, A-4	0	95-100	95-100	60-90	30-50	<20	NP-10
BgA Bigbee	0-10	Loamy sand	SM	A-2-4	0	100	95-100	60-90	15-30	---	NP
	10-65	Sand, loamy sand	SP-SM, SM	A-2-4, A-3	0	85-100	85-100	50-75	5-20	---	NP
CaA Cahaba	0-7	Sandy loam	SM	A-4, A-2-4	0	95-100	95-100	65-90	30-45	---	NP
	7-38	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
	38-60	Sand, loamy sand, sandy loam.	SM, SP-SM	A-2-4	0	95-100	90-100	60-85	10-35	---	NP
DkE2:											
Demopolis	0-5	Channery loam	GC, GM-GC, GP-GC	A-2, A-1	0-5	20-30	15-25	10-20	8-15	18-38	4-14
	5-9	Channery loam, channery clay loam, extremely channery silty clay loam.	GC, GM-GC, GP-GC	A-2, A-1	0-5	20-30	15-25	10-20	8-15	18-38	4-14
	9-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
Kipling	0-2	Loam	CL, ML, CL-ML	A-4	0	100	100	90-100	70-95	<30	NP-10
	2-38	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	78-100	75-98	80-95	38-70	19-45
	38-60	Clay, silty clay	CH, CL	A-7	0	100	100	90-100	75-95	48-80	26-50
DsB:											
Demopolis	0-6	Loam	CL, CL-ML	A-4, A-6, A-7	0-5	85-100	75-90	65-85	50-80	24-44	6-20
	6-14	Channery loam, channery clay loam, extremely channery silty clay loam.	GC, GM-GC, GP-GC	A-2, A-1	0-5	20-30	15-25	10-20	8-15	18-38	4-14
	14-60	Weathered bedrock	---	---	---	---	---	---	---	---	---

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
DsB:											
Sumter----------	0-9	Silt loam--------	CL	A-7, A-6	0	90-100	85-100	80-98	75-90	35-50	16-25
	9-23	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
	23-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
EsA-------------- Escambia	0-8	Sandy loam-------	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	70-90	40-65	<25	NP-7
	8-23	Fine sandy loam, loam, silt loam.	SC, SM-SC, CL, CL-ML	A-4, A-6	0	95-100	95-100	70-95	40-75	16-30	4-15
	23-65	Fine sandy loam, loam, silt loam.	SC, CL, SM-SC, CL-ML	A-4, A-6	0	87-95	87-95	60-95	35-80	20-40	4-20
GdE3: Gullied land.											
Demopolis-------	0-2	Silty clay loam	CL, CL-ML	A-4, A-6, A-7	0-5	85-100	75-90	65-85	50-80	24-44	6-20
	2-6	Channery loam, channery clay loam, extremely channery silty clay loam.	GC, GM-GC, GP-GC	A-2, A-1	0-5	20-30	15-25	10-20	8-15	18-38	4-14
	6-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
HoA-------------- Houlka	0-5	Silty clay-------	CH, CL	A-7	0	100	100	90-100	75-95	45-70	32-45
	5-60	Clay, silty clay, clay loam.	CH, MH	A-7	0	100	100	95-100	80-97	52-75	27-50
KpA-------------- Kipling	0-5	Loam-------------	ML, CL-ML, CL	A-4	0	100	100	90-100	70-90	<30	NP-10
	5-42	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	95-100	85-95	38-70	22-45
	42-65	Clay, silty clay	CH, CL	A-7	0	100	100	90-100	75-95	48-80	26-50
KpB2------------- Kipling	0-7	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	85-95	30-45	15-25
	7-42	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	95-100	80-95	38-70	19-45
	42-65	Clay, silty clay	CH, CL	A-7	0	100	100	90-100	75-95	48-80	26-50
KuC:											
Kipling---------	0-6	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	85-95	30-45	15-25
	6-38	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	95-100	80-95	38-70	19-45
	38-60	Clay, silty clay	CH, CL	A-7	0	100	100	90-100	75-95	48-80	26-50
Urban land.											
LvB-------------- Luverne	0-8	Sandy loam-------	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	8-22	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
	22-33	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
	33-60	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

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
LvE-------------- Luverne	0-4	Sandy loam-------	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	4-14	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
	14-28	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
	28-60	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-------------- Mayhew	0-7	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	36-50	15-28
	7-44	Silty clay loam, silty clay, clay.	CH, CL	A-7	0	100	100	95-100	85-95	46-75	25-50
	44-60	Silty clay, clay, silty clay loam.	CH, CL	A-7	0	100	90-100	90-100	75-90	45-80	25-50
MnA-------------- Minter	0-12	Clay loam--------	CL, ML	A-4, A-6	0	100	100	80-100	65-95	26-40	8-18
	12-60	Clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	37-59	18-32
OkB-------------- Okolona	0-6	Silty clay-------	CL, CH	A-7	0	100	100	95-100	85-95	46-55	25-32
	6-60	Silty clay, clay	CH	A-7	0	95-100	95-100	95-100	90-95	60-90	36-65
PIT. Pits											
SaA-------------- Savannah	0-9	Loam------------	ML, CL-ML	A-4	0	100	90-100	80-100	60-90	<25	NP-7
	9-18	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	98-100	90-100	80-100	40-80	23-40	7-19
	18-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	0	94-100	90-100	60-100	30-80	23-43	7-19
SaB-------------- Savannah	0-4	Loam------------	ML, CL-ML	A-4	0	100	90-100	80-100	60-90	<25	NP-7
	4-18	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	98-100	90-100	80-100	40-80	23-40	7-19
	18-65	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	0	94-100	90-100	60-100	30-80	23-43	7-19
SbB:											
Savannah--------	0-2	Sandy loam-------	SM, ML	A-2-4, A-4	0	98-100	90-100	60-100	30-65	<25	NP-4
	2-16	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	98-100	90-100	80-100	40-80	23-40	7-19
	16-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	0	94-100	90-100	60-100	30-80	23-43	7-19
Urban land.											
SmB-------------- Smithdale	0-11	Loamy sand-------	SM	A-2	0	100	85-100	50-75	15-30	---	NP
	11-45	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-96	45-75	23-38	7-16
	45-65	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-95	36-70	<30	NP-10
SrA-------------- Sucarnoochee	0-22	Silty clay-------	CL, CH, MH	A-7	0	98-100	95-100	90-100	85-95	40-65	15-35
	22-32	Silty clay, clay	MH, CH, CL	A-7	0	98-100	95-100	90-100	85-98	45-70	20-40
	32-65	Silty clay, clay	CH, MH	A-7	0	98-100	95-100	90-100	85-98	50-80	25-45

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
SuB2------------- Sumter	0-5	Silty clay loam	CL	A-7, A-6	0	90-100	85-100	80-98	75-90	35-50	16-25
	5-15	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
	15-29	Channery silty clay loam, silty clay loam, silty clay.	CH, CL	A-6, A-7	0	80-100	65-98	60-95	55-95	35-55	16-32
	29-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
SuC2------------- Sumter	0-2	Silty clay loam	CL	A-7, A-6	0	90-100	85-100	80-98	75-90	35-50	16-25
	2-22	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
	22-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
SvB-------------- Sumter	0-8	Very cobbly silt loam	CL	A-6, A-7	10-35	85-100	75-90	65-80	50-70	30-44	12-20
	8-12	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
	12-32	Channery silty clay loam, silty clay loam, silty clay.	CH, CL	A-6, A-7	0	80-100	65-98	60-95	55-95	35-55	16-32
	32-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
TrB-------------- Troup	0-54	Loamy sand-------	SM, SP-SM	A-2, A-4	0	95-100	90-100	50-90	10-40	---	NP
	54-75	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2, A-6	0	95-100	90-100	60-90	24-55	19-40	4-20
TSE: Troup-----------	0-50	Loamy sand-------	SM, SP-SM	A-2, A-4	0	95-100	90-100	50-90	10-40	---	NP
	50-60	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2, A-6	0	95-100	90-100	60-90	24-55	19-40	4-20
Smithdale-------	0-16	Loamy sand-------	SM	A-2	0	100	85-100	50-75	15-30	---	NP
	16-42	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-96	45-75	23-38	7-16
	42-60	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-95	36-70	<30	NP-10
TuB. Typic Udorthents											
VaA-------------- Vaiden	0-6	Silty clay loam	MH, CH	A-7	0	100	100	95-100	70-90	50-60	20-30
	6-34	Clay-------------	CH, MH	A-7	0	100	100	95-100	85-95	50-90	30-50
	34-60	Clay-------------	CH	A-7	0	100	100	95-100	85-95	50-90	30-52
WcB-------------- Wilcox	0-4	Silty clay-------	CH	A-7	0	100	100	95-100	80-98	50-70	25-40
	4-14	Clay, silty clay, silty clay loam.	CH, MH	A-7	0	100	100	95-100	80-98	50-78	22-46
	14-41	Clay-------------	CH, MH	A-7	0	100	100	90-100	75-98	58-80	32-55
	41-65	Weathered bedrock	---	---	---	---	---	---	---	---	---

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
WuC2:											
Wilcox----------	0-3	Silty clay-------	CH	A-7	0	100	100	95-100	80-98	50-70	25-40
	3-11	Clay, silty clay, silty clay loam.	CH, MH	A-7	0	100	100	80-98	50-78	50-78	22-46
	11-42	Clay-------------	CH, MH	A-7	0	100	100	90-100	75-98	58-80	32-55
	42-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
Luverne---------	0-4	Sandy loam-------	ML, SM	A-4, A-2	0-5	87-100	84-100	80-100	30-60	<20	NP
	4-19	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
	19-46	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
	46-60	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

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		Organic matter
								K	T	
	In	Pct	G/cc	In/hr	In/in	pH				Pct
AmA:										
Alamuchee-------	0-5	10-25	1.25-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Low-----------	0.28	5	1-3
	5-52	20-35	1.20-1.50	0.6-2.0	0.12-0.20	4.5-5.5	Low-----------	0.28		
	52-65	14-30	1.20-1.50	0.6-2.0	0.12-0.20	4.5-5.5	Low-----------	0.28		
Mooreville------	0-6	5-27	1.40-1.50	0.6-2.0	0.14-0.20	4.5-5.5	Low-----------	0.37	5	.5-2
	6-42	18-35	1.40-1.50	0.6-2.0	0.14-0.18	4.5-5.5	Moderate-----	0.28		
	42-60	10-40	1.40-1.60	0.6-2.0	0.14-0.18	4.5-5.5	Moderate-----	0.28		
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	.5-1
	6-18	35-50	1.30-1.45	0.06-0.2	0.14-0.18	4.5-5.5	Moderate-----	0.37		
	18-30	40-60	1.25-1.40	0.06-0.2	0.14-0.18	4.5-5.5	Moderate-----	0.37		
	30-42	20-35	1.30-1.60	0.2-0.6	0.14-0.18	4.5-5.5	Low-----------	0.37		
	42-60	5-25	1.40-1.60	0.2-2.0	0.14-0.18	4.5-5.5	Low-----------	0.32		
BgA-------------- Bigbee	0-10	4-10	1.40-1.50	6.0-20	0.05-0.10	4.5-6.0	Low-----------	0.10	5	.5-2
	10-65	1-10	1.40-1.50	6.0-20	0.05-0.08	4.5-6.0	Low-----------	0.10		
CaA-------------- Cahaba	0-7	7-17	1.35-1.60	2.0-6.0	0.10-0.14	4.5-6.0	Low-----------	0.24	5	.5-2
	7-38	18-35	1.35-1.60	0.6-2.0	0.12-0.20	4.5-6.0	Low-----------	0.28		
	38-60	4-20	1.40-1.70	2.0-20	0.05-0.10	4.5-6.0	Low-----------	0.24		
DkE2:										
Demopolis-------	0-5	17-35	1.30-1.50	0.2-0.6	0.10-0.15	7.4-8.4	Low-----------	0.20	1	1-2
	5-9	20-35	1.30-1.50	0.2-0.6	0.10-0.15	7.4-8.4	Low-----------	0.32		
	9-60	---	---	---	---	---	-------------	----		
Kipling---------	0-2	28-32	1.30-1.45	0.06-0.2	0.20-0.22	3.6-6.0	Moderate-----	0.32	5	.5-2
	2-38	36-60	1.37-1.41	0.06-0.2	0.20-0.22	3.6-8.4	High---------	0.32		
	38-60	40-60	1.57-1.60	<0.06	0.18-0.20	5.1-8.4	Very high----	0.32		
DsB:										
Demopolis-------	0-6	17-35	1.30-1.50	0.2-0.6	0.15-0.18	7.4-8.4	Moderate-----	0.37	1	1-2
	6-14	20-35	1.30-1.50	0.2-0.6	0.10-0.15	7.4-8.4	Low-----------	0.32		
	14-60	---	---	---	---	---	-------------	----		
Sumter----------	0-9	32-50	1.30-1.60	0.06-2.0	0.12-0.17	6.6-8.4	High---------	0.37	2	2-5
	9-23	35-57	1.15-1.55	0.06-2.0	0.12-0.17	7.4-8.4	High---------	0.37		
	23-60	---	---	---	---	---	-------------	----		
EsA-------------- Escambia	0-8	5-14	1.35-1.55	2.0-6.0	0.11-0.15	3.6-5.5	Low-----------	0.24	5	.5-2
	8-23	8-18	1.35-1.55	0.6-2.0	0.15-0.20	3.6-5.5	Low-----------	0.24		
	23-65	8-10	1.45-1.65	0.06-0.6	0.10-0.18	3.6-5.5	Low-----------	0.28		
GdE3:										
Gullied land.										
Demopolis-------	0-2	17-35	1.30-1.50	0.2-0.6	0.15-0.18	7.4-8.4	Moderate-----	0.37	1	1-2
	2-6	20-35	1.30-1.50	0.2-0.6	0.10-0.15	7.4-8.4	Low-----------	0.32		
	6-60	---	---	---	---	---	-------------	----		
HoA-------------- Houlka	0-5	40-55	1.45-1.65	0.6-2.0	0.18-0.22	4.5-5.5	High---------	0.32	5	.5-1
	5-60	35-55	1.40-1.60	<0.06	0.18-0.20	4.5-5.5	High---------	0.32		

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
KpA----------------	0-5	16-29	1.30-1.48	0.06-0.2	0.20-0.22	3.6-6.0	Low-----------	0.32	5	.5-2
Kipling	5-42	36-60	1.37-1.41	0.06-0.2	0.20-0.22	3.6-8.4	High----------	0.32		
	42-65	40-60	1.57-1.60	<0.06	0.18-0.20	5.1-8.4	Very high-----	0.32		
KpB2---------------	0-7	28-32	1.30-1.45	0.06-0.2	0.20-0.22	3.6-6.0	Moderate------	0.32	5	.5-2
Kipling	7-42	36-60	1.37-1.41	0.06-0.2	0.20-0.22	3.6-8.4	High----------	0.32		
	42-65	40-60	1.57-1.60	<0.06	0.18-0.20	5.1-8.4	Very high-----	0.32		
KuC:										
Kipling------------	0-6	28-32	1.30-1.45	0.06-0.2	0.20-0.22	3.6-6.0	Moderate------	0.32	5	.5-2
	6-38	36-60	1.37-1.41	0.06-0.2	0.20-0.22	3.6-8.4	High----------	0.32		
	38-60	40-60	1.57-1.60	<0.06	0.18-0.20	5.1-8.4	Very high-----	0.32		
Urban land.										
LvB----------------	0-8	7-20	1.35-1.65	2.0-6.0	0.11-0.15	4.5-5.5	Low-----------	0.24	4	.5-1
Luverne	8-22	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate------	0.28		
	22-33	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low-----------	0.28		
	33-60	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low-----------	0.28		
LvE----------------	0-4	7-20	1.35-1.65	2.0-6.0	0.11-0.15	4.5-5.5	Low-----------	0.24	4	.5-1
Luverne	4-14	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate------	0.28		
	14-28	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low-----------	0.28		
	28-60	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low-----------	0.28		
MaA----------------	0-7	10-40	1.35-1.45	0.06-0.2	0.20-0.22	3.6-6.0	Moderate------	0.37	5	1-3
Mayhew	7-44	35-60	1.40-1.55	<0.06	0.18-0.20	3.6-6.0	High----------	0.32		
	44-60	35-75	1.40-1.55	<0.06	0.18-0.20	3.6-6.0	High----------	0.32		
MnA----------------	0-12	14-30	---	0.6-2.0	0.16-0.22	4.5-5.5	Low-----------	0.37	5	.5-1
Minter	12-60	35-50	---	<0.06	0.14-0.20	4.5-5.5	Moderate------	0.32		
OkB----------------	0-6	27-50	1.30-1.50	<0.06	0.20-0.22	6.6-8.4	High----------	0.37	4	1-4
Okolona	6-60	40-55	1.30-1.50	<0.06	0.18-0.20	6.6-8.4	Very high-----	0.32		
PIT.										
Pits										
SaA----------------	0-9	3-16	1.45-1.65	0.6-2.0	0.16-0.20	3.6-5.5	Low-----------	0.37	3	.5-3
Savannah	9-18	18-32	1.55-1.75	0.6-2.0	0.13-0.20	3.6-5.5	Low-----------	0.28		
	18-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low-----------	0.24		
SaB----------------	0-4	3-16	1.45-1.65	0.6-2.0	0.16-0.20	3.6-5.5	Low-----------	0.37	3	.5-3
Savannah	4-18	18-32	1.55-1.75	0.6-2.0	0.13-0.20	3.6-5.5	Low-----------	0.28		
	18-65	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low-----------	0.24		
SbB:										
Savannah-----------	0-2	3-16	1.45-1.65	0.6-2.0	0.10-0.15	3.6-5.5	Low-----------	0.24	3	.5-3
	2-16	18-32	1.55-1.75	0.6-2.0	0.13-0.20	3.6-5.5	Low-----------	0.28		
	16-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low-----------	0.24		
Urban land.										
SmB----------------	0-11	2-8	1.40-1.50	2.0-6.0	0.05-0.10	4.5-5.5	Low-----------	0.17	5	.5-2
Smithdale	11-45	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low-----------	0.24		
	45-65	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low-----------	0.28		
SrA----------------	0-22	40-60	1.20-1.50	0.06-0.2	0.14-0.20	6.6-8.4	High----------	0.32	5	2-7
Sucarnoochee	22-32	40-60	1.00-1.30	<0.06	0.14-0.18	6.6-8.4	High----------	0.32		
	32-65	45-70	1.00-1.30	<0.06	0.12-0.18	6.6-8.4	High----------	0.32		

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
SuB2-------------	0-5	32-50	1.30-1.60	0.06-2.0	0.12-0.17	6.6-8.4	High---------	0.37	2	2-5
Sumter	5-15	35-57	1.15-1.55	0.06-2.0	0.12-0.17	7.4-8.4	High---------	0.37		
	15-29	35-57	1.15-1.50	0.06-2.0	0.11-0.16	7.4-8.4	Moderate-----	0.32		
	29-60	---	---	---	---	---	-------------	----		
SuC2-------------	0-2	32-50	1.30-1.60	0.06-2.0	0.12-0.17	6.6-8.4	High---------	0.37	2	2-5
Sumter	2-22	35-57	1.15-1.55	0.06-2.0	0.12-0.17	7.4-8.4	High---------	0.37		
	22-60	---	---	---	---	---	-------------	----		
SvB--------------	0-8	20-38	1.20-1.40	0.6-2.0	0.08-0.13	6.6-8.4	Low----------	0.24	2	2-7
Sumter	8-12	35-57	1.15-1.55	0.06-2.0	0.12-0.17	7.4-8.4	High---------	0.37		
	12-32	35-57	1.15-1.50	0.06-2.0	0.11-0.16	7.4-8.4	Moderate-----	0.32		
	32-60	---	---	---	---	---	-------------	----		
TrB--------------	0-54	2-12	1.30-1.70	6.0-20	0.08-0.12	4.5-6.0	Very low-----	0.10	5	<1
Troup	54-75	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20		
TSE:										
Troup-----------	0-50	2-12	1.30-1.70	6.0-20	0.08-0.12	4.5-6.0	Very low-----	0.10	5	<1
	50-60	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20		
Smithdale-------	0-16	2-8	1.40-1.50	2.0-6.0	0.05-0.10	4.5-5.5	Low----------	0.17	5	.5-2
	16-42	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	42-60	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
TuB.										
Typic Udorthents										
VaA--------------	0-6	25-55	1.20-1.50	0.06-0.2	0.10-0.15	4.5-6.5	High---------	0.32	5	.5-2
Vaiden	6-34	60-75	1.20-1.30	<0.06	0.10-0.15	4.5-6.0	Very high----	0.32		
	34-60	40-75	1.10-1.40	<0.06	0.10-0.15	4.5-7.8	Very high----	0.32		
WcB--------------	0-4	40-55	1.40-1.45	0.06-0.2	0.18-0.20	4.5-5.5	High---------	0.37	4	.5-2
Wilcox	4-14	40-60	1.40-1.50	<0.06	0.18-0.20	3.6-5.5	High---------	0.32		
	14-41	40-70	1.40-1.55	<0.06	0.15-0.18	3.6-5.5	High---------	0.28		
	41-65	---	---	---	---	---	-------------	----		
WuC2:										
Wilcox----------	0-3	40-55	1.40-1.45	0.06-0.2	0.18-0.20	4.5-5.5	High---------	0.37	4	.5-2
	3-11	40-60	1.40-1.50	<0.06	0.18-0.20	3.6-5.5	High---------	0.32		
	11-42	40-70	1.40-1.55	<0.06	0.15-0.18	3.6-5.5	High---------	0.28		
	42-60	---	---	---	---	---	-------------	----		
Luverne---------	0-4	7-20	1.35-1.65	2.0-6.0	0.11-0.15	4.5-5.5	Low----------	0.24	4	.5-1
	4-19	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	19-46	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.28		
	46-60	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.28		

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 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			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
AmA:											
Alamuchee	B	Frequent	Brief	Dec-Apr	3.0-5.0	Apparent	Dec-Apr	>60	---	Low	Moderate.
Mooreville	C	Frequent	Brief to long.	Jan-Mar	1.5-3.0	Apparent	Jan-Mar	>60	---	Moderate	High.
AnA Annemaine	C	Occasional	Very brief to brief.	Jan-Mar	1.5-2.5	Apparent	Jan-Mar	>60	---	High	High.
BgA Bigbee	A	Occasional	Brief	Jan-Mar	3.5-6.0	Apparent	Jan-Mar	>60	---	Low	Moderate.
CaA Cahaba	B	Occasional	Very brief	Nov-Feb	>6.0	---	---	>60	---	Moderate	Moderate.
DkE2:											
Demopolis	C	None	---	---	>6.0	---	---	4-20	Soft	Moderate	Low.
Kipling	D	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	High	High.
DsB:											
Demopolis	C	None	---	---	>6.0	---	---	4-20	Soft	Moderate	Low.
Sumter	C	None	---	---	>6.0	---	---	20-40	Soft	Moderate	Low.
EsA Escambia	C	None	---	---	1.5-2.5	Apparent	Dec-Mar	>60	---	Moderate	High.
GdE3: Gullied land.											
Demopolis	C	None	---	---	>6.0	---	---	4-20	Soft	Moderate	Low.
HoA Houlka	D	Occasional	Brief to long.	Jan-Mar	1.0-2.0	Apparent	Jan-Mar	>60	---	High	High.
KpA, KpB2 Kipling	D	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	High	High.
KuC:											
Kipling	D	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	High	High.
Urban land.											
LvB, LvE Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
MaA Mayhew	D	None	---	---	0-1.0	Apparent	Jan-Mar	>60	---	High	High.
MnA Minter	D	Frequent	Brief to long.	Dec-Apr	+3-1.0	Apparent	Nov-Jan	>60	---	High	High.
OkB Okolona	D	None	---	---	4.0-6.0	Apparent	Jan-Mar	>60	---	High	Moderate.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
PIT. Pits											
SaA, SaB----------- Savannah	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	High.
SbB:											
Savannah---------	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	High.
Urban land.											
SmB--------------- Smithdale	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
SrA--------------- Sucarnoochee	D	Frequent----	Brief to long.	Dec-Apr	0.5-1.5	Apparent	Nov-Feb	>60	---	High-----	Low.
SuB2, SuC2, SvB--- Sumter	C	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	Low.
TrB--------------- Troup	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
TSE:											
Troup------------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
Smithdale--------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
TuB. Typic Udorthents											
VaA--------------- Vaiden	D	None--------	---	---	1.0-2.0	Apparent	Nov-Mar	>60	---	High-----	High.
WcB--------------- Wilcox	D	None--------	---	---	1.5-3.0	Perched	Jan-Apr	40-60	Soft	High-----	High.
WuC2:											
Wilcox-----------	D	None--------	---	---	1.5-3.0	Perched	Jan-Apr	40-60	Soft	High-----	High.
Luverne----------	C	None--------	---	---	>6.0	---	---	>60	---	High-----	High.

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				
Alamuchee:					
S83AL-119-6	0-5	A	52.5	31.0	16.5
	5-13	Bw1	58.5	26.3	15.2
	13-34	Bw2	35.0	43.1	21.9
	34-52	Bw3	56.5	18.6	24.9
	52-65	C	39.0	41.4	19.6
Annemaine:					
S83AL-119-3	0-6	Ap	56.7	25.2	18.1
	6-18	Bt1	42.8	18.1	39.1
	18-30	Bt2	44.3	7.7	48.0
	30-42	BC	56.3	15.7	28.0
	42-60	2C	87.2	6.8	6.0
Escambia:					
S83AL-119-4	0-3	Ap	71.8	20.5	7.7
	3-8	Bt1	62.1	27.9	10.0
	8-23	Bt2	61.1	26.7	12.2
	23-50	Btv1	58.6	30.3	11.1
	50-65	Btv2	64.8	13.5	21.7
Houlka:					
S82AL-119-1	0-5	Ap	8.9	41.3	49.8
	5-12	Bg1	6.5	40.3	53.2
	12-32	Bg2	5.7	37.9	56.4
	32-42	Bg3	4.7	34.5	60.8
	42-60	Cg	4.2	33.4	62.4
Kipling:					
S82AL-119-3	0-5	Ap	43.3	35.8	20.9
	5-11	Bg1	27.8	36.2	36.0
	11-42	Bg2	19.8	34.0	46.2
	42-65	C	14.6	32.2	53.2
Luverne:					
S83AL-119-5	0-4	Ap	56.9	26.5	16.6
	4-14	Bt1	29.0	24.9	46.1
	14-19	Bt2	39.0	19.1	41.9
	19-28	BC	41.5	24.2	34.3
	28-35	C1	64.2	9.2	26.6
	35-60	C2	44.9	26.9	28.2
Mayhew:					
S84AL-119-2	0-7	Ap	17.4	42.8	39.8
	7-21	Btg1	11.3	38.4	50.3
	21-27	Btg2	10.5	41.7	47.8
	27-44	BCg	4.6	26.5	68.9
	44-60	Cg	4.6	31.0	64.4
Minter:					
S81AL-119-6	0-6	A1	26.9	45.1	28.0
	6-12	A2	29.2	45.2	25.6
	12-34	Btg1	16.3	39.7	44.0
	34-55	Btg2	20.0	43.4	36.6
	55-60	Btg3	11.6	52.6	35.8

See footnote 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				
Okolona:					
S82AL-119-4	0-6	Ap	12.3	47.5	40.2
	6-17	A	9.2	45.0	45.8
	17-28	Bw1	10.6	43.5	45.9
	28-36	Bw2	11.1	38.6	50.3
	36-60	Bw3	9.0	34.8	56.2
Savannah:					
S83AL-119-1	0-4	A	42.7	46.1	11.2
	4-18	Bt	33.1	43.1	23.8
	18-33	Bx1	38.4	36.0	25.6
	33-48	Bx2	37.1	32.3	30.6
	48-65	Bx3	36.5	31.2	32.3
Sucarnoochee:					
S81AL-119-4	0-9	Ap	11.6	41.5	46.9
	9-22	AB	12.8	47.0	40.2
	22-32	Bw1	9.6	30.1	60.3
	32-65	Bw2	7.7	22.9	69.4
Sumter:					
S81AL-119-2	0-6	Ap	33.6	53.4	13.0
	6-9	AB	29.0	50.8	20.2
	9-23	Bw	10.3	53.1	36.6
Wilcox:					
S84AL-119-3	0-4	A	10.2	49.4	40.4
	4-14	Bt1	5.7	43.8	50.5
	14-41	Bt2	4.1	33.4	62.5
	41-65	C	0.5	38.5	61.0

* See "Soil Series and Their Morphology" for pedon location.

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS

Soil name and sample number*	Depth	Horizon	Extractable bases			Extractable acidity	Base saturation	Reaction	Cation-exchange capacity
			Ca	Mg	K				
	In		Meq/100g				Pct	pH	
Alamuchee:									
S83AL-119-6	0-5	A	2.20	1.39	0.09	3.60	50.6	4.9	7.28
	5-13	Bw1	2.33	1.26	0.07	3.36	52.1	5.0	7.02
	13-34	Bw2	0.40	0.85	0.10	5.92	18.6	4.5	7.27
	34-52	Bw3	0.25	0.98	0.11	5.36	19.9	5.5	6.69
	52-65	C	0.15	1.12	0.12	7.04	16.5	4.5	8.48
Annemaine:									
S83AL-119-3	0-6	Ap	1.90	1.63	0.15	3.84	48.9	4.9	7.52
	6-18	Bt1	3.50	1.30	0.17	7.54	39.8	4.9	12.49
	18-30	Bt2	2.30	1.50	0.17	9.44	29.6	4.8	13.41
	30-42	BC	0.35	0.82	0.15	8.80	13.1	4.6	10.12
	42-60	2C	0.15	0.09	0.02	1.28	17.0	5.1	1.54
Demopolis:									
S82AL-119-5	0-6	Ap	28.67	0.24	0.08	1.68	94.5	7.8	30.67
	6-14	C	26.53	0.14	0.07	1.12	96.0	8.0	27.83
Escambia:									
S83AL-119-4	0-3	Ap	0.35	0.06	0.03	2.96	13.1	4.2	3.41
	3-8	Bt1	0.35	0.08	0.02	1.92	18.9	5.0	2.37
	8-23	Bt2	0.35	0.04	0.02	2.40	14.6	4.7	2.81
	23-50	Btv1	0.25	0.05	0.02	2.40	11.9	4.8	2.72
	50-65	Btv2	0.28	0.11	0.03	6.40	6.1	4.7	6.81
Houlka:									
S82AL-119-1	0-5	Ap	19.30	10.74	0.45	2.08	93.6	6.0	32.57
	5-12	Bg1	8.43	1.05	0.19	8.48	53.3	5.5	18.15
	12-32	Bg2	8.48	0.83	0.18	8.80	51.9	4.7	18.29
	32-42	Bg3	9.20	1.00	0.21	8.08	56.3	4.5	18.49
	42-60	Cg	10.83	1.47	0.28	8.08	60.9	4.5	20.65
Kipling:									
S82AL-119-3	0-5	Ap	9.96	0.57	0.17	4.64	69.8	5.9	15.34
	5-11	Bt1	6.22	0.29	0.07	6.56	50.1	4.6	13.14
	11-42	Bt2	7.48	0.24	0.08	9.20	45.9	4.3	17.00
	42-65	C	12.01	0.24	0.08	3.28	79.0	---	15.61
Luverne:									
S83AL-119-5	0-4	Ap	3.40	1.66	0.12	2.88	64.3	5.8	8.06
	4-14	Bt1	3.93	3.67	0.30	4.80	61.2	5.0	12.70
	14-19	Bt2	2.63	3.54	0.29	6.80	48.7	4.7	13.26
	19-28	BC	1.95	3.45	0.29	8.00	41.6	4.6	13.69
	28-35	C1	1.15	3.01	0.20	6.80	39.1	4.6	11.16
	35-60	C2	0.70	3.33	0.24	10.72	28.5	4.6	14.99
Mayhew:									
S84AL-119-2	0-7	Ap	6.60	5.68	0.38	6.00	67.9	4.6	18.67
	7-21	Btg1	2.63	4.49	0.41	9.36	44.6	4.1	16.88
	21-27	Btg2	2.11	4.43	0.32	12.72	35.0	4.2	19.57
	27-44	BCg	4.85	11.86	0.59	4.48	79.4	3.8	21.78
	44-60	Cg	3.83	9.75	0.75	5.68	71.6	3.6	20.01
Minter:									
S81AL-119-6	0-6	A1	6.49	0.47	0.13	6.00	54.1	4.2	13.08
	6-12	A2	4.90	0.08	0.06	6.32	44.4	4.6	11.36
	12-34	Btg1	8.10	0.08	0.10	5.10	61.9	4.6	13.38
	34-55	Btg2	8.17	0.39	0.08	5.68	60.4	4.3	14.33
	55-60	Btg3	8.48	0.43	0.13	3.92	69.8	4.4	12.97

See footnote at end of table.

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number*	Depth	Horizon	Extractable bases			Extractable acidity	Base saturation	Reaction	Cation-exchange capacity
			Ca	Mg	K				
	In		Meq/100g				Pct	pH	
Okolona:									
S82AL-119-4	0-6	Ap	26.16	0.31	0.11	2.88	90.2	6.7	29.46
	6-17	A	23.16	0.08	0.07	4.00	85.4	7.2	27.32
	17-28	Bw1	13.03	0.05	0.07	3.52	86.8	7.5	26.67
	28-36	Bw2	28.17	0.04	0.05	2.96	90.5	7.9	31.22
	36-60	Bw3	29.79	0.09	0.06	2.64	91.9	7.8	32.57
Savannah:									
S83AL-119-4	0-4	A	0.63	0.40	0.11	3.80	23.1	4.8	4.94
	4-18	Bt	0.30	0.93	0.06	4.57	22.0	5.1	5.86
	18-33	Bx1	0.35	1.12	0.07	4.44	25.7	5.1	5.98
	33-48	Bx2	0.28	0.56	0.04	5.04	14.9	5.0	5.92
	48-65	Bx3	0.28	0.62	0.04	7.27	11.5	4.9	8.21
Sucarnoochee:									
S81AL-119-4	0-9	Ap	38.80	0.22	0.07	3.04	92.8	7.9	42.13
	9-22	AB	41.00	0.10	0.05	2.96	93.3	8.1	44.11
	22-32	Bw1	30.70	0.04	0.09	3.68	89.3	7.7	34.51
	32-65	Bw2	29.90	0.08	0.13	4.40	87.3	7.1	34.50
Sumter:									
S81AL-119-2	0-6	Ap	36.94	0.42	0.08	2.00	94.9	7.7	39.44
	6-9	AB	32.09	0.08	0.04	1.36	95.9	8.0	33.57
	9-23	Bw	31.97	0.07	0.02	1.60	95.2	8.4	22.66
Wilcox:									
S84AL-119-3	0-4	A	4.80	4.25	0.46	4.64	67.2	4.6	14.15
	4-14	Bt1	2.45	5.05	0.38	10.32	43.3	4.1	18.20
	14-41	Bt2	2.23	8.35	0.50	24.96	30.7	3.8	36.03
	41-65	Cr	2.43	8.98	0.70	13.28	47.7	3.6	25.39

* See "Soil Series and Their Morphology" for pedon location.

TABLE 20.--ENGINEERING INDEX TEST DATA

[Dashes indicate data were not available. NP means nonplastic]

Soil name, report number, horizon, and depth (in inches)	Classification		Grain-size distribution				Liquid limit	Plasticity index	Moisture density	
	AASHTO	Unified	Percentage passing sieve-- No. 10	No. 40	No. 200	Percentage smaller than .005 mm			Maximum dry density	Optimum moisture
							Pct		Lb/ft^3	Pct
Annemaine sandy loam: 1/ 2/ (S83AL-119-3)										
Bt1 ---- 6-18	A-6(8)	CL	100	99	65	---	39	14	99.6	18.2
Bt2 ---- 18-30	A-6(7)	ML	100	100	61	---	40	13	100.6	16.9
BC ---- 30-42	A-2-4(0)	SM	100	100	35	---	---	NP	105.7	15.8
Houlka silty clay: 1/ 3/ (S82AL-119-1)										
Bg1 ---- 5-12	A-7-6(35)	CH	100	99	95	84	60	31	88.0	26.0
Bg2 ---- 12-32	A-7-6(32)	MH	100	100	96	86	60	27	90.0	27.0
Bg3 ---- 32-42	A-7-6(31)	CH	100	100	96	87	55	28	90.0	26.0
Kipling loam: 1/ 4/ (S82AL-119-3)										
Bt2 ---- 11-42	A-7-6(17)	CL	100	97	81	68	48	19	93.0	24.0
C ---- 42-65	A-7-6(27)	CH	100	98	84	71	56	29	92.0	24.0
Sucarnoochee silty clay: 1/ (S81AL-119-4)										
Ap ---- 0-9	A-7-5(29)	MH	100	99	92	75	57	27	104.0	20.0
Bw1 ---- 22-32	A-7-5(30)	MH	100	98	88	82	61	29	89.0	27.0
Bw2 ---- 32-65	A-7-5(48)	CH	100	99	95	86	75	42	101.0	20.0
Wilcox silty clay: 1/ (S84AL-119-3)										
Bt1 ---- 4-14	A-7-5(26)	MH	100	97	95	82	55	22	96.0	21.0
Bt2 ---- 14-41	A-7-5(36)	MH	100	98	96	87	58	32	95.0	21.0

1/ See "Soil Series and Their Morphology" for pedon location.

2/ The Annemaine soil is slightly outside the allowed range in characteristics in the AASHTO classification, number 200 sieve, Liquid limit, and Plasticity index.

3/ The Houlka soil is slightly outside the allowed range in characteristics in the Unified classification and Plasticity index.

4/ The Kipling soil is slightly outside the allowed range in characteristics in the Plasticity index and Percentage passing sieve no. 200.

TABLE 21.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Alamuchee	Fine-loamy, siliceous, thermic Fluventic Dystrochrepts
Annemaine	Clayey, mixed, thermic Aquic Hapludults
Bigbee	Thermic, coated Typic Quartzipsamments
Cahaba	Fine-loamy, siliceous, thermic Typic Hapludults
Demopolis	Loamy-skeletal, carbonatic, thermic, shallow Typic Udorthents
Escambia	Coarse-loamy, siliceous, thermic Plinthaquic Paleudults
Houlka	Fine, montmorillonitic, acid, thermic Vertic Haplaquepts
Kipling	Fine, montmorillonitic, thermic Vertic Hapludalfs
Luverne	Clayey, mixed, thermic Typic Hapludults
Mayhew	Fine, montmorillonitic, thermic Vertic Ochraqualfs
Minter	Fine, mixed, thermic Typic Ochraqualfs
Mooreville	Fine-loamy, siliceous, thermic Fluvaquentic Dystrochrepts
Okolona	Fine, montmorillonitic, thermic Typic Chromuderts
Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Smithdale	Fine-loamy, siliceous, thermic Typic Hapludults
Sucarnoochee	Fine, montmorillonitic, thermic Aquentic Chromuderts
Sumter	Fine-silty, carbonatic, thermic Rendollic Eutrochrepts
Troup	Loamy, siliceous, thermic Grossarenic Paleudults
Typic Udorthents	Loamy, thermic Typic Udorthents
Vaiden	Very-fine, montmorillonitic, thermic Vertic Hapludalfs
Wilcox	Fine, montmorillonitic, thermic Vertic Hapludalfs

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