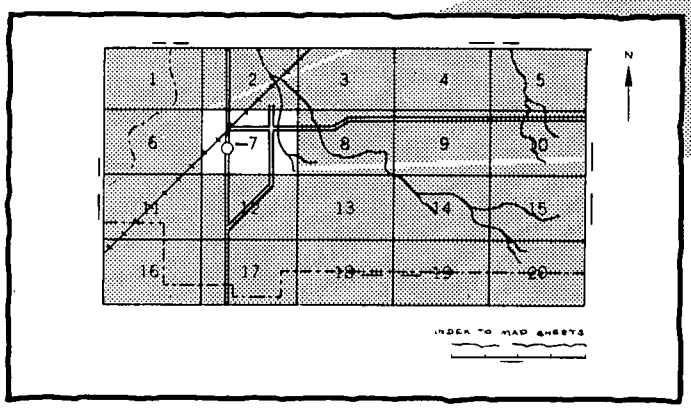
SOIL SURVEY OF
Marion County, Alabama

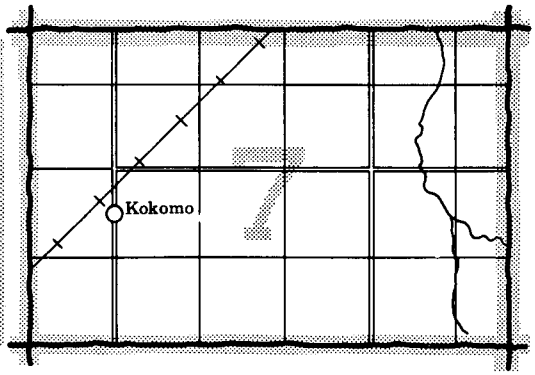
United States Department of Agriculture
Soil Conservation Service

in cooperation with
Alabama Agricultural Experiment Station and
Alabama Department of Agriculture and Industries

HOW TO USE

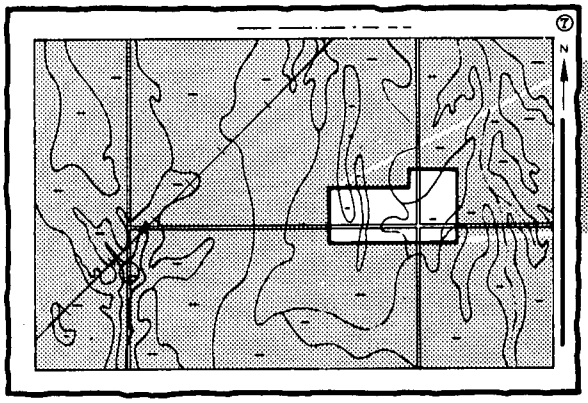
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

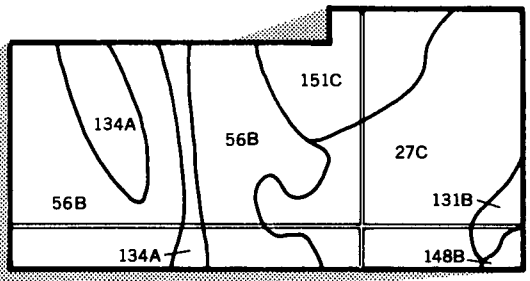




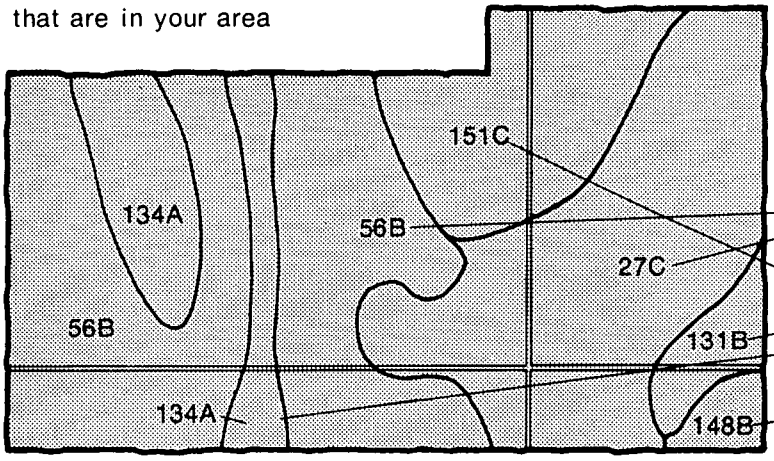
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.





4. List the map unit symbols that are in your area

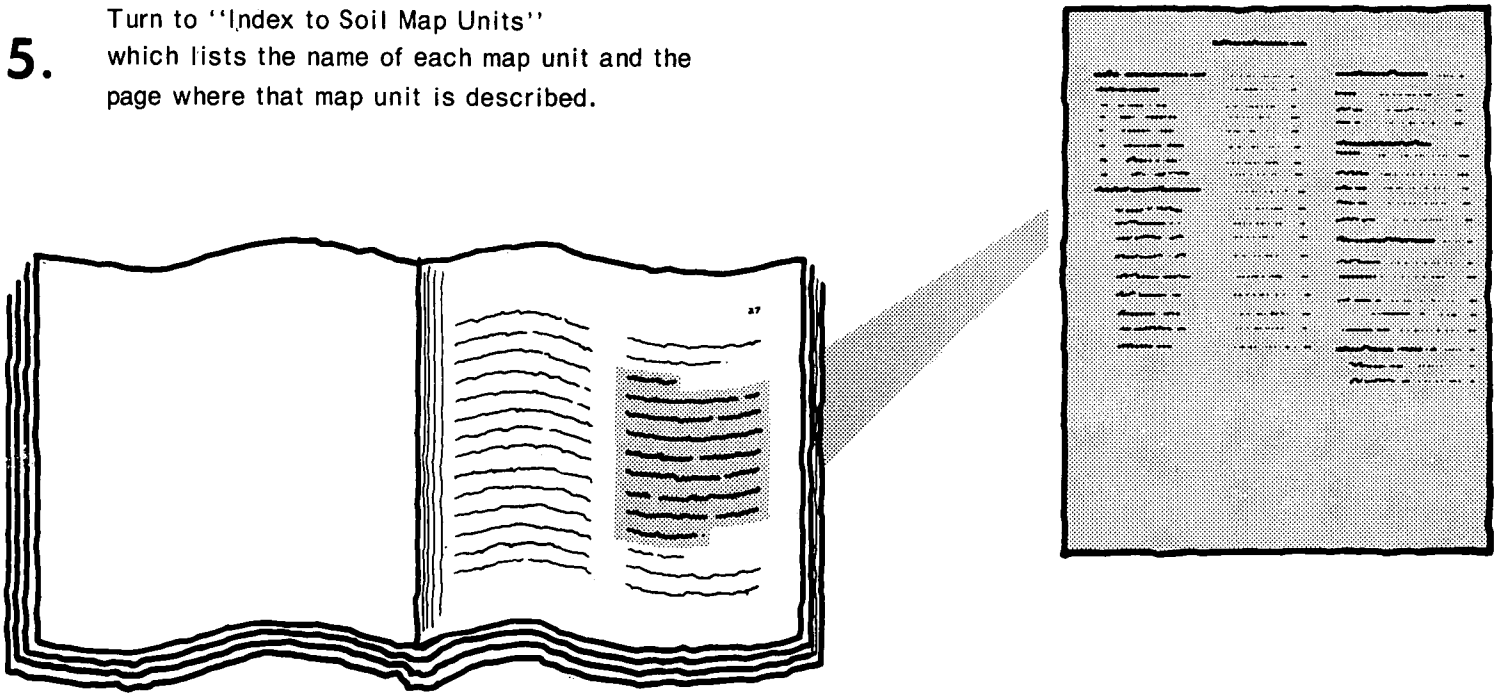


Symbols

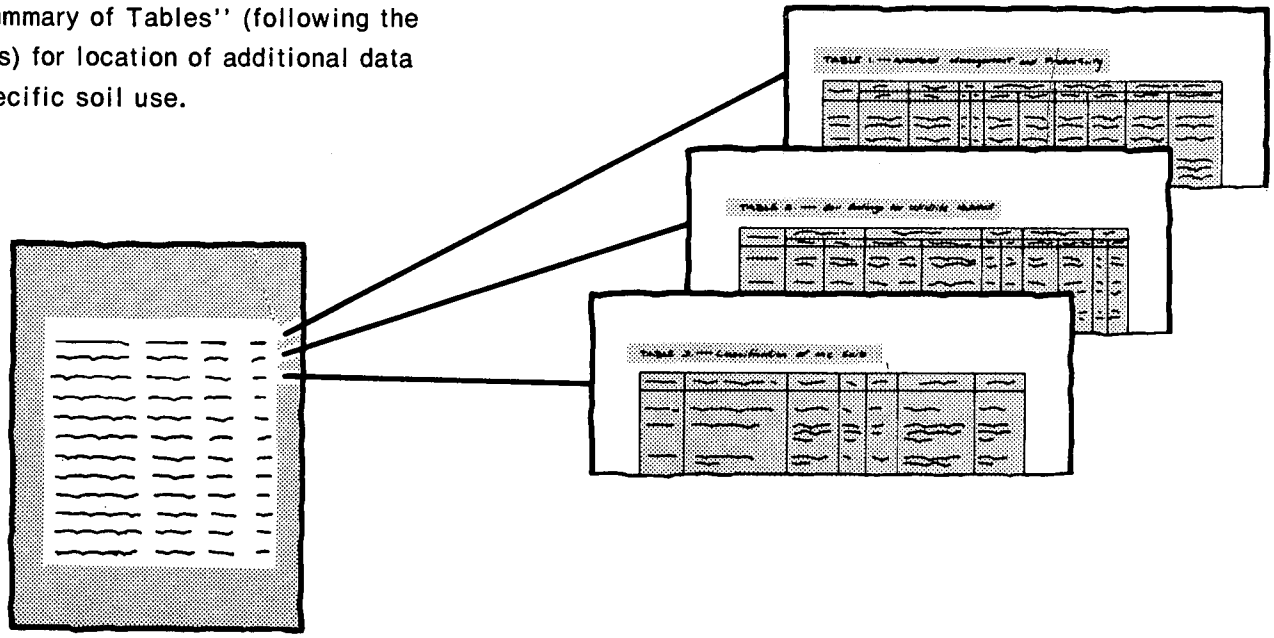
27C
56B
131B
134A
148B
151C

THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; for specialists in wildlife management, waste disposal, or pollution control.

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in the period 1969 to 1976. Soil names and descriptions were approved in 1976. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1976. This survey was made cooperatively by the Soil Conservation Service, Alabama Agricultural Experiment Station, and Alabama Department of Agriculture and Industries. It is part of the technical assistance furnished to the Marion County Soil and Water Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps can cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

Cover: Terracing and contour farming help to reduce runoff and control erosion in this area of Savannah loam, 2 to 6 percent slopes, used for soybeans.

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Issued March 1979

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Summary of Tables

Foreword

The Soil Survey of Marion County, Alabama, contains such information useful in any land-planning program. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil, improvements needed to overcome these limitations, and the impact that selected land uses will have on the environment.

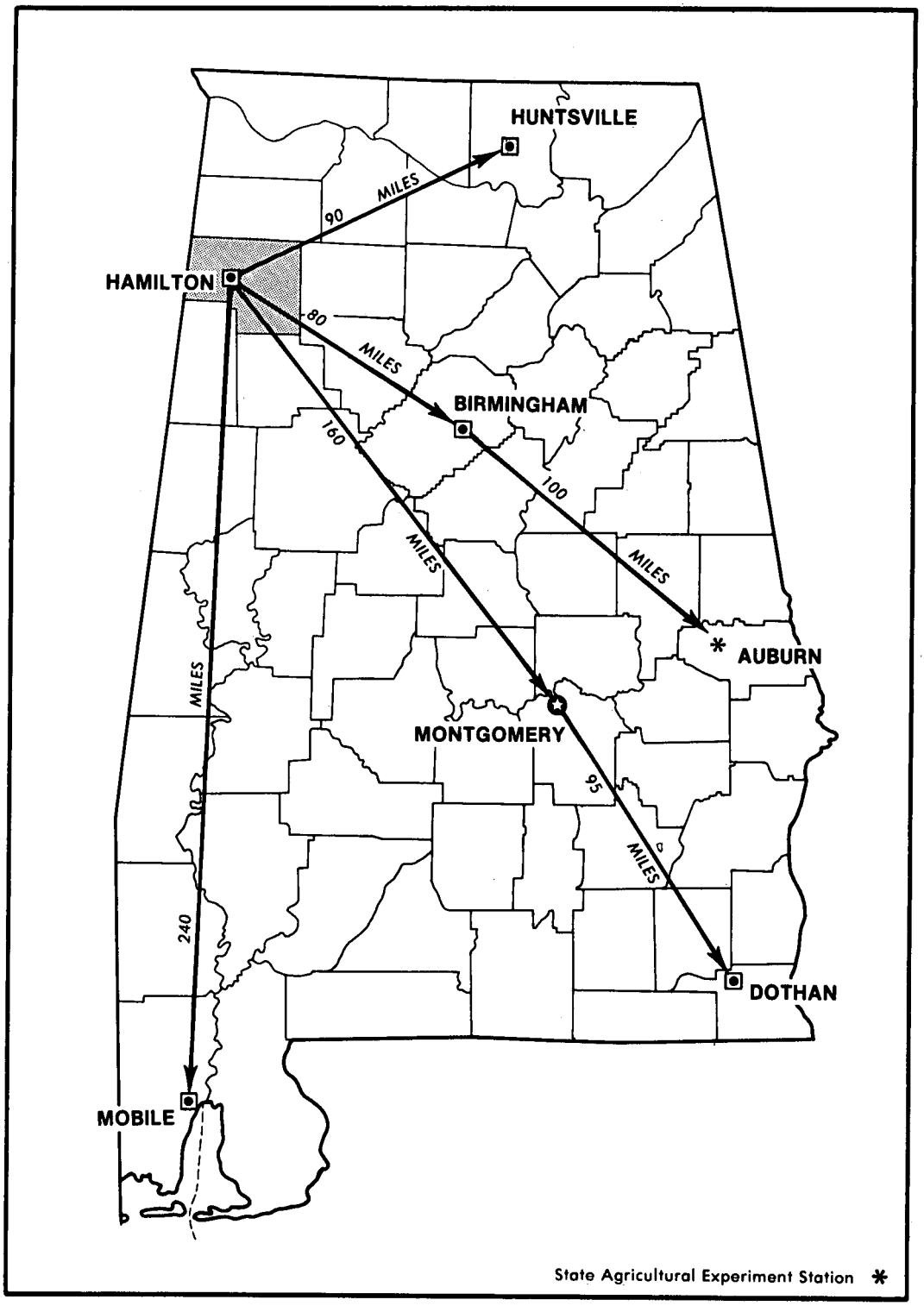
This soil survey has been prepared for many different users. Farmers, ranchers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use it to plan land use, select sites for construction, develop soil resources, or identify any special practices that may be needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the soil survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur even within short distances. Soils may be seasonally wet or subject to flooding. They may be shallow to bedrock. They may be too unstable to be used as a foundation for buildings or roads. Very clayey or wet soils are poorly suited to 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 kind of soil is shown on detailed soil maps. Each kind of soil in the survey area is described, and much information is given about each soil for specific uses. Additional information or assistance in using this publication can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

This soil survey can be useful in the conservation, development, and productive use of soil, water, and other resources.

W. B. Lingle
State Conservationist
Soil Conservation Service



Location of Marion County in Alabama.

SOIL SURVEY OF MARION COUNTY, ALABAMA

By James A. Cotton, Soil Conservation Service

Soils surveyed by James A. Cotton and Bobby C. Fox, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service,
in cooperation with Alabama Agricultural Experiment Station
and Alabama Department of Agriculture and Industries

MARION COUNTY is in the northwestern part of Alabama (see map on facing page). The county has a total area of 475,520 acres, or 743 square miles. It is bounded on the west by Itawamba and Monroe Counties, Mississippi; on the south by Lamar and Fayette Counties; on the east by Winston and Walker Counties; and on the north by Franklin County. Hamilton, the county seat, has a population of 4,175.

General nature of the county

Transportation; natural resources; history and development; physiography, relief, and drainage; and climate of the county are briefly described in this section.

Transportation

The county is served by 3 railroads. The Illinois Central crosses the northern part of the county at Hackleburg; the Southern railroad crosses the county at Bear Creek; and the St. Louis and San Francisco railroad crosses the southern part of the county at Guin and Winfield. Major highways that cross the county are U.S. Highway 43 from north to south and U.S. 78 and 278 from east to west. Many state and county roads provide easy access to most parts of the county.

Natural resources

Soil is the most important natural resource in the county. Livestock that graze the grassland, crops that are produced on the farms, and timber that is produced in the forests are marketable products that are derived from the soil.

In most of the county, water is adequate for domestic use and watering livestock. The Tuscaloosa geologic formation and the underlying Pottsville Formation are good aquifers that supply abundant water to both dug and drilled wells (7). There are many springs in the county whose water is supplied by the sand and gravel layers in the Tuscaloosa Formation or by subsoil storage in the adjoining hillsides in the Pottsville Formation. There are many farm ponds throughout the county.

The more important minerals and rocks are coal, gravel, oil, gas, kaolin, and sand. The coal measures are in the Pottsville Formation. Oil and gas deposits are throughout the county.

History and development

Marion County is named after South Carolina's famous "swamp fox" of Revolutionary days, General Francis Marion. The area once belonged to the Chickasaw Indians and was used for a hunting ground until it was deeded to the United States in 1816. The present area of 743 square miles was once much larger, including, until 1866, all of what is now Lamar County.

A famous military road was cut by Andrew Jackson in the course of his many maneuvers throughout Alabama. This road is known as the Old Military Road, or the Jackson Highway. It branched from the Natchez Trace at Columbia, Tennessee and ran through northwest Alabama to Columbus, Mississippi.

Alabama became a state in 1819, and the present area of Marion County was formed in 1866. In 1830 the population of the county was 4,058; in 1880 it increased to 9,361. By 1910 it was 17,495; by 1930 it was 25,967; in 1960 it was 21,837; and in 1970 it was 23,788.

The first settlers in Marion County were mainly subsistence farmers. There were no transportation facilities, except for the ox cart. The nearest shipping points were 40 to 60 miles away, and there was no inducement to produce more than was needed for home use.

In the 1930's the largest planted acreage in the county was in corn, and cotton was the major cash crop. The principal livestock in the county was workstock, milk cows, hogs, and poultry. However, the farmers were beginning to realize that there was a place for livestock production for commercial purposes, and they began increasing the pasture acreage.

In 1957 there were 32,900 acres of corn in the county, 9,600 acres of cotton, and 70 acres of soybeans. In 1965

there were 11,600 acres of corn, 11,750 acres of cotton, and 50 acres of soybeans. In 1975 there were 10,400 acres of corn, 1,600 acres of cotton, and 14,600 acres of soybeans in the county.

In 1957 there were 8,100 hogs on farms in Marion County; in 1965 there were 7,600; and in 1972 there were 16,800. In 1957 there were 13,200 cattle in the county; in 1965 there were 14,600 and in 1972 there were 19,800. In 1967 there were 49,973 acres of cropland, 40,506 acres of pastureland, and 353,400 acres of woodland in the county (*1*). There has been a slight decline in the acreage of woodland since 1967.

Physiography, relief, and drainage

The county lies within two physiographic provinces. The eastern third of the county lies within the Appalachian Plateau province, and the western two-thirds lies within the Coastal Plain province.

Originally the Coastal Plain deposits covered the entire county, but erosion has stripped most of the Tuscaloosa Formation from the eastern part of the county. Many of the broader ridgetops, however, are capped with Coastal Plain deposits while sandstone and shale of the Pottsville Formation are exposed on the side slopes. The Buttahatchee River and its tributaries have cut a deep gorge in a southwesterly direction across the county. A broad, nearly level to gently sloping high terrace formed along this river. Bear Creek has cut a deep gorge in a northwesterly direction in the northern part of the county. Bear Creek drains into the Tennessee River system, and the Buttahatchee River drains in the Tombigbee River system.

Within the Coastal Plain area, the ridgetops are fairly broad and gently sloping to sloping with steep side slopes in the stream valleys. In the eastern part, the ridgetops are narrow and sloping to moderately steep with steep to very steep side slopes into the stream valleys. In many places the sandstone layers form nearly vertical cliffs along the stream courses. Elevation of the land ranges from 400 feet in the southern part of the county to nearly 1,000 feet in the northern part.

Climate

Marion County has long, hot summers because moist tropical air from the Gulf of Mexico covers the area. Winters are cool and fairly brief. Cold waves are rare, and they moderate in 1 or 2 days. Precipitation is fairly heavy throughout the year and peaks slightly in winter. Prolonged droughts are rare. Summer precipitation occurs mainly as thundershowers in the afternoon and is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area, as recorded at Hamilton, Alabama, for the period 1962 to 1974. 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 40 degrees F, and the average daily minimum temperature is 27 degrees. The lowest temperature on record, which occurred at Hamilton on January 30, 1966, is -19 degrees. In summer the average temperature is 76 degrees, and the average daily maximum temperature is 89 degrees. The highest recorded temperature, which occurred on June 23, 1964, is 101 degrees.

Growing degree days, shown in table 1, 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.

Of the total annual precipitation, 29 inches, or 50 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 26 inches. The heaviest 1-day rainfall during the period of record was 9.06 inches at Hamilton on March 16, 1973. About 58 thunderstorms occur each year, and about 29 occur in summer.

Average seasonal snowfall is 4 inches. The greatest snow depth at any one time during the period of record was 14 inches. On the average, 2 days have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year.

The average relative humidity in midafternoon is less than 55 percent in spring and is about 60 percent during the rest of the year. Humidity is higher at night, and the average at dawn is about 85 percent. The percentage of possible sunshine is 63 in summer and 45 in winter. The prevailing wind is from the southwest. Average windspeed is highest, 10 miles per hour, in March.

Severe local storms, including tornadoes, occasionally occur in the county. These storms are brief and cause variable damage. In summer or autumn of some years, a tropical depression or a hurricane remnant moves inland and causes extremely heavy rainfall that lasts from 1 to 3 days.

How this survey was made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are, and how they can be used. The soil scientists went into the area knowing they likely would locate many soils they already knew something about and perhaps identify some they had never seen before. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; the kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material, which has been changed very little by leaching or by the action of plant roots.

The soil scientists recorded the characteristics of the profiles they studied, and they compared those profiles with others in counties nearby and in places more distant. Thus, through correlation, they classified and named the soils according to nationwide, uniform procedures.

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

The areas shown on a soil map are called soil map units. Some map units are made up of one kind of soil, others are made up of two or more kinds of soil, and a few have little or no soil material at all. Map units are discussed in the sections "General soil map for broad land use planning" and "Soil maps for detailed planning."

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. The soils are field tested, and interpretations of their behavior are modified as necessary during the course of the survey. New interpretations are added to meet local needs, mainly through field observations of different kinds of soil in different uses under different levels of management. Also, data are assembled from other sources, such as test results, records, field experience, and information available from state and local specialists. For example, data on crop yields under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it is readily available to different groups of users, among them farmers, managers of rangeland and woodland, engineers, planners, developers and builders, homebuyers, and those seeking recreation.

General soil map for broad land use planning

The general soil map at the back of this publication shows, in color, map units that have a distinct pattern of soils and of relief and drainage. Each map unit 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 provides a broad perspective of the soils and landscapes in the survey area. It provides a basis for comparing the potential of large areas for general kinds of land use. Areas that are, for the most part, suited to certain kinds of farming or to other land uses can be identified on the map. Likewise, areas of soils having properties that are distinctly unfavorable for certain land uses can be located.

Because of its small scale, the map does not show the kind of soil at a specific site. Thus, it is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The kinds of soil in any one map unit differ from place to place in slope, depth, stoniness, drainage, or other characteristics that affect their management.

The soils in the survey area vary widely in their potential for major land uses. Table 4 shows the extent of the map units shown on the general soil map and gives general ratings of the potential of each, in relation to the other map units, for major land uses. Soil properties that pose limitations to the use are indicated. The ratings of soil potential are based on the assumption that practices in common use in the survey area are being used to overcome soil limitations. These ratings reflect the ease of overcoming the soil limitations and the probability of soil problems persisting after such practices are used.

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

Descriptions of map units

1. Savannah

Deep, nearly level and gently sloping, moderately well drained soils that are loamy in the upper part of the subsoil and have a fragipan in the lower part; formed in unconsolidated beds of marine and fluvial sediment that consists of sand, silt, and clay

Areas of these nearly level and gently sloping soils are scattered throughout the county and are on broad Coastal Plain uplands and stream terraces (fig. 1).

This map unit makes up about 13 percent of the county. About 48 percent of the unit is Savannah soils, and the rest is soils of minor extent.

Savannah soils are moderately well drained. The surface layer is brown loam 8 inches thick. The upper part of the subsoil is yellowish brown loam to a depth of 20 inches. The lower part of the subsoil is compact and brittle and is yellowish brown loam with light brownish gray mottles to a depth of 24 inches, yellowish brown clay loam with light gray mottles to a depth of 32 inches, yellowish brown sandy clay loam with light gray and strong brown mottles to a depth of 52 inches, and yellowish brown fine sandy loam with light gray and strong brown mottles to a depth of 66 inches.

Soils of minor extent in this map unit are the well drained Cahaba, Hector, Ochlockonee, Nauvoo, Ruston, and Smithdale soils; the moderately well drained Iuka and Ora soils; the somewhat poorly drained Mantachie and Stough soils; and the poorly drained Leaf and Myatt soils. Rock outcrops are often near the shallow Hector soils.

This map unit is used mainly for cultivated crops, but in some areas it is used for pasture. Most of the acreage has been cleared, but there are some wooded areas mainly along the side slopes of the drainage courses. Moderate wetness, a seasonal high perched water table, and a slight to moderate hazard of erosion on slopes of more than 2 percent are the main limitations to the use of the soils for farming and for most other purposes.

This map unit has good potential for cultivated crops. Wetness, moderately slow permeability, and low strength are limitations for residential development and other urban uses. This unit has good potential as woodland and openland wildlife habitat and has very poor potential as wetland wildlife habitat.

2. Ora-Smithdale

Deep, gently sloping and sloping, moderately well drained and well drained soils that have a loamy subsoil; formed in unconsolidated beds of marine sediment that consists of sand, silt, and clay

Areas of these gently sloping and sloping soils are scattered throughout the county with the largest area at Hackleburg in the northern part of the county. These areas are on broad ridgetops and side slopes in the Coastal Plain uplands.

This map unit makes up about 17 percent of the county. About 40 percent of the unit is Ora soils, and about 35 percent is Smithdale soils. The rest is soils of minor extent.

Ora soils are moderately well drained. The surface layer is brown silt loam 8 inches thick. The upper part of the subsoil is yellowish red silt loam to a depth of 24 inches. The lower part of the subsoil is compact and brittle to a depth of 48 inches and is yellowish red loam with yellowish brown and light brownish gray mottles. The underlying material, to a depth of 72 inches, is red loam with yellowish brown and light brownish gray mottles.

Smithdale soils are well drained. The surface layer is dark brown fine sandy loam 5 inches thick. The subsoil is yellowish red clay loam to a depth of 20 inches, yellowish red sandy clay loam to a depth of 50 inches, yellowish red sandy loam to a depth of 66 inches, and yellowish red sandy loam to a depth of 72 inches and has pale brown pockets of loamy sand.

Soils of minor extent in this map unit are the well drained Bama, Hector, Luverne, Ochlockonee, Pikeville, Ruston, and Saffell soils; the moderately well drained Iuka and Savannah soils; the somewhat poorly drained Mantachie soils; and the excessively drained Flomaton soils. Rock outcrops are often near the shallow Hector soils.

This map unit is used mainly for cultivated crops and for pasture. Most of the acreage has been cleared; however, there are a few wooded areas mainly on the narrower ridgetops and side slopes. Moderate wetness in the Ora soils and the slight to moderate hazard of erosion are the main limitations to the use of the soils for farming and for most other purposes.

This map unit has good to fair potential for cultivated crops. Wetness and moderately slow permeability in the Ora soils are limitations for residential development and other urban uses. Bama and Ruston soils on 2 to 6 percent slopes are well suited to residential development and most urban uses. Smithdale soils on 6 to 10 percent slopes have a moderate limitation because of slope. This unit has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat.

3. Hector-Rock outcrop-Pikeville

Shallow and deep, steep, well drained soils that have a loamy subsoil; formed in material weathered from sandstone that is interbedded with shale in places and in unconsolidated, gravelly marine sediment

Areas of these steep soils are scattered throughout the county along the Buttahatchee River, Bear Creek, Northfork Creek, Williams Creek, and some of the other larger creeks and rivers. In many areas the soils are nearly vertical sandstone cliffs (fig. 2).

This map unit makes up about 6 percent of the county. About 40 percent of the unit is Hector soils, about 25 percent is Rock outcrop, and 20 percent is Pikeville soils. The rest is soils of minor extent.

Hector soils are mainly on the middle and lower parts of slopes. The surface layer is dark grayish brown stony fine sandy loam 2 inches thick and overlies dark yellowish brown stony fine sandy loam 4 inches thick. The subsoil is yellowish brown gravelly loam. Sandstone bedrock is at a depth of 16 inches.

The areas of Rock outcrop are generally on the lower part of slopes. These areas consist of escarpments, large boulders, and outcrops. Dark gray to brown, loamy soil material 2 to 8 inches deep is between the outcrops.

Pikeville soils are generally on the upper part of slopes. The surface layer is dark grayish brown loam 4 inches thick and overlies brown loam 8 inches thick. The subsoil is yellowish red. It is loam to a depth of 30 inches, gravelly loam to a depth of 40 inches, and very gravelly sandy loam to a depth of 65 inches. Below this, to a depth of 90 inches, the subsoil is very gravelly fine sandy loam and has strata of yellowish red sandy clay loam and strong brown sandy loam.

The soils of minor extent in this map unit are the excessively drained Flomaton soils; the well drained Luverne, Nauvoo, Ochlockonee, Saffell, Smithdale, and Townley soils; the moderately well drained Iuka soils; and the somewhat poorly drained Mantachie soils.

This map unit is used mainly for woodland, and almost all of the acreage has a forest cover of mixed hardwood

and pine. Steep slopes, and shallow depth and stoniness of the Hector soils are the main limitations to use of the soils for farming.

This map unit has poor potential for cultivated crops. Steep slopes and shallow depth of the Hector soils are limitations for residential development and other urban uses. These limitations are very difficult to overcome. This map unit has very poor potential as openland and wetland wildlife habitat and has fair to poor potential as woodland wildlife habitat.

4. Townley-Nauvoo-Hector

Shallow and deep, gently rolling to steep, well drained soils that have a loamy or clayey subsoil; formed in material weathered from shale, sandstone, or interbedded sandstone and shale

Areas of these soils are scattered throughout the eastern part of the county. The landscape consists of highly dissected uplands that have narrow, winding ridgetops; steep hillsides; and narrow bottoms along the streams.

This map unit makes up about 17 percent of the county. About 28 percent of the unit is Townley soils, 24 percent is Nauvoo soils, and 18 percent is Hector soils. The rest is soils of minor extent.

Townley soils are on ridgetops and side slopes throughout this map unit. The surface layer is dark grayish brown silt loam 2 inches thick and overlies yellowish brown silt loam 7 inches thick. The subsoil is yellowish red silty clay to a depth of 19 inches and yellowish red silty clay with red mottles to a depth of 26 inches. The underlying material is mottled light gray, strong brown, red, and yellowish red, partially weathered, rippable shale.

Nauvoo soils are on ridgetops and side slopes. The surface layer is dark grayish brown fine sandy loam about 7 inches thick. The subsoil is strong brown fine sandy loam to a depth of 11 inches, yellowish red sandy clay loam to a depth of 30 inches, and yellowish red gravelly fine sandy loam to a depth of 42 inches. Below this, this soil is soft, weathered sandstone.

Hector soils are on side slopes. The surface layer is dark grayish brown fine sandy loam, 3 inches thick and overlies brown stony fine sandy loam 5 inches thick. The subsoil is yellowish brown gravelly loam. Sandstone bedrock is at a depth of 18 inches.

The soils of minor extent in this map unit are the well drained Brilliant, Luverne, Ochlockonee, Ruston, and Saffell soils; the moderately well drained Iuka and Ora soils; the somewhat poorly drained Mantachie soils; and Rock outcrop.

This map unit is used mainly for woodland. Most of the acreage has a forest cover of mixed hardwood and pine. However, some of the less sloping areas are cleared and are used for pasture or row crops. Steep slopes, shallow depth of the Hector soils, small size of the less sloping areas, and a hazard of erosion are the main limitations to use of the soils for farming and for most nonfarm purposes.

This map unit has poor potential for cultivated crops. Slope, shallow depth of the Hector soils, and slow permeability of the Townley soils are limitations to the use of the soils. These limitations are so difficult to overcome that this map unit has poor potential for residential development and for other urban uses. It has good potential as woodland and openland wildlife habitat and has very poor potential as wetland wildlife habitat. Most of the strip mining for coal in Marion County is in areas of this map unit.

5. Smithdale-Luverne-Flomaton

Deep, gently rolling to hilly, well drained and excessively drained soils that have a loamy, clayey, and gravelly subsoil; formed in unconsolidated beds of marine sediment that consists of sand, silt, clay, and gravel

Areas of these soils are scattered throughout the western and central parts of the county. The area is a highly dissected upland with narrow, winding ridgetops, steep hillsides, and narrow bottoms along the streams.

This map unit makes up about 40 percent of the county. About 31 percent of the unit is Smithdale soils and soils that are similar to them, 20 percent is Luverne soils, and 15 percent is Flomaton soils. The rest is soils of minor extent.

Smithdale soils are throughout the unit mainly on hillsides. The surface layer is dark grayish brown fine sandy loam 3 inches thick and brown fine sandy loam 6 inches thick. The subsoil is yellowish red loam to a depth of 42 inches and yellowish red sandy loam to a depth of 52 inches. Yellowish red sandy loam that has pockets of pale brown loamy sand extends from a depth of 52 to 72 inches.

Luverne soils are throughout the map unit on ridgetops and hillsides. The surface layer is dark grayish brown fine sandy loam 3 inches thick and yellowish brown fine sandy loam 5 inches thick. The subsoil is yellowish red clay to a depth of 20 inches and yellowish red clay with light yellowish brown mottles to a depth of 40 inches. Below this it is mottled red, brown, and gray and is stratified sandy loam to silty clay material.

Flomaton soils are mainly on hillsides. The surface layer is dark grayish brown very gravelly loamy sand 5 inches thick and yellowish brown gravelly loamy sand 9 inches thick. Below this, is yellowish brown very gravelly sand to a depth of 20 inches and pale brown very gravelly sand to a depth of 46 inches. The next layer, to a depth of 72 inches, is yellowish red very gravelly loamy sand and has thin lamellae of yellowish red sandy loam.

The soils of minor extent in this map unit are the well drained Hector, Ochlockonee, Pikeville, Ruston, and Saffell soils; the moderately well drained Iuka, Ora, and Savannah soils; and the somewhat poorly drained Mantachie soils. Rock outcrops are often near the shallow Hector soils.

This map unit is used mainly for woodland and pasture, but in some small areas it is well suited to cultivated

crops. Most of the acreage has a forest cover of mixed hardwood and pine. The cleared areas are in improved pasture, and the less sloping areas are used for cultivated crops. The cultivated areas are small fields scattered throughout the unit. Slope is the main limitation to the use of the soils for farming and for most nonfarm purposes.

This map unit has fair potential for pasture and poor potential for cultivated crops. Slope is a limitation for residential development and other urban uses. Also, the slow permeability of the Luverne soils is a severe limitation for many residential uses. This unit has good potential for woodland wildlife habitat. It has fair potential as openland wildlife habitat and has very poor potential as wetland wildlife habitat.

6. Iuka-Mantachie-Stough

Deep, nearly level, moderately well drained and somewhat poorly drained soils that have a loamy subsoil or underlying material; formed mostly in alluvium

Areas of these soils are on first bottoms or low stream terraces. Most of these soils are subject to occasional or frequent flooding (fig. 3).

This map unit makes up about 7 percent of the county. About 30 percent of the unit is Iuka soils, 25 percent is Mantachie soils, and 15 percent is Stough soils. The rest is soils of minor extent.

Iuka soils are slightly higher in elevation than Mantachie and Stough soils and are subject to flooding. Iuka soils are moderately well drained. The surface layer is brown silt loam 11 inches thick. Below this, the soil is brown sandy loam with grayish brown mottles to a depth of 18 inches and has thin strata of brown fine sand. Below this, the soil is mottled brown, light gray, and dark brown silt loam to a depth of 34 inches; mottled light gray, yellowish brown, and pale brown silt loam to a depth of 38 inches; and is light gray sandy loam to a depth of 70 inches.

Mantachie soils are somewhat poorly drained and are subject to flooding. The surface layer is brown silt loam 4 inches thick. Below this, the soil is mottled light brownish gray and pale brown silt loam to a depth of 10 inches; mottled light gray, pale brown, and yellowish brown loam to a depth of 24 inches; and is light gray loam with yellowish brown mottles to a depth of 48 inches. The underlying material, to a depth of 60 inches, is light gray loam.

Stough soils are somewhat poorly drained and are not subject to flooding. The surface layer is dark grayish brown loam 5 inches thick and overlies grayish brown fine sandy loam 8 inches thick. The subsoil is yellowish brown fine sandy loam with light brownish gray mottles to a depth of 25 inches, is mottled yellowish brown and light gray fine sandy loam to a depth of 41 inches, and is light gray sandy clay loam with yellowish brown and yellowish red mottles to a depth of 70 inches.

The soils of minor extent in this map unit are the excessively drained Bigbee soils; the well drained Bassfield, Choccolocco, and Ochlockonee soils; the moderately well drained Kirkville soils; and the poorly drained Bibb, Leaf, and Myatt soils.

This map unit is used mainly for woodland and pasture, but in some areas it is used for cultivated crops. About 50 percent of the acreage has been cleared, and some areas have been drained. Many areas are swampy and undrained. Wetness and flooding are the main limitations to the use of the soils for farming and for most nonfarm purposes.

This map unit unit has good potential for pasture. If it is drained and protected from flooding, it has good potential for cultivated crops. Wetness and flooding are limitations to the use of the soils. These limitations are so difficult to overcome that this map unit has poor potential for residential development and other urban uses. This map unit has good potential as openland and woodland wildlife habitat and has fair to poor potential as wetland wildlife habitat.

Broad land use considerations

Deciding which land should be used for urban development is an important issue in the survey area. Each year a considerable amount of land is developed for urban uses in Hamilton, Winfield, Guin, and other towns in the county. The general soil map is most helpful in planning the general projected growth of urban areas, but it should not be used for the selection of sites for specific urban structures.

Areas where the soils are so unfavorable that urban development is almost prohibitive are extensive in the survey area. Large parts of the Iuka-Mantachie-Stough map unit are on flood plains in which flooding, the seasonal high water table, and wetness are severe limitations. Most of the Hector-Rock outcrop-Pikeville map unit has severe limitations for urban development because of steep slopes and shallow depth to bedrock. Most areas of the Smithdale-Luverne-Flomaton map unit have steep and unstable soils on which urban development is costly. Many areas of the Townley-Nauvoo-Hector map unit have steep soils with shallow depth to bedrock, which is a severe limitation for urban development.

The Ora-Smithdale map unit and the Savannah map unit have properties that are generally favorable for urban development, but the wetness and slow permeability of the Ora and Savannah soils limit the use for septic tank filter fields. The Savannah map unit and the less sloping areas of the Ora-Smithdale map unit are good farmland, and this potential should not be overlooked when broad land uses are considered.

The Iuka-Mantachie-Stough map unit includes some soils that have good potential for farming. Flooding and wetness are limitations for farming these soils. With proper drainage and shaping of the surface, wetness can be overcome for farming. Flooding occurs mainly late in winter and in spring when the soils are idle. In many areas of this map unit, farmers have provided sufficient drainage and flood protection for farm crops.

Vegetables and other specialty crops are suited to soils in the Ora-Smithdale map unit and the Savannah map unit. If flooding is not a serious hazard, some of the soils of the Iuka-Mantachie-Stough map unit are well suited to these crops. Ora and Savannah soils warm up later in spring than Smithdale soils, but they produce good yields.

Most soils in the survey area have good to fair potential for woodland. Soils in the Hector-Rock outcrop-Pikeville map unit produce fair wood crops, but timber is difficult to harvest because of steep slopes, cliffs, and rock outcrops.

All map units in the county have areas with good potential for park sites and for extensive recreation. Forest cover of mixed hardwood and pine enhances the beauty of many areas. Undrained areas of the Iuka-Mantachie-Stough unit are good nature study areas. All of the map units in the survey area provide wildlife habitat for many important species.

Soil maps for detailed planning

The map units shown on the detailed soil maps at the back of this publication represent the kinds of soil in the survey area. They are described in this section. The descriptions together with the soil maps can be useful in determining the potential of a soil and in managing it for food and fiber production; in planning land use and developing soil resources; and in enhancing, protecting, and preserving the environment. More information for each map unit, or soil, is given in the section "Use and management of the soils."

Preceding the name of each map unit is the symbol that identifies the soil on the detailed soil maps. Each soil description includes general facts about the soil and a brief description of the soil profile. In each description, the principal hazards and limitations are indicated, and the management concerns and practices needed are discussed.

The map units on the detailed soil maps represent an area on the landscape made up mostly of the soil or soils for which the unit is named. Most of the delineations shown on the detailed soil map are phases of soil series.

Soils that have a profile that is almost alike make up a *soil series*. Except for allowable differences in texture of the surface layer or of the underlying substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement in the profile. A soil series commonly is named for a town or geographic feature near the place where a soil of that series was first observed and mapped. The Brilliant series, for example, was named for the town of Brilliant in Marion County.

Soils of one series can differ in texture of the surface layer or in the underlying substratum and in slope, erosion, stoniness, salinity, wetness, or other characteristics that affect their use. On the basis of such differences, a soil series is divided into phases. The name of a *soil phase* commonly indicates a feature that affects use or management. For example, Savannah loam, 0 to 2 percent slopes, is one of several phases within the Savannah series.

Some map units are made up of two or more dominant kinds of soil. Such map units are called soil complexes, soil associations, and undifferentiated groups.

A *soil complex* consists of areas of two or more soils that are so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area includes some of each of the two or more dominant soils, and the pattern and proportion are somewhat similar in all areas. Iuka-Mantachie complex is an example.

A *soil association* is made up of soils that are geographically associated and are shown as one unit on the map because it is not practical to separate them. A soil association has considerable regularity in geographic pattern and in the kinds of soil that are a part of it. The extent of the soils can differ appreciably from one delineation to another; nevertheless, interpretations can be made for use and management of the soils. Townley-Hector association, hilly, 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 there is little value in separating them. The pattern and proportion of the soils are not uniform. An area shown on the map has at least one of the dominant (named) soils or may have all of them. Brilliant soils is an undifferentiated group in this survey area.

Most map units include small, scattered areas of soils other than those that appear in the name of the map unit. Some of these soils have properties that differ substantially from those of the dominant soil or soils and thus could significantly affect use and management of the map unit. These soils are described in the description of each map unit. Some of the more unusual or strongly contrasting soils that are included are identified by a special symbol on the soil map.

Most mapped areas include places that have little or no soil material and support little or no vegetation. Such places are called *miscellaneous areas*; they are delineated on the soil map and given descriptive names. Pits is an example. Some of these areas are too small to be delineated and are identified by a special symbol on the soil map.

The acreage and proportionate extent of each map unit are given in table 5, and additional information on properties, limitations, capabilities, and potentials for many soil uses is given for each kind of soil in other tables in this survey. (See "Summary of tables.") Many of the terms used in describing soils are defined in the Glossary.

Soil descriptions

2—Bama loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on ridgetops on the Coastal Plain uplands. Slopes are smooth and convex. The mapped areas are 5 to 100 acres in size.

Typically, the surface layer is brown loam about 9 inches thick. The subsoil is yellowish red loam to a depth of 31 inches, red clay loam to a depth of 52 inches, and red sandy clay loam mottled with pale brown to a depth of 88 inches.

Included with this soil in mapping are Ora, Luverne, and Saffell soils. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is moderate to high. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is deep and is easily penetrated by plant roots.

This soil has good potential for row crops, small grain, hay, and pasture; and high yields can be obtained. Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is slight to moderate if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine. There are no significant limitations to the use of this soil for woodland.

This soil has good potential for most urban uses. Seepage is a moderate limitation for sewage lagoons and pond reservoir areas, and low strength is a moderate limitation for local roads and streets.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIe; woodland group 3o.

3—Bassfield loamy sand. This deep, well drained, nearly level soil is on low stream terraces along the larger creeks and rivers in the county. It is subject to very brief, occasional flooding. Slopes are 0 to 2 percent and are smooth. The mapped areas are 5 to 50 acres in size and are irregular in shape.

Typically, the surface layer is brown loamy sand about 7 inches thick. The subsoil is reddish brown fine sandy loam to a depth of 10 inches, reddish brown loam to a depth of 18 inches, and reddish brown sandy loam to a depth of 40 inches. The underlying material, to a depth of 60 inches, is strong brown loamy sand.

Included with this soil in mapping are Bigbee and Kirkville soils. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderately rapid, and available water capacity is moderate to low. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is deep and is easily penetrated by plant roots.

This soil has fair potential for row crops and small grain. Its potential for these crops is limited because of droughtiness, susceptibility to flooding, and the small size and irregular shape of the areas. This soil has good potential for hay and pasture. Good tilth can be easily maintained by returning crop residue to the soil. Erosion is not a hazard except in areas that are subject to flood scour. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine and sweetgum. There are no significant limitations to the use of this soil for woodland.

This soil has poor potential for most urban uses because of susceptibility to flooding.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIs; woodland group 2o.

4—Bibb soils. This map unit consists of nearly level Bibb soils on flood plains of major streams. The soils are subject to frequent flooding for brief periods, mainly late in winter and in spring. The surface layer varies in texture. Each kind of surface layer is in areas large enough to be mapped separately, but because of present and expected use these areas were not mapped separately. Most mapped areas have each kind of texture in the surface layer but a few areas do not. Slopes are 0 to 2 percent and are smooth except where they are cut by old stream channels. The mapped areas are 5 to 100 acres in size.

Typically, the surface layer of Bibb soils is dark gray silt loam about 6 inches thick. Below this, to a depth of about 20 inches, the soil is dark gray loam that is mottled with gray and grayish brown and has thin strata of sandy loam. The underlying material, to a depth of 60 inches, is light gray fine sandy loam that is mottled with light brownish gray, light yellowish brown, and yellowish brown.

Included with these soils in mapping are Iuka soils in small areas that make up 5 to 10 percent of the individual mapped areas.

Bibb soils are moderate in natural fertility and in organic matter content. In unlimed areas they are strongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is moderate to high. These soils have poor tilth. They are subject to frequent flooding and have a seasonal high water table that is near the surface from December to May. The root zone is deep for plant roots that can tolerate wetness.

Unless the soils are protected and drained, this map unit has low potential for row crops and small grain. This map unit has fair potential for pasture. Its potential for farming is limited because of poor drainage, a seasonal high water table, and frequent flooding. Erosion is not a hazard except in areas that are subject to scouring by floodwater.

This map unit has good potential for eastern cottonwood, loblolly pine, sweetgum, and water oak. Equipment limitation, seedling mortality, and plant competition are severe.

This map unit has fair potential as openland and woodland wildlife habitat and has good potential as wetland wildlife habitat.

This map unit has poor potential for most urban uses because of flooding, wetness, and a seasonal high water table. These limitations are difficult to overcome. Capability subclass Vw; woodland group 2w.

5—Bigbee fine sand. This deep, excessively drained, nearly level soil is on low stream terraces. During wet periods, this soil has a seasonal high water table at a depth of 20 to 40 inches for about 2 weeks and at a depth of 40 to 70 inches for about 1 month. Most areas are subject to brief, occasional flooding. Slopes are 0 to 2 percent. The mapped areas are 5 to 30 acres in size and are irregular in shape.

Typically, the surface layer is brown fine sand 8 inches thick. The next layer is strong brown fine sand 32 inches thick. Below this is very pale brown sand to a depth of 80 inches.

Included with this soil in mapping are Cahaba, Stough, and Ochlockonee soils. These soils make up 5 to 15 percent of some individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is rapid, and available water capacity is low. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is deep.

This soil has poor potential for row crops and small grain because of droughtiness, the hazard of flooding, and the small size and irregular shape of the areas. Good tilth can be easily maintained by returning crop residue to the soil. Erosion is not a hazard except in areas that are subject to scouring by floodwater. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine. The equipment limitation is moderate because of the sandy texture of the soil, and seedling mortality is moderate because of low available water capacity.

This soil has poor potential for most urban uses because of flooding and the sandy texture of the soil. These limitations are difficult to overcome.

This soil has fair potential as openland wildlife habitat. It has poor potential as woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIIs; woodland group 2s.

6—Brilliant soils. This map unit consists of somewhat excessively drained, sloping to very steep Brilliant soils in mine spoil areas where coal strip mining operations have taken place. The surface layer varies in texture and each kind of surface layer is mostly in areas large enough to be mapped separately, but because of the expected use these areas were not mapped separately. Some areas have been smoothed, and some have not (figs. 4 and 5). Smoothing operations are presently underway in some areas. Slopes range from 5 to 60 percent and are simple or complex, depending on whether the spoil areas have been smoothed or on how they are stacked. Slopes are very steep and complex and many large rocks are on the surface in most of the unsmoothed areas. If the areas are smoothed, slopes are gentle and fairly uniform over large tracts and most of the large rocks have been covered. Many pits, 2 to 5 acres in size, are throughout the area and water stands in some of them. The mapped areas are 5 to 1,000 acres in size and are irregular in shape.

Typically, the surface layer is very dark gray very shaly sandy loam 7 inches thick. The next layer is dark gray very shaly loam and has 75 percent fragments of shale, siltstone, and sandstone. It extends to a depth of 72 inches.

Included with these soils in mapping are small areas that are strongly acid or extremely acid. Also included are small areas of undisturbed Hector, Nauvoo, and Townley soils. The included soils make up 10 to 25 percent of some individual mapped areas.

These soils are moderate in natural fertility and low in organic matter content. They are slightly acid to moderately alkaline throughout. Permeability is moderately rapid, and available water capacity is moderate to low. These soils have poor tilth but can be worked within a wide range of moisture content. The root zone is restricted by large rocks.

The unsmoothed areas have poor potential for row crops and small grain. Their potential for these crops is limited because of steep slopes, the restricted root zone, large rocks on the surface, moderate to low available water capacity, and poor tilth. Smoothed areas have fair to poor potential for hay and pasture. Their potential is limited because of the restricted root zone, moderate to low available water capacity, and poor tilth. The hazard of erosion is severe if these soils are tilled. Onsite investigation is needed to determine if areas are smoothed or unsmoothed.

These soils have fair potential for yellow-poplar, American sycamore, loblolly pine, Virginia pine, and sweetgum. Seedling mortality is severe. The hazard of erosion is severe in the unsmoothed areas. Equipment limitation is moderate in most smoothed areas and severe in the unsmoothed areas.

These soils have poor potential for most urban uses because of steep slopes, large rocks on the surface, and a possible hazard of subsidence.

These soils have poor potential as openland wildlife habitat. They have fair potential as woodland wildlife habitat and have very poor potential as wetland wildlife habitat. Capability subclass VIIs; woodland group 3x.

7—Cahaba fine sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on high stream terraces in the Coastal Plain. Slopes are smooth and convex. The mapped areas are 5 to 50 acres in size and are irregular in shape.

Typically, the surface layer is brown fine sandy loam 10 inches thick. The subsoil is yellowish red sandy clay loam to a depth of 56 inches. The underlying material is yel-

lowish red sandy loam in the upper part and yellowish red loamy sand to a depth of 84 inches.

Included with this soil in mapping are Stough soils. The included soils make up 5 to 10 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is moderate. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is deep and is easily penetrated by plant roots.

This soil has good potential for row crops, small grain, hay, and pasture. Its potential for these crops is limited because of the small size of some areas. Good tilth can be easily maintained by returning crop residue to the soil. Erosion is not a hazard. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine, yellow-poplar, and cherrybark oak. There are no significant limitations to the use of this soil for woodland.

This soil has good potential for most urban uses. Seepage is severe for sewage lagoons and sanitary landfills and is difficult to overcome.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability class I; woodland group 2o.

8—Cahaba fine sandy loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on high stream terraces in the Coastal Plain. Slopes are smooth and convex. The mapped areas are 5 to 20 acres in size and are irregular in shape.

Typically, the surface layer is brown fine sandy loam 6 inches thick. The subsoil is yellowish red loam to a depth of 15 inches, yellowish red sandy clay loam to a depth of 30 inches, and yellowish red loam to a depth of 38 inches. The underlying material is strong brown loamy sand to a depth of 58 inches and yellowish brown loamy sand mottled with light gray to a depth of 72 inches.

Included with this soil in mapping are Stough soils. The included soils make up 5 to 10 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is moderate. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is deep and is easily penetrated by plant roots.

This soil has good potential for row crops, small grain, hay, and pasture. Its potential for these crops is limited by the small size of the areas. Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is slight to moderate if the soil is tilled. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine, yellow-poplar, and cherrybark oak. There are no significant limitations to the use of this soil for woodland.

This soil has good potential for most urban uses. Seepage is a severe limitation for sewage lagoons and sanitary landfills and is difficult to overcome for these uses.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIe; woodland group 2o.

9—Choccolocco silt loam. This deep, well drained, nearly level soil is on low stream terraces along the larger creeks and rivers in the county. Slopes are 0 to 2 percent and are smooth. The mapped areas are 20 to 80 acres in size and are irregular in shape.

Typically, the surface layer is brown silt loam 10 inches thick. The upper part of the subsoil is strong brown silty clay loam to a depth of 30 inches. The lower part of the subsoil is strong brown loam with yellowish brown and grayish brown mottles to a depth of 50 inches. The underlying material, to a depth of 60 inches, is brown sandy loam.

Included with this soil in mapping are areas of a soil that is similar to the Choccolocco soil but has gray mottles in the upper 20 inches of the subsoil. Small areas of Leaf, Mantachie, and Myatt soils are in some map units. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is medium in natural fertility and low in organic matter content. In unlimed areas it is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is high. This soil has good tilth and can be worked within a fairly wide range of moisture content. The root zone is deep and is easily penetrated by plant roots.

This soil has good potential for row crops and small grain, and high yields can be obtained. Its potential for these crops is limited because of occasional flooding, but crops are seldom damaged. This soil has good potential for hay and pasture. Good tilth can be easily maintained by returning crop residue to the soil. Erosion is not a hazard except in areas that are subject to scouring by floodwater. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine and yellow-poplar. Plant competition is moderate. There are no other limitations to the use of this soil for woodland.

This soil has poor potential for most urban uses because of the hazard of flooding.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability class I; woodland group 3o.

10—Hector-Rock outcrop association, steep. This association consists of well drained, shallow soils and areas of Rock outcrop that are in a regular pattern on the land-

scape. The landscape is a steep, wooded hillside that is generally long and narrow and parallels the Buttahatchee River, New River, Bear Creek, and some of the other creeks and rivers in the county. The areas have very narrow bottoms with escarpments of sandstone on the lower and middle parts of slopes. Hector soils are mainly on the upper parts of slopes. Slopes range from 15 to 50 percent. The areas of Rock outcrop range from 5 to 400 acres. Sandstone outcrops and loose boulders and fragments of sandstone cover 15 to 50 percent of the surface. The mapped areas range from 50 to 1,000 acres in size.

The well drained Hector soils make up about 42 percent of each mapped area. Typically, the surface layer is dark grayish brown stony fine sandy loam 2 inches thick and dark yellowish brown stony fine sandy loam 4 inches thick: The subsoil is yellowish brown gravelly loam. Sandstone bedrock is at a depth of 16 inches.

Hector soils have moderately rapid permeability and very low available water capacity. They are strongly acid or very strongly acid.

The areas of Rock outcrop make up about 30 percent of each mapped area. These areas consists of escarpments, large boulders, and outcrops. Dark gray to brown, loamy soil material 2 to 8 inches deep is between the outcrops. Soils of minor extent in the association are Townley, Nauvoo, Ochlockonee, Iuka, and a soil that is similar to the Nauvoo soil except that the subsoil is yellowish brown. Nauvoo and Townley soils are throughout the association on the upper, middle, or lower parts of slopes. Iuka and Ochlockonee soils are in the narrow drainageways. These soils make up 28 percent of the association.

Most areas of this association are used for woodland. This association has poor potential for improved or native pasture because of steep slopes, shallow soils, rock outcrops and large boulders, very low available water capacity, and a restricted root zone. Management concerns include proper stocking rates, controlled grazing, and control of weeds and brush.

This association has poor potential for woodland. Loblolly and Virginia pine are the species that are best adapted to the soils in this association. The soils have a restricted rooting zone. The use of equipment is restricted because of steep slopes, escarpments, and rock outcrops. Also, seedling mortality and erosion are severe.

This association has poor potential for most urban uses because of steep slopes, shallow depth of the soils, escarpments, and rock outcrops. These limitations are very difficult to overcome for most urban uses.

This association has very poor potential as openland wildlife habitat. It has poor potential as woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass VIIs; woodland group 4x.

11—Iuka-Mantachie complex. This complex consists of small areas of deep, moderately well drained and somewhat poorly drained soils that are so intermingled that they could not be mapped separately at the scale used for mapping. The soils are on narrow first bottoms and at the head of and along small drainageways. The mapped areas are dissected by stream channels and sloughs, and the soils are subject to frequent, brief flooding. The mapped areas are 50 to 400 yards wide, 1/4 mile to several miles long, and range from 5 to 1,000 acres in size. Slopes are 0 to 2 percent.

Iuka soils make up about 44 percent of each mapped area. Typically, the surface layer is brown silt loam about 11 inches thick. Below this, to a depth of 18 inches, the soil is brown sandy loam with grayish brown mottles and has thin strata of fine sand. Below that it is mottled brown, light gray, and dark brown silt loam to a depth of 34 inches; is mottled light gray, yellowish brown, and pale brown silt loam to a depth of 38 inches; and is gray sandy loam to a depth of 70 inches.

Iuka soils are low in natural fertility and moderate in organic matter content. In unlimed areas they are strongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is moderate. Iuka soils are generally along the stream channel and at a slightly higher elevation than Mantachie soils.

Mantachie soils make up about 30 percent of each mapped area. Typically, the surface layer is brown silt loam 4 inches thick. Below this, the soil is mottled light brownish gray and pale brown silt loam to a depth of 10 inches; is mottled light gray, pale brown, and yellowish brown loam to a depth of 24 inches; and is light gray loam with yellowish brown mottles to a depth of 48 inches. The underlying material is light gray loam to a depth of 60 inches.

Mantachie soils are low in natural fertility and moderate in organic matter content. In unlimed areas they are stongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is moderate to high. Mantachie soils are generally at the outer edge of the bottoms and are at a lower elevation than Iuka soils.

Soils of minor extent make up about 26 percent of this complex. These are Bassfield, Bibb, Kirkville, Myatt, Ochlockonee, and Stough soils. Bassfield, Kirkville, and Ochlockonee soils are on the highest part of the bottoms, and Bibb, Myatt, and Stough soils are on the lowest part of the bottoms.

This complex has fair potential for row crops. Flooding is a hazard but generally occurs when the land is idle. This complex has good potential for hay and pasture, and high yields can be obtained under good management. Erosion is not a hazard except in areas subject to scouring by floodwater. Good tilth can be easily maintained by returning crop residue to the soil. If artificial drainage is installed, Mantachie soils can be tilled earlier in spring.

This complex has good potential for green ash, loblolly pine, eastern cottonwood, and yellow-poplar. The use of equipment is restricted because of wetness. Seedling mortality and plant competition are severe.

This complex has poor potential for most urban uses because of flooding, wetness, and a seasonal high water table. These limitations are difficult to overcome for most urban uses.

This complex has fair potential as openland wildlife habitat. It has good potential as woodland wildlife habitat and has fair to poor potential as wetland wildlife habitat. Capability subclass Vw; woodland group 1w.

12—Kirkville loam. This deep, moderately well drained, nearly level soil is on low stream terraces. It is subject to brief, occasional flooding. The mapped areas are 5 to 30 acres in size and are irregular in shape.

Typically, the surface layer is brown loam about 7 inches thick. The subsoil is strong brown fine sandy loam to a depth of 14 inches, yellowish brown loam that has few light brownish gray mottles to a depth of 24 inches, yellowish brown fine sandy loam that has light brownish gray mottles to a depth of 36 inches, and mottled yellowish brown, light gray, and strong brown fine sandy loam to a depth of 48 inches. The underlying material, to a depth of 60 inches, is yellowish brown sandy loam with grayish brown mottles.

Included with this soil in mapping are small areas of Mantachie, Bassfield, and Stough soils. The included soils make up 5 to 10 percent of some individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is high. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is deep and is easily penetrated by plant roots.

This soil has fair potential for row crops and small grain. Its potential for these crops is limited by its susceptibility to flooding and the small size and irregular shape of the areas. This soil has good potential for hay and pasture. Good tilth can be maintained by returning crop residue to the surface. Erosion is not a hazard except in areas that are subject to scouring by floodwater.

This soil has good potential for loblolly pine, cherrybark oak, sweetgum, and eastern cottonwood. Equipment limitation, seedling mortality, and plant competition are moderate for woodland.

This soil has poor potential for most urban uses because of the hazard of flooding and the seasonal high water table.

This soil has good potential as openland and woodland wildlife habitat and has poor potential as wetland wildlife habitat. Capability subclass IIw; woodland group 1w.

13—Leaf silt loam. This deep, poorly drained, nearly level soil is on low stream terraces and broad upland flats. It is subject to brief flooding or ponding, mainly late in winter and early in spring. Slopes are smooth and slightly concave. The mapped areas are 5 to 100 acres in size.

Typically, the surface layer is dark gray silt loam 6 inches thick. The subsoil is light gray silty clay with yellowish brown mottles to a depth of 26 inches, gray clay with red mottles to a depth of 61 inches, and light gray clay with yellowish brown mottles to a depth of 89 inches.

Included with this soil in mapping are small areas near Bear Creek that have bedrock at a depth of 3 to 4 feet. Some areas on low terraces have 6 to 10 inches of silty overwash material on the surface. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid to very strongly acid throughout. Permeability is very slow, and available water capacity is high. This soil has poor tilth and can be worked only within a narrow range of moisture content. The root zone is restricted by the high water table and the clayey texture of the subsoil.

This soil has poor potential for row crops and small grain. Its potential for these crops is limited because of poor drainage, very slow permeability, flooding or ponding, and the high water table. This soil has fair potential for hay and pasture, and if artificial drainage is installed, row crops can be grown. Soil tilth can be improved by returning crop residue to the soils. Erosion is not a hazard.

This soil has good potential for loblolly pine and sweetgum. Equipment limitation, seedling mortality, and plant competition are severe.

This soil has poor potential for most urban uses because of wetness, the hazard of flooding, the high water table, and very slow permeability. These limitations are difficult to overcome. Areas that are not flooded have slight limitations for sewage lagoons.

This soil has fair potential as openland and woodland wildlife habitat and has good potential as wetland wildlife habitat. Capability subclass IVw; woodland group 2w.

14—Luverne fine sandy loam, 6 to 15 percent slopes. This deep, well drained, sloping to moderately steep soil is on narrow ridgetops and side slopes on the Coastal Plain uplands. Slopes are complex and convex. The mapped areas are 5 to 100 acres in size and are irregular in shape.

Typically, the surface layer is dark grayish brown fine sandy loam about 3 inches thick and overlies brown fine sandy loam 6 inches thick. The subsoil is yellowish red clay loam to a depth of 11 inches, yellowish red clay to a depth of 29 inches, and yellowish red clay with brownish yellow, light gray, and red mottles to a depth of 48 inches. The underlying material, to a depth of 60 inches, is stratified light gray clayey material and red sandy material.

Included with this soil in mapping are Ora, Ruston, Saffell, and Savannah soils. Also included are areas of Luverne soils that are 15 to 25 percent gravel in the surface layer. Ironcrust rock fragments almost cover the surface layer in a few areas. The included soils make up 10 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderately slow, and available water capacity is moderate to high. This soil has poor tilth and can be worked only within a narrow range of moisture content. The root zone is deep, but the clayey texture of the subsoil slows root penetration.

This soil has poor potential for row crops. Its potential for these crops is limited because of the complex slope, irregular shape of the areas, and the moderate to severe hazard of erosion. This soil has fair potential for small grain, hay, and pasture, and moderate yields can be obtained. Tilth is improved by returning crop residue to the soil. The hazard of erosion is moderate to severe if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has fair potential for loblolly pine. Equipment limitation is moderate and is the only significant limitation for woodland.

This soil has fair to poor potential for most urban uses because of slow percolation, low strength, slope, and the clayey texture of the subsoil. The moderately slow permeability is a severe limitation for septic tank absorption fields, but this limitation can be reduced by increasing the size of the absorption field. The slope, clayey texture of the subsoil, and low strength are limitations that are fairly difficult to overcome.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IVe; woodland group 3c.

15—Luverne-Urban land complex, 6 to 15 percent slopes. This complex consists of sloping to moderately steep, well drained Luverne soil and areas of Urban land. The mapped areas range from 5 to 100 acres in size. The Luverne soil and areas of Urban land are so intricately mixed or so small in size that it is not practical to map them separately.

Luverne soil makes up about 60 percent of each mapped area. Typically, the surface layer is brown fine sandy loam about 6 inches thick. The subsoil is yellowish red clay to a depth of 24 inches, mottled red, light gray, and yellowish brown clay to a depth of 40 inches, and is light gray silty clay with red and brownish yellow mottles to a depth of 50 inches. The underlying material, to a depth of 60 inches, is mottled light gray, brownish yellow, and red stratified loamy and silty material. In some places this soil has been altered by cutting, filling, and grading.

The areas of Urban land make up about 30 percent of each mapped area. These areas are covered by streets, parking lots, buildings, and other structures that obscure or alter the soils so that identification is not feasible.

Included with this complex in mapping are areas of Ruston, Ora, Savannah, and Iuka soils. These areas make up about 10 percent of the complex. Ruston, Ora, and Savannah soils are in about the same position on the landscape as the Luverne soil. Iuka soils are in narrow depressional drainageways.

The Luverne soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderately slow, and available water capacity is moderate to high. The root zone is deep, but the clayey texture of the subsoil slows root penetration.

The Luverne soil, or the open part of the map unit, is used for parks, open space, building sites, lawns, and gardens. It has fair potential for lawns, vegetable and flower gardens, trees, shrubs, and recreational areas. This soil has poor potential for most engineering uses.

The Luverne soil is suited to grasses, flowers, vegetables, trees, and shrubs if it is properly limed and fertilized. In eroded or cut areas where the yellowish red clayey subsoil material is at the surface, good stands of grasses, vegetables, flowers, trees, and shrubs are difficult to establish and maintain. The hazard of soil erosion is moderate to severe if this soil is disturbed.

The Luverne soil has severe limitations for most urban uses because of low strength. It has moderate limitations for recreational uses because of slope and slow permeability. This soil has severe limitations for septic tank absorption fields because of its moderately slow permeability, but this limitation can be reduced by increasing the size of the absorption field. Not assigned to a capability subclass; Luverne part in woodland group 3c; Urban land part not assigned to a woodland group.

16—Luverne-Smithdale association, hilly. This association consists of well drained, loamy and clayey soils that are in a regular pattern on the landscape. The landscape is mainly a series of steep wooded hillsides, very narrow winding ridgetops, and narrow drainageways. Luverne soils are typically on the middle and upper parts of slopes, and Smithdale soils are mainly on the middle and lower parts of slopes; but both may be throughout the landscape. The mapped areas are irregular in shape and range from 40 to 1,000 acres in size. Each soil in a mapped area ranges from 20 to 300 acres. Both soils formed in unconsolidated beds of Coastal Plain sediment. Slopes range from 15 to 35 percent.

Luverne soils make up about 45 percent of each mapped area. Typically, the surface layer is dark grayish brown fine sandy loam 5 inches thick. The upper part of the subsoil is red clay to a depth of 15 inches and is yellowish red silty clay loam with light yellowish brown and light brownish gray mottles to a depth of 25 inches. The lower part of the subsoil is mottled light gray, red, and light yellowish brown clay loam to a depth of 36 inches and is light gray clay loam with red and strong brown mottles to a depth of 50 inches. The underlying material, to a depth of 72 inches, is stratified red, brown, and gray loamy, sandy, and clayey material.

Luverne soils are low in natural fertility and in organic matter content. They are strongly or very strongly acid. Permeability is moderately slow, and available water capacity is moderate to high.

Smithdale soils make up 38 percent of each mapped area. Typically, the surface layer is dark grayish brown fine sandy loam 3 inches thick and overlies brown fine sandy loam 9 inches thick. The subsoil is yellowish red sandy clay loam to a depth of 37 inches and is yellowish red sandy loam to a depth of 58 inches. The underlying

material, to a depth of 72 inches, is yellowish red sandy loam.

Smithdale soils are low in natural fertility and in organic matter content. They are strongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is moderate to high.

Soils of minor extent are Flomaton, Iuka, Mantachie, Ora, Pikeville, and Saffell. They make up 17 percent of the association.

Most areas of this association are used for woodland. A few areas are cleared and are used for pasture. This association has poor potential for improved pasture because of steep slopes and the severe hazard of erosion. Management concerns include proper stocking rates, controlled grazing, and control of weeds and brush.

This association has fair potential for woodland. Loblolly pine is the species best adapted to the soils in this association. The use of equipment is restricted because of steep slopes.

This association has poor potential for farming and for most urban uses because of steep slopes and the clayey texture subsoil, and moderately slow permeability of the Luverne soil. This association has fair potential as openland wildlife habitat. It has good potential as woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Luverne part in capability subclass VIIe and woodland group 3c; Smithdale part in capability subclass VIe and woodland group 3o.

17—Mantachie-Iuka association. This association consists of moderately well drained and somewhat poorly drained soils that are on broad flood plains along large streams. The soils are in a regular pattern on the landscape. The landscape is a nearly level first bottom that has low areas of poorly drained and somewhat poorly drained soils and higher ridges of moderately well drained and well drained soils. Most areas are dissected by old stream channels and sloughs. The soils formed in loamy alluvium. The mapped areas are 1/4 to 1 mile wide and several miles long, and are mainly more than 1,000 acres in size. Each soil in a mapped area ranges from 30 to several hundred acres. The areas are subject to brief, frequent flooding mainly from January to March.

The somewhat poorly drained Mantachie soils and soils that are similar to Mantachie soils make up 63 percent of each mapped area. Typically, the surface layer is dark grayish brown silt loam 5 inches thick. Below this, the soil is mottled light brownish gray, brown, and dark brown loam to a depth of 20 inches. Below that, it is light gray loam with yellowish brown mottles to a depth of 43 inches. The underlying material, to a depth of 60 inches, is light gray sandy loam with yellowish brown and strong brown mottles.

Mantachie soils are low in natural fertility and moderate in organic matter content. Permeability is moderate, and available water capacity is moderate to high. In unlimed areas these soils are strongly acid or very strongly acid throughout. These soils mainly are at the outer edge of the bottom and at a lower elevation than Iuka soils.

The moderately well drained Iuka soils and soils that are similar to Iuka soils make up 28 percent of the association. Typically, the surface layer is brown silt loam 9 inches thick. Below this, the soil is brown sandy loam with light brownish gray mottles to a depth of 17 inches and has thin strata of fine sand. Below that it is mottled brown, light gray, and yellowish brown silt loam to a depth of 37 inches and is gray sandy loam with yellowish brown mottles to a depth of 70 inches.

Iuka soils are low in natural fertility and moderate in organic matter content. In unlimed areas they are strongly acid to very strongly acid throughout. Permeability is moderate, and available water capacity is moderate. Iuka soils mainly are at a higher elevation than Mantachie soils.

Soils of minor extent are mostly Bassfield, Bibb, and Myatt soils. Bassfield soils are well drained and are on the highest part of the bottom, mainly along the stream courses. Bibb and Myatt soils are poorly drained and are on the lowest part of the bottom, mainly at the edge. These soils make up about 9 percent of the association.

This association has fair potential for row crops. Flooding and wetness are a moderate to severe hazard, but flooding generally occurs when the land is idle. This soil has good potential for hay and pasture, and high yields can be obtained with good management. If extensive flood control and drainage measures are established, this association would have high potential for row crops. Erosion is not a hazard except in areas that are subject to scouring by floodwater. Good tilth can be easily maintained by returning crop residue to the soil.

This association has good potential for woodland. Trees suitable for planting are green ash, eastern cottonwood, cherrybark oak, loblolly pine, sweetgum, and yellow-poplar. Equipment limitation, seedling mortality, and plant competition are severe for woodland.

This association has poor potential for most urban uses because of flooding, wetness, and a seasonal high water table. These limitations are difficult to overcome for most urban uses.

This association has fair potential as openland wildlife habitat. It has good potential as woodland wildlife habitat and has fair potential as wetland wildlife habitat. Capability subclass Vw; woodland group 1w.

18—Myatt silt loam. This deep, poorly drained, nearly level soil is on low stream terraces or broad upland flats of the Coastal Plain. It is subject to brief, frequent flooding or ponding from November to March. Slopes generally are smooth. The mapped areas are 5 to 50 acres in size, and are irregular in shape.

Typically, the surface layer is gray silt loam with yellowish brown mottles 6 inches thick. Below this, the soil is light gray silt loam with brownish yellow mottles 7 inches thick. The subsoil is light gray loam with yellowish brown mottles to a depth of 32 inches, mottled light gray, yellowish brown, and yellowish red loam to a depth of 49 inches, and light gray loam with brownish yellow mottles to a depth of 60 inches. The underlying material is light gray gravelly sandy loam.

Included with this soil in mapping are Ochlockonee and Kirkville soils. The included soils make up 5 to 10 percent of some individual mapped areas.

This soil is low in natural fertility and moderate in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderate to moderately slow, and available water capacity is high. This soil has fair tilth and can only be worked within a narrow range of moisture content. The root zone is restricted because of the seasonal high water table.

This soil has poor potential for row crops and small grain because of the hazard of flooding, ponding, and a seasonal high water table. It has fair potential for hay and pasture and especially for crops that are tolerant of wetness. Erosion is not a hazard except in areas that are subject to scouring by floodwater. The use of cover crops helps to control erosion.

This soil has good potential for loblolly pine, water oak, and sweetgum. Equipment limitation, seedling mortality, and plant competition are severe.

This soil has poor potential for most urban uses because of the hazard of flooding, ponding, and a seasonal high water table. These limitations are difficult to overcome.

This soil has fair potential as openland and woodland wildlife habitat and has good potential as wetland wildlife habitat. Capability subclass Vw; woodland group 2w.

19—Nauvoo fine sandy loam, 6 to 10 percent slopes. This deep, well drained, sloping soil is on narrow ridgetops and side slopes of the Southern Appalachian Plateau. Slopes are complex and convex. The mapped areas are 5 to 50 acres in size and are irregular in shape.

Typically, the surface layer is brown fine sandy loam 7 inches thick. The subsoil is yellowish red fine sandy loam to a depth of 11 inches, yellowish red sandy loam to a depth of 30 inches, and yellowish red fine sandy loam to a depth of 42 inches. Weathered sandstone bedrock is at a depth of 42 inches. The sandstone can be cut with handtools in most places.

Included with this soil in mapping are small areas of Hector and Townley soils. Rock outcrops are in this unit in the northeastern part of the county. The included soils and rock outcrops make up to 10 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is moderate to high. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is moderately deep to deep and is easily penetrated by plant roots.

This soil has fair potential for row crops and small grain, but high yields can be obtained. Its potential for these crops is limited because of slope, the small size of the areas, and the moderate hazard of erosion. This soil has good potential for hay and pasture. Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is moderate if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has fair potential for loblolly pine and Virginia pine. There are no significant limitations to the use of this soil for woodland.

This soil has fair potential for most urban uses. Depth to bedrock and slope are moderate limitations for septic tank absorption fields and excavations.

This soil has good potential as woodland and openland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIIe; woodland group 4o.

20—Nauvoo loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on ridgetops and benches of the Southern Appalachian Plateau. Slopes are smooth and convex. The mapped areas are 5 to 30 acres in size and are irregular in shape.

Typically, the surface layer is dark brown loam about 7 inches thick. The subsoil is yellowish red clay loam to a depth of 32 inches and strong brown fine sandy loam with pale brown mottles to a depth of 42 inches. The underlying material is weathered sandstone bedrock that can be cut with handtools in most places.

Included with this soil in mapping are Hector and Townley soils. Also included are areas where the depth to bedrock is less than 40 inches. The included soils make up 5 to 10 percent of some individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is moderate to high. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is moderately deep to deep and is easily penetrated by plant roots.

This soil has good potential for row crops, small grain, and hay and pasture; and high yields can be obtained. Its potential for these crops is limited, to some extent, by the small size and irregular shape of the areas. Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is slight to moderate if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has fair potential for loblolly pine and Virginia pine. There are no significant limitations to the use of this soil for woodland.

This soil has good to fair potential for urban uses because of the depth to bedrock.

This soil has good potential as woodland and openland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIe; woodland group 4o.

21—Ochlockonee fine sandy loam. This deep, well drained, nearly level soil is on first bottoms and is subject to brief, frequent flooding. Flooding is mainly from December to April. The surface topography is level to

slightly undulating because of old channels and drainageways. The areas generally are narrow and long and range from 50 yards to 1/4 mile wide and 1/2 mile to several miles long. The mapped areas are 5 to 200 acres in size.

Typically, the surface layer is brown fine sandy loam 8 inches thick. Below this, the soil is slightly compact brown loam with yellowish brown and dark brown mottles to a depth of 12 inches, stratified brown sandy loam and yellowish brown loamy sand to a depth of 20 inches, and brown loam to a depth of 30 inches that overlies brown sandy loam to a depth of 44 inches. The underlying material, to a depth of 60 inches, is dark yellowish brown loamy sand.

Included with this soil in mapping are small areas of Mantachie and Bigbee soils. A few small areas have 15 to 30 percent gravel throughout. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderately rapid, and available water capacity is moderate. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is deep and is easily penetrated by plant roots.

This soil has fair potential for row crops and hay and pasture. Its potential for these crops is limited to some extent by the small, irregular size of some areas and by flooding. Flooding generally does not occur during the cropping season. Good tilth can be easily maintained by returning crop residue to the soil. Erosion is not a hazard except in areas that are subject to scouring by floodwater. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine, sweetgum, and yellow-poplar. Plant competition is moderate.

This soil has poor potential for most urban uses because of flooding. Extensive flood control measures are needed to overcome this limitation.

This soil has fair potential as openland wildlife habitat. It has good potential as woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IVw; woodland group 2o.

22—Ora fine sandy loam, 6 to 10 percent slopes. This deep, moderately well drained, sloping soil is on narrow ridgetops and side slopes of the Coastal Plain uplands. Slopes are complex and convex. The mapped areas are 5 to 100 acres in size and are long and narrow in shape.

Typically, the surface layer is brown fine sandy loam 6 inches thick. The upper part of the subsoil is yellowish red clay loam to a depth of 26 inches. The compact and brittle fragipan is yellowish red loam with yellowish brown, red, and light brownish gray mottles to a depth of 50 inches. The next layer is red loam with yellowish brown and light brownish gray mottles.

Included with this soil in mapping are small areas of Bama, Luverne, Ruston, and Saffell soils. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. This soil has good tilth and can be worked within a wide range of moisture content. Roots easily penetrate the upper part of the solum but are restricted by the fragipan.

This soil has fair potential for row crops, and high yields can be obtained. Its potential for these crops is limited because of the small size and oblong shape of the areas and the moderate hazard of erosion. This soil has good potential for pasture and hay and for small grain. Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is moderate if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine. Plant competition is moderate.

This soil has fair potential for most urban uses. Slopes are a moderate limitation for many urban uses. Low strength is a moderate limitation for roads and dwellings, but it can be easily overcome by good design and careful installation procedures. The fragipan has moderately slow permeability, which is a severe limitation for septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field and by installing the field lines at a shallow depth.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIIe; woodland group 3o.

23—Ora silt loam, 2 to 6 percent slopes. This deep, moderately well drained, gently sloping soil is on broad ridgetops of the Coastal Plain uplands. Slopes are smooth and convex. The mapped areas are 5 to 200 acres in size.

Typically, the surface layer is brown silt loam 8 inches thick. The upper part of the subsoil is yellowish red silt loam to a depth of 24 inches. The fragipan is yellowish red loam with yellowish brown and light brownish gray mottles to a depth of 48 inches. It is compact in places and brittle. The next layer, to a depth of 72 inches, is red loam with yellowish brown and light brownish gray mottles.

Included with this soil in mapping are Bama, Luverne, Ruston, and Smithdale soils. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. This soil has good tilth and can be worked within a wide range of moisture content. Roots easily penetrate the upper part of the subsoil but are restricted by the fragipan.

This soil has good potential for row crops, small grain, and hay and pasture (fig. 6). In some areas its potential for these crops is limited because of the size of the area and the slope of the adjacent soils. Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is slight to moderate if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine. Plant competition is moderate.

This soil has good potential for most urban uses. Low strength is a moderate limitation for roads and dwellings but can be easily overcome by good design and careful installation procedures. The fragipan has moderately slow permeability, which is a severe limitation for septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field and by installing the field lines at a shallow depth.

This soil has good potential as openland and woodland wildlife habitat and has poor potential as wetland wildlife habitat. Capability subclass IIe; woodland group 3o.

24—Pikeville-Flomaton association, hilly. This association consists of excessively drained and well drained soils that are in a regular pattern on the landscape. The landscape is mainly a series of very narrow ridgetops, steep hillsides, and very narrow drainageways. Pikeville soils are mainly on the middle and lower parts of slopes, and Flomaton soils are mainly on the lower and upper parts of slopes. Both of these soils formed in unconsolidated beds of gravel, sand, silt, or clay of the Coastal Plain. The mapped areas are mostly long and narrow, are irregular in shape, and range from 40 to 1,000 acres in size. The component soils in a mapped area range from 5 to 100 acres in size and are mainly in long, narrow strips that follow the contour of the slope. Slopes range from 15 to 35 percent.

The well drained Pikeville soils and soils that are similar to Pikeville soils make up about 60 percent of this association. Typically, the surface layer of Pikeville soils is dark grayish brown loam 4 inches thick and overlies brown loam 8 inches thick. The subsoil is yellowish red. It is loam to a depth of 30 inches, gravelly loam to a depth of 40 inches, and very gravelly sandy clay loam to a depth of 65 inches. To a depth of 90 inches, the subsoil is very gravelly fine sandy loam and has strata of yellowish red sandy clay loam and strong brown sandy loam. The soils that are similar to Pikeville soils include soils that have more than 35 percent gravel in the upper part of the subsoil and soils that do not have gravel in the lower part of the subsoil.

Permeability of Pikeville soils is moderate, and available water capacity is moderate. These soils are strongly acid or very strongly acid throughout.

The excessively drained Flomaton soils make up about 28 percent of this association. Typically, the surface layer is dark grayish brown very gravelly loamy sand 5 inches thick. Below this, the soil is light yellowish brown very gravelly loamy sand to a depth of 16 inches, pale brown very gravelly sand to a depth of 32 inches, and light yellowish brown very gravelly sand to a depth of 50 inches. Below this, to a depth of 72 inches, the soil is yellowish red very gravelly loamy sand and has lamellae of yellowish red gravelly sandy loam.

Permeability of Flomaton soils is rapid, and available water capacity is very low. These soils are strongly acid or very strongly acid throughout.

Soils of minor extent make up 12 percent of this association. These are mostly Ora, Luverne, and Iuka soils. Ora soils are typically on very narrow ridgetops. Luverne soils are on hillsides, and Iuka soils are in narrow drainageways. Areas of these soils range from 5 to 20 acres in size.

Most areas of this association are used for woodland. A few areas are cleared and are used for pasture. This association has poor potential for improved pasture because of medium and very low available water capacity, steep slopes, and severe hazard of erosion. Management concerns include proper stocking rates, controlled grazing, and control of weeds and brush.

This association has fair potential for woodland. Loblolly pine is the species that is best adapted to the soils in this association. The use of equipment is restricted because of slope and the gravelly and very gravelly areas of Flomaton soils.

This association has poor potential for most urban uses because of steep slopes.

This association has fair to poor potential as openland wildlife habitat, fair potential as woodland wildlife habitat, and very poor potential as wetland wildlife habitat. Pikeville part in capability subclass VIe and woodland group 3o; Flomaton part in capability subclass VIIs and woodland group 4f.

25—Pits. This miscellaneous area exists as open excavations from which soil and the underlying material have been removed, exposing geological strata of gravel, sand, silt, or clay. Most of the material that was removed has been used as roadfill material for improving the roads in the county. However, some Pits are the result of sand being removed to make concrete, and others were a source of gravel for commercial use. A few Pits south of Hackleburg are the result of strip mining for kaolin.

Most Pits are on hillsides, leaving a semicircular high wall at the back of the Pit. The floor is mainly gravelly loamy sand or gravelly sand. The material in the high wall generally is stratified layers of sandy, gravelly, and loamy material. The layers range from a few inches to several feet thick. Water stands in a few Pits in the county.

The floor and high wall of most Pits are bare and the hazard of erosion is severe. Because of the low available water capacity and low natural fertility, permanent vegetation is difficult to establish.

Pits are generally near Ruston, Saffell, Flomaton, and Pikeville soils. The overburden soil material generally is

thicker in the areas of the Ruston soil than in the Pits near other soils.

Pits are variable in shape, size, and residual material. Onsite investigation is needed to determine the best conservation practice to reduce erosion, to stabilize each Pit, and to determine the suitability for urban and other uses. Not assigned to a capability subclass or a woodland group.

26—Ruston fine sandy loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on fairly broad ridgetops and on the Coastal Plain uplands. Slopes are smooth and convex. The mapped areas are 5 to 50 acres in size.

Typically, the surface layer is brown fine sandy loam 6 inches thick. The subsoil is yellowish red loam to a depth of 33 inches, yellowish red sandy loam to a depth of 43 inches with pale brown mottles, yellowish red sandy clay loam to a depth of 66 inches, and yellowish red fine sandy loam with very pale brown mottles to a depth of 72 inches.

Included with this soil in mapping are Ora, Savannah, and Saffell soils. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is high. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is deep and is easily penetrated by plant roots.

This soil has good potential for row crops, small grain, and hay and pasture; and high yields can be obtained. Its potential for these crops is limited, to some extent, by the small size and irregular shape of the areas and the slope of the adjacent soils. Good tilth can be easily maintained by returning crop residue to the soil (fig. 7). The hazard of erosion is slight to moderate if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine. There are no significant limitations to the use of this soil for woodland.

This soil has good potential for most urban uses. Seepage is a moderate limitation for sewage lagoons, and low strength is a moderate limitation for local roads and streets. These limitations are fairly easy to overcome with good design and careful installation procedures.

This soil has good potential as openland wildlife habitat. It has fair potential as woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIe; woodland group 3o.

27—Ruston-Urban land complex, 0 to 10 percent slopes. This complex consists of the gently sloping and sloping, well drained Ruston soil, soils that are similar to the Ruston soil, and areas of Urban land. The mapped areas of this complex range from 8 to 65 acres in size. The Ruston soil and areas of Urban land are so intricately mixed or so small in size that it is not practical to map them separately.

The Ruston soil makes up about 65 percent of each mapped area. Typically, the surface layer is brown fine sandy loam 8 inches thick. The subsoil is yellowish red sandy clay loam to a depth of 30 inches, strong brown sandy loam with pale brown mottles to a depth of 40 inches, and yellowish red sandy clay loam to a depth of 60 inches. In some places this soil has been altered by cutting, filling, and grading.

Urban land makes up about 25 percent of each mapped area. These areas are covered by streets, parking lots, buildings, and other structures that obscure or alter the soils so that identification is not feasible.

Included with this complex in mapping are Saffell, Savannah, Ora, and Iuka soils. Saffell, Savannah, and Ora soils are on about the same position on the landscape as the Ruston soil. Iuka soils are in narrow drainageways at a lower elevation than the Ruston soil. The included soils make up about 10 percent of the unit.

The Ruston soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is high. The root zone is deep and is easily penetrated by plant roots.

The Ruston soil, or open part of the map unit, is used for parks, open spaces, building sites, lawns, and gardens. It has good potential for lawns, vegetable and flower gardens, trees, and shrubs. It also has good potential for recreational areas and for most engineering uses.

The Ruston soil is well suited to grasses, flowers, vegetables, trees, and shrubs if it is properly limed and fertilized. The subsoil is easily penetrated by plant roots. The hazard of soil erosion is moderate if the soil is disturbed.

The Ruston soil has good potential for most urban and recreational uses. It has a moderate limitation for local roads and streets because of low strength and has a moderate limitation for sewage lagoons because of slope and seepage. Not assigned to capability subclass; Ruston part in woodland group 3o, Urban land part not assigned to a woodland group.

28—Saffell gravelly fine sandy loam, 6 to 15 percent slopes. This deep, well drained, sloping and moderately steep soil is on narrow ridgetops and hillsides in the Coastal Plain uplands. Slopes are complex and convex. The mapped areas are generally long and narrow in shape and are 5 to 40 acres in size.

Typically, the surface layer is brown gravelly fine sandy loam about 10 inches thick. The subsoil is reddish brown very gravelly fine sandy loam to a depth of 15 inches and yellowish red very gravelly fine sandy loam to a depth of 47 inches. The underlying material, to a depth of 60 inches, is strong brown very gravelly loamy sand.

Included with this soil in mapping are Ruston and Ora soils. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderate, and

available water capacity is low. This soil has poor tilth because of the gravel but can be worked within a wide range of moisture content. The root zone is deep but is somewhat restricted by the gravel.

This soil has poor potential for row crops. Its potential for these crops is limited by the hazard of erosion, the gravelly texture, and the small size and irregular shape of the areas. This soil has fair potential for hay and pasture. Tilth can be improved by returning crop residue to the soil. The hazard of erosion is moderate to severe if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has fair potential for loblolly pine and eastern redcedar. Seedling mortality is moderate. This is the only significant limitation to the use of this soil for woodland.

This soil has fair potential for most urban uses. Slope is a moderate and severe limitation for many uses. Small stones are a severe limitation for shallow excavations, for lawns, and for recreational uses. These limitations can be overcome, to some extent, with good design and careful installation practices.

This soil has fair potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IVe; woodland group 4f.

29—Savannah loam, 0 to 2 percent slopes. This deep, moderately well drained, nearly level soil is on broad ridgetops, benches, and terraces in the Coastal Plain. Slopes are smooth and convex. The mapped areas are 5 to 300 acres in size.

Typically, the surface layer is brown loam 8 inches thick. The subsoil is yellowish brown loam to a depth of 20 inches. The compact and brittle fragipan is yellowish brown loam with light brownish gray mottles to a depth of 24 inches, yellowish brown clay loam with light gray mottles to a depth of 32 inches, and yellowish brown sandy clay loam with light gray and strong brown mottles to a depth of 52 inches. Yellowish brown sandy loam with light gray and strong brown mottles is at a depth of 52 to 66 inches.

Included with this soil in mapping are small areas of Luverne and Ruston soils. The included soils make up 5 to 10 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid to extremely acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. This soil has good tilth but can be worked only within a narrow range of moisture content. This soil warms late in spring, and planting is sometimes delayed. When the soil dries, it sometimes forms a crust on the surface that may inhibit seedling emergence. The root zone is moderately deep and is easily penetrated by plant roots to the fragipan.

This soil has good potential for row crops, small grain, and hay and pasture; and high yields can be obtained. Its potential for these crops is limited to some extent by wetness and the moderately slow permeability in the fragipan. Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is only slight if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine. Windthrow hazard and plant competition are moderate.

This soil has fair potential for most urban uses. Low strength and wetness are moderate limitations, but they can be overcome by good design and careful installation procedures. The fragipan has moderately slow permeability, which is a severe limitation for septic tank absorption fields. This limitation may be reduced by increasing the size of the absorption field and by installing the field lines at a shallow depth.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIw; woodland group 3o.

30—Savannah loam, 2 to 6 percent slopes. This deep, moderately well drained, gently sloping soil is on broad ridgetops, benches, and terraces of the Coastal Plain. Slopes are fairly smooth and convex. The mapped areas are 5 to 300 acres in size.

Typically, the surface layer is brown loam about 6 inches thick. The upper part of the subsoil is yellowish brown loam to a depth of 22 inches. The compact and brittle fragipan is yellowish brown sandy loam with light brownish gray and yellowish brown mottles to a depth of about 60 inches.

Included with this soil in mapping are small areas of Luverne, Ruston, and Saffell soils. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. This soil has good tilth but can be worked only within a narrow range of moisture content. This soil warms late in spring, and planting is sometimes delayed. When the soil dries, it sometimes forms a crust on the surface that may inhibit seedling emergence. The root zone is moderately deep and is easily penetrated by plant roots to the fragipan.

This soil has good potential for row crops, small grain, and hay and pasture; and high yields can be obtained. Its potential for these crops is limited to some extent by the slight to moderate hazard of erosion, wetness, and moderately slow permeability in the fragipan. Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is slight to moderate if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine. Windthrow hazard and plant competition are moderate.

This soil has fair potential for most urban uses. Low strength and wetness are moderate limitations, but they can be overcome by good design and careful installation procedures. The fragipan has moderately slow permeability, which is a severe limitation for septic tank absorption fields. This limitation may be reduced by increasing the size of the absorption field and by installing the field lines at a shallow depth.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIe; woodland group 3o.

31—Savannah-Urban land complex, 0 to 6 percent slopes. This complex consists of the nearly level and gently sloping, moderately well drained Savannah soil and areas of Urban land. The mapped areas of this complex range from 10 to 100 acres in size. The Savannah soil and areas of Urban land are so intricately mixed or so small in size that it is not practical to map them separately.

The Savannah soil makes up about 60 percent of each mapped area. Typically, the surface layer is brown loam 6 inches thick. The upper part of the subsoil is yellowish brown loam to a depth of about 24 inches. Below this, the soil is mottled brown, yellowish brown, light brownish gray, and strong brown loam to a depth of about 60 inches. It is compact and brittle. The underlying material is yellowish brown sandy clay loam with light gray and red mottles to a depth of 72 inches. In some places this soil has been altered by cutting, filling, and grading.

Urban land makes up about 30 percent of each mapped area. The areas are covered by streets, parking lots, buildings, and other structures that obscure or alter the soils so that identification is not feasible.

Included with this complex in mapping are Ruston, Saffell, Bama, Luverne, and Iuka soils. Ruston, Saffell, Bama, and Luverne soils are on about the same position on the landscape as the Savannah soil. Iuka soils are in narrow depressional drainageways. The included soils make up about 10 percent of the unit.

Most areas of this map unit are artificially drained with sewer systems, gutters, drainage tiles, and to a lesser extent, surface ditches. The Savannah soil has a seasonal high perched water table at a depth of 18 to 36 inches late in winter and in spring.

The Savannah soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate.

The Savannah soil, or open part of the map unit, is used for parks, open space, building sites, lawns, and gardens. It has good potential for lawns, vegetable and flower gardens, trees, and shrubs. It also has good potential for recreational areas and has fair potential for most engineering uses.

The Savannah soil is well suited to grasses, flowers, vegetables, trees, and shrubs if it is properly limed and fertilized. Perennial plants that are selected for planting should have a moderate rooting depth and be tolerant to moderate wetness. The hazard of soil erosion is moderate on slopes of more than 2 percent if this soil is disturbed.

The Savannah soil has moderate limitations for dwellings and small commercial buildings because of wetness. Also low strength is a moderate limitation for local roads and streets on this soil. The soil has severe limitations for septic tank absorption fields because of moderately slow permeability in the fragipan. This limitation can be reduced by installing the field lines at a shallow depth and by increasing the size of the absorption field. Not assigned to a capability subclass; Savannah part in woodland group 3o, Urban land part not assigned to a woodland group.

32—Smithdale fine sandy loam, 6 to 10 percent slopes. This deep, well drained, sloping soil is on side slopes of the Coastal Plain uplands. Slopes are complex and convex. The mapped areas are about 5 to 300 acres in size and are long and narrow in shape.

Typically, the surface layer is dark brown fine sandy loam 5 inches thick. The subsoil is yellowish red clay loam to a depth of 20 inches, yellowish red sandy clay loam to a depth of 50 inches, and yellowish red sandy loam to a depth of 66 inches. Yellowish red sandy loam with pale brown mottles is at a depth of 66 to 72 inches.

Included with this soil in mapping are Luverne, Ora, and Saffell soils. Also included are small areas of Ruston soils on narrow, gently sloping ridgetops. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is high. This soil has good tilth and can be worked within a wide range of moisture content. The root zone is deep and is easily penetrated by plant roots.

This soil has fair potential for row crops and small grain, but high yields can be obtained. Its potential for these crops is limited by the moderate hazard of erosion and by the small size and irregular shape of the areas. This soil has good potential for hay and pasture (fig. 8). Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is moderate if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has good potential for loblolly pine. There are no significant limitations to the use of this soil for woodland.

This soil has fair potential for most urban uses. Seepage and slope are severe limitations for sewage lagoons. Slope is also a severe limitation for small commercial buildings and a moderate limitation for local roads and streets. These limitations are fairly easy to overcome with good design and careful installation procedures.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capabiality subclass IIIe; woodland group 3o.

33—Smithdale-Luverne complex, 15 to 35 percent slopes. This complex consists of areas of Smithdale and Luverne soils that are so intermingled that they could not be mapped separately at the scale used. The landscape is mainly a series of very narrow ridgetops and moderately steep to steep side slopes and narrow drainageways. These landscapes appear to be small outliers of similar, but more extensive, landscapes of similar soils to the east and west, but they are separated by areas of more gently sloping soils. The mapped areas are mostly long and narrow in shape and are 20 to 500 acres in size. Individual areas of Smithdale soils range from 10 to 200 acres in size. Areas of Luverne soils and other minor soils are small, mostly less than 3 acres in size, and are randomly scattered throughout the mapped areas. The soils formed in unconsolidated beds of Coastal Plain sediments.

Smithdale soils and soils that are similar to Smithdale soils make up about 70 percent of each mapped area. Typically, the surface layer is dark grayish brown fine sandy loam 2 inches thick and brown fine sandy loam 11 inches thick. The subsoil is yellowish red loam to a depth of 30 inches and yellowish red fine sandy loam to a depth of 42 inches. The underlying material, to a depth of 68 inches, is yellowish red sandy loam with light yellowish brown and brown bands or pockets of loamy sand.

Smithdale soils are low in natural fertility and in organic matter content. In unlimed areas they are strongly acid or very strongly acid. Permeability is moderate, and available water capacity is high.

Luverne soils and soils that are similar to Luverne soils make up about 15 percent of each mapped area. Typically, the surface layer is dark grayish brown fine sandy loam 3 inches thick and brown fine sandy loam 7 inches thick. The upper part of the subsoil is yellowish red clay to a depth of 30 inches and mottled red, strong brown, yellowish brown, and light brownish gray clay loam to a depth of 46 inches. The underlying material, to a depth of 60 inches, is stratified light gray clayey material and yellowish red sandy material.

Luverne soils are low in natural fertility and in organic matter content. In unlimed areas they are strongly acid or very strongly acid throughout. Permeability is moderately slow, and available water capacity is moderate to high.

Soils of minor extent make up about 15 percent of this complex. These are Flomaton, Pikeville, Saffell, and Iuka soils. Flomaton and Saffell soils are mainly on lower parts of side slopes, and Pikeville soils are on the middle and upper parts of side slopes. Iuka soils are in narrow drainageways.

This complex has poor potential for farming and improved pasture and hay because of the steep slopes and severe hazard of erosion. Most of the complex is used for woodland; however, a few cleared areas are used for pasture and hay. Management concerns for pasture include proper stocking rates, controlled grazing, and control of weeds and brush.

This complex has fair potential for loblolly pine. The use of equipment is somewhat restricted because of steep slopes. Plant competition is moderate.

This complex has poor potential for most urban uses because of steep slopes. The hazard of landslides is moderate to severe when cuts are made across the hillside in areas of the Luverne soils.

This complex has fair potential as openland wildlife habitat. It has good potential as woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Smithdale part in capability subclass VIe, woodland group 3o; Luverne part in capability subclass VIIe, woodland group 3c.

34—Smithdale-Luverne association, hilly. This association consists of well drained and excessively drained soils that are in a regular pattern on the landscape. The landscape is mainly a series of steep wooded hillsides, very narrow ridgetops, and narrow drainageways. Smithdale soils are on the upper, middle, and lower parts of slopes, and Luverne soils are mainly on the middle and lower parts of slopes. The mapped areas are irregular in shape and range from 200 to 5,000 acres in size. Each soil in a mapped area ranges from 20 to several hundred acres. Smithdale soils formed in loamy Coastal Plain sediment, and Luverne soils formed in clayey Coastal Plain sediment. Slopes range from 15 to 35 percent.

Smithdale soils and soils that are similar to Smithdale soils make up about 34 percent of each mapped area. Typically, the surface layer is dark grayish brown fine sandy loam 3 inches thick and brown fine sandy loam 6 inches thick. The subsoil is yellowish red loam to a depth of 42 inches and is yellowish red sandy loam to a depth of 52 inches. Below this, the subsoil is yellowish red sandy loam to a depth of 72 inches with pockets of pale brown loamy sand.

Smithdale soils are low in natural fertility and in organic matter content. They are strongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is high.

Luverne soils and soils that are similar to Luverne soils make up about 33 percent of each mapped area. Typically, the surface layer is dark grayish brown fine sandy loam 3 inches thick and yellowish brown fine sandy loam 5 inches thick. The subsoil is yellowish red clay to a depth of 20 inches and yellowish red clay with light yellowish brown mottles to a depth of 40 inches. The underlying material is mottled red, brown, and gray and is stratified sandy loam to silty clay.

Luverne soils are low in natural fertility and in organic matter content. They are strongly acid or very strongly acid. Permeability is moderately slow, and available water capacity is moderate to high.

Soils of minor extent make up 33 percent of this association. These are Flomaton, Iuka, Mantachie, and Stough soils and areas of clayey soils. Flomaton soils

make up about 26 percent of the association. They are gravelly and typically are on the steepest part of side slopes. Iuka, Mantachie, and Stough soils are in narrow drainageways. The clayey soils are on hillsides.

Most areas of this association are used for woodland. A few areas are cleared and used for pasture. This association has poor potential for improved pasture because of steep slopes, high gravel content in some areas, and severe hazard of erosion. Management concerns include proper stocking rates, controlled grazing, and control of weeds and brush.

This association has fair potential for woodland. Loblolly pine is the species that is best adapted to the soils in this association. The use of equpment is restricted because of steep slopes.

This association has poor potential for farming and for most urban uses because of steep slopes and clayey texture and moderately slow permeability of the Luverne soils. The hazard of landslides is moderate to severe when cuts are made across the hillsides in areas of Luverne soils. This association has fair potential as openland wildlife habitat. It has good potential as woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Smithdale part in capability subclass VIe and woodland group 3o; Luverne part in capability subclass VIIe and woodland group 3c.

35—Stough loam. This deep, somewhat poorly drained, nearly level soil is on terraces and upland flats and in narrow drainageways in the Coastal Plain. Slopes are smooth and concave. The mapped areas are 5 to 100 acres in size.

Typically, the surface layer is dark grayish brown loam 5 inches thick and overlies grayish brown sandy loam 8 inches thick. The subsoil is yellowish brown fine sandy loam with light brownish gray mottles to a depth of 25 inches, mottled yellowish brown and light gray fine sandy loam to a depth of 41 inches, and light gray sandy clay loam with yellowish brown and yellowish red mottles to a depth of 70 inches.

Included with this soil in mapping are areas of Urban land in the Winfield area and small areas of Myatt soils. The included soils and Urban land make up 5 to 10 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid or very strongly acid throughout. Permeability is moderately slow, and available water capacity is moderate. This soil has good tilth but can only be worked within a narrow range of moisture content. It has a seasonal high water table and warms slowly in spring. The root zone is shallow, except for plant roots that can tolerate a seasonal water table.

This soil has fair potential for row crops and small grain. Its potential for these crops is limited because of the somewhat poor drainage, the seasonal high water table, and the small size and irregular shape of the areas. It has good potential for hay and pasture. Good tilth can be easily maintained by returning crop residue to the soil. Erosion is not a hazard. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff.

This soil has good potential for loblolly pine and sweetgum. Equipment limitation is moderate because of wetness. Plant competition is also moderate.

This soil has poor potential for most urban uses because of wetness and a seasonal high water table. These limitations are difficult to overcome.

This soil has good potential as openland and woodland wildlife habitat and has fair potential as wetland wildlife habitat. Capability subclass IIw; woodland group 2w.

36—Townley silt loam, 2 to 6 percent slopes. This moderately deep, well drained, gently sloping soil is on ridgetops and benches of the Southern Appalachian Plateau. Slopes are smooth and convex. The mapped areas are 5 to 50 acres in size.

Typically, the surface layer is brown silt loam 5 inches thick. The subsoil is yellowish red silty clay to a depth of 20 inches and yellowish red silty clay with brown mottles to a depth of 31 inches. The underlying material consists of level bedded rippable shale.

Included with this soil in mapping are small areas of Hector and Nauvoo soils and small areas where the depth to shale is more than 40 inches. The included soils make up 5 to 15 percent of some individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid to extremely acid throughout. Permeability is slow, and available water capacity is moderate. This soil has good tilth but can be worked only within a narrow range of moisture content. The root zone is moderately deep and is fairly easily penetrated by plant roots.

This soil has fair potential for row crops, but fairly high yields can be obtained. Its potential for these crops is limited by the slow permeability and moderate hazard of erosion. It has good potential for hay, pasture, and small grain. Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is moderate if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has fair potential for loblolly pine and Virginia pine. There are no significant limitations to the use of this soil for woodland.

This soil has fair to poor potential for for most urban uses. Depth to rock is a severe limitation for septic tank absorption fields and sewage lagoons. This limitation is difficult to overcome. This soil has moderate limitations for sanitary landfills, dwellings, and small commercial buildings because of depth to rock, low strength, or slope. These limitations can be overcome by good design and careful installation procedures.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IIIe; woodland group 4o.

37—Townley silt loam, 6 to 15 percent slopes. This moderately deep, well drained, sloping soil is on narrow ridgetops and side slopes in the Southern Appalachian Plateau. Slopes are complex and convex. The mapped areas are long and narrow in shape and are 5 to 100 acres in size.

Typically, the surface layer is dark grayish brown silt loam 2 inches thick and yellowish brown silt loam 7 inches thick. The subsoil is yellowish red silty clay to a depth of 19 inches and yellowish red silty clay with red mottles to a depth of 26 inches. The substratum is mottled light gray, strong brown, red, and yellowish red weathered shale fragments and silty clay. It is underlain at a depth of about 31 inches by rippable shale bedrock.

Included with this soil in mapping are small areas of Hector and Nauvoo soils and areas where the depth to shale is more than 40 inches. There are a few rock outcrops in this map unit. The included soils make up 5 to 15 percent of individual mapped areas.

This soil is low in natural fertility and in organic matter content. In unlimed areas it is strongly acid to extremely acid throughout. Permeability is slow, and available water capacity is moderate. This soil has good tilth but can be worked only within a narrow range of moisture content. The root zone is moderately deep and is fairly easily penetrated by plant roots.

This soil has poor potential for row crops. Its potential for these crops is limited by the slow permeability and severe hazard of erosion. It has good potential for hay and pasture. Good tilth can be easily maintained by returning crop residue to the soil. The hazard of erosion is severe if cultivated crops are grown. Minimum tillage and the use of cover crops in the cropping system, including grasses and legumes, are practices that help to reduce runoff and to control erosion.

This soil has fair potential for loblolly pine and Virginia pine. There are no significant limitations to the use of this soil for woodland.

This soil has fair to poor potential for most urban uses. Depth to rock is a severe limitation for septic tank absorption fields and sewage lagoons. These limitations are difficult to overcome. This soil has moderate limitations for sanitary landfills and dwellings and severe limitations for small commercial buildings because of depth to rock, low strength, or slope. These limitations can be overcome by good design and careful installation procedures.

This soil has good potential as openland and woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass IVe; woodland group 4o.

38—Townley-Hector association, hilly. This association consists of well drained soils that are in a regular pattern on the landscape. The landscape is mainly a series of steep, wooded hillsides; very narrow, winding ridgetops; and narrow drainageways. All the soils are on the upper, middle, and lower parts of slopes. Hector soils mainly are on the steeper parts of slopes. The mapped areas are irregular in shape and range from 100 to 2,000 acres in size. Each soil in a mapped area ranges from 10 to 200 acres. Hector soils formed in residuum from sandstone, and Townley soils formed in residuum from shale or in shale that was thinly interbedded with sandstone. Slopes range from 15 to 40 percent.

Townley soils and soils that are similar to Townley soils make up about 35 percent of each mapped area. Typically, the surface layer is dark grayish brown and yellowish brown silt loam 7 inches thick. The upper part of the subsoil is strong brown silty clay loam to a depth of 12 inches, and the lower part is yellowish red silty clay to a depth of 30 inches. This is underlain by soft shale bedrock. Soils that are similar to Townley soils are slightly less than 20 inches or slightly more than 40 inches to bedrock.

Townley soils are low in natural fertility and in organic matter content. In unlimed areas they are strongly acid to extremely acid. Permeability is slow, and available water capacity is moderate.

Hector soils make up 26 percent of each mapped area. Typically, the surface layer is dark grayish brown fine sandy loam 3 inches thick and yellowish brown fine sandy loam 5 inches thick. The subsoil is yellowish brown gravelly loam to a depth of 18 inches. Below this is sandstone bedrock.

Hector soils are low in natural fertility and in organic matter content. They are strongly acid or very strongly acid throughout. Permeability is moderately rapid, and available water capacity is low.

Soils of minor extent make up 39 percent of this association. They are Iuka, Mantachie, Nauvoo, and Ochlockonee soils. Iuka, Mantachie, and Ochlockonee soils are in narrow drainageways. Nauvoo soils make up about 20 percent of the association. They are loamy soils which have soft sandstone bedrock at a depth of about 40 inches from the surface and typically are in transitional areas of soils that formed in sandstone and soils that formed in shale. Other minor soils and rock outcrop are on hillsides and narrow ridgetops.

Most areas of this association are used for woodland. A few areas are cleared and are used for pasture. This association has poor potential for improved pasture because of steep slopes; shallow, droughty soils; and the severe hazard of erosion. Management concerns include proper stocking rates, controlled grazing, and control of weeds and brush.

This association has fair potential for loblolly and Virginia pine. The use of equipment is restricted because of steep slopes and, in a few areas, large sandstone boulders and sandstone escarpments.

This association has poor potential for farming and for most urban uses because of steep slopes, shallow soils, and slow permeability of the Townley soils. It has fair potential as openland wildlife habitat. It has good potential as woodland wildlife habitat and has very poor potential as wetland wildlife habitat. Capability subclass VIIe; Townley part in woodland group 4r, Hector part in woodland group 4x.

Use and management of the soils

The soil survey is a detailed inventory and evaluation of the most basic resource of the survey area—the soil. It is useful in adjusting land use, including urbanization, to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in uses of the land.

While a soil survey is in progress, soil scientists, conservationists, engineers, and others keep extensive notes about the nature of the soils and about unique aspects of behavior of the soils. These notes include data on erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic tank disposal systems, and other factors affecting the productivity, potential, and limitations of the soils under various uses and management. In this way, field experience and measured data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section is useful in planning use and management of soils for crops, pasture, and woodland; as sites for buildings, highways and other transportation systems, sanitary facilities, and parks and other recreation facilities; and for wildlife habitat. From the data presented, the potential of each soil for specified land uses can be determined, soil limitations to these land uses can be identified, and costly failures in houses and other structures, caused by unfavorable soil properties, can be avoided. A site where soil properties are favorable can be selected, or practices that will overcome the soil limitations can be planned.

Planners and others using the soil survey can evaluate the impact of specific land uses on the overall productivity of the survey area or other broad planning area and on the environment. Productivity and the environment are closely related to the nature of the soil. Plans should maintain or create a land-use pattern in harmony with the natural soil.

Contractors can find information that is useful in locating sources of sand and gravel, roadfill, and topsoil. Other information indicates the presence of bedrock, wetness, or very firm soil horizons that cause difficulty in excavation.

Health officials, highway officials, engineers, and many other specialists also can find useful information in this soil survey. The safe disposal of wastes, for example, is closely related to properties of the soil. Pavements, sidewalks, campsites, playgrounds, lawns, and trees and shrubs are influenced by the nature of the soil.

Crops and pasture

LEWIS D. WILLIAMS, conservation agronomist, Soil Conservation Service, helped to prepare this section.

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the crops or pasture plants best suited to the soil, including some not commonly grown in the survey area, are discussed; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are presented for each soil.

This section provides information about the overall agricultural potential of the survey area and about the management practices that are needed. The information is useful to equipment dealers, land improvement contractors, fertilizer companies, processing companies, planners, conservationists, and others. For each kind of soil, information about management is presented in the section "Soil maps for detailed planning." Planners of management systems for individual fields or farms should also consider the detailed information given in the description of each soil.

In 1967 almost 50,000 acres of cropland and about 40,000 acres of pastureland were in the survey area (*1*). Of the cropland, 25,416 acres were used for row crops, 22,048 acres were used for hayland or conservation purposes or were temporarily idle, and 2,509 acres were formerly cropped openland.

The potential of the soils in Marion County for increased production of food and fiber is good. About 25,000 acres of cropland is used for pasture or other uses, and more than 100,000 acres of potentially good pastureland is in woodland or is idle. In addition, food and fiber production could be increased considerably by better application of the latest farming technology. With proper woodland management, timber production could be increased.

Acreage in cultivated crops has been decreasing gradually, and acreage in pasture has been increasing in the survey area. Acreage in urban land is also increasing. The use of this survey to help make land use decisions that will influence the future role of farming in the county is discussed in the section "Soil maps for detailed planning."

Soil erosion is a major concern on about three-fourths of the cropland and pasture in Marion County. If the slope is more than 2 percent, erosion is a potential hazard. Bama, Cahaba, Ora, Nauvoo, Ruston, Townley, and Savannah soils are some of the soils presently being cultivated that have slopes of 2 percent or more. Ora and Savannah soils also have a problem of wetness.

Loss of soil through erosion is damaging in several ways. Productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on such soils as the Townley soil that have a clayey subsoil and on soils that have a layer in or below the subsoil that restricts rooting depth. Such layers include the fragipan in Ora and Savannah soils, the sandy substrata in Cahaba soils, and the bedrock of Nauvoo and Townley soils. Erosion also reduces the productivity of soils that tend to be droughty, such as Bassfield, Bigbee, and Hector soils. Soil erosion results in sediment that causes offsite damage. 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.

Seedbed preparation and cultivation are difficult in eroded clayey or fragipan areas because the original friable surface layer has been removed. Such conditions are common in areas of Luverne, Ora, and Townley soils.

Erosion control practices provide protective surface cover, reduce runoff, and increase infiltration. A cropping system that keeps plant cover and crop residue on the land for extended periods can hold soil erosion losses to amounts that will not reduce the productive capacity of the soils. On livestock farms, legume and grass forage crops can be incorporated into the cropping system to reduce erosion in sloping areas. They also provide nitrogen and improve tilth for the crops that follow in the rotation.

Minimum tillage and leaving crop residue on the surface help to increase infiltration and reduce the hazards of runoff and erosion. These practices can be adapted to most soils in the survey area. Nontillage for corn and soybeans is effective in reducing erosion in sloping areas. This practice also can be adapted to most soils in the survey area and can be used in fields that have topographic conditions that are unfavorable for terracing or contouring.

Terraces and diversions reduce the length of slope and reduce runoff and erosion. They are most practical on deep, well drained and moderately well drained, sloping soils such as Bama, Cahaba, Ruston, Nauvoo, Ora, Savannah, and Smithdale. Other soils in the survey area are less suitable for terracing because of irregular slopes, a clayey subsoil which would be exposed in the terrace channels, or bedrock at a depth of less than 40 inches. Diversions are most practical on toe slopes and benches that intercept surface runoff from hilly uplands and divert the water from the lower-lying cropland fields. Contour farming is very effective in reducing erosion on cultivated cropland. It is best suited to soils that have smooth, uniform slopes.

Information on the design of erosion control practices for each kind of soil is available in local offices of the Soil Conservation Service.

Soil drainage is needed on about 20,000 acres in the survey area. Some soils are naturally too wet for production of crop and pasture plants that are common to the area. In other areas, drainage would increase crop and pasture production. These include the poorly drained Myatt, Leaf, and Bibb soils and the somewhat poorly drained Mantachie and Stough soils.

Many areas of well drained or moderately well drained soils are intermittently crossed by narrow drainageways. The soils immediately adjacent to the drains are often wet in spring and delay farming operations. Artificial drainage systems can be used to remove excess water from the low-lying areas. The areas can be planted earlier, and some turnrows can be eliminated.

Savannah, Stough, and Ora soils have a perched water table early in spring. This is caused by the slow permeability of the fragipan in the lower part of the subsoil. An underground tile drainage system is an excellent way to remove this perched water (fig. 9). The land can then be planted earlier, thereby increasing yields. Also underground drainage systems can be used to intercept seepage water on toe slopes and divert it from the lower-lying cropland.

The design of both surface and subsurface drainage systems varies with the kind of soil. A combination of surface drainage and tile drainage is needed in some areas to complete the system. Drains have to be more closely spaced in soils that have slow permeability than in the more permeable soils. Finding adequate outlets for both surface and subsurface drainage systems is difficult in many areas of the county.

Soil fertility is naturally low in most of the soils in the survey area. All but the Brilliant soils are acid. The soils on flood plains, such as Iuka, Mantachie, Ochlockonee, and Bibb, are a little higher in natural fertility than most upland soils. Soils in the survey area require applications of ground limestone to raise the pH sufficiently for optimum utilization of commercial fertilizer by plants. Crops on all soils in the survey area respond well to fertilizer. Available phosphorus and potash levels are low in most of the soils. On all soils, additions of lime and fertilizer should be based on the results of soil tests, on the need of crops, and on the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

Soil tilth is an important factor in seed germination, and it affects the infiltration of water into the soil. Soils that have good tilth have a granular and porous surface layer.

Most of the soils that are used for crops in the survey area have a fine sandy loam or loam surface layer that is light in color and low in organic matter content. The structure of these soils is weak, and intense rainfall often causes the formation of a crust on the surface. The crust is hard when dry and is almost impervious to water. It reduces infiltration of water and increases runoff. Regular additions of crop residue, manure, and other organic material can help improve soil structure and reduce crust formation.

Field crops suited to the soils and climate of the survey area include many that are not now commonly grown. Corn, soybeans, cotton, and grain sorghum are the main row crops. Peanuts, potatoes, and similar crops can be grown when economic conditions are favorable.

Wheat, ryegrass, and rye are the most common close-growing crops. Oats and barley could be grown. Crimson clover, white clover, Yuchi clover, ball clover, and other legumes will grow on most soils in the county, especially if agricultural limestone is applied to the soils in proper amounts. Tall fescue, bahiagrass, common bermudagrass, and hybrid bermudagrasses are the main grasses grown for pasture and hay. Dallisgrass and orchardgrass are suited to the more fertile soils. Sericea and the annual lespedezas are well adapted to most soils.

Speciality crops grown commercially in the survey area are pimento pepper, cucumbers, tomatoes, pole beans,

peas, sweet corn, greens, and melons. These crops make up a very small acreage. These and other specialty crops are well suited to most soils in the county, and if economic conditions were more suitable, a large acreage would be grown. Apples and peaches are the most important tree fruits in the county, but these generally are not grown for commercial purposes. Also pears and plums would be well suited.

Information and suggestions for growing specialty crops can be obtained from local offices of the Cooperative Extension Service and the Soil Conservation Service.

Pasture and hay crops are important in the survey area. Several management practices are needed on all soils that are used for pasture and hay production. They include proper grazing or cutting heights, control of weeds, proper fertilization, rotational grazing, and scattering animal droppings. Cool season perennial grasses, such as tall fescue, should not be grazed in summer so that food reserves will be stored in the plants for growth in fall and early in spring. Overgrazing and low fertilization are the two greatest problems associated with pasture production. Both result in weak plants and poor stands that are quickly infested with weeds. The best way to prevent weeds from becoming established is to maintain a good dense ground cover with the desired pasture species.

Capability classes and subclasses

Capability classes and subclasses show, in a general way, the suitability of soils for most kinds of field crops. The soils are classed according to their limitations when they are used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forest trees, or for engineering purposes.

In the capability system, all kinds of soil are grouped at three levels: capability class, subclass, and unit. These levels are defined in the following paragraphs. A survey area may not have soils of all classes.

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 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 landforms 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 close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

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

The acreage of soils in each capability class and subclass is indicated in table 6. All soils in the survey area except those named at a level higher than the series are included. Some of the soils that are well suited to crops and pasture may be in low-intensity use, for example, soils in capability classes I and II. Data in this table can be used to determine the farming potential of such soils.

The capability subclass is identified in the description of each soil map unit in the section "Soil maps for detailed planning."

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 7. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Hay and pasture yields were estimated for the most productive varieties of grasses and legumes suited to the climate and the soil. A few farmers may be obtaining average yields higher than those shown in table 7.

The management needed to achieve the indicated yields of the various crops depends on the kind of soil and the crop. Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is favorable; 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 residues, barnyard manure, and green-manure crops; harvesting crops with the smallest possible loss; and timeliness of all fieldwork.

Woodland management and productivity

JERRY L. JOHNSON, state staff forester, Soil Conservation Service, helped to prepare this section.

About 348,100 acres of commercial woodland, or 73 percent of the total land area, is in Marion County. The acreage in woodland decreased 2 percent from 1963 to 1972. Of the total acreage of commercial woodland in the county, private landowners own 72 percent. Industry owns 27 percent, or 94,400 acres, and the rest is publicly owned (*6*).

The acreage of various forest types in Marion County is as follows: 100,300 acres of loblolly-shortleaf pine, 82,600 acres of oak-pine, 159,300 acres of oak-hickory, and 5,900 acres of elm-ash-cottonwood (*6*). Many acres of upland hardwood can be converted to pine. Pine generally grows better on uplands. Hardwoods generally grow well on lowlands, on north-facing slopes, and in coves.

Good stands of merchantable timber are in the county. Most of the soils in the county have high potential productivity for trees. However, a considerable acreage of soils that have moderate to low potential productivity is in the county (*10*). The forests in Marion County consist of 47,200 acres of saw timber, 153,400 acres of pole timber, and 147,500 acres of saplings and seedlings (*6*).

Eight wood-using plants in Marion County provide employment for several hundred people (*2*). The value of the local forest products industry is well below its potential.

Table 8 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Mapping unit symbols for soils suitable for wood crops are listed, and the ordination (woodland suitability) symbol for each soil is given. All soils bearing the same ordination symbol require the same general kinds of woodland management and have about the same potential productivity.

The first part of the *ordination symbol* (woodland group), a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates insignificant limitations or restrictions. If a soil has more than one limitation, priority in placing the soil into a limitation class is in the following order: x, w, t, d, c, s, f, and r.

In table 8 the soils are also rated for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of major soil limitations.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if some measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or equipment; *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree that the soil affects expected mortality of planted tree seedlings. Plant competition is not considered in the ratings. Seedlings from good planting stock that are properly planted during a period of sufficient rainfall are rated. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Ratings of *plant competition* indicate the degree to which undesirable plants are expected to invade or grow if openings are made in the tree canopy. The invading plants compete with native plants or planted seedlings by impeding or preventing their growth. A rating of *slight* indicates little or no competition from other plants; *moderate* indicates that plant competition is expected to hinder the development of a fully stocked stand of desirable trees; *severe* means that plant competition is expected to prevent the establishment of a desirable stand unless the site is intensively prepared, weeded, or otherwise managed for the control of undesirable plants.

The *potential productivity* of merchantable or *important trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Important trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suitable for commercial wood production and that are suited to the soils.

Engineering

This section provides information about the use of soils for building sites, sanitary facilities, construction material, and water management. Among those who can benefit from this information are engineers, landowners, community planners, town and city managers, land developers, builders, contractors, and farmers.

The ratings in the engineering tables are based on test data and estimated data in the "Soil properties" section. The ratings were determined jointly by soil scientists and engineers of the Soil Conservation Service using known relationships between the soil properties and the behavior of soils in various engineering uses.

Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock that is within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure or aggregation, in-place soil density, and geologic origin of the soil material. Where pertinent, data about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations were also considered.

On the basis of information assembled about soil properties, ranges of values can be estimated for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, shear strength, compressibility, slope stability, and other factors of expected soil behavior in engineering uses. As appropriate, these values can be applied to each major horizon of each soil or to the entire profile.

These factors of soil behavior affect construction and maintenance of roads, airport runways, pipelines, foundations for small buildings, ponds and small dams, irrigation projects, drainage systems, sewage and refuse disposal systems, and other engineering works. The ranges of values can be used to (1) select potential residential, commercial, industrial, and recreational uses; (2) make preliminary estimates pertinent to construction in a particular area; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for location of sanitary landfills, onsite sewage disposal systems, and other waste disposal facilities; (5) plan detailed onsite investigations of soils and geology; (6) find sources of gravel, sand, clay, and topsoil; (7) plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; (8) relate performance of structures already built to the properties of the kinds of soil on which they are built so that performance of similar structures on the same or a similar soil in other locations can be predicted; and (9) predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

Data presented in this section are useful for land-use planning and for choosing alternative practices or general designs that will overcome unfavorable soil properties and minimize soil-related failures. Limitations to the use of these data, however, should be well understood. First, the data are generally not presented for soil material below a depth of 5 or 6 feet. Also, because of the scale of the detailed map in this soil survey, small areas of soils that differ from the dominant soil may be included in mapping. Thus, these data do not eliminate the need for onsite investigations, testing, and analysis by personnel having expertise in the specific use contemplated.

The information is presented mainly in tables. Table 9 shows, for each kind of soil, the degree and kind of limitations for building site development; table 10, for sanitary facilities; and table 12, for water management. Table 11 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations and to construct interpretive maps for specific uses of land.

Some of the terms used in this soil survey have a special meaning in soil science. Many of these terms are defined in the Glossary.

Building site development

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets are indicated in table 9. A *slight* limitation indicates that soil properties generally are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A *severe* limitation indicates that one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design, or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible.

Shallow excavations are made for pipelines, sewerlines, communications and power transmission lines, basements, open ditches, and cemeteries. Such digging or trenching is influenced by soil wetness caused by a seasonal high water table; the texture and consistence of soils; the tendency of soils to cave in or slough; and the presence of very firm, dense soil layers, bedrock, or large stones. In addition, excavations are affected by slope of the soil and the probability of flooding. Ratings do not apply to soil horizons below a depth of 6 feet unless otherwise noted.

In the soil series descriptions, the consistence of each soil horizon is given, and the presence of very firm or extremely firm horizons, usually difficult to excavate, is indicated.

Dwellings and *small commercial buildings* referred to in table 9 are built on undisturbed soil and have founda-

tion loads of a dwelling no more than three stories high. Separate ratings are made for small commercial buildings without basements and for dwellings with and without basements. For such structures, soils should be sufficiently stable that cracking or subsidence of the structure from settling or shear failure of the foundation does not occur. These ratings were determined from estimates of the shear strength, compressibility, and shrink-swell potential of the soil. Soil texture, plasticity and in-place density, potential frost action, soil wetness, and depth to a seasonal high water table were also considered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Depth to bedrock, slope, and large stones in or on the soil are also important considerations in the choice of sites for these structures and were considered in determining the ratings. Susceptibility to flooding is a serious hazard.

Local roads and streets referred to in table 9 have an all-weather surface that can carry light to medium traffic all year. They consist of a subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

The load supporting capacity and the stability of the soil as well as the quantity and workability of fill material available are important in design and construction of roads and streets. The classifications of the soil and the soil texture, density, shrink-swell potential, and potential frost action are indicators of the traffic supporting capacity used in making the ratings. Soil wetness, flooding, slope, depth to hard rock or very compact layers, and content of large stones affect stability and ease of excavation.

Sanitary facilities

Favorable soil properties and site features are needed for proper functioning of septic tank absorption fields, sewage lagoons, and sanitary landfills. The nature of the soil is important in selecting sites for these facilities and in identifying limiting soil properties and site features to be considered in design and installation. Also, those soil properties that affect ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 10 shows the degree and kind of limitations of each soil for such uses and for use of the soil as daily cover for landfills. It is important to observe local ordinances and regulations.

If the degree of soil limitation is expressed as *slight*, soils are generally favorable for the specified use and limitations are minor and easily overcome; if *moderate*, soil properties or site features are unfavorable for the specified use, but limitations can be overcome by special planning and design; and if *severe*, soil properties or site features are so unfavorable or difficult to overcome that major soil reclamation, special designs, or intensive maintenance is required. Soil suitability is rated by the terms *good*, *fair*, or *poor*, which, respectively, mean about the same as the terms *slight*, *moderate*, and *severe*.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the natural soil. Only the soil horizons between depths of 18 and 72 inches are evaluated for this use. The soil properties and site features considered are those that affect the absorption of the effluent and those that affect the construction of the system.

Properties and features that affect absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and susceptibility to flooding. Stones, boulders, and shallowness to bedrock interfere with installation. Excessive slope can cause lateral seepage and surfacing of the effluent. Also, soil erosion and soil slippage are hazards if absorption fields are installed on sloping soils.

In some soils, loose sand and gravel or fractured bedrock is less than 4 feet below the tile lines. In these soils the absorption field does not adequately filter the effluent, and ground water in the area may be contaminated.

On many of the soils that have moderate or severe limitations for use as septic tank absorption fields, a system to lower the seasonal water table can be installed or the size of the absorption field can be increased so that performance is satisfactory.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons have a nearly level floor and cut slopes or embankments of compacted soil material. Aerobic lagoons generally are designed to hold 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. Soils that are very high in content of organic matter and those that have cobbles, stones, or boulders are not suitable. Unless the soil has very slow permeability, contamination of ground water is a hazard where the seasonal high water table is above the level of the lagoon floor. In soils where the water table is seasonally high, seepage of ground water into the lagoon can seriously reduce the lagoon's capacity for liquid waste. Slope, depth to bedrock, and susceptibility to flooding also affect the suitability of sites for sewage lagoons or the cost of construction. Shear strength and permeability of compacted soil material affect the performance of embankments.

Sanitary landfill is a method of disposing of solid waste by placing refuse in successive layers either in excavated trenches or on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil material. Landfill areas are subject to heavy vehicular traffic. Risk of polluting ground water and trafficability affect the suitability of a soil for this use. The best soils have a loamy or silty texture, have moderate to slow permeability, are deep to a seasonal water table, and

are not subject to flooding. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability, which might allow noxious liquids to contaminate ground water. Soil wetness can be a limitation, because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

Ease of excavation affects the suitability of a soil for the trench type of landfill. A suitable soil is deep to bedrock and free of large stones and boulders. If the seasonal water table is high, water will seep into trenches.

Unless otherwise stated, the limitations in table 10 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry periods. Soils that are loamy or silty and free of stones or boulders are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface layer of the final cover is desirable.

Where it is necessary to bring in soil material for daily or final cover, thickness of suitable soil material available and depth to a seasonal high water table in soils surrounding the sites should be evaluated. Other factors to be evaluated are those that affect reclamation of the borrow areas. These factors include slope, erodibility, and potential for plant growth.

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 11 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in table 15 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

Soils rated *good* are coarse grained. They have low shrink-swell potential, low potential frost action, and few cobbles and stones. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as moderate shrink-swell potential, moderately steep slopes, wetness, or many stones. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor*.

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 11 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 15.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, slope, and amount of stones. The ability of the soil to support plantlife is determined by texture, structure, and the amount of soluble salts or toxic substances. Organic matter in the A1 or Ap horizon greatly increases the absorption and retention of moisture and nutrients. Therefore, the soil material from these horizons should be carefully preserved for later use.

Soils rated *good* have at least 16 inches of friable loamy material at their surface. They are free of stones and cobbles, are low in content of gravel, and have gentle slopes. They are low in soluble salts that can limit or prevent plant growth. They are naturally fertile or respond well to fertilizer. They are not so wet that excavation is difficult during most of the year.

Soils rated *fair* are loose sandy soils or firm loamy or clayey soils in which the suitable material is only 8 to 16 inches thick or soils that have appreciable amounts of gravel, stones, or soluble salt.

Soils rated *poor* are very sandy soils and very firm clayey soils; soils with suitable layers less than 8 inches thick; soils having large amounts of gravel, stones, or soluble salt; steep soils; and poorly drained soils.

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is generally preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 12 soil and site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water control structures.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by permeability and the depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage, erosion, and piping and has favorable stability, shrink-swell potential, shear strength, and compaction characteristics. Large stones and organic matter in a soil downgrade the suitability of a soil for use in embankments, dikes, and levees.

Aquifer-fed excavated ponds are bodies of water made by excavating a pit or dugout into a ground-water aquifer. Excluded are ponds that are fed by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Ratings in table 12 are for ponds that are properly designed, located, and constructed. Soil properties and site features that affect aquifer-fed ponds are depth to a permanent water table, permeability of the aquifer, quality of the water, and ease of excavation.

Drainage of soil is affected by such soil properties as permeability; texture; depth to bedrock, hardpan, or other layers that affect the rate of water movement; depth to the water table; slope; stability of ditchbanks; susceptibility to flooding; salinity and alkalinity; and availability of outlets for drainage.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to intercept runoff. They allow water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock, hardpan, or other unfavorable material; large stones; permeability; ease of establishing vegetation; and resistance to water erosion, soil blowing, soil slipping, and piping.

Grassed waterways are constructed to channel runoff to outlets at a nonerosive velocity. Features that affect the use of soils for waterways are slope, permeability, erodibility, wetness, and suitability for permanent vegetation.

Recreation

The soils of the survey area are rated in table 13 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

The degree of the limitation of the soils is expressed as slight, moderate, or severe. *Slight* means that the soil properties are generally favorable and that the limitations are minor and easily overcome. *Moderate* means that the 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 13 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 10, and interpretations for dwellings without basements and for local roads and streets, given in table 9.

Camp areas require such site preparation as shaping and leveling for 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 for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that will 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 or boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or hardpan should be enough to allow necessary grading.

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Wildlife habitat

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, is inadequate, or is inaccessible, wildlife either are scarce or do not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by helping the natural establishment of desirable plants.

In table 14, the soils in the survey area are rated according to their potential to support the main kinds of wildlife habitat in the area. This information can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and 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* means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

The elements of wildlife habitat are briefly described in the following paragraphs.

Grain and seed crops are seed-producing annuals used by wildlife. The major soil properties 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 seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Major soil properties 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, lovegrass, dallisgrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Major soil properties 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 dewberry, blackberry, crotons, crabgrass, and paspalum.

Hardwood trees and the associated woody understory provide cover for wildlife and produce nuts or other fruit, buds, catkins, twigs, bark, or foliage that wildlife eat. Major soil properties that affect growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of native plants are oak, poplar, cherry, sweetgum, hawthorn, dogwood, and hickory. Examples of fruit-producing shrubs that are commercially available and suitable for planting soils rated *good* are autumn-olive and crabapple.

Coniferous plants are cone-bearing trees, shrubs, or ground cover plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Soil properties that have a major effect on the growth of coniferous plants are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, cypress, and cedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or cover for wildlife that use wetland as habitat. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, rushes, sedges, and reeds.

Shallow water areas are bodies of water that have an average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams or levees or by water-control structures in marshes or streams. Major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. The availability of

a dependable water supply is important if water areas are to be developed. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The kinds of wildlife habitat are briefly 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 kinds of wildlife attracted to these areas include bobwhite quail, mourning dove, meadowlark, field sparrow, cottontail, and red fox.

Habitat for *woodland wildlife* consists of areas of hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for *wetland wildlife* consists of open, marshy or swampy, shallow water areas where water-tolerant plants grow. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Soil properties

Extensive data about soil properties are summarized on the following pages. The two main sources of these data are the many thousands of soil borings made during the course of the survey and the laboratory analyses of selected soil samples from typical profiles.

In making soil borings during field mapping, soil scientists can identify several important soil properties. They note the seasonal soil moisture condition or the presence of free water and its depth. For each horizon in the profile, they note the thickness and color of the soil material; the texture, or amount of clay, silt, sand, and gravel or other coarse fragments; the structure, or the natural pattern of cracks and pores in the undisturbed soil; and the consistence of the soil material in place under the existing soil moisture conditions. They record the depth of plant roots, determine the pH or reaction of the soil, and identify any free carbonates.

Samples of soil material are analyzed in the laboratory to verify the field estimates of soil properties and to determine all major properties of key soils, especially properties that cannot be estimated accurately by field observation. Laboratory analyses are not conducted for all soil series in the survey area, but laboratory data for many soil series not tested are available from nearby survey areas.

The available field and laboratory data are summarized in tables. The tables give the estimated range of engineering properties, the engineering classifications, and the physical and chemical properties of each major horizon of each soil in the survey area. They also present data about pertinent soil and water features, engineering test data, and data obtained from physical and chemical laboratory analyses of soils.

Engineering properties

Table 15 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 15 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Soil series and morphology."

Texture is described in table 15 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 soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*4*) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*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, plasticity index, liquid limit, and organic-matter content. Soils are grouped into 15 classes—eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes have a dual classification symbol, for example, CL-ML.

The *AASHTO* system classifies soils according to those properties that affect their use in highway construction and maintenance. In this system a mineral soil is classified in one of seven basic groups ranging 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. At the other extreme, in group A-7, are fine-grained soils. Highly organic soils are classified in group A-8 on the basis of visual inspection.

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These

numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested in the survey area, with group index numbers in parentheses, is given in table 19. The estimated classification, without group index numbers, is given in table 15. Also in table 15 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard) is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

Liquid limit and *plasticity index* indicate the effect of water on the strength and consistence of soil. These indexes are used in both the Unified and AASHTO soil classification systems. They are also used as indicators in making general predictions of soil behavior. Range in liquid limit and plasticity index are estimated on the basis of test data from the survey area or from nearby areas and on observation of the many soil borings made during the survey.

In some surveys, the estimates are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterburg limits extend a marginal amount across classification boundaries (1 or 2 percent), the classification in the marginal zone is omitted.

Physical and chemical properties

Table 16 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the typical pedon of each soil. The estimates are based on field observations and on test data for these and similar soils.

Permeability is estimated on the basis of known relationships among the soil characteristics observed in the field—particularly soil structure, porosity, and gradation or texture—that influence the downward movement of water in the soil. The estimates are for vertical water movement when the soil is saturated. Not considered in the estimates is lateral seepage or such transient soil features as plowpans and surface crusts. Permeability of the soil is an important factor to be considered in planning and designing drainage systems, in evaluating the potential of soils for septic tank systems and other waste disposal systems, and in many other aspects of land use and management.

Available water capacity is rated on the basis of soil characteristics that influence the ability of the soil to hold water and make it available to plants. Important characteristics are content of organic matter, soil texture, and soil structure. Shallow-rooted plants are not likely to use the available water from the deeper soil horizons. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design of irrigation systems.

Soil reaction is expressed as a range in pH values. The range in pH of each major horizon is based on many field checks. For many soils, the values have been verified by laboratory analyses. Soil reaction is important in selecting the crops, ornamental plants, or other plants to be grown; in evaluating soil amendments for fertility and stabilization; and in evaluating the corrosivity of soils.

Shrink-swell potential depends mainly on the amount and kind of clay in the soil. Laboratory measurements of the swelling of undisturbed clods were made for many soils. For others the swelling was estimated on the basis of the kind and amount of clay in the soil and on measurements of similar soils. The size of the load and the magnitude of the change in soil moisture content also influence the swelling of soils. Shrinking and swelling of some soils can cause damage to building foundations, basement walls, roads, and other structures unless special designs are used. A high shrink-swell potential indicates that special design and added expense may be required if the planned use of the soil will not tolerate large volume changes.

Risk of corrosion pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to soil moisture, particle-size distribution, total acidity, and electrical conductivity of the soil material. The rate of corrosion of concrete is based mainly on the sulfate content, texture, and acidity of the soil. Protective measures for steel or more resistant concrete help to avoid or minimize damage resulting from the corrosion. Uncoated steel intersecting soil boundaries or soil horizons is more susceptible to corrosion than an installation that is entirely within one kind of soil or within one soil horizon.

Erosion factors are used to predict the erodibility of a soil and its tolerance to erosion in relation to specific kinds of land use and treatment. The soil erodibility factor (K) is a measure of the susceptibility of the soil to erosion by water. Soils having the highest K values are the most erodible. K values range from 0.10 to 0.64. To estimate annual soil loss per acre, the K value of a soil is modified by factors representing plant cover, grade and length of slope, management practices, and climate. The soil-loss tolerance factor (T) is the maximum rate of soil erosion, whether from rainfall or soil blowing, that can occur without reducing crop production or environmental quality. The rate is expressed in tons of soil loss per acre per year.

Soil and water features

Table 17 contains information helpful in planning land uses and engineering projects that are likely to be affected by soil and water features.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are placed in one of four groups on the basis of the intake of water after the soils have been wetted and have received 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 chiefly of deep, well drained to excessively drained sands or gravels. 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 that have a layer that impedes the downward movement of water or soils that have 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 clay soils that have a 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 is the temporary covering of soil with water from overflowing streams, with runoff from adjacent slopes, and by tides. Water standing for short periods after rains or after snowmelts is not considered flooding, nor is water in swamps and marshes. Flooding is rated in general terms that describe the frequency and duration of flooding and the time of year when flooding is most likely. The ratings are based on evidence in the soil profile of the effects of flooding, namely thin strata of gravel, sand, silt, or, in places, clay deposited by floodwater; irregular decrease in organic-matter content with increasing depth; and absence of distinctive soil horizons that form in soils of the area that are not subject to flooding. The ratings are also based on local information about floodwater levels in the area and the extent of flooding; and on information that relates the position of each soil on the landscape to historic floods.

The generalized description of flood hazards is of value in land-use planning and provides a valid basis for land-use restrictions. The soil data are less specific, however, than those provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table is the highest level of a saturated zone more than 6 inches thick for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed in many borings made during the course of the soil survey. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table, that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. Only saturated zones above a depth of 5 or 6 feet are indicated.

Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to insure dry basements. Such information is also needed to decide whether or not construction of basements is feasible and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Depth to bedrock is shown for all soils that are underlain by bedrock at a depth of 5 to 6 feet or less. For many soils, the limited depth to bedrock is a part of the definition of the soil series. The depths shown are based on measurements made in many soil borings and on other observations during the mapping of the soils. The kind of bedrock and its hardness as related to ease of excavation is also shown. Rippable bedrock can be excavated with a single-tooth ripping attachment on a 200-horsepower tractor, but hard bedrock generally requires blasting.

Physical and chemical analyses of selected soils

The results of physical and chemical analysis of several pedons of the survey area are given in table 18. The data presented are for samples from soil series that are important in the survey area. All samples were collected from carefully selected sites of soil series that are described in the section "Soil series and morphology." The soil samples were analyzed by Auburn University Soils Laboratory.

All capacity measurements are reported on an oven-dry basis. *Particle—size distribution* is the weight percentage of soil material less than 2 millimeters in diameter (method 3A1) (*9*). The percentage of silt and clay was determined by pipette extraction. *Extractable bases, extractable acidity, and base saturation* were determined by the method of Hajek, Adams, and Cope (*5*). *Reaction* was determined in a 1:1 ratio of soil and water in dilution (method 8 C1a) (*9*).

Engineering test data

The results of analyses of engineering properties of several typical soils of the survey area are given in table 19.

The data presented are for soil samples that were collected from carefully selected sites. The soil profiles sampled are typical of the series discussed in the section "Soil series and morphology." The soil samples were analyzed by Alabama State Highway Laboratory.

The methods used in obtaining the data are listed by code in the next paragraph. Most of the codes, in parentheses, refer to the methods assigned by the American Association of State Highway and Transportation Officials. The codes for shrinkage, Unified classification, and California bearing ratio are those assigned by the American Society for Testing and Materials.

The methods and codes are AASHTO classification (M-145-66); Unified classification (D-2487-66T); mechanical analysis (T88-57); liquid limit (T89-60); plasticity index (T90-56); and moisture-density, method A (T99-57).

Soil series and morphology

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

Characteristics of the soil and the material in which it formed are discussed for each series. The soil is then compared to similar soils and to nearby soils of other series. Then a pedon, a small three-dimensional area of soil that is typical of the soil series in the survey area, is described. The detailed descriptions of each soil horizon follow standards in the Soil Survey Manual (*8*). Unless otherwise noted, colors described are for moist soil.

Following the pedon description is the range of important characteristics of the soil series in this survey area. Phases, or map units, of each soil series are described in the section "Soil maps for detailed planning."

Bama series

The Bama series consists of deep, well drained, moderately permeable, reddish soils that formed in thick beds of loamy marine sediment. These soils are on broad Coastal Plain uplands. Slopes range from 2 to 6 percent.

Bama soils are near Luverne, Ora, Ruston, Saffell, and Smithdale soils. Luverne soils have more than 35 percent clay in the control section. Ora soils have a fragipan and are moderately well drained. Ruston soils are bisequal. Saffell soils have more than 35 percent gravel in the subsoil and have a thinner solum. Smithdale soils have a significant decrease in clay content in the lower part of the Bt horizon.

Typical pedon of Bama loam, 2 to 6 percent slopes, 0.5 mile northeast of the junction of Alabama Highway 172 and U.S. Highway 43, 660 feet south and 1,300 feet east of the northwest corner of Sec. 17, T. 9 S., R. 12 W.:

Ap—0 to 9 inches; brown (7.5YR 4/4) loam; weak fine granular structure; friable; strongly acid; clear smooth boundary.

B21t—9 to 31 inches; yellowish red (5YR 4/8) loam; moderate medium subangular blocky structure; friable; few thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—31 to 52 inches; red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; common thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B23t—52 to 88 inches; red (2.5YR 4/6) sandy clay loam; common fine distinct pale brown mottles; moderate medium subangular blocky structure; friable; many thin clay films on faces of peds; very strongly acid.

The solum is more than 5 feet thick. In unlimed areas reaction is strongly acid or very strongly acid.

The Ap horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 3 or 4. The B21t and B22t horizons have hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. They are loam, clay loam, or sandy clay loam and have an average clay content of 25 to 33 percent. The B23t horizon has hue of 2.5YR, value of 3 to 5, and chroma of 6 or 8. In some pedons the B23t horizon has pale brown or light yellowish brown mottles. Texture is sandy clay loam or clay loam.

Bassfield series

The Bassfield series consists of deep, well drained, moderately rapidly permeable, reddish soils formed in moderately coarse textured alluvium. These soils are on low stream terraces and are subject to occasional flooding. Slopes are 0 to 2 percent.

Bassfield soils are near Bigbee, Cahaba, Choccolocco, Iuka, Kirkville, Mantachie, and Ochlockonee soils. Bigbee soils are sandy throughout. Cahaba and Choccolocco soils have more than 18 percent clay in the Bt horizon. Kirkville soils have mottles with chroma of 2 or less in the upper 24 inches of the solum. Iuka, Mantachie, and Ochlokonee soils do not have an argillic horizon.

Typical pedon of Bassfield loamy sand, 3 miles south of Marion County Courthouse on U.S. Highway 43, 1,000 feet south and 790 feet east of the northwest corner of the SE1/4 of Sec. 15, T. 11 S., R. 14 W.

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

B1—7 to 10 inches; reddish brown (5YR 4/4) fine sandy loam; few medium distinct brown (10YR 4/3) pockets of material from the A horizon; weak medium subangular blocky structure; friable; few fine roots; few thin clay films on faces of peds; strongly acid; clear wavy boundary.

B21t—10 to 18 inches; reddish brown (5YR 4/4) loam; weak medium subangular blocky structure; friable; few fine roots; common thin clay films on faces of peds; sand grains coated and bridged with clay; few uncoated sand grains; strongly acid; gradual wavy boundary.

B22t—18 to 40 inches; reddish brown (5YR 4/4) sandy loam; weak medium subangular blocky structure; friable; few fine roots; common thin clay films on faces of peds; sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.

IIC1—40 to 52 inches; strong brown (7.5YR 5/6) loamy sand; weak medium subangular blocky structure; very friable; very strongly acid; gradual wavy boundary.

IIC2—52 to 60 inches; strong brown (7.5YR 5/6) loamy sand; single grain; very friable; strongly acid.

The solum is 40 to 60 inches thick. In unlimed areas reaction is strongly acid or very strongly acid.

The A horizon has hue of 10YR, value of 4, and chroma of 2 or 3. The B horizon has hue of 5YR, value of 4 or 5, and chroma of 4 to 8. It is sandy loam, fine sandy loam, or loam. The upper part of the argillic horizon has an average of 10 to 18 percent clay. The IIC horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. It is loamy sand or sand.

Bibb series

The Bibb series consists of deep, poorly drained, moderately permeable, grayish soils that formed in moderately coarse textured alluvium. These soils are on first bottoms and are subject to frequent flooding. They

are saturated to the surface late in winter and early in spring. Slopes are 0 to 2 percent.

Bibb soils are near Iuka, Leaf, Mantachie, Myatt, Ochlockonee, and Stough soils. Iuka soils dominantly have chroma of 3 or more in the upper part of the C horizon. Leaf soils have an argillic horizon with more than 35 percent clay in the upper 20 inches. Mantachie soils do not have dominant gray colors immediately below the A1 or Ap horizon and have more than 18 percent clay in the 10- to 40-inch section. Myatt soils have an argillic horizon with more than 18 percent clay in the upper 20 inches. Ochlockonee soils do not have mottles with chroma of 2 or less within 20 inches of the surface. Stough soils have an argillic horizon that is compact and brittle in about one-third of the mass.

Typical pedon of Bibb silt loam, in an area of Bibb soils, in Guin, 590 feet south and 1,050 feet west of the northeast corner of the SW1/4 of Sec. 34, T. 12 S., R. 13 W.:

A1—0 to 6 inches; dark gray (10YR 4/1) silt loam; massive; friable; many fine and medium roots; strongly acid; gradual smooth boundary.

C1—6 to 20 inches; dark gray (10YR 4/1) loam; common medium faint gray (10YR 5/1) and grayish brown (10YR 5/2) mottles; massive; friable; common fine roots; thin strata of sandy loam; strongly acid; gradual wavy boundary.

C2—20 to 34 inches; light gray (10YR 6/1) fine sandy loam; common medium faint light brownish gray (10YR 6/2) and few fine distinct light yellowish brown mottles; massive; very friable; few fine roots; strongly acid; gradual wavy boundary.

C3—34 to 46 inches; light gray (10YR 6/1) fine sandy loam; medium distinct light yellowish brown (10YR 6/4) mottles; massive; friable; strongly acid; gradual wavy boundary.

C4—46 to 60 inches; light gray (10YR 6/1) fine sandy loam; many medium distinct light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/6) mottles; massive; friable; very strongly acid.

Reaction is strongly acid or very strongly acid. A few mica flakes are in some pedons.

The A horizon has hue of 10YR, value of 4, and chroma of 1 or 2. It is loam, sandy loam, or silt loam. The C horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or it is N 4/0 to N 6/0. The C horizon mainly has few to common brown, red, or yellow mottles. The 10- to 40-inch control section is loam, fine sandy loam, or silt loam. Some pedons are stratified with coarser material in some parts. The 10- to 40-inch control section has an average of less than 18 percent clay.

Bigbee series

The Bigbee series consists of deep, excessively drained, rapidly permeable, brownish soils that formed in sandy alluvium. These soils are on low stream terraces, and most areas are subject to occasional flooding. Slopes are 0 to 2 percent.

Bigbee soils are near Bassfield, Cahaba, Ochlockonee, and Stough soils. Bassfield and Cahaba soils have a loamy Bt horizon. Ochlockonee soils have a loamy textured control section. Stough soils have a loamy Bt horizon and have mottles with chroma of 2 or less in the upper 30 inches of the soil.

Typical pedon of Bigbee fine sand, 3 miles south of the Marion County Courthouse on U.S. Highway 43, 660 feet south and 725 feet east of the northwest corner of the SE1/4 of Sec. 15, T. 11 S., R. 14 W.:

Ap—0 to 8 inches; brown (10YR 4/3) fine sand; weak fine granular structure; very friable; few fine roots; strongly acid; clear smooth boundary.

C1—8 to 28 inches; strong brown (7.5YR 5/6) fine sand; weak fine granular structure; very friable; few fine roots; very strongly acid; gradual wavy boundary.

C2—28 to 40 inches; strong brown (7.5YR 5/6) fine sand; single grain; very friable; very strongly acid; gradual wavy boundary.

C3—40 to 80 inches; very pale brown (10YR 7/4) sand; single grain; loose; very strongly acid.

The sandy sediment is more than 80 inches thick. Reaction is strongly acid or very strongly acid throughout.

The A horizon has hue of 10YR, value of 4, and chroma of 2 or 3. The C1 and C2 horizons have hue of 5YR, value of 4, and chroma of 6 or 8; hue of 7.5YR, value of 5, and chroma of 6 or 8; and hue of 10YR, value of 5 or 6, and chroma of 4 to 8. They are fine sand or loamy sand. The C3 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4. It is sand or fine sand.

Brilliant series

The Brilliant series consists of deep, somewhat excessively drained, moderately rapidly permeable, grayish soils that formed in mine spoil areas where coal strip mining operations have taken place. The material is mainly shale and sandstone fragments. Slopes range from 5 to 60 percent.

Brilliant soils are near Hector, Nauvoo, and Townley soils. Hector, Nauvoo, and Townley soils have a B horizon and consolidated bedrock at a shallow depth.

Typical pedon of Brilliant very shaly sandy loam, in an area of Brilliant soils, on the crest of a strip mine spoil area, 4.5 miles south of the junction of U.S. Highway 278 and Alabama Highway 33, 900 feet north and 330 feet east of the southwest corner of the SE1/4 of Sec. 4, T. 12 S., R. 11 W.:

Ap—0 to 7 inches; very dark gray (5Y 3/1) very shaly sandy loam; massive; friable; 75 percent by volume fragments, mainly soft shale and siltstone that have thin and medium platy structure and few sandstone fragments; fragments range in size from 1/2 inch to 60 inches; mildly alkaline; clear wavy boundary.

C—7 to 72 inches; dark gray (5Y 4/1) very shaly loam; massive friable; 75 percent by volume fragments, mainly soft shale and siltstone that have thin and medium platy structure and few sandstone fragments; fragments range in size from 1/2 inch to 60 inches; moderately alkaline.

Depth to rock is more than 5 feet. Reaction is slightly acid to moderately alkaline. Coarse fragments make up 40 to 90 percent, by volume, of the Ap horizon and 60 to 90 percent of the C horizon. They range in size from 1/2 inch to 60 inches and are sandstone, shale, and siltstone.

The Ap horizon has hue of 5Y, value of 3 or 4, and chroma of 1 or 2. The C horizon has hue of 5Y, value of 3 or 4, and chroma of 1 or 2. The fine earth fraction is sandy loam, loam, silt loam, or silty clay loam.

Cahaba series

The Cahaba series consists of deep, well drained, moderately permeable, reddish soils that formed in loamy alluvium. These nearly level and gently sloping soils are

on high stream terraces. Slopes range from 0 to 6 percent.

Cahaba soils are near Bassfield, Bigbee, Choccolocco, Kirkville, and Stough soils. Bassfield soils have less than 18 percent clay in the Bt horizon. Bigbee soils are sandy throughout. Choccolocco soils have less than 15 percent fine or coarser sand in the Bt horizon. Kirkville soils have mottles with chroma of 2 or less in the upper 24 inches of the soils. Stough soils have mottles with chroma of 2 or less in the upper 30 inches of the soil.

Typical pedon of Cahaba fine sandy loam, 0 to 2 percent slopes, 2.3 miles south of junction of U.S. Highway 43 and U.S. Highway 278, 860 feet south of the northwest corner of Sec. 14, T. 11 S., R. 14 W.:

Ap—0 to 10 inches; brown (7.5YR 4/4) fine sandy loam; weak fine granular structure; friable; strongly acid; abrupt smooth boundary.

B21t—10 to 34 inches; yellowish red (5YR 4/6) sandy clay loam; weak and moderate medium subangular blocky structure; friable; common thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—34 to 56 inches; yellowish red (5YR 4/6) sandy clay loam; weak and moderate medium subangular blocky structure; friable; few thin clay films on faces of peds; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

C1—56 to 72 inches; yellowish red (5YR 4/8) sandy loam; weak medium subangular blocky structure; friable; few uncoated sand grains; very strongly acid; gradual wavy boundary.

C2—72 to 84 inches; yellowish red (5YR 5/6) loamy sand; common medium distinct very pale brown (10YR 7/4) uncoated sand grains; single grain; very friable; very strongly acid.

The solum is 36 to 56 inches thick. In unlimed areas reaction is strongly acid or very strongly acid.

The Ap horizon has hue of 10YR, value of 4, and chroma of 2 or 3; and it has hue of 7.5YR, value of 4, and chroma of 4. The B2t horizon has hue of 5YR or 2.5YR, value of 4, and chroma of 6 or 8; and it has hue of 5YR, value of 5, and chroma of 6 or 8. It is sandy clay loam, loam, or clay loam. The C horizon has hue of 10YR, 7.5YR, or 5YR, value of 5, and chroma of 6 or 8; and it has hue of 5YR, value of 4, and chroma of 6 or 8. In some pedons the C horizon is mottled with shades of brown, yellow, or gray. Texture ranges from fine sandy loam to sand.

Choccolocco series

The Choccolocco series consists of deep, well drained, moderately permeable brownish soils that formed in silty alluvium. These soils are on low stream terraces and are subject to occasional flooding. Slopes are 0 to 2 percent.

Choccolocco soils are near Bassfield, Cahaba, Leaf, Mantachie, Myatt, and Stough soils. Bassfield soils have less than 18 percent clay in the Bt horizon. Cahaba soils have more than 15 percent fine or coarser sand in the Bt horizon. Leaf and Myatt soils are dominated by chroma of 2 or less in the Bt horizon. Also, Leaf soils have more than 35 percent clay, and Myatt soils have more than 15 percent fine or coarser sand in the Bt horizon. Mantachie soils do not have an argillic horizon. Stough soils have mottles with chroma of 2 or less in the upper 30 inches of the soil and have a compact lower part of the subsoil.

Typical pedon of Choccolocco silt loam, 3.5 miles south of the Marion County Courthouse in Hamilton on U.S. Highway 43, 1 mile east, 525 feet south, and 30 feet east of the northwest corner of the SW1/4 of Sec. 13, T. 11 S., R. 14 W.:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; moderate fine granular structure; friable; strongly acid; abrupt smooth boundary.

B21t—10 to 16 inches; yellowish brown (10YR 5/6) silty clay loam; massive; firm; compact in place; common pockets of brown (10YR 4/3) silt loam; very strongly acid; clear smooth boundary.

B22t—16 to 30 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; many thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B23t—30 to 38 inches; strong brown (7.5YR 5/8) loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak and moderate medium subangular blocky structure; friable; common thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B24t—38 to 50 inches; strong brown (7.5YR 5/8) loam; common medium distinct yellowish brown (10YR 5/4) and few fine distinct grayish brown mottles; weak medium subangular blocky structure; friable; few thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

IIC—50 to 60 inches; brown (7.5YR 4/4) sandy loam; massive; friable; very strongly acid.

The solum is 40 to 60 inches thick. In unlimed areas reaction is strongly acid or very strongly acid.

The Ap horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 3 or 4. The upper part of the Bt horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8; and it has hue of 7.5YR, value of 4, and chroma of 4. It is silty clay loam, silt loam, or clay loam. The lower part of the Bt horizon has about the same color range as the upper part of the Bt horizon. In some pedons the lower part of the Bt horizon may be mottled with shades of yellow and brown. It is loam, silt loam, or clay loam. The IIC horizon has colors that are similar to the lower part of the Bt horizon. It is loam or sandy loam.

Flomaton series

The Flomaton series consists of deep, excessively drained, rapidly permeable, reddish soils that formed in very gravelly marine sediment. These soils are on steep hillsides. They are droughty and are highly erodible when disturbed. Slopes range from 15 to 40 percent.

Flomaton soils are near Luverne, Pikeville, Ruston, Saffell, and Smithdale soils. Luverne soils have a clayey Bt horizon. Pikeville, Ruston, and Smithdale soils have less than 15 percent gravel in the upper part of the Bt horizon. Saffell soils have a solum that is less than 60 inches thick and texture that is finer than loamy fine sand in all parts of the argillic horizon.

Typical pedon of Flomaton very gravelly loamy sand, in an area of Pikeville-Flomaton association, hilly, 2 miles west of the Marion County Courthouse in Hamilton, 660 feet north and 130 feet east of the southwest corner of Sec. 33, T. 10 S., R. 14 W.:

A1—0 to 5 inches; dark grayish brown (10YR 4/2) very gravelly loamy sand; weak fine granular structure; very friable; many fine roots; 55 percent chert and quartz gravel; very strongly acid; gradual wavy boundary.

A21—5 to 16 inches; light yellowish brown (10YR 6/4) very gravelly loamy sand; weak fine granular structure; very friable; many fine roots; 65 percent chert and quartz gravel; very strongly acid; gradual wavy boundary.

A22—16 to 32 inches; pale brown (10YR 6/3) very gravelly sand; single grain; loose; 70 percent chert and quartz gravel; very strongly acid; gradual wavy boundary.

A23—32 to 50 inches; light yellowish brown (10YR 6/4) very gravelly sand; single grain; loose; 70 percent chert and quartz gravel; very strongly acid; gradual wavy boundary.

A24&Bt—50 to 72 inches; yellowish red (5YR 5/6) very gravelly loamy sand (A24); single grain; loose; lamellae of yellowish red (5YR 5/8) gravelly sandy loam (Bt); massive; firm; wavy and generally continuous 1/4- to 3-inches thick lamellae 1/2- to 5-inches apart that occupy 40 percent of the vertical area; small gravel and sand grains coated and bridged with clay; 65 percent chert and quartz gravel; very strongly acid.

The solum is more than 60 inches thick. The combined thickness of the A horizon is 30 to 50 inches. Reaction is strongly acid or very strongly acid.

The A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 2. Gravel content ranges from 30 to 70 percent by volume. The A2 horizon has hue of 10YR, value of 6, and chroma of 3 or 4. Gravel content ranges from 30 to 70 percent by volume. The A24&Bt horizon has hue of 5YR or 7.5YR, value of 5, and chroma of 6 or 8. The lamellae are gravelly sandy loam, gravelly loamy sand, or the very gravelly counterparts. The A24 part of the horizon is gravelly loamy sand, gravelly sand, or the very gravelly counterparts.

Hector series

The Hector series consists of shallow, well drained, brownish soils. Permeability is moderately rapid. The soils formed in material that was weathered from sandstone or from interbedded sandstone and shale. They are on very narrow ridgetops and steep hillsides. Slopes range from 15 to 50 percent.

Hector soils are near Brilliant, Nauvoo, and Townley soils. Brilliant soils do not have a B horizon and are medium acid to moderately alkaline. Nauvoo soils have bedrock at a depth of 40 to 60 inches. Townley soils have bedrock at a depth of 20 to 40 inches and have more than 35 percent clay in the Bt horizon.

Typical pedon of Hector stony fine sandy loam, in an area of Hector-Rock outcrop association, steep, 2 miles northwest of Bear Creek, 1,000 feet west and 100 feet north of the southeast corner of the NW1/4 of Sec. 5, T. 9 S., R. 11 W.:

A1—0 to 2 inches; dark grayish brown (10YR 4/2) stony fine sandy loam; weak fine granular structure; friable; 20 percent sandstone fragments 3 to 48 inches across; very strongly acid; clear smooth boundary.

A2—2 to 6 inches; dark yellowish brown (10YR 4/4) stony fine sandy loam; weak fine granular structure; friable; 20 percent sandstone fragments 3 to 36 inches across; very strongly acid; clear smooth boundary.

B—6 to 16 inches; yellowish brown (10YR 5/6) gravelly loam; weak medium subangular blocky structure; friable; 20 percent sandstone fragments 1/4 inch to 20 inches across; very strongly acid.

R—16 inches; sandstone bedrock; massive; hard.

Thickness of the solum and depth to bedrock range from 10 to 20 inches. Coarse fragments make up 15 to 50 percent, by volume, of the upper part of the solum and 10 to 34 percent of the lower part of the solum. Reaction is strongly acid or very strongly acid throughout.

The A1 horizon has hue of 10YR and has value of 4 and chroma of 2 or value of 3 and chroma of 3. The A2 horizon has hue of 10YR and has value of 4 and chroma of 3 or 4 or value of 5 and chroma of 2 or 3. The B horizon has hue of 10YR, value of 5, and chroma of 3 to 6; hue of 7.5YR, value of 5, and chroma of 6; or it has hue of 5YR, value of 4, and chroma of 6. It is sandy loam, fine sandy loam, or loam and their gravelly or stony counterparts.

Iuka series

The Iuka series consists of deep, moderately well drained, moderately permeable, brownish soils that formed in thick beds of loamy alluvium. These soils are on bottoms and are subject to brief, frequent flooding. Slopes are 0 to 2 percent.

Iuka soils are near Bassfield, Bibb, Kirkville, Mantachie, Ochlockonee, and Stough soils. Bassfield and Kirkville soils have a B horizon. Bibb soils are mainly gray in the upper 20 inches. Mantachie soils have an average of more than 18 percent clay in the control section. Ochlockonee soils do not have mottles with chroma of 2 or less in the upper 20 inches. Stough soils have a Bt horizon.

Typical pedon of Iuka silt loam, in an area of Iuka-Mantachie complex, along Hurricane Creek, 8.75 miles west of Hamilton on U.S. Highway 78, 600 feet south and 1,000 feet west of the northeast corner of the SE1/4 of Sec. 17, T. 10 S., R. 15 W.:

A1—0 to 4 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid; clear smooth boundary.

A12—4 to 11 inches; brown (10YR 5/3) silt loam; few fine distinct dark yellowish brown, common fine faint pale brown, and few fine faint grayish brown mottles; weak fine granular structure; friable; many fine and medium roots; very strongly acid; clear smooth boundary.

C1—11 to 18 inches; brown (10YR 5/3) sandy loam; many fine faint grayish brown mottles; common thin strata of dark brown (7.5YR 4/4) fine sand; loamy material is massive, sandy material is single grain; friable; few fine roots; very strongly acid; clear smooth boundary.

C2—18 to 34 inches; mottled brown (10YR 4/3), light gray (10YR 6/1), and dark brown (7.5YR 4/4) silt loam; massive; friable; few fine roots; very strongly acid; gradual wavy boundary.

C3—34 to 38 inches; mottled light gray (10YR 6/1), yellowish brown (10YR 5/6), and pale brown (10YR 6/3) silt loam; massive; friable; few fine roots; strongly acid; gradual wavy boundary.

C4—38 to 57 inches; gray (N 6/0) sandy loam; massive; very friable; very strongly acid; gradual wavy boundary.

C5—57 to 70 inches; gray (10YR 5/1) sandy loam; massive; very friable; very strongly acid.

In unlimed areas reaction is strongly acid or very strongly acid. Thin bedding planes of contrasting textures are common in most pedons.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. The upper part of the C horizon has hue of 10YR and has value of 5 and chroma of 3 to 6 or value of 4 and chroma of 2 or 3; or it has hue of 7.5YR, value of 4, and chroma of 4. Mottles with chroma of 2 or less are within 20 inches of the surface. The lower part of the C horizon has the colors described above and is mottled with shades of gray; or it does not have a matrix color and is mottled in shades of brown, yellow, and gray; or it is mainly gray mottled with shades of brown and yellow. The 10- to 40-inch control section is silt loam to sandy loam and has an average of 12 to 16 percent clay. Below a depth of 40 inches texture is loamy sand to clay loam.

Kirkville series

The Kirkville series consists of deep, moderately well drained, moderately permeable, brownish soils that formed in loamy stream deposits. These soils are on low stream terraces and are subject to occasional brief flooding mainly late in winter and in spring. Slopes are 0 to 2 percent.

Kirkville soils are near Bassfield, Cahaba, Iuka, Mantachie, and Stough soils. Bassfield and Cahaba soils do not have mottles with chroma of 2 or less in the upper 24 inches of the soil. Iuka soils are massive and have thin bedding planes in the upper 20 inches of the soil. Mantachie soils have more than 18 percent clay in the 10- to 40-inch control section. Stough soils have a subhorizon in the lower part of the subsoil that is brittle.

Typical pedon of Kirkville loam, 11 miles west of Hamilton, 990 feet south and 460 feet east of the northwest corner of NE1/4 of Sec. 13, T. 10 S., R. 16 W.:

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

B21—7 to 14 inches; strong brown (7.5YR 5/6) fine sandy loam; weak and moderate medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

B22—14 to 24 inches; yellowish brown (10YR 5/6) loam; few fine distinct light brownish gray mottles; weak medium subangular blocky structure; friable; very strongly acid; clear wavy boundary.

B23—24 to 36 inches; yellowish brown (10YR 5/4) fine sandy loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; common fine brown and black concretions; very strongly acid; clear wavy boundary.

B3—36 to 48 inches; mottled yellowish brown (10YR 5/4), light gray (10YR 6/1), and strong brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; few fine black concretions; very strongly acid; gradual wavy boundary.

C—48 to 60 inches; yellowish brown (10YR 5/4) sandy loam; few fine faint grayish brown mottles; weak medium subangular blocky structure; very friable; very strongly acid.

The solum is 30 to 60 inches thick. In unlimed areas reaction is strongly acid or very strongly acid.

The A horizon has hue of 10YR, value of 4, and chroma of 2 to 4; or it has hue of 7.5YR, value of 5, and chroma of 4. The B21 horizon has hue of 7.5YR, value of 5, and chroma of 6 or 8; or it has hue of 10YR, value of 5, and chroma of 4 or 6. The B22 horizon has matrix colors that are similar to the B21 horizon and has few to common mottles with chroma of 2 or less. Mottles with chroma of 2 or less are in the upper 24 inches of the soil. The B23 and B3 horizons have hue of 10YR, value of 5, and chroma of 6 or 8; or they have hue of 2.5Y, value of 5, and chroma of 4 with grayish mottles. In some pedons these horizons do not have dominant matrix colors and are mottled in shades of gray and brown. The B horizon is loam or fine sandy loam. The C horizon has about the same range in color as the B23 horizon. It is sandy loam or fine sandy loam.

Leaf series

The Leaf series consists of deep, poorly drained, very slowly permeable, grayish soils that formed in thick beds of fine textured alluvium or marine sediment. These soils are on stream terraces or upland flats. They are subject to brief flooding or ponding. Slopes are 0 to 2 percent.

Leaf soils are near Bibb, Choccolocco, Mantachie, Myatt, and Stough soils. Bibb and Mantachie soils do not have a Bt horizon. Choccolocco soils have less than 35 percent clay in the Bt horizon and do not have gray mottles in the subsoil. Myatt soils have less than 35 percent clay in the Bt horizon. Stough soils have less than 18 percent clay in the upper 20 inches of the Bt horizon.

Typical pedon of Leaf silt loam, 2.5 miles southeast of the Marion County Courthouse in Hamilton, 925 feet south and 40 feet west of the northwest corner of the NE1/4 of NE1/4 of Sec. 14, T. 11 S., R. 14 W.:

Ap—0 to 6 inches; dark gray (10YR 4/1) silt loam; moderate medium granular structure; firm; many fine roots; very strongly acid; abrupt smooth boundary.

B21tg—6 to 26 inches; light gray (10YR 6/1) silty clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; many thin clay films on faces of peds; few fine brown concretions; very strongly acid; gradual wavy boundary.

B22tg—26 to 61 inches; gray (10YR 5/1) clay; common medium prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; firm; many thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B23tg—61 to 89 inches; light gray (10YR 6/1) clay; many medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; many thin clay films on faces of peds; common fine black concretions; very strongly acid.

The solum is more than 60 inches thick. In unlimed areas reaction is strongly acid or very strongly acid throughout.

The A horizon has hue of 10YR, value of 4, and chroma of 1 or 2 or value of 5 and chroma of 2. The Bt horizon has hue of 10YR and 2.5Y, value of 5 or 6, and chroma of 1; or it is N 5/0 or N 6/0. It is silty clay or clay.

Luverne series

The Luverne series consists of deep, well drained, reddish soils. Permeability in these soils is moderately slow. These soils formed in marine-deposited, stratified sand and clay. They are on ridgetops, benches, and hillsides on the Coastal Plain uplands. Slopes range from 6 to 35 percent but are mainly 6 to 15 percent.

Luverne soils are near Bama, Flomaton, Ora, Pikeville, Ruston, Saffell, Savannah, and Smithdale soils. Bama, Pikeville, Ruston, and Smithdale soils have less than 35 percent clay in the Bt horizon. Flomaton and Saffell soils have 30 to 70 percent gravel in the solum. Ora and Savannah soils have a fragipan in the subsoil.

Typical pedon of Luverne fine sandy loam, 6 to 15 percent slopes, 8.0 miles southwest of Hamilton on State Highway 17, 625 feet north and 10 feet west of the southeast corner of the NE1/4 of Sec. 34, T. 11 S., R. 15 W.:

A1—0 to 3 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; many fine and few medium roots; 10 to 15 percent gravel; very strongly acid; clear smooth boundary.

A2—3 to 9 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; friable; common fine roots; 10 to 15 percent gravel; very strongly acid; clear smooth boundary.

B1—9 to 11 inches; yellowish red (5YR 5/8) clay loam; weak medium subangular blocky structure; firm; few fine roots; few thin clay films on faces of peds; very strongly acid; clear smooth boundary.

B21t—11 to 29 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; firm; few fine roots; many thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—29 to 48 inches; yellowish red (5YR 5/6) clay; many medium distinct brownish yellow (10YR 6/6), light gray (10YR 6/1), and red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; many thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

C—48 to 60 inches; stratified light gray (10YR 6/1) clayey and red (2.5YR 4/6) sandy material; 1- to 4-inch thick strata; very strongly acid.

The solum is 40 to 50 inches thick. Coarse fragments make up 0 to 15 percent, by volume, of the A horizon and 0 to 8 percent, by volume, of the B horizon. In unlimed areas reaction is strongly acid or very strongly acid.

The A2 or Ap horizon has hue of 10YR, value of 5, and chroma of 3 to 6 or value of 4 and chroma of 3. The B2t horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. The lower part of the B2t horizon has a light gray to red matrix color and is generally mottled with shades of red, brown, gray, or yellow. The B2t horizon is clay, sandy clay, or clay loam. The color of the C horizon is variable, and the texture is stratified sandy and clayey material.

Mantachie series

The Mantachie series consists of deep, somewhat poorly drained, moderately permeable, grayish soils that formed in loamy alluvium. These soils are on first bottoms and are subject to frequent flooding. They have a seasonal high water table at a depth of 1 foot to 1.5 feet from January to March. Slopes are 0 to 2 percent.

Mantachie soils are near Bassfield, Bibb, Choccolocco, Iuka, Kirkville, Leaf, Myatt, Ochlockonee, and Stough soils. Bassfield, Choccolocco, Leaf, Myatt, and Stough soils are on low terraces and have a Bt horizon. Also, Myatt soils are mainly gray, and Bassfield soils do not have mottles with chroma of 2 or less. Bibb, Iuka, Kirkville, and Ochlockonee soils have less than 18 percent clay in the 10- to 40-inch control section. Bibb soils are mainly gray, and Iuka and Ochlockonee soils have colors with higher chroma.

Typical pedon of Mantachie silt loam, in an area of Iuka-Mantachie complex, 0.5 mile north of Gravel Springs School, 660 feet south and 525 feet west of the northeast corner of the SW1/4 of Sec. 9, T. 10 S., R. 15 W.:

A1—0 to 4 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.

C1—4 to 10 inches; mottled light brownish gray (10YR 6/2) and pale brown (10YR 6/3) silt loam; few fine distinct yellowish brown mottles; weak fine granular structure; friable; common fine roots; very strongly acid; clear smooth boundary.

C2—10 to 24 inches; mottled light gray (10YR 6/1), pale brown (10YR 6/3), and yellowish brown (10YR 5/4) loam; massive; friable; few brown concretions; very strongly acid; clear wavy boundary.

C3g—24 to 48 inches; light gray (10YR 6/1) loam; many medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; few brown concretions; very strongly acid; gradual wavy boundary.

C4g—48 to 60 inches; light gray (10YR 6/1) loam; massive; friable; few small pebbles; strongly acid; clear wavy boundary.

In unlimed areas reaction is strongly acid or very strongly acid throughout.

The A horizon has hue of 10YR, value of 4, and chroma of 2 or 3 or value of 5 and chroma of 3. The C1 and C2 horizons are mottled in shades of gray, brown, and yellow. They are loam, sandy loam, or silt loam. The Cg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It is loam, silt loam, clay loam, or sandy loam. Below a depth of 42 inches, it is sand, gravelly sandy loam, or loamy sand. Most pedons are mottled with shades of brown and yellow.

Myatt series

The Myatt series consists of deep, poorly drained, grayish soils. Permeability is moderate to moderately slow. These soils formed in coarse to moderately fine textured alluvial deposits. They are on low stream terraces and broad upland flats and are subject to brief, frequent flooding or ponding. Slopes are 0 to 2 percent.

Myatt soils are near Bibb, Choccolocco, Leaf, Mantachie, and Stough soils. Bibb and Mantachie soils do not have a Bt horizon. Also, Mantachie soils are less gray. Choccolocco soils do not have mottles with chroma of 2 or less in the upper 24 inches of the argillic horizon. Leaf soils have more than 35 percent clay in the Bt horizon. Stough soils have less than 18 percent clay in the upper 20 inches of the Bt horizon.

Typical pedon of Myatt silt loam, 1 mile west of Winfield on road to Upper Coastal Plain Experiment Station, 1,050 feet east and 125 feet north of the southwest corner of the SE1/4 of Sec. 18, T. 13 S., R. 12 W.:

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

A2g—6 to 13 inches; light gray (10YR 6/1) silt loam; common medium distinct brownish yellow (10YR 6/6) mottles; weak fine granular structure; friable; common fine roots; strongly acid; gradual wavy boundary.

B21tg—13 to 32 inches; light gray (10YR 6/1) loam; many medium distinct yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; friable; few fine roots; common thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22tg—32 to 49 inches; mottled light gray (10YR 6/1) and yellowish brown (10YR 5/6) loam; few fine distinct yellowish red mottles; weak medium subangular blocky structure; friable; few thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3g—49 to 60 inches; light gray (10YR 6/1) loam; common medium distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

IICg—60 to 72 inches; light gray (10YR 6/1) gravelly sandy loam; single grain; very friable; very strongly acid.

The solum is 40 to 60 inches thick. In unlimed areas reaction is strongly acid or very strongly acid.

The Ap horizon has hue of 10YR, value of 4, and chroma of 1 or 2 or value of 5 and chroma of 1. Most pedons are mottled with shades of brown or gray. The A2 horizon has hue of 10YR, value of 6, and chroma of 1 or 2 or value of 5 and chroma of 1. The B2tg horizon has hue of 10YR, value of 6 or 7, and chroma of 1. It is mottled with yellowish brown, brownish yellow, strong brown, or yellowish red. It is loam or sandy clay loam. In some pedons the lower part of the B2tg horizon does not have a dominant matrix color and is mottled in shades of gray, brown, or yellow. The B3g horizon has about the same color range as the B2tg horizon. It is sandy loam, loamy sand, fine sandy loam, or loam. The IIC horizon is variable in color. It ranges from loamy sand to sand and gravel.

Nauvoo series

The Nauvoo series consists of deep, well drained, moderately permeable, reddish soils that formed in material that was weathered from sandstone or from interbedded sandstone and shale. These soils are on ridgetops, benches, saddles, and hillsides. Slopes range from 2 to 35 percent but are mainly 2 to 10 percent.

Nauvoo soils are near Brilliant, Hector, and Townley soils. Brilliant soils do not have a Bt horizon. Hector soils

have bedrock at a depth of less than 20 inches from the surface. Townley soils have more than 35 percent clay in the Bt horizon.

Typical pedon of Nauvoo fine sandy loam, 6 to 10 percent slopes, 2.0 miles north of Bear Creek, 860 feet south and 200 east of the northwest corner of the NE1/4 of NW1/4 of Sec. 3, T. 9 S., R. 11 W.:

Ap—0 to 7 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; many fine and medium roots; 12 percent gravel 1/4 to 1 inch in diameter; very strongly acid; abrupt smooth boundary.

B1—7 to 11 inches; yellowish red (5YR 4/6) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; few thin clay films on faces of peds; 5 percent gravel 1/4 to 1 inch in diameter; very strongly acid; clear wavy boundary.

B2t—11 to 30 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common thin clay films on faces of peds; 5 percent gravel 1/4 to 1 inch in diameter; very strongly acid; gradual wavy boundary.

B3—30 to 42 inches; yellowish red (5YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; few thin clay films on faces of peds; 10 percent gravel 1/4 to 1 inch in diameter; very strongly acid; clear wavy boundary.

Cr—42 inches; yellowish red, level bedded, massive, weathered sandstone bedrock.

The solum is 30 to 50 inches thick, and the depth to weathered bedrock is 40 to 60 inches. Coarse fragments consist of sandstone, shale, or quartz. In unlimed areas reaction is strongly acid or very strongly acid.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Some pedons have an A1 horizon less than 6 inches thick with value of 3 and chroma of 2 or 3. The A horizon is fine sandy loam or loam. Coarse fragments range from 0 to 15 percent. The B1 horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. It is fine sandy loam, loam, or sandy clay loam. Coarse fragments range from 0 to 10 percent. The B2 horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8. It is loam, sandy clay loam, or clay loam. In some pedons, the lower part of this horizon is mottled in shades of yellow, brown, and red. Coarse fragments range from 0 to 8 percent. The B3 horizon has about the same color range as the B1 horizon. It is fine sandy loam, loam, or sandy clay loam. Some pedons are mottled with shades of brown or yellow. Coarse fragments range from 0 to 15 percent. The Cr horizon is level bedded, weathered sandstone or interbedded sandstone and shale in shades of red, yellow, or gray. It ranges from highly weathered and fractured to a slightly weathered, massive, and coherent state. It is rippable by the use of heavy equipment and can be cut in most places with handtools. Some pedons have a C horizon 2 to 10 inches thick that overlies the paralithic contact.

Ochlockonee series

The Ochlockonee series consists of deep, well drained, moderately rapidly permeable, brownish soils that formed in sandy and loamy alluvium. These soils are on first bottoms and are subject to very brief, frequent flooding. Slopes are 0 to 2 percent.

Ochlockonee soils are near Bassfield, Bibb, Bigbee, Iuka, and Mantachie soils. Bassfield soils have a Bt horizon. Bibb, Iuka, and Mantachie soils have colors with chroma of 2 or less within 20 inches of the surface. Bigbee soils are sandy throughout.

Typical pedon of Ochlockonee fine sandy loam, 2.5 miles southeast of Hamilton, 660 feet west of the southeast corner of the NE1/4 of NW1/4 of Sec. 13, T. 11 S., R. 14 W.:

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

A12—8 to 12 inches; brown (10YR 4/3) loam; common fine distinct yellowish brown (10YR 5/4) and dark brown (7.5YR 4/2) mottles; massive firm; compact in place; very strongly acid; abrupt smooth boundary.

C1—12 to 20 inches; stratified brown (7.5YR 4/4) sandy loam and yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; friable; 1/4- to 3/4-inch thick strata; very strongly acid; clear wavy boundary.

C2—20 to 30 inches; brown (7.5YR 4/4) loam; massive; friable; very strongly acid; clear wavy boundary.

C3—30 to 44 inches; brown (7.5YR 4/4) sandy loam; massive; very friable; very strongly acid; gradual wavy boundary.

IIC4—44 to 60 inches; dark yellowish brown (10YR 4/4) loamy sand; single grain; loose; very strongly acid.

In unlimed areas reaction is strongly acid or very strongly acid.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. The C horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. The lower C horizons of some pedons are mottled with brown or gray. The C1, C2, and C3 horizons are sandy loam to loam. The 10- to 40-inch control section has an average of 10 to 17 percent clay. The IIC4 horizon is loamy sand to sand. Thin strata of sandy or silty material are in most profiles. In some pedons, mottles with chroma of 2 or less are below a depth of 20 inches.

Ora series

The Ora series consists of deep, moderately well drained, slowly permeable, reddish soils that formed in marine and fluvatile deposits of medium and moderately fine texture. These soils are on ridgetops and side slopes in the Coastal Plain. Slopes range from 2 to 10 percent but are mainly 2 to 6 percent.

Ora soils are near Bama, Luverne, Pikeville, Ruston, Saffell, Savannah and Smithdale soils. Bama, Luverne, Pikeville, Ruston, Saffell and Smithdale soils do not have a fragipan. Also, Luverne soils have more than 35 percent clay in the upper part of the subsoil; Ruston soils are bisequal; and Saffell soils have more than 35 percent gravel in the Bt horizon. Savannah soils have a yellowish brown or strong brown Bt horizon.

Typical pedon of Ora silt loam, 2 to 6 percent slopes, 0.38 mile north of Hackleburg High School, 330 feet south and 925 feet east of the northwest corner of the SE1/4 of Sec. 7, T. 9 S., R. 12 W.:

Ap—0 to 8 inches; brown (10YR 5/3) silt loam; moderate fine granular structure; friable; medium acid; clear smooth boundary.

B2t—8 to 24 inches; yellowish red (5YR 4/8) silt loam; weak and moderate medium subangular blocky structure; friable; common thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bx1—24 to 36 inches; yellowish red (5YR 4/6) loam; common medium distinct yellowish brown (10YR 5/4) and few fine distinct light brownish gray mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; upper part of prisms part to weak coarse platy structure; firm; few thin clay films on faces of peds; compact in place; brittle in about 50 percent of the mass; very strongly acid; gradual wavy boundary.

Bx2—36 to 48 inches; yellowish red (5YR 4/6) loam; many medium distinct red (2.5YR 4/6) and light brownish gray (10YR 6/2) mottles; moderate coarse prismatic structure parting to weak medium subangular blocky; firm; common thin clay films on faces of peds; compact in place; brittle in about 50 percent of the mass; very strongly acid; gradual wavy boundary.

B3—48 to 72 inches; red (2.5YR 4/8) loam; common medium distinct yellowish brown (10YR 5/4 and 5/8) and light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; very strongly acid.

The solum is more than 72 inches thick. Depth to the fragipan ranges from 20 to 36 inches. In unlimed areas reaction is strongly acid or very strongly acid.

The Ap horizon has hue of 10YR, value of 5, and chroma of 3 or 4. The A1 horizon has hue of 10YR, value of 4, and chroma of 1. The A horizon is silt loam to fine sandy loam. The B2t horizon has hue of 5YR, value of 4 or 5, and chroma of 6 or 8; or it has hue of 2.5YR, value of 4, and chroma of 6 or 8. It is silt loam, loam, clay loam, or sandy clay loam. The 10- to 40-inch control section has an average of 24 to 32 percent clay. The fragipan has hue of 7.5YR, 5YR, or 2.5YR, value of 4 or 5, and chroma of 6 or 8 and is mottled with shades of gray and brown; or does not have a matrix color and is mottled in shades of red, brown, and gray. It is loam, sandy loam, sandy clay loam, or silt loam. The B3 horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. It is sandy loam, loam, sandy clay loam. Most pedons are mottled with shades of gray, brown, or yellow.

Pikeville series

The Pikeville series consists of deep, well drained, moderately permeable, reddish soils that formed in loamy and gravelly marine deposits. These soils are on hillsides and very narrow ridgetops. Slopes range from 15 to 35 percent.

Pikeville soils are near Flomaton, Luverne, Ora, Ruston, Saffell, and Smithdale soils. Flomaton soils are more gravelly throughout than Pikeville soils. Luverne soils have a clayey Bt horizon. Ora soils have a fragipan. Ruston soils are bisequal and are not gravelly in the lower part of the Bt horizon. Saffell soils have more than 35 percent gravel in the upper 20 inches of the Bt horizon. Smithdale soils are not gravelly or very gravelly in the lower part of the Bt horizon.

Typical pedon of Pikeville loam, in an area of Pikeville-Flomaton association, hilly, 1.5 miles west of the Marion County Courthouse, 700 feet east of the southwest corner of the NE1/4 of Sec. 33, T. 10 S., R. 14 W.:

A1—0 to 4 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; friable; many fine and medium roots; 4 percent gravel by volume; strongly acid; clear smooth boundary.

A2—4 to 12 inches; brown (10YR 5/3) loam; weak fine granular structure; friable; few fine and medium roots; 1 to 2 percent gravel by volume; strongly acid; gradual wavy boundary.

B21t—12 to 30 inches; yellowish red (5YR 4/6) gravelly loam; weak and moderate medium subangular blocky structure; friable; few fine roots; few thin clay films on faces of peds; 4 percent gravel by volume 1/4 inch to 2 inches in diameter; strongly acid; gradual wavy boundary.

B22t—30 to 40 inches; yellowish red (5YR 4/6) gravelly loam; weak medium subangular blocky structure; friable; few fine roots; few thin clay films on faces of peds; 15 to 20 percent gravel by volume 1/4 inch to 2 inches in diameter; very strongly acid; gradual wavy boundary.

B23t—40 to 65 inches; yellowish red (5YR 4/6) very gravelly sandy clay loam; weak medium subangular blocky structure; friable; common thin clay films on faces of peds; sand grains coated and bridged with clay; 70 to 75 percent gravel, by volume, 1/4 inch to 3 inches in diameter; very strongly acid; gradual wavy boundary.

B24t—65 to 90 inches; yellowish red (5YR 4/8) very gravelly fine sandy loam; massive; friable; few thin clay films on gravel; 60 percent gravel 1/4 inch to 3 inches in diameter; many strata of yellowish red (5YR 4/6) sandy clay loam and strong brown (7.5YR 5/6) sandy loam 1 inch to 5 inches thick and 1 inch to 4 inches apart; massive; strata are generally continuous horizontally and sand grains are coated and bridged with clay; very strongly acid.

The solum is more than 6 feet thick, and depth to horizons that have more than 15 percent gravel ranges from 30 to 48 inches. In unlimed areas reaction is strongly acid or very strongly acid throughout.

The A1 or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 through 4. The A2 horizon has hue of 10YR, value of 4 to 6, and chroma of 3 or 4. The B1 horizon, if present, has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. It is sandy clay loam, loam, fine sandy loam, or sandy loam. The B21t horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 6 or 8. It is sandy clay loam, clay loam, or loam. The 10- to 40-inch control section has an average of 18 to 30 percent clay and as much as 15 percent gravel. The B22t horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 or 8. It is gravelly sandy clay loam, gravelly clay loam, gravelly loam, gravelly sandy loam, or gravelly fine sandy loam. Gravel content ranges from 15 to 40 percent. The B23t and B24t horizons have hue of 10YR to 2.5YR, value of 4 or 5, and chroma of 4 to 8. They are gravelly sandy loam, gravelly loam, gravelly sandy clay loam, or their very gravelly counterparts. Gravel content ranges from 15 to 80 percent. The B24t horizon has strata with hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 or 8. The strata is sandy clay loam, sandy loam, loam, or fine sandy loam.

Ruston series

The Ruston series consists of deep, well drained, moderately permeable, reddish soils that formed in thick beds of loamy marine or stream deposits. These soils are on ridgetops and benches. Slopes range from 2 to 6 percent.

Ruston soils are near Bama, Flomaton, Luverne, Ora, Pikeville, Saffell, Savannah, and Smithdale soils. Bama and Smithdale soils do not have bisequal profiles. Flomaton and Saffell soils have more than 35 gravel in the Bt horizon. Luverne soils have more than 35 percent clay in the Bt horizon. Ora and Savannah soils have a fragipan in the subsoil. Pikeville soils are gravelly between depths of 20 and 50 inches.

Typical pedon of Ruston fine sandy loam, 2 to 6 percent slopes, 9.0 miles southeast of Hamilton, 660 feet south and 530 feet west of the northeast corner of the SW1/4 of Sec. 35, T. 11 W., R. 12 W.:

Ap—0 to 6 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; many fine roots; medium acid; clear smooth boundary.

B2t—6 to 33 inches; yellowish red (5YR 4/6) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3t&A'2—33 to 43 inches; yellowish red (5YR 5/6) sandy loam (B3t); weak medium subangular blocky structure; friable; pale brown (10YR 6/3) sandy loam (A'2); massive; firm; slightly compact in place; very strongly acid; clear wavy boundary.

B'21t—43 to 66 inches; yellowish red (5YR 4/8) sandy clay loam; moderate medium subangular structure; friable; common thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B'22t—66 to 72 inches; yellowish red (5YR 5/8) fine sandy loam; few fine distinct very pale brown mottles; weak medium subangular blocky structure; friable; very strongly acid.

The solum is more than 60 inches thick. In unlimed areas reaction is strongly acid or very strongly acid throughout.

The Ap or A2 horizon has hue of 10YR, value of 5, and chroma of 3 or 4 or value of 4 and chroma of 3. The B1 horizon, if present, has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. It is loam or fine sandy loam. The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. It is loam, fine sandy loam, sandy clay loam, or clay loam. The A'2 horizon has hue of 10YR, value of 6, and chroma of 3 or 4. The B't horizon has the same color range as the Bt horizon and is mottled with shades of yellow and brown in some pedons. Clay content decreases from the B2t horizon to the B3t and A'2 horizons, then increases in the B't horizon. The B't horizon is fine sandy loam, loam, sandy clay loam, or clay loam.

Saffell series

The Saffell series consists of deep, well drained, moderately permeable, gravelly reddish soils that formed in sandy and clayey marine deposits of high gravel content. These soils are on narrow ridgetops and steep hillsides. Slopes range from 6 to 15 percent.

Saffell soils are near Bama, Flomaton, Luverne, Ora Pikeville, Ruston, Savannah, and Smithdale soils. Bama soils have less than 15 percent gravel in the solum. Flomaton soils have a solum that is more than 60 inches thick and have loamy sand or sand in some part of the argillic horizon. Luverne soils have more than 35 percent clay in the Bt horizon. Ora and Savannah soils have a fragipan and have less than 15 percent gravel. Pikeville and Smithdale soils have less than 15 percent gravel in the upper part of the Bt horizon. Ruston soils are bisequal and have less than 15 percent gravel.

Typical pedon of Saffell gravelly fine sandy loam, 6 to 15 percent slopes, 2.25 miles southwest of Hackleburg, 930 feet north of the southeast corner of the SW1/4 of NE1/4 of Sec. 25, T. 9 S., R. 13 W.:

Ap—0 to 10 inches; brown (10YR 4/3) gravelly fine sandy loam; weak fine granular structure; friable; many fine roots; 35 percent quartz and chert gravel 1/4 inch to 2 inches in size; very strongly acid; abrupt smooth boundary.

B1—10 to 15 inches; reddish brown (5YR 4/4) very gravelly fine sandy loam; weak medium subangular blocky structure; friable; few thin clay films on faces of peds; 40 percent chert and quartz gravel 1/4 inch to 2 inches in size; very strongly acid; gradual wavy boundary.

B2t—15 to 37 inches; yellowish red (5YR 4/6) very gravelly fine sandy loam; weak medium subangular blocky structure; friable; common thin clay films on faces of peds; 50 percent chert and quartz gravel 1/4 inch to 2 inches in size; very strongly acid; gradual wavy boundary.

B3t—37 to 47 inches; yellowish red (5YR 4/6) very gravelly fine sandy loam; weak medium subangular blocky structure; friable; sand grains and gravel coated and bridged with clay; 65 percent quartz and chert gravel 1/4 inch to 2 inches in size; very strongly acid; gradual wavy boundary.

C—47 to 60 inches; strong brown (7.5YR 5/6) very gravelly loamy sand; single grain; loose; few pebbles coated with clay films; 80 percent chert and quartz gravel 1/4 inch to 3 inches in size; very strongly acid.

The solum is 40 to 60 inches thick. In unlimed areas reaction is strongly acid or very strongly acid.

The Ap or A2 horizon has hue of 10YR, value of 4, and chroma of 2 or 3 or value of 5 and chroma of 3 or 4. The A1 horizon has hue of 10YR, value of 4, and chroma of 2. The B1 horizon has hue of 7.5YR, value of 5, and chroma of 6; or it has hue of 5YR, value of 4, and chroma of 4. It is gravelly sandy loam, gravelly sandy clay loam, or the very gravelly counterparts. The B2t horizon has hue of 5YR, value of 4 or 5, and chroma of 4 to 8; or it has hue of 2.5YR, value of 4 or 5, and chroma of 6. It is very gravelly fine sandy loam, very gravelly loam, or very gravelly sandy clay loam. Gravel content ranges from 35 to 60 percent. The B3 horizon has hue of 5YR, value of 4 or 5, and chroma of 5 to 8; or it has hue of 7.5YR, value of 5, and chroma of 6 or 8. It is very gravelly sandy loam or very gravelly sandy clay loam. The C horizon has hue of 10YR, 7.5YR, or 5YR and has value of 5, and chroma of 6 or 8. It is gravelly sandy loam, gravelly loamy sand, or the very gravelly counterparts. Gravel content ranges from 30 to 80 percent.

Savannah series

The Savannah series consists of deep, moderately well drained, brownish soils that have a fragipan in the lower part of the subsoil (fig. 10). Permeability is moderate above the fragipan and moderately slow in the fragipan. These soils formed in medium to moderately fine textured fluvial and marine deposits. They are on ridgetops, benches, and terraces. Slopes range from 0 to 6 percent.

Savannah soils are near Luverne, Ora, Ruston, Saffell, and Stough soils. Luverne soils have more than 35 percent clay in the Bt horizon. Ora soils are yellowish red or red in the upper part of the Bt horizon. Ruston soils are bisequal. Saffell soils have more than 35 percent gravel in the upper part of the Bt horizon. Stough soils have less than 18 percent clay in the 10- to 40-inch control section.

Typical pedon of Savannah loam, 0 to 2 percent slopes, 1.75 miles east of the Marion County Courthouse in Hamilton, 790 feet west and 125 feet north of the southeast corner of the NE1/4 of Sec. 36, T. 10 S., R. 14 W.:

Ap—0 to 8 inches; brown (10YR 5/3) loam; weak medium granular structure; friable; very strongly acid; abrupt smooth boundary.

B2t—8 to 20 inches; yellowish brown (10YR 5/4) loam; weak and moderate medium subangular blocky structure; friable; few thin clay films on faces of peds; strongly acid; clear wavy boundary.

Bx1—20 to 24 inches; yellowish brown (10YR 5/4) loam; common medium distinct light brownish gray (10YR 6/2) and dark yellowish brown (10YR 4/4) mottles; moderate coarse prismatic structure parting to moderate fine subangular blocky; firm; common thin clay films on faces of peds; brittle in about 65 percent of the mass; compact in place; few fine and medium pebbles; very strongly acid; clear wavy boundary.

Bx2—24 to 32 inches; yellowish brown (10YR 5/6) clay loam; many medium distinct light gray (10YR 6/1) and strong brown (7.5YR 5/6) mottles; moderate coarse prismatic structure parting to moderate fine subangular blocky; firm; common thin clay films on faces of peds; brittle in about 65 percent of the mass; compact in place; few fine and medium pebbles; very strongly acid; gradual wavy boundary.

Bx3—32 to 52 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct light gray (10YR 6/1) and strong brown (7.5YR 5/6) mottles; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; firm to friable; common clay films on faces of peds; brittle in about 65 percent of the mass; compact in place; few fine and medium pebbles; very strongly acid; gradual wavy boundary.

Bx4—52 to 66 inches; yellowish brown (10YR 5/6) sandy loam; common medium distinct light gray (10YR 6/1 and strong brown (7.5YR 5/6) mottles; weak fine and medium subangular blocky structure; friable; few thin clay films on faces of peds; brittle in about 65 percent of the mass; compact in place; common fine pebbles; extremely acid; gradual wavy boundary.

The solum is more than 60 inches thick. In unlimed areas reaction is strongly acid to extremely acid.

The Ap horizon has hue of 10YR, value of 5, and chroma of 2 to 4 to 8. The Bt horizon has hue of 10YR, value of 5, and chroma of 4. It is loam, clay loam, or sandy clay loam. The fragipan has hue of 10YR, value of 5, and chroma of 4 to 8. It is mottled in shades of brown, gray, or red; or it may not have a matrix color and is mottled with shades of red gray, yellow, and brown. It is sandy loam, loam, sandy clay loam, or clay loam.

Smithdale series

The Smithdale series consists of deep, well drained, moderately permeable, reddish soils that formed in loamy marine deposits. These soils are on sloping to steep side slopes in the Coastal Plain. Slopes range from 6 to 35 percent.

Smithdale soils are near Bama, Flomaton, Luverne, Ora, Pikeville, Ruston, and Saffell soils. Bama soils do not have a significant decrease in clay with depth in the upper 60 inches of the soil. Flomaton and Saffell soils have more than 35 percent gravel in the Bt horizon. Luverne soils have more than 35 percent clay in the Bt horizon. Ora soils have a fragipan in the subsoil. Pikeville soils are gravelly between a depth of 30 and 50 inches. Ruston soils are bisequal.

Typical pedon of Smithdale fine sandy loam, 6 to 10 percent slopes, 8.5 miles southwest of Hamilton on Alabama Highway 17, 990 feet west and 150 feet south of the northeast corner of Sec. 34, T. 1 S., R. 15 W.:

Ap—0 to 5 inches; dark brown (7.5YR 4/4) fine sandy loam; weak fine granular structure; friable; few medium pebbles; very strongly acid; clear smooth boundary.

B21t—5 to 20 inches; yellowish red (5YR 4/6) clay loam; weak and moderate medium subangular blocky structure; friable; common very thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—20 to 50 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; many very thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B23t—50 to 66 inches; yellowish red (5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; few very thin clay films on faces of peds; very strongly acid; gradual irregular boundary.

B24t—66 to 72 inches; yellowish red (5YR 5/6) sandy loam; weak medium subangular blocky structure; friable; few pockets of pale brown (10YR 6/3) loamy sand; very strongly acid.

The solum is more than 60 inches thick. In unlimed areas reaction is strongly acid or very strongly acid.

The A1 horizon has hue of 10YR, value of 4, and chroma of 1 to 3. The Ap or A2 horizon has hue of 10YR and has value of 4 and chroma of 3, value of 5 and chroma of 3 to 6, or value of 6 and chroma of 3 or 4; or it has hue of 7.5YR, value of 4 and chroma of 4. The B21t and B22t horizons have hue of 5YR, value of 5, and chroma of 6; or they have hue of 5YR and 2.5YR, value of 4, and chroma of 6 or 8. They are loam, sandy clay loam, or clay loam. The B23t and B24t horizons have hue of 5YR, value of 5, and chroma of 6; or they have hue of 5YR or 2.5YR, value of 4, and chroma of 6 or 8. They are sandy loam or loam. Some pedons have pockets of sandy material in these horizons.

Stough series

The Stough series consists of deep, somewhat poorly drained, mottled soils. Permeability in these soils is moderately slow. These soils formed in loamy marine or fluvial deposits. They are on broad upland flats and nearly level terraces. Slopes are 0 to 2 percent.

Stough soils are near Bibb, Cahaba, Choccolocco, Iuka, Kirkville, Leaf, Mantachie, Myatt, and Savannah soils. Bibb and Iuka soils are massive and have thin bedding planes in the upper 20 inches of the soil. Cahaba, Choccolocco, Mantachie, and Myatt soils have more than 18 percent clay in the control section. Kirkville soils have higher chroma and less gray in the upper 24 inches of the soil. Leaf soils have more than 35 percent clay in the control section. Savannah soils have a fragipan.

Typical pedon of Stough loam, 2 miles southeast of the Marion County Courthouse in Hamilton, 400 feet north of the southwest corner of the SE1/4 of SW1/4 of Sec. 11, T. 11 S, R. 14 W.:

A1—0 to 5 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; friable; very strongly acid; clear smooth boundary.

A2—5 to 13 inches; grayish brown (10YR 5/2) fine sandy loam; few fine distinct pale brown mottles; weak fine granular structure; friable; very strongly acid; clear smooth boundary.

B21t—13 to 25 inches; yellowish brown (10YR 5/6) fine sandy loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; few thin clay films on faces of peds; very strongly acid; clear wavy boundary.

B22t—25 to 40 inches; mottled yellowish brown (10YR 5/6) and light gray (10YR 6/1) fine sandy loam; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; friable to firm; common thin clay films on faces of peds; slightly brittle in about 50 percent of the mass; compact in place; very strongly acid; gradual wavy boundary.

B23tg—41 to 70 inches; light gray (10YR 6/1) sandy clay loam; many medium distinct yellowish brown (10YR 5/6) and yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable to firm; few thin clay films on faces of peds; compact in place; slightly brittle in 10 to 50 percent of the mass; very strongly acid; gradual wavy boundary.

The solum is more than 60 inches thick. In unlimed areas reaction is strongly acid or very strongly acid.

The A1 horizon has hue of 10YR, value of 4, and chroma of 1 or 2. The Ap or A2 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or value of 6 and chroma of 3. The B21t horizon has hue of 10YR, value of 5, and chroma of 4 or 6 or value of 6 and chroma of 3 or 4. It is loam or sandy loam. Most pedons are mottled with shades of gray. The 10- to 40-inch control section has an average of 14 to 18 percent clay. The B22t and B23t horizons are mottled with shades of gray and brown, or they have a yellowish brown or light gray matrix mottled with brown or gray. They are sandy loam, loam, or sandy clay loam. These horizons are brittle and compact and restrict roots and water in about 50 percent of the mass.

Townley series

The Townley series consists of deep, well drained, slowly permeable, reddish soils that formed in material that was weathered from shale or from interbedded shale and sandstone. These soils are on ridgetops, benches, and side slopes. Slopes range from 2 to 40 percent but are mainly 6 to 25 percent.

Townley soils are near Brilliant, Hector, and Nauvoo soils. Brilliant soils do not have a Bt horizon. Hector soils are less than 20 inches deep to bedrock and have less than 35 percent clay in the B horizon. Nauvoo soils have

18 to 35 percent clay in the upper 20 inches of the Bt horizon.

Typical pedon of Townley silt loam, 6 to 15 percent slopes, about 5 miles east of Haleys, 200 feet south and east of the northwest corner of SE1/4 of Sec. 1, T. 11 S., R. 11 W.:

A1—0 to 2 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine and medium roots; 15 percent small shale fragments; very strongly acid; clear smooth boundary.

A2—2 to 9 inches; yellowish brown (10YR 5/4) silt loam; weak fine granular structure; friable; many fine roots; 15 percent small shale fragments; very strongly acid; clear smooth boundary.

B21t—9 to 19 inches; yellowish red (5YR 5/8) silty clay; moderate fine and medium subangular blocky structure; firm; few fine roots; many thin clay films on faces of peds; few small shale fragments; very strongly acid; gradual wavy boundary.

B22t—19 to 26 inches; yellowish red (5YR 5/8) silty clay; common medium distinct red (2.5YR 4/6) mottles; moderate fine and medium subangular blocky structure; firm; few fine roots; many thin clay films on faces of peds; few small shale fragments; very strongly acid; gradual wavy boundary.

C—26 to 31 inches; mottled light gray (10YR 7/2), strong brown (7.5YR 5/6), red (2.5YR 4/6), and yellowish red (5YR 4/8) partially weathered shale fragments and silty clay; common thin clay films between plates; very strongly acid; gradual wavy boundary.

Cr—31 to 40 inches; level bedded massive shale.

The solum is 20 to 30 inches thick. Depth to shale is 20 to 40 inches. In unlimed areas reaction is strongly acid to extremely acid.

The A1 horizon has hue of 10YR, value of 4, and chroma of 1 or 2. The Ap or A2 horizon has hue of 10YR, value of 4, and chroma of 3; hue of 10YR, value of 5, and chroma of 3 or 4; or hue of 7.5YR, value of 4, and chroma of 4. Shale fragments make up 10 to 20 percent, by volume, of the A horizon. The Bt horizon has hue of 5YR or 2.5YR, value of 4, and chroma of 6 or 8; or it has hue of 2.5YR, 5YR, or 7.5YR and has value of 5 and chroma of 6 or 8. It is silty clay or clay. The control section has an average of 40 to 50 percent clay. In some pedons the lower part of the Bt horizon is mottled with shades of brown, yellow, or red. Some pedons have a B1 horizon. Where present, the B1 horizon is 3 to 8 inches thick, has colors similar to those in the upper part of the Bt horizon, and is silty clay loam or silt loam. The C horizon consists of partially weathered shale fragments and has yellowish brown, gray, or red silty clay or clay in the cracks below the fragments. The Cr horizon is platy, fractured, or massive shale that can be ripped by the use of large machinery.

Classification of the soils

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Readers interested in further details about the system should refer to "Soil taxonomy" (*11*).

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 20, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Haplaquents (*Hapl*, meaning simple horizons, plus *aquent*, the suborder of Entisols that have an aquic moisture regime).

SUBGROUP. Each great group may be divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades, which have some properties that are representative of the great groups 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 is thought to typify the great group. An example is Typic Haplaquents.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentiae. An example is fine-loamy, mixed, nonacid, mesic Typic Haplaquents.

SERIES. The series consists of soils that formed in a particular kind of material and have horizons that, except for texture of the surface soil or of the underlying substratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

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Glossary

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. An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	More than 9

Base saturation. The degree to which material having base exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the 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.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to frequent flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Chiseling. Tillage with an implement having one or more soil-penetrating points that loosen the subsoil and bring clods to the surface. A form of emergency tillage to control soil blowing.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Coarse textured (light textured) soil. Sand or loamy sand.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures is difficult.

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.

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 (or contour farming). 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 40 or 80 inches (1 or 2 meters).

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. Unstable walls of cuts made by earthmoving equipment. The soil sloughs easily.

Depth to rock. Bedrock at a depth that adversely affects 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 for 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, as for example in "hillpeats" and "climatic moors."

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by running 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, for example, fire, that exposes a bare surface.

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Fast intake. The rapid movement of water into the soil.

Favorable. Favorable soil features for the specified use.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured (heavy textured) soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; *November-May*, for example, means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered 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.

Forage. Plant material used as feed by domestic animals. Forage can be grazed or cut for hay.

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.

Gleyed soil. A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

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 from 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 (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, which is the upper limit of saturation.

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. The major horizons of mineral soil are as follows:

O horizon.—An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

A horizon.—The mineral horizon, formed or forming 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.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks 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 from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock 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.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration 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.

Large stones. Rock fragments 10 inches (25 centimeters) or more across. Large stones adversely affect the specified use.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand and loamy sand.

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. Inadequate strength for supporting loads.

Marine sediment. Material deposited in ocean water and exposed by geologic uplift of the land or by recession of the water.

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 greater than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Moderately coarse textured (moderately light textured) soil. Sandy loam and fine sandy loam.

Moderately fine textured (moderately heavy textured) soil. Clay loam, sandy clay loam, and silty clay loam.

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 single 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.

Neutral soil. A soil having a pH value between 6.6 and 7.3.

Nutrient, plant. Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Plant nutrients are nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil; and carbon, hydrogen, and oxygen obtained largely from the air and water.

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

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. The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are *very slow* (less than 0.06 inch), *slow* (0.06 to 0.20 inch), *moderately slow* (0.2 to 0.6 inch), *moderate* (0.6 to 2.0 inches), *moderately rapid* (2.0 to 6.0 inches), *rapid* (6.0 to 20 inches), and *very rapid* (more than 20 inches).

pH value. (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

Piping. Moving water of subsurface tunnels or pipelike cavities in 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 a semisolid to a plastic state.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Poorly graded. Refers to soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Productivity (soil). The capability of a soil for producing a specified plant or sequence of plants under a specified system of management. Productivity is measured in terms of output, or harvest, in relation to input.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The 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. Soil scientists regard as soil only the part of the regolith that is modified by organisms and other soil-building forces. Most engineers describe the whole regolith, even to a great depth, as "soil."

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulates over disintegrating rock.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth. Shallow root zone. The soil is shallow over a layer that greatly restricts roots. See Root zone.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

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 runoff water.

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.

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.

Slow intake. The slow movement of water into the soil.

Small stones. Rock fragments 3 to 10 inches (7.5 to 25 centimeters) in diameter. Small stones adversely affect the specified use.

Soil. A natural, three-dimensional body at the earth's surface that 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: *very coarse sand* (2.0 millimeters to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

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.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining 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, to provide protection from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by 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, silt loam, 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. Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Unstable fill. Risk of caving or sloughing in banks of fill material.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to a soil or soil material consisting of particles well distributed over a wide range in size or diameter. Such a soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Illustrations

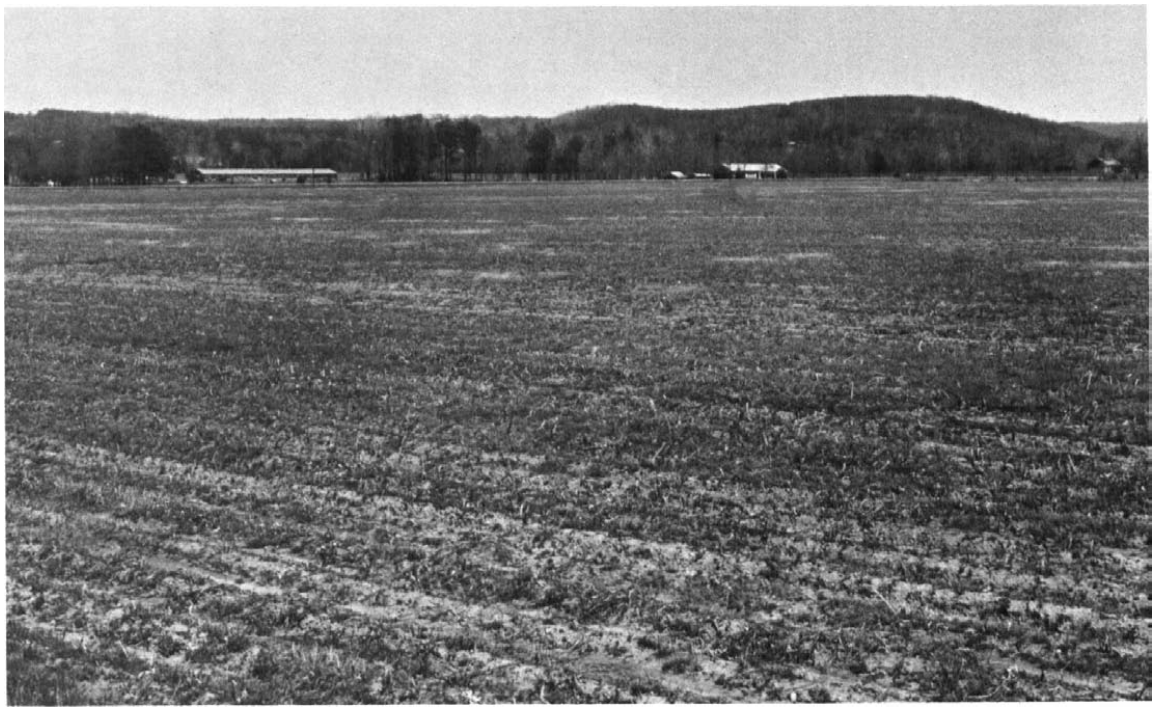

Figure 1.—Typical landscape in the Savannah map unit. Savannah loam, 0 to 2 percent slopes, is in the foreground. Hills in the background are in the Smithdale-Luverne-Flomaton map unit.

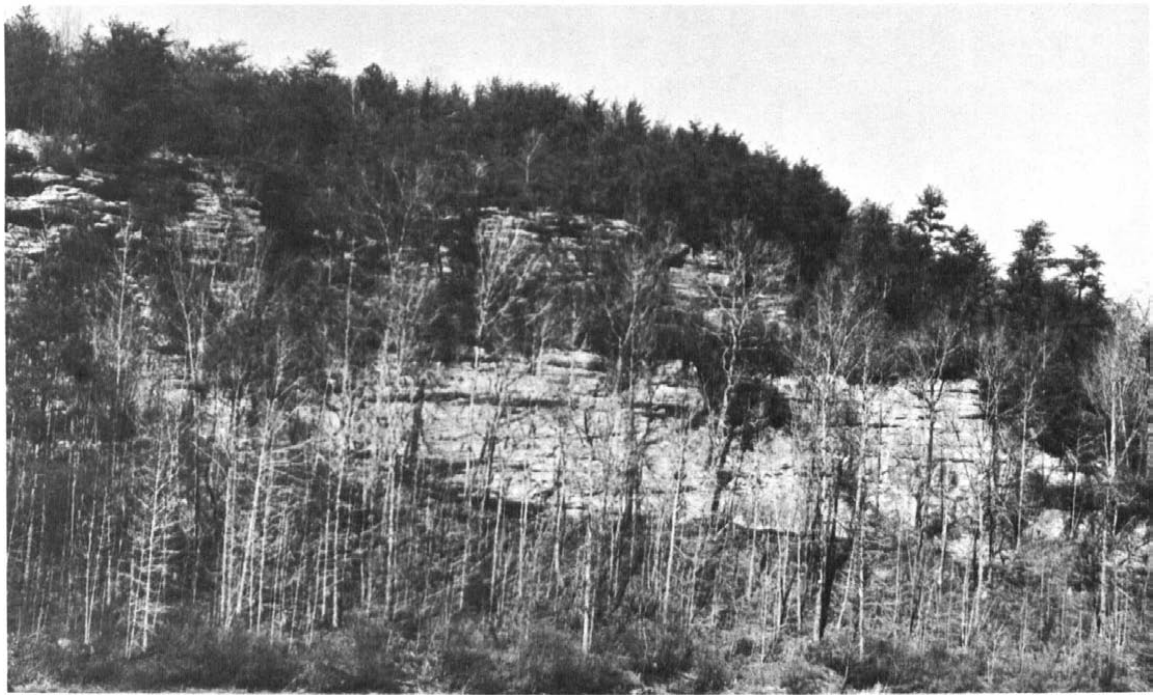

Figure 2.—Typical landscape in the Hector-Rock outcrop-Pikeville map unit. The Rock outcrop consists of nearly vertical cliffs. Hector soils are immediately above the Rock outcrop, and Pikeville soils are on the highest part of the landscape.

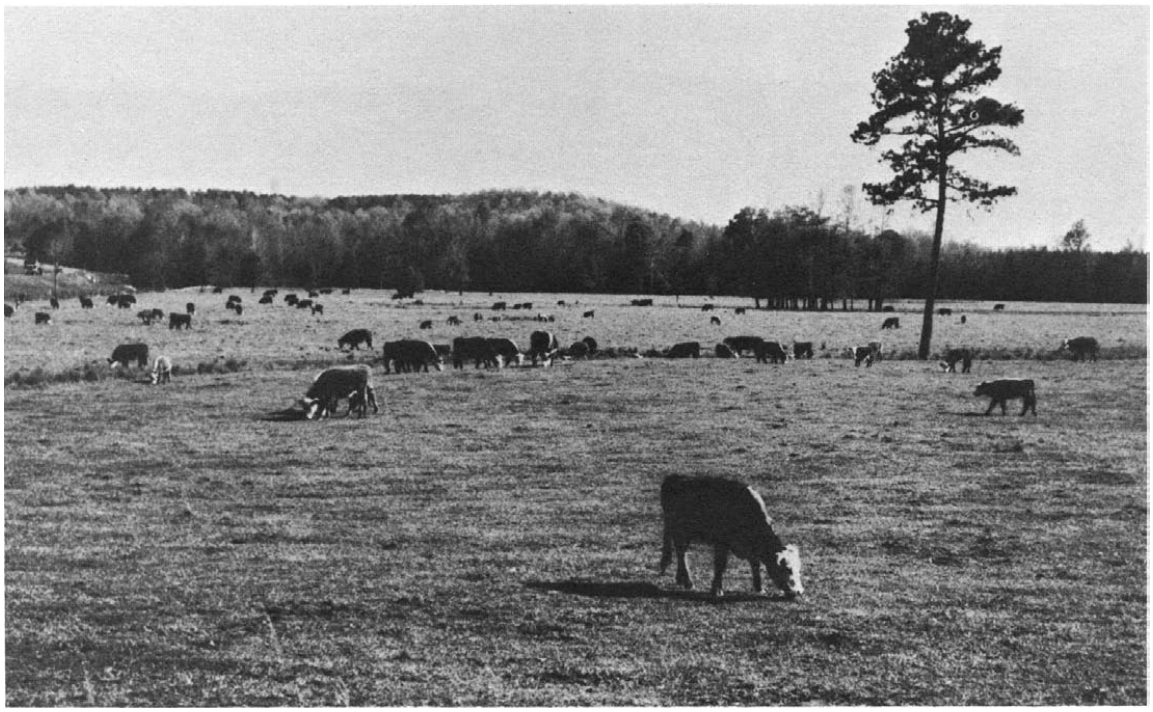

Figure 3.—Typical landscape in the Iuka-Mantachie-Stough map unit. The Iuka, Mantachie, and Stough soils are nearly level and are on bottom land in the foreground. Hills in the background are in the Smithdale-Luverne-Flomaton map unit.

Figure 4.—An area of Brilliant soils that was not smoothed after strip mining operations.

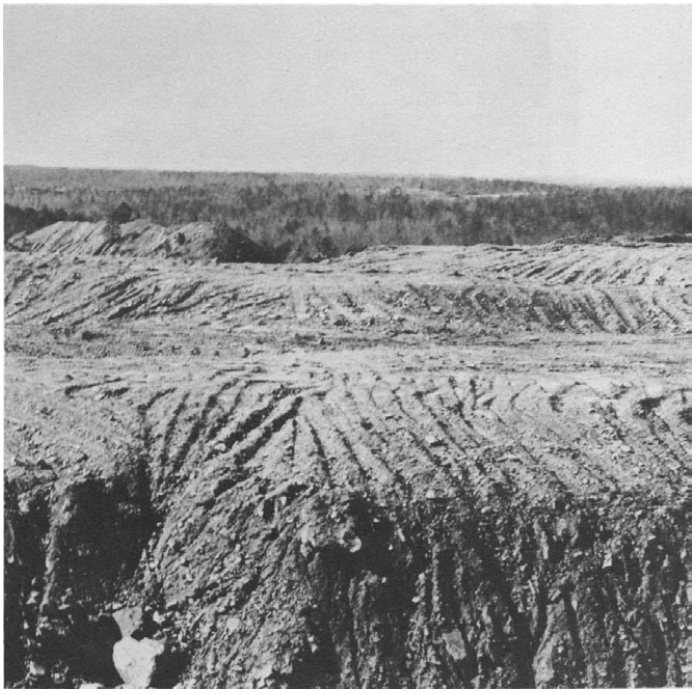

Figure 5.—An area of Brilliant soils that was smoothed after strip mining operations as part of a reclamation project design to restore the orginal contour of the land and to reestablish vegetation.

Figure 6.—This pasture of fescue is in an area of Ora silt loam, 2 to 6 percent slopes.

Figure 7.—Returning crop residue to the soil helps to maintain good tilth in this area of Ruston fine sandy loam, 2 to 6 percent slopes.

Figure 8.—This pasture of bahiagrass is in an area of Smithdale fine sandy loam, 6 to 10 percent slopes.

Figure 9.—A tile drainage system is being installed in this area of Stough loam to reduce excessive soil wetness caused by a perched high water table.

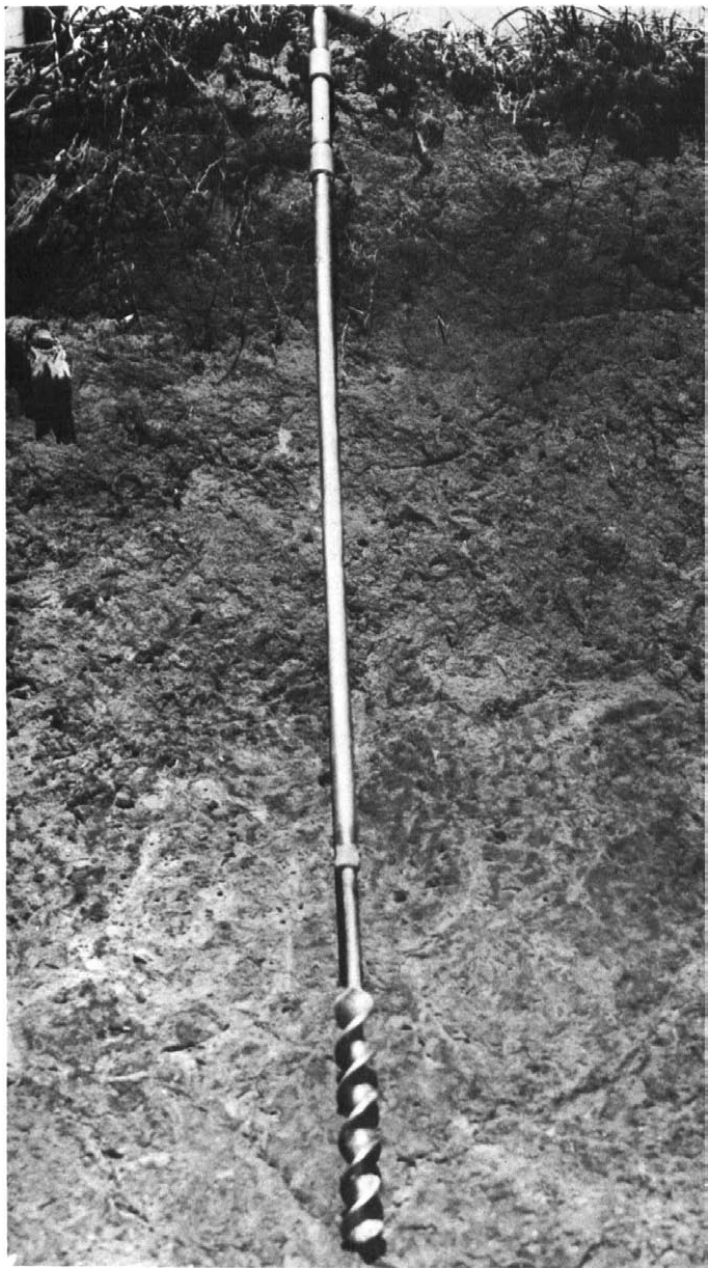

Figure 10.—Typical pedon of Savannah loam, 0 to 2 percent slopes.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION DATA

[Data were recorded in the period 1962-74 at Hamilton, Alabama]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	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[1]	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----	51.6	26.2	38.9	75	-3	20	5.50	2.73	7.75	8	2.7
February---	54.8	25.8	40.3	77	4	18	4.73	2.65	6.41	7	.5
March------	64.3	34.4	49.4	83	15	142	6.41	3.21	9.02	8	.4
April------	75.1	44.4	59.8	88	24	300	6.40	4.51	8.14	8	.0
May--------	81.5	52.0	66.8	93	34	521	5.25	2.96	7.12	6	.0
June-------	87.3	60.0	73.7	97	42	711	3.45	1.91	4.70	6	.0
July-------	89.9	64.2	77.1	99	50	840	5.18	3.33	6.85	8	.0
August-----	89.7	63.1	76.4	98	50	818	4.45	2.68	6.03	7	.0
September--	85.1	57.8	71.5	95	36	645	3.90	2.50	5.16	6	.0
October----	76.4	43.3	59.9	90	25	317	2.57	1.48	3.65	4	.0
November---	64.4	33.8	49.1	82	13	85	3.87	2.20	5.22	6	.1
December---	54.9	29.0	41.9	76	7	49	6.09	3.49	8.21	8	.1
Year:	72.9	44.5	58.7	99	-3	4,466	57.80	50.98	64.39	82	3.8

[1]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 were recorded in the period 1962-74 at Hamilton, 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--	April 10	April 15	April 26
2 years in 10 later than--	April 2	April 10	April 22
5 years in 10 later than--	March 17	March 31	April 14
First freezing temperature in fall:			
1 year in 10 earlier than--	October 26	Octoaber 23	October 7
2 years in 10 earlier than--	November 1	October 27	October 12
5 years in 10 earlier than--	November 11	November 4	October 22

TABLE 3.--GROWING SEASON LENGTH

[Data were recorded in the period 1962-74 at Hamilton, 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	203	197	169
8 years in 10	215	204	176
5 years in 10	239	217	190
2 years in 10	262	231	205
1 year in 10	275	238	212

TABLE 4.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON THE GENERAL SOIL MAP FOR SPECIFIED USES

Map unit	Extent of area	Potentials and limitations for--				
		Cultivated farm crops	Woodland	Urban uses	Intensive recreation areas	Extensive recreation areas
	Pct					
1. Savannah	13	Good	Good	Fair: wetness, low strength, percs slowly.	Good	Good.
2. Ora-Smithdale	17	Good to fair: slope.	Good	Good to fair: slope, percs slowly.	Fair: slope.	Good.
3. Hector-Rock outcrop-Pikeville	6	Poor: slope, depth to rock.	Fair: slope, depth to rock.	Poor: slope, depth to rock.	Poor: slope, large stones.	Good.
4. Townley-Nauvoo-Hector	17	Poor: slope.	Good to fair: slope.	Poor: slope, depth to rock.	Poor: slope.	Good.
5. Smithdale-Luverne-Flomaton	40	Poor: slope.	Good to fair: slope.	Poor: slope.	Poor: slope.	Good.
6. Iuka-Mantachie-Stough	7	Fair to good: flooding.	Good	Poor: wetness, flooding.	Poor: flooding.	Good.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
2	Bama loam, 2 to 6 percent slopes	920	0.2
3	Bassfield loamy sand	750	0.2
4	Bibb soils	950	0.2
5	Bigbee fine sand	310	0.1
6	Brilliant soils	4,250	0.9
7	Cahaba fine sandy loam, 0 to 2 percent slopes	760	0.2
8	Cahaba fine sandy loam, 2 to 6 percent slopes	1,200	0.2
9	Choccolocco silt loam	284	0.1
10	Hector-Rock outcrop association, steep	38,500	8.1
11	Iuka-Mantachie complex	26,000	5.5
12	Kirkville loam	810	0.2
13	Leaf silt loam	413	0.1
14	Luverne fine sandy loam, 6 to 15 percent slopes	13,300	2.8
15	Luverne-Urban land complex, 6 to 15 percent slopes	310	0.1
16	Luverne-Smithdale association, hilly	17,600	3.7
17	Mantachie-Iuka association	6,250	1.3
18	Myatt silt loam	1,300	0.3
19	Nauvoo fine sandy loam, 6 to 10 percent slopes	11,200	2.4
20	Nauvoo loam, 2 to 6 percent slopes	490	0.1
21	Ochlockonee fine sandy loam	3,000	0.6
22	Ora fine sandy loam, 6 to 10 percent slopes	38,250	8.0
23	Ora silt loam, 2 to 6 percent slopes	12,600	2.6
24	Pikeville-Flomaton association, hilly	52,500	11.0
25	Pits	392	0.1
26	Ruston fine sandy loam, 2 to 6 percent slopes	5,300	1.1
27	Ruston-Urban land complex, 0 to 10 percent slopes	390	0.1
28	Saffell gravelly fine sandy loam, 6 to 15 percent slopes	9,600	2.0
29	Savannah loam, 0 to 2 percent slopes	4,050	0.8
30	Savannah loam, 2 to 6 percent slopes	26,750	5.6
31	Savannah-Urban land complex, 0 to 6 percent slopes	800	0.2
32	Smithdale fine sandy loam, 6 to 10 percent slopes	40,250	8.5
33	Smithdale-Luverne complex, 15 to 35 percent slopes	24,250	5.1
34	Smithdale-Luverne association, hilly	70,000	14.7
35	Stough loam	6,200	1.3
36	Townley silt loam, 2 to 6 percent slopes	491	0.1
37	Townley silt loam, 6 to 15 percent slopes	8,800	1.8
38	Townley-Hector association, hilly	46,250	9.7
	Water areas	50	*
	Total	475,520	100.0

* Less than 0.1 percent.

TABLE 6.--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	1,044	---	---	---
II	59,070	47,260	11,060	750
III	90,501	90,191	---	310
IV	35,113	31,700	3,413	---
V	27,177	---	27,177	---
VI	78,963	78,963	---	---
VII	97,989	62,869	---	35,120
VIII	---	---	---	---

TABLE 7.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of data 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	Corn	Cotton lint	Soybeans	Wheat	Improved bermudagrass	Bahiagrass	Tall fescue
	Bu	Lb	Bu	Bu	AUM*	AUM*	AUM*
2---------- Bama	85	750	35	35	9.5	9.5	8.0
3---------- Bassfield	75	---	30	---	10.0	8.5	7.0
4**: Bibb	---	---	---	---	---	---	8.0
5---------- Bigbee	50	---	---	---	9.0	7.5	6.0
6**: Brilliant	---	---	---	---	5.0	5.0	4.5
7---------- Cahaba	90	800	35	40	10.0	8.5	7.5
8---------- Cahaba	85	750	30	35	9.5	8.0	7.5
9---------- Choccolocco	95	850	35	40	10.0	10.0	9.0
10**: Hector----------	---	---	---	---	---	---	---
Rock outcrop.							
11** Iuka----------	---	---	30	---	8.0	7.5	7.5
Mantachie----------	---	---	35	---	8.0	8.0	8.0
12---------- Kirkville	95	700	40	---	---	10.0	10.5
13---------- Leaf	---	---	35	---	---	8.5	8.0
14---------- Luverne	70	600	30	30	8.0	7.0	6.0
15**: Luverne----------	---	---	---	---	---	---	---
Urban land.							
16**: Luverne----------	---	---	---	---	8.0	7.0	5.5
Smithdale----------	---	---	---	---	8.0	7.5	5.0

See footnotes at end of table.

TABLE 7.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Cotton lint	Soybeans	Wheat	Improved bermuda-grass	Bahiagrass	Tall fescue
	Bu	Lb	Bu	Bu	AUM*	AUM*	AUM*
17**:							
Mantachie	---	---	35	---	8.0	8.0	8.0
Iuka	---	---	30	---	8.0	7.0	7.0
18--- Myatt	---	---	---	---	---	7.0	7.0
19--- Nauvoo	60	650	25	27	7.0	7.5	6.5
20--- Nauvoo	75	800	30	30	7.5	8.0	7.0
21--- Ochlockonee	---	---	30	---	8.5	8.5	8.0
22--- Ora	70	600	30	25	7.0	8.0	7.0
23--- Ora	80	700	35	30	8.5	9.0	8.0
24**:							
Pikeville	---	---	---	---	6.0	6.0	5.5
Flomaton	---	---	---	---	4.0	4.5	---
25**: Pits.							
26--- Ruston	65	600	30	28	9.5	9.5	8.0
27**:							
Ruston	---	---	---	---	---	---	---
Urban land.							
28--- Saffell	---	---	---	---	4.5	4.5	4.5
29--- Savannah	80	700	35	30	8.5	9.0	8.0
30--- Savannah	75	650	35	28	8.5	9.0	8.0
31**:							
Savannah	---	---	---	---	---	---	---
Urban land.							

See footnotes at end of table.

TABLE 7.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Cotton lint	Soybeans	Wheat	Improved bermuda-grass	Bahiagrass	Tall fescue
	Bu	Lb	Bu	Bu	AUM*	AUM*	AUM*
32---------- Smithdale	55	500	25	27	9.0	9.0	7.0
33**:							
Smithdale----------	---	---	---	---	8.5	8.0	6.0
Luverne----------	---	---	---	---	8.0	7.0	6.0
34**:							
Smithdale----------	---	---	---	---	8.5	8.0	6.0
Luverne----------	---	---	---	---	8.0	7.0	6.0
35---------- Stough	80	725	25	---	8.0	8.0	8.0
36---------- Townley	55	600	---	---	---	6.0	6.0
37---------- Townley	---	---	---	---	---	5.5	5.5
38**:							
Townley----------	---	---	---	---	---	---	---
Hector----------	---	---	---	---	---	---	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available. Site index was calculated at age 30 for eastern cottonwood, at age 35 for American sycamore, and at age 50 for all other species]

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Important trees	Site index	
2---------- Bama	3o	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine-----	85 75	Loblolly pine.
3---------- Bassfield	2o	Slight	Slight	Slight	Slight	Cherrybark oak------ Loblolly pine------- Shortleaf pine------ Sweetgum----------	90 90 80 90	Cherrybark oak, loblolly pine, sweetgum.
4*---------- Bibb	2w	Slight	Severe	Severe	Severe	Loblolly pine------- Sweetgum---------- Water oak---------- Willow oak---------- Green ash----------	90 90 90 91 86	Eastern cottonwood, loblolly pine, sweetgum, yellow-poplar, green ash.
5---------- Bigbee	2s	Slight	Moderate	Moderate	Slight	Loblolly pine-------	88	Loblolly pine.
6*---------- Brilliant	3x	Severe	Severe	Severe	Slight	Yellow-poplar------- American sycamore--- Loblolly pine------- Virginia pine------- Sweetgum----------	80 80 80 70 ---	Yellow-poplar, American sycamore, loblolly pine, Virginia pine.
7, 8---------- Cahaba	2o	Slight	Slight	Slight	Slight	Loblolly pine------- Yellow-poplar------- Sweetgum---------- Southern red oak---- White oak---------- Cherrybark oak------	90 90 85 80 80 90	Loblolly pine, yellow-poplar, cherrybark oak.
9---------- Choccolocco	3o	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Southern red oak---- Virginia pine-------	80 70 70 70	Loblolly pine, Virginia pine, yellow-poplar.
10*: Hector----------	4x	Severe	Severe	Severe	Slight	Shortleaf pine------ Loblolly pine------- Virginia pine-------	63 73 61	Loblolly pine, eastern redcedar.
Rock outcrop.								
11*: Iuka----------	1w	Slight	Moderate	Moderate	Severe	Loblolly pine------- Sweetgum---------- Eastern cottonwood-- Water oak---------- Yellow-poplar-------	100 100 105 100 110	Loblolly pine, eastern cottonwood, yellow-poplar.
Mantachie---------	1w	Slight	Severe	Severe	Severe	Green ash---------- Eastern cottonwood-- Cherrybark oak------ Loblolly pine------- Sweetgum---------- Yellow-poplar-------	80 90 100 98 95 95	Green ash, eastern cottonwood, cherrybark oak, loblolly pine, sweetgum, yellow-poplar.
12---------- Kirkville	1w	Slight	Moderate	Moderate	Moderate	Cherrybark oak------ Loblolly pine------- Sweetgum---------- Water oak----------	100 95 100 100	Cherrybark oak, eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.

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	Plant competition	Important trees	Site index	
13---------- Leaf	2w	Slight	Severe	Severe	Severe	Loblolly pine------- Sweetgum----------	90 90	Loblolly pine, Shumard oak, sweetgum.
14---------- Luverne	3c	Slight	Moderate	Slight	Slight	Loblolly pine------- Shortleaf pine------	85 73	Loblolly pine.
15*: Luverne----------	3c	Slight	Moderate	Slight	Slight	Loblolly pine------- Shortleaf pine------	85 73	Loblolly pine.
Urban land.								
16*: Luverne----------	3c	Slight	Moderate	Slight	Slight	Loblolly pine------- Shortleaf pine------	85 73	Loblolly pine.
Smithdale---------	3o	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------	80 69	Loblolly pine.
17*: Mantachie---------	1w	Slight	Severe	Severe	Severe	Green ash---------- Eastern cottonwood-- Cherrybark oak------ Loblolly pine------- Sweetgum---------- Yellow-poplar-------	80 90 100 98 95 95	Green ash, eastern cottonwood, cherrybark oak, loblolly pine, sweetgum, yellow-poplar.
Iuka----------	1w	Slight	Moderate	Moderate	Severe	Loblolly pine------- Sweetgum---------- Eastern cottonwood-- Water oak---------- Yellow-poplar-------	100 100 105 100 110	Loblolly pine, eastern cottonwood, yellow-poplar.
18---------- Myatt	2w	Slight	Severe	Severe	Severe	Loblolly pine------- Sweetgum---------- Water oak----------	95 92 86	Loblolly pine.
19, 20---------- Nauvoo	4o	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine------ Virginia pine------- Yellow-poplar-------	70 60 70 80	Loblolly pine, Virginia pine.
21---------- Ochlockonee	2o	Slight	Slight	Slight	Moderate	Loblolly pine------- Sweetgum---------- Cherrybark oak------ Water oak---------- Yellow-poplar-------	95 90 87 82 ---	Loblolly pine, sweetgum, cherrybark oak, yellow-poplar.
22, 23---------- Ora	3o	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Sweetgum----------	83 69 80	Loblolly pine.
24*: Pikeville---------	3o	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine------	80 70	Loblolly pine.
Flomaton----------	4f	Slight	Moderate	Moderate	Slight	Loblolly pine------- Shortleaf pine------	70 60	Longleaf pine, shortleaf pine.
26---------- Ruston	3o	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine------	84 75	Loblolly pine.
27*: Ruston----------	3o	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine------	84 75	Loblolly pine.
Urban land.								

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	Plant competition	Important trees	Site index	
28---------- Saffell	4f	Slight[1]	Slight	Moderate	Slight	Loblolly pine-------	70	Loblolly pine,
						Shortleaf pine------	60	shortleaf pine,
						Eastern redcedar----	---	eastern redcedar.
29, 30---------- Savannah	3o	Slight	Slight	Slight	Moderate	Loblolly pine-------	81	Loblolly pine.
						Shortleaf pine------	76	
						Southern red oak----	75	
31*:								
Savannah----------	3o	Slight	Slight	Slight	Moderate	Loblolly pine-------	81	Loblolly pine,
						Shortleaf pine------	76	slash pine.
						Southern red oak----	75	
Urban land.								
32---------- Smithdale	3o	Slight	Slight	Slight	Moderate	Loblolly pine-------	80	Loblolly pine.
						Shortleaf pine------	69	
33*, 34*:								
Smithdale---------	3o	Slight	Slight	Slight	Moderate	Loblolly pine-------	80	Loblolly pine.
						Shortleaf pine------	69	
Luverne----------	3c	Slight	Moderate	Slight	Slight	Loblolly pine-------	85	Loblolly pine.
						Shortleaf pine------	73	
35---------- Stough	2w	Slight	Moderate	Slight	Moderate	Red oak------------	85	Loblolly pine,
						Loblolly pine-------	90	sweetgum,
						Sweetgum-----------	85	cherry bark oak.
						White oak----------	80	
						Black tupelo--------	---	
36, 37---------- Townley	4o	Slight	Slight	Slight	Slight	Loblolly pine-------	70	Loblolly pine,
						Virginia pine-------	65	Virginia pine.
						Shortleaf pine------	60	
38*:								
Townley----------	4r	Moderate	Moderate	Slight	Slight	Loblolly pine-------	70	Loblolly pine,
						Virginia pine-------	65	Virginia pine.
						Shortleaf pine------	60	
Hector----------	4x	Severe	Severe	Severe	Slight	Shortleaf pine------	50	Loblolly pine,
						Loblolly pine-------	73	eastern redcedar,
						Virginia pine-------	61	Virginia pine.

* See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 9.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
2 Bama	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.
3 Bassfield	Severe: cutbanks cave, floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
4* Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
5 Bigbee	Severe: floods, cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
6* Brilliant	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.
7 Cahaba	Slight	Slight	Slight	Slight	Slight.
8 Cahaba	Slight	Slight	Slight	Moderate: slope.	Slight.
9 Choccolocco	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
10*: Hector	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.
Rock outcrop.					
11*: Iuka	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods.
Mantachie	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
12 Kirkville	Severe: floods, wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods.
13 Leaf	Severe: floods, wetness, too clayey.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.
14 Luverne	Moderate: too clayey, slope.	Severe: low strength.	Severe: low strength.	Severe: low strength, slope.	Severe: low strength.
15*: Luverne	Moderate: too clayey, slope.	Severe: low strength.	Severe: low strength.	Severe: low strength, slope.	Severe: low strength.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
15* Cont.: Urban land.					
16*: Luverne	Severe: slope.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
17*: Mantachie	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Iuka	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods.
18--- Myatt	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
19--- Nauvoo	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.
20--- Nauvoo	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.
21--- Ochlockonee	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
22--- Ora	Moderate: slope.	Moderate: low strength.	Moderate: low strength.	Severe: slope.	Moderate: low strength.
23--- Ora	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.
24*: Pikeville	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Flomaton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
25*: Pits.					
26--- Ruston	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.
27*: Ruston	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.
Urban land.					
28--- Saffell	Severe: small stones.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
29--- Savannah	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, corrosive.	Moderate: low strength.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
30---------- Savannah	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope, corrosive.	Moderate: low strength.
31*: Savannah----------	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, corrosive.	Moderate: low strength.
Urban land.					
32---------- Smithdale	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
33*, 34*: Smithdale--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Luverne----------	Severe: slope.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.
35---------- Stough	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.
36---------- Townley	Moderate: depth to rock.	Moderate: low strength.	Moderate: depth to rock.	Moderate: depth to rock, slope.	Slight.
37---------- Townley	Moderate: depth to rock, slope.	Moderate: low strength, slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.
38*: Townley----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hector----------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.

* See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 10.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," and "fair." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2---------- Bama	Slight----------	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
3---------- Bassfield	Severe: floods.	Severe: seepage, floods.	Severe: seepage, floods.	Severe: seepage, floods.	Fair: too sandy.
4*---------- Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
5---------- Bigbee	Severe: floods.	Severe: floods, seepage.	Severe: floods, seepage, wetness.	Severe: floods, seepage.	Fair: too sandy.
6*---------- Brilliant	Severe: slope, large stones.	Severe: slope, seepage.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: large stones, seepage, slope.
7, 8---------- Cahaba	Slight----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
9---------- Choccolocco	Severe: floods.	Severe: floods, seepage.	Severe: floods, seepage.	Severe: floods.	Good.
10*: Hector---------- Rock outcrop.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, large stones.	Severe: slope, seepage.	Poor: slope, thin layer, large stones.
11*: Iuka---------- Mantachie----------	Severe: floods, wetness. Severe: floods, wetness.	Severe: floods, wetness. Severe: floods, wetness.	Severe: floods, wetness. Severe: floods, wetness.	Severe: floods, wetness. Severe: floods, wetness.	Good. Good.
12---------- Kirkville	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Good.
13---------- Leaf	Severe: floods, wetness, percs slowly.	Slight----------	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: wetness, thin layer.
14---------- Luverne	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: slope, too clayey.
15*: Luverne---------- Urban land.	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: slope, too clayey.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
16*:					
Luverne	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.
17*:					
Mantachie	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Good.
Iuka	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Good.
18--- Myatt	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
19--- Nauvoo	Moderate: slope, depth to rock.	Severe: slope.	Moderate: depth to rock.	Moderate: slope.	Fair: slope.
20--- Nauvoo	Moderate: depth to rock.	Moderate: seepage, slope.	Moderate: depth to rock.	Slight	Good.
21--- Ochlockonee	Severe: floods.	Severe: floods, seepage.	Severe: floods, seepage, wetness.	Severe: floods.	Good.
22--- Ora	Severe: percs slowly.	Severe: slope.	Slight	Moderate: slope.	Good.
23--- Ora	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
24*:					
Pikeville	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope, seepage.	Poor: slope.
Flomaton	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
25*: Pits.					
26--- Ruston	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
27*:					
Ruston	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
Urban land.					
28--- Saffell	Severe: slope.	Severe: slope.	Slight	Moderate: slope.	Poor: small stones.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
29--Savannah	Severe: percs slowly.	Slight	Slight	Slight	Good.
30--Savannah	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
31*: Savannah	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Urban land.					
32--Smithdale	Moderate: slope.	Severe: seepage, slope.	Slight	Moderate: slope.	Fair: slope.
33*, 34*: Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.
Luverne	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
35--Stough	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
36--Townley	Severe: depth to rock.	Severe: depth to rock.	Moderate: depth to rock.	Slight	Fair: thin layer.
37--Townley	Severe: depth to rock.	Severe: depth to rock, slope.	Moderate: depth to rock.	Moderate: slope.	Fair: thin layer, slope.
38*: Townley	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Poor: slope.
Hector	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer.

* See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 11.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor," and "unsuited." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
2 Bama	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
3 Bassfield	Fair: low strength.	Fair: excess fines.	Unsuited: excess fines.	Fair: too sandy.
4* Bibb	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
5 Bigbee	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
6* Brilliant	Poor: slope, large stones.	Unsuited: excess fines, large stones.	Unsuited: excess fines.	Poor: large stones, thin layer, slope.
7, 8 Cahaba	Good	Poor: excess fines.	Unsuited: excess fines.	Good.
9 Choccolocco	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
10*: Hector	Poor: slope, thin layer, large stones.	Poor: excess fines.	Poor: excess fines.	Poor: slope, thin layer, large stones.
Rock outcrop.				
11*: Iuka	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
Mantachie	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
12 Kirkville	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
13 Leaf	Poor: wetness, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, too clayey.
14 Luverne	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, too clayey.
15*: Luverne	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, too clayey.
Urban land.				
16*: Luverne	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, too clayey.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
16* Cont.:				
Smithdale	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
17*:				
Mantachie	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Iuka	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
18--- Myatt	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
19--- Nauvoo	Fair: low strength, area reclaim.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: small stones, slope.
20--- Nauvoo	Fair: low strength, area reclaim.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: small stones.
21--- Ochlockonee	Good	Poor: excess fines.	Unsuited: excess fines.	Good.
22, 23--- Ora	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
24*:				
Pikeville	Poor: slope.	Unsuited: excess fines, small stones.	Fair: excess fines.	Poor: slope.
Flomaton	Poor: slope.	Poor: excess fines.	Fair: excess fines.	Poor: slope, small stones.
25*: Pits.				
26--- Ruston	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
27*:				
Ruston	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Urban land.				
28--- Saffell	Good	Poor: excess fines.	Fair: excess fines.	Poor: small stones.
29, 30--- Savannah	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
31*:				
Savannah	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Urban land.				
32--- Smithdale	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
33*, 34*:				
Smithdale	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
33*, 34* Cont.: Luverne	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, too clayey.
35--- Stough	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
36, 37--- Townley	Poor: low strength, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, area reclaim.
38*: Townley	Poor: low strength, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, area reclaim.
Hector	Poor: slope, thin layer.	Poor: excess fines.	Poor: excess fines.	Poor: slope, thin layer, small stones.

* See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 12.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
2---- Bama	Seepage	Favorable	No water	Not needed	Favorable	Favorable.
3---- Bassfield	Seepage	Seepage	Deep to water	Not needed	Favorable	Favorable.
4*---- Bibb	Seepage	Piping, wetness.	Slow refill	Floods	Not needed	Wetness.
5---- Bigbee	Seepage	Seepage, piping.	No water	Not needed	Not needed	Droughty.
6*---- Brilliant	Seepage	Unstable fill	No water	Not needed	Complex slope, slope.	Droughty, slope.
7, 8---- Cahaba	Seepage	Thin layer	No water	Not needed	Favorable	Favorable.
9---- Choccolocco	Seepage	Low strength, piping, erodes easily.	Deep to water	Not needed	Not needed	Not needed.
10*: Hector----	Depth to rock, seepage.	Thin layer, large stones.	No water	Not needed	Slope, depth to rock, large stones.	Droughty, large stones, slope.
Rock outcrop.						
11*: Iuka----	Seepage	Piping	Deep to water	Floods	Not needed	Not needed.
Mantachie----	Seepage	Piping	No water	Wetness, floods.	Wetness	Wetness.
12---- Kirkville	Seepage	Compressible, unstable fill.	Deep to water	Floods, wetness.	Favorable	Favorable.
13---- Leaf	Favorable	Compressible, unstable fill.	Deep to water	Floods, wetness, percs slowly.	Not needed	Wetness, percs slowly.
14---- Luverne	Seepage	Hard to pack, piping.	No water	Not needed	Slope	Slope, erodes easily.
15*: Luverne----	Seepage	Hard to pack, piping.	No water	Not needed	Slope	Slope, erodes easily.
Urban land.						
16*: Luverne----	Seepage	Hard to pack, piping.	No water	Not needed	Slope	Slope, erodes easily.
Smithdale----	Seepage	Piping, unstable fill.	No water	Not needed, slope.	Slope, erodes easily.	Slope, erodes easily.
17*: Mantachie----	Seepage	Piping	No water	Wetness, floods.	Wetness	Wetness.
Iuka----	Seepage	Piping	Deep to water	Floods	Not needed	Not needed.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
18---------- Myatt	Seepage---------	Low strength---	Deep to water	Favorable------	Not needed-----	Wetness.
19, 20---------- Nauvoo	Seepage, depth to rock.	Thin layer-----	No water--------	Not needed-----	Slope----------	Slope.
21---------- Ochlockonee	Seepage---------	Seepage, piping, erodes easily.	Deep to water	Floods---------	Not needed-----	Favorable.
22, 23---------- Ora	Seepage---------	Piping---------	No water--------	Percs slowly---	Favorable------	Rooting depth.
24*: Pikeville---------	Seepage---------	Seepage, piping.	No water--------	Not needed-----	Erodes easily, slope.	Erodes easily, slope.
Flomaton---------	Seepage---------	Piping, seepage.	No water--------	Not needed-----	Piping, erodes easily, slope.	Droughty, erodes easily, slope.
25*: Pits.						
26---------- Ruston	Seepage---------	Favorable------	No water--------	Not needed-----	Favorable------	Favorable.
27*: Ruston----------	Seepage---------	Favorable------	No water--------	Not needed-----	Favorable------	Slope.
Urban land.						
28---------- Saffell	Seepage---------	Seepage, piping, thin layer.	No water--------	Not needed-----	Erodes easily, slope, small stones.	Droughty, erodes easily, slope.
29---------- Savannah	Seepage---------	Low strength, piping.	Deep to water	Percs slowly, slope.	Percs slowly, erodes easily.	Percs slowly.
30---------- Savannah	Seepage---------	Low strength, piping.	Deep to water	Percs slowly, slope.	Percs slowly, erodes easily.	Percs slowly.
31*: Savannah---------	Seepage---------	Low strength, piping.	Deep to water	Percs slowly, slope.	Percs slowly, erodes easily.	Percs slowly.
Urban land.						
32---------- Smithdale	Seepage---------	Piping, unstable fill.	No water--------	Not needed, slope.	Slope, erodes easily.	Slope, erodes easily.
33*, 34*: Smithdale---------	Seepage---------	Piping, unstable fill.	No water--------	Not needed, slope.	Slope, erodes easily.	Slope, erodes easily.
Luverne----------	Seepage---------	Hard to pack, piping.	No water--------	Not needed-----	Slope----------	Slope, erodes easily.
35---------- Stough	Favorable------	Piping---------	No water--------	Percs slowly, wetness, slope.	Percs slowly, wetness.	Percs slowly, wetness.
36, 37---------- Townley	Depth to rock	Thin layer-----	No water--------	Not needed-----	Depth to rock, rooting depth, slope.	Droughty, rooting depth, slope.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
38*:						
Townley	Depth to rock	Thin layer	No water	Not needed	Depth to rock, rooting depth, slope.	Droughty, rooting depth, slope.
Hector	Depth to rock, seepage.	Thin layer	No water	Not needed	Slope, depth to rock, rooting depth.	Droughty, rooting depth, slope.

* See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 13.--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
2 Bama	Slight	Slight	Moderate: slope.	Slight.
3 Bassfield	Moderate: floods.	Moderate: floods.	Moderate: floods.	Moderate: floods.
4* Bibb	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.
5 Bigbee	Severe: floods, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.
6* Brilliant	Severe: large stones, slope.	Severe: large stones, slope.	Severe: large stones, slope.	Severe: slope.
7 Cahaba	Slight	Slight	Slight	Slight.
8 Cahaba	Slight	Slight	Moderate: slope.	Slight.
9 Choccolocco	Moderate: floods.	Slight	Slight	Slight.
10*: Hector	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, depth to rock.	Severe: slope, large stones.
Rock outcrop.				
11*: Iuka	Severe: floods.	Moderate: wetness, floods.	Severe: floods.	Slight.
Mantachie	Severe: floods.	Moderate: wetness, floods.	Severe: floods.	Moderate: wetness.
12 Kirkville	Moderate: floods, wetness.	Moderate: floods, wetness.	Moderate: floods, wetness.	Slight.
13 Leaf	Severe: floods, wetness, percs slowly.	Severe: wetness, too clayey, floods.	Severe: floods, wetness, percs slowly.	Severe: wetness.
14 Luverne	Moderate: slope, percs slowly.	Moderate: slope.	Severe: slope.	Slight.
15*: Luverne	Moderate: slope, percs slowly.	Moderate: slope.	Severe: slope.	Slight.
Urban land.				

See footnote at end of table.

TABLE 13.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
16*:				
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
17*:				
Mantachie	Severe: floods.	Moderate: wetness, floods.	Severe: floods.	Moderate: wetness.
Iuka	Severe: floods.	Moderate: wetness, floods.	Severe: floods.	Slight.
18 Myatt	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Moderate: wetness.
19 Nauvoo	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
20 Nauvoo	Slight	Slight	Moderate: slope.	Slight.
21 Ochlockonee	Severe: floods.	Moderate: floods.	Severe: floods.	Slight.
22 Ora	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
23 Ora	Slight	Slight	Moderate: slope.	Slight.
24*:				
Pikeville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Flomaton	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
25*:				
Pits.				
26 Ruston	Slight	Slight	Moderate: slope.	Slight.
27*:				
Ruston	Slight	Slight	Moderate: slope.	Slight.
Urban land.				
28 Saffell	Severe: small stones.	Moderate: small stones.	Severe: slope.	Moderate: small stones.
29 Savannah	Slight	Slight	Slight	Slight.
30 Savannah	Slight	Slight	Moderate: slope.	Slight.
31*:				
Savannah	Slight	Slight	Moderate: slope.	Slight.
Urban land.				

See footnote at end of table.

TABLE 13.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
32--Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
33*, 34*:				
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
35--Stough	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
36--Townley	Moderate: percs slowly.	Slight	Moderate: slope, depth to rock.	Slight.
37--Townley	Moderate: slope, percs slowly.	Moderate: slope.	Severe: slope.	Slight.
38*:				
Townley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hector	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.

* See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 14.--WILDLIFE HABITAT POTENTIALS

[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
2---- Bama	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
3---- Bassfield	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
4*---- Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
5---- Bigbee	Poor	Fair	Fair	Poor	Fair	Very poor	Very poor	Fair	Poor	Very poor
6*---- Brilliant	Very poor	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
7, 8---- Cahaba	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
9---- Choccolocco	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
10*: Hector----	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor
Rock outcrop.										
11*: Iuka----	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor
Mantachie----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair
12---- Kirkville	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
13---- Leaf	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
14---- Luverne	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
15*: Luverne----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land.										
16*: Luverne----	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Smithdale----	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
17*: Mantachie----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair
Iuka----	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor
18---- Myatt	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good

See footnote at end of table.

TABLE 14.--WILDLIFE HABITAT POTENTIALS--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
19---------- Nauvoo	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
20---------- Nauvoo	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
21---------- Ochlockonee	Poor	Fair	Fair	Good	Good	Poor	Very poor	Fair	Good	Very poor
22---------- Ora	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
23---------- Ora	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
24*: Pikeville----------	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Flomaton----------	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor	Very poor
25*. Pits										
26---------- Ruston	Good	Good	Good	Fair	Good	Poor	Very poor	Good	Fair	Very poor
27*: Ruston----------	Good	Good	Good	Fair	Good	Very poor	Very poor	Good	Fair	Very poor
Urban land.										
28---------- Saffell	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
29, 30---------- Savannah	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
31*: Savannah----------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Urban land.										
32---------- Smithdale	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
33*, 34*: Smithdale----------	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Luverne----------	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
35---------- Stough	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
36, 37---------- Townley	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
38*: Townley----------	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor

See footnote at end of table.

TABLE 14.--WILDLIFE HABITAT POTENTIALS--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
38*: Hector	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor	Poor	Very poor

* See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated. NP means nonplastic]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2---------- Bama	0-9	Loam----------	SM, SC, SM-SC, CL-ML	A-2, A-4	0	95-100	85-100	70-95	30-70	<30	NP-10
	9-88	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0	95-100	85-100	80-95	40-70	20-40	8-18
3---------- Bassfield	0-7	Loamy sand------	SM	A-2	0	90-100	85-100	65-85	13-25	<20	NP-3
	7-52	Sandy loam, loam	SM, SC, SM-SC	A-2, A-4	0	90-100	85-100	60-92	30-50	<20	NP-10
	52-60	Loamy sand, sand	SP-SM, SM	A-2, A-3	0	90-100	80-100	65-85	5-20	<20	NP-3
4*---------- Bibb	0-60	Silt loam-------	SM, SM-SC, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
5---------- Bigbee	0-28	Fine sand-------	SM, SP-SM	A-2-4, A-3	0	100	95-100	80-95	5-30	---	NP
	28-80	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	85-100	85-100	80-100	5-20	---	NP
6*---------- Brilliant	0-72	Very shaly sandy loam.	SM, SC, SM-SC	A-2-4	0-20	60-90	20-60	15-40	9-30	20-30	3-16
7, 8---------- Cahaba	0-10	Fine sandy loam	SM	A-4, A-2-4	0	95-100	95-100	65-90	30-45	---	NP
	10-56	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
	56-84	Sand, loamy sand, fine sandy loam.	SM, SP-SM	A-2-4	0	95-100	90-100	60-85	10-35	---	NP
9---------- Choccolocco	0-10	Silt loam-------	ML	A-4	0	95-100	95-100	70-98	50-90	28-40	NP-8
	10-50	Silty clay loam, silt loam, loam.	ML	A-4, A-6, A-7	0	95-100	95-100	85-98	60-95	35-45	7-14
	50-60	Sandy loam, loam	SM, ML, SM-SC, CL-ML	A-2, A-4	0	95-100	95-100	60-95	30-75	<35	NP-7
10*: Hector----------	0-6	Stony fine sandy loam.	GM, GM-GC	A-2	15-40	40-50	35-45	30-40	20-30	<30	NP-6
	6-16	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML, GM, GM-GC	A-4, A-2	0-20	55-100	55-100	45-100	30-65	<30	NP-6
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
11*: Iuka----------	0-11	Silt loam-------	SM, SM-SC, ML, CL-ML	A-4	0	95-100	90-100	70-95	45-75	<30	NP-7
	11-38	Fine sandy loam, loam, sandy loam.	SM, SM-SC, ML, CL-ML	A-4	0	95-100	85-100	65-100	36-71	<30	NP-7
	38-70	Sandy loam, fine sandy loam, loam.	SM, ML	A-2, A-4	0	95-100	90-100	70-100	25-55	<30	NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
11* Cont.:											
Mantachie	0-10	Silt loam	CL-ML, SM-SC	A-4	0-5	95-100	90-100	60-85	40-60	<20	NP-5
	10-60	Loam, clay loam, sandy clay loam.	CL, SC, SM-SC, CL-ML	A-4, A-6	0-5	95-100	90-100	80-95	45-80	20-40	5-15
12	0-7	Loam	SM, ML, CL-ML	A-2, A-4	0	100	100	85-100	30-70	<20	NP-5
Kirkville	7-60	Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SM-SC	A-2, A-4	0	100	100	60-100	30-65	<20	NP-5
13	0-6	Silt loam	ML, CL	A-4, A-6	0	100	100	70-100	50-90	30-40	8-15
Leaf	6-89	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	100	100	90-100	75-95	42-65	20-38
14	0-9	Fine sandy loam	ML, SM	A-2, A-4	---	87-100	84-100	80-100	19-75	0-20	NP
Luverne	9-48	Clay loam, sandy clay, clay.	ML, MH, CH, CL	A-5, A-7	---	95-100	90-100	85-100	50-95	40-70	10-30
	48-60	Stratified loamy sand to clay.	---	---	---	---	---	---	---	---	---
15*:											
Luverne	0-9	Fine sandy loam	ML, SM	A-2, A-4	---	87-100	84-100	80-100	19-75	0-20	NP
	9-48	Clay loam, sandy clay, clay.	ML, MH, CH, CL	A-5, A-7	---	95-100	90-100	85-100	50-95	40-70	10-30
	48-60	Stratified loamy sand to clay.	---	---	---	---	---	---	---	---	---
Urban land.											
16*:											
Luverne	0-9	Fine sandy loam	ML, SM	A-2, A-4	---	87-100	84-100	80-100	19-75	0-20	NP
	9-48	Clay loam, sandy clay, clay.	ML, MH, CH, CL	A-5, A-7	---	95-100	90-100	85-100	50-95	40-70	10-30
	48-60	Stratified loamy sand to clay.	---	---	---	---	---	---	---	---	---
Smithdale	0-5	Fine sandy loam	SM, SM-SC	A-4	0	100	85-100	60-80	36-49	<20	NP-5
	5-50	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-95	45-75	23-38	7-15
	50-72	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-80	36-70	<30	NP-10
17*:											
Mantachie	0-10	Silt loam	CL-ML, SM-SC	A-4	0-5	95-100	90-100	60-85	40-60	<20	NP-5
	10-60	Loam, clay loam, sandy clay loam.	CL, SC, SM-SC, CL-ML	A-4, A-6	0-5	95-100	90-100	80-95	45-80	20-40	5-15
Iuka	0-11	Silt loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	90-100	70-95	45-75	<30	NP-7
	11-38	Fine sandy loam, loam, sandy loam.	SM, SM-SC, ML, CL-ML	A-4	0	95-100	85-100	65-100	36-71	<30	NP-7
	38-70	Sandy loam, fine sandy loam, loam.	SM, ML	A-2, A-4	0	95-100	90-100	70-100	25-55	<30	NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--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	
18---------- Myatt	0-13	Silt loam-------	SM, SM-SC, ML, CL-ML	A-2, A-4	0	95-100	95-100	70-100	30-90	<25	NP-5
	13-60	Loam, sandy clay loam, clay loam.	SM, SC, ML, CL	A-4	0	95-100	95-100	80-100	40-80	<30	NP-10
	60-72	Gravelly fine sandy loam, sandy clay loam, clay loam.	SM-SC, SC, CL-ML, CL	A-6, A-4, A-2	0	75-100	60-90	60-80	30-70	15-40	5-20
19---------- Nauvoo	0-11	Fine sandy loam	SM-SC, CL-ML, SC, CL	A-4	0-3	90-100	85-100	55-90	35-65	18-25	4-8
	11-30	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0-3	95-100	90-100	60-95	40-80	25-35	8-14
	30-42	Fine sandy loam, loam, sandy clay loam.	SM-SC, CL-ML, SC, CL	A-4	0-5	90-100	85-100	55-90	35-65	18-25	4-8
	42	Weathered bedrock.	---	---	---	---	---	---	---	---	---
20---------- Nauvoo	0-11	Loam----------	SM-SC, CL-ML, SC, CL	A-4	0-3	90-100	85-100	55-90	35-65	18-25	4-8
	11-30	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0-3	95-100	90-100	60-95	40-80	25-35	8-14
	30-42	Fine sandy loam, loam, sandy clay loam.	SM-SC, CL-ML, SC, CL	A-4	0-5	90-100	85-100	55-90	35-65	18-25	4-8
	42	Weathered bedrock.	---	---	---	---	---	---	---	---	---
21---------- Ochlockonee	0-44	Fine sandy loam	SM, ML, SM-SC	A-4	0	100	95-100	95-100	36-80	<26	NP-5
	44-60	Loamy sand, sandy loam, silt loam.	SM, ML, CL, SC	A-4, A-2	0	100	95-100	85-99	13-80	<32	NP-9
22---------- Ora	0-8	Fine sandy loam	SM-SC, SM, ML, CL-ML	A-4, A-2	0	100	95-100	65-85	30-65	<30	NP-5
	8-24	Clay loam, sandy clay loam, loam.	CL, ML	A-6, A-4, A-7	0	100	95-100	80-100	50-80	25-48	8-22
	24-48	Sandy clay loam, loam, sandy loam.	CL, ML	A-6, A-7, A-4	0	100	95-100	80-100	50-75	25-43	8-25
	48-72	Sandy clay loam, loam, sandy loam.	CL, ML	A-4, A-6, A-7	0	100	95-100	80-98	50-60	30-49	11-30
23---------- Ora	0-8	Silt loam-------	SM-SC, SM, ML, CL-ML	A-4, A-2	0	100	95-100	65-85	30-65	<30	NP-5
	8-24	Clay loam, sandy clay loam, loam.	CL, ML	A-6, A-4, A-7	0	100	95-100	80-100	50-80	25-48	8-22
	24-48	Sandy clay loam, loam, sandy loam.	CL, ML	A-6, A-7, A-4	0	100	95-100	80-100	50-75	25-43	8-25
	48-72	Sandy clay loam, loam, sandy loam.	CL, ML	A-4, A-6, A-7	0	100	95-100	80-98	50-60	30-49	11-30

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--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	
24*:											
Pikeville	0-12	Loam	SM, ML	A-4	0	90-100	90-100	50-85	36-60	<30	NP-4
	12-30	Sandy clay loam, loam, gravelly loam.	SC, CL, SM-SC	A-4, A-6	0	80-100	65-100	60-90	36-60	20-40	4-17
	30-90	Gravelly sandy loam, gravelly loamy sand, gravelly sandy clay loam.	GW-GM, GM, SW-SM, SM	A-1-B, A-2, A-4, A-6	0	35-90	20-85	15-75	9-45	25-48	2-18
Flomaton	0-50	Very gravelly loamy sand.	GM, GP-GM, SM, SP-SM	A-1	0-5	30-80	30-75	20-40	5-25	<20	NP-4
	50-72	Very gravelly loamy sand, gravelly loamy sand, gravelly sandy loam.	GP-GM, GM-GC, SM-SC, SP-SM	A-1, A-2	0-10	30-70	25-65	20-50	10-35	<20	NP-7
25*:											
Pits.											
26											
Ruston	0-6	Fine sandy loam	SM, ML	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<20	NP-3
	6-33	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
	33-43	Fine sandy loam, sandy loam.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<27	NP-7
	43-72	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
27*:											
Ruston	0-6	Fine sandy loam	SM, ML	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<20	NP-3
	6-33	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
	33-43	Fine sandy loam, sandy loam.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<27	NP-7
	43-72	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
Urban land.											
28											
Saffell	0-10	Gravelly fine sandy loam.	SM	A-1, A-2, A-4	0-5	70-80	50-75	40-65	20-40	<20	NP-3
	10-15	Gravelly fine sandy loam, gravelly sandy clay loam.	GC, SC, SM-SC, GM-GC	A-2, A-1	0-15	35-85	25-70	20-55	15-35	20-40	4-18
	15-47	Very gravelly sandy clay loam, very gravelly fine sandy loam, very gravelly loam.	GC, SC, SM-SC, GM-GC	A-2, A-1	0-15	35-85	25-70	20-55	15-35	20-40	4-18
	47-60	Gravelly sandy loam, very gravelly sandy loam, gravelly loamy sand.	GM, GC, SM, SC	A-1, A-2, A-3	0-5	25-80	10-70	5-60	5-35	<35	NP-15

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--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	
29, 30---------- Savannah	0-8	Loam----------	ML, CL-ML	A-4	0	100	100	80-100	60-90	<25	NP-7
	8-20	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	100	100	80-100	40-80	23-40	7-19
	20-66	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7	0	100	100	80-100	40-80	23-43	7-19
31*:											
Savannah----------	0-8	Loam----------	ML, CL-ML	A-4	0	100	100	80-100	60-90	<25	NP-7
	8-20	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	100	100	80-100	40-80	23-40	7-19
	20-66	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7	0	100	100	80-100	40-80	23-43	7-19
Urban land.											
32---------- Smithdale	0-5	Fine sandy loam	SM, SM-SC	A-4	0	100	85-100	60-80	36-49	<20	NP-5
	5-50	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-95	45-75	23-38	7-15
	50-72	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-80	36-70	<30	NP-10
33*, 34*:											
Smithdale----------	0-5	Fine sandy loam	SM, SM-SC	A-4	0	100	85-100	60-80	36-49	<20	NP-5
	5-50	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-95	45-75	23-38	7-15
	50-72	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-80	36-70	<30	NP-10
Luverne----------	0-9	Fine sandy loam	ML, SM	A-2, A-4	---	87-100	84-100	80-100	19-75	0-20	NP
	9-48	Clay loam, sandy clay, clay.	ML, MH, CH, CL	A-5, A-7	---	95-100	90-100	85-100	50-95	40-70	10-30
	48-60	Stratified loamy sand to clay.	---	---	---	---	---	---	---	---	---
35---------- Stough	0-25	Loam----------	ML, CL-ML	A-4	0	100	100	75-95	50-65	<25	NP-7
	25-70	Sandy loam, sandy clay loam, loam.	SC, CL	A-4, A-6	0	100	100	65-90	40-65	25-40	8-15
36, 37---------- Townley	0-9	Silt loam-------	ML, CL	A-4	0-2	80-98	70-95	65-90	50-65	<35	NP-10
	9-26	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0-2	80-100	80-100	75-99	70-95	30-55	12-30
	26-31	Weathered bedrock.	---	---	---	---	---	---	---	---	---
	31-40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
38*:											
Townley----------	0-9	Silt loam-------	ML, CL	A-4	0-2	80-98	70-95	65-90	50-65	<35	NP-10
	9-26	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0-2	80-100	80-100	75-99	70-95	30-55	12-30
	26-31	Weathered bedrock.	---	---	---	---	---	---	---	---	---
	31-40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--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	
38* Cont.:											
Hector	0-6	Fine sandy loam	SM, ML, SM-SC, CL-ML	A-4, A-2	0	80-100	80-100	80-100	30-65	<30	NP-6
	6-16	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML, GM, GM-GC	A-4, A-2	0-15	55-100	55-100	45-100	30-65	<30	NP-6
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

* See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more then. The entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
2----------	0-9	0.6-6.0	0.08-0.15	4.5-6.0	Low--------	Low----------	Moderate-------	0.24	5
Bama	9-88	0.6-2.0	0.12-0.18	4.5-5.5	Low--------	Low----------	Moderate-------	0.32	
3----------	0-7	2.0-6.0	0.05-0.08	4.5-5.5	Very low	Low----------	Moderate-------	0.17	4
Bassfield	7-52	2.0-6.0	0.10-0.15	4.5-5.5	Low--------	Low----------	Moderate-------	0.20	
	52-60	6.0-20	0.05-0.08	4.5-5.5	Very low	Low----------	Moderate-------	0.17	
4*----------	0-60	0.6-2.0	0.12-0.18	4.5-5.5	Low--------	High----------	Moderate-------	0.20	5
Bibb									
5----------	0-28	6.0-20	0.05-0.10	4.5-6.0	Low--------	Low----------	Moderate-------	0.17	5
Bigbee	28-80	6.0-20	0.05-0.08	4.5-6.0	Low--------	Low----------	Moderate-------	0.17	
6*----------	0-72	2.0-6.0	0.06-0.13	6.1-8.4	Low--------	Low----------	Low----------	0.24	5
Brilliant									
7, 8----------	0-10	2.0-6.0	0.05-0.14	4.5-6.0	Very low	Low----------	Moderate-------	0.24	4
Cahaba	10-56	0.6-2.0	0.12-0.15	4.5-6.0	Low--------	Moderate------	Moderate-------	0.28	
	56-84	6.0-20	0.05-0.10	4.5-6.0	Very low	Low----------	Moderate-------	0.24	
9----------	0-10	0.6-2.0	0.12-0.18	5.6-6.5	Low--------	Moderate------	Low----------	0.32	---
Choccolocco	10-50	0.6-2.0	0.15-0.20	4.5-6.0	Low--------	Moderate------	Moderate-------	0.37	
	50-60	2.0-6.0	0.10-0.16	4.5-6.0	Low--------	Moderate------	Moderate-------	0.32	
10*:									
Hector----------	0-6	2.0-6.0	0.05-0.10	5.1-6.5	Low--------	Low----------	Moderate-------	0.17	1
	6-16	2.0-6.0	0.08-0.15	4.5-5.5	Low--------	Low----------	Moderate-------	0.17	
	16	---	---	---	----------	----------	----------	---	
Rock outcrop.									
11*:									
Iuka----------	0-11	0.6-2.0	0.10-0.15	5.1-6.0	Low--------	Moderate------	Moderate-------	0.24	5
	11-38	0.6-2.0	0.10-0.15	4.5-5.5	Low--------	Moderate------	High----------	0.28	
	38-70	0.6-2.0	0.10-0.15	4.5-5.5	Low--------	Moderate------	High----------	0.20	
Mantachie---------	0-10	0.6-2.0	0.16-0.20	4.5-5.5	Low--------	High----------	High----------	0.28	5
	10-60	0.6-2.0	0.14-0.20	4.5-5.5	Low--------	High----------	High----------	0.28	
12----------	0-7	0.6-2.0	0.15-0.22	4.5-5.5	Low--------	Moderate------	High----------	0.28	---
Kirkville	7-60	0.6-2.0	0.10-0.15	4.5-5.5	Low--------	Moderate------	High----------	0.28	
13----------	0-6	0.06-0.2	0.20-0.22	4.5-5.5	Low--------	High----------	Moderate-------	0.32	---
Leaf	6-89	<0.06	0.18-0.21	4.5-5.5	High-------	High----------	Moderate-------	0.32	
14----------	0-9	2.0-6.0	0.06-0.15	4.5-5.5	Low--------	High----------	High----------	0.37	3
Luverne	9-48	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	High----------	High----------	0.28	
	48-60	---	---	---	----------	----------	----------	---	
15*:									
Luverne----------	0-9	2.0-6.0	0.06-0.15	4.5-5.5	Low--------	High----------	High----------	0.37	3
	9-48	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	High----------	High----------	0.28	
	48-60	---	---	---	----------	----------	----------	---	
Urban land.									
16*:									
Luverne----------	0-9	2.0-6.0	0.06-0.15	4.5-5.5	Low--------	High----------	High----------	0.37	3
	9-48	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	High----------	High----------	0.28	
	48-60	---	---	---	----------	----------	----------	---	

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
16*. Cont.:									
Smithdale	0-5	2.0-6.0	0.14-0.16	4.5-5.5	Low	Low	Moderate	0.28	5
	5-50	0.6-2.0	0.15-0.17	4.5-5.5	Low	Low	Moderate	0.24	
	50-72	2.0-6.0	0.14-0.16	4.5-5.5	Low	Low	Moderate	0.28	
17*:									
Mantachie	0-10	0.6-2.0	0.16-0.20	4.5-5.5	Low	High	High	0.28	5
	10-60	0.6-2.0	0.14-0.20	4.5-5.5	Low	High	High	0.28	
Iuka	0-11	0.6-2.0	0.10-0.15	5.1-6.0	Low	Moderate	Moderate	0.24	5
	11-38	0.6-2.0	0.10-0.15	4.5-5.5	Low	Moderate	High	0.28	
	38-70	0.6-2.0	0.10-0.15	4.5-5.5	Low	Moderate	High	0.20	
18	0-13	0.6-2.0	0.11-0.24	4.5-5.5	Low	High	High	0.32	---
Myatt	13-60	0.2-2.0	0.12-0.20	3.6-5.5	Low	High	High	0.28	
	60-72	0.2-2.0	0.10-0.20	3.6-5.0	Low	High	High	0.24	
19, 20	0-11	2.0-6.0	0.13-0.17	4.5-5.5	Low	Low	High	0.28	3
Nauvoo	11-30	0.6-2.0	0.14-0.20	4.5-5.5	Low	Low	High	0.32	
	30-42	0.6-2.0	0.11-0.17	4.5-5.5	Low	Low	High	0.32	
	42-60	---	---	---	---	---	---	---	
21	0-44	2.0-6.0	0.07-0.14	4.5-5.5	Low	Low	High	0.20	---
Ochlockonee	44-60	2.0-6.0	0.06-0.12	4.5-5.5	Low	Low	High	0.17	
22, 23	0-8	2.0-6.0	0.10-0.13	4.0-5.5	Low	Moderate	High	0.32	3
Ora	8-24	0.6-2.0	0.12-0.18	4.0-5.5	Low	Moderate	High	0.37	
	24-48	0.2-0.6	0.05-0.10	4.0-5.5	Low	Moderate	High	0.32	
	48-72	0.6-2.0	0.10-0.15	4.0-5.5	Low	Moderate	High	0.37	
24*:									
Pikeville	0-12	0.6-2.0	0.10-0.15	4.5-5.5	Low	Low	Moderate	0.24	4
	12-30	0.6-2.0	0.10-0.15	4.5-5.5	Low	Low	Moderate	0.37	
	30-90	2.0-6.0	0.05-0.10	4.5-5.5	Low	Low	Moderate	0.10	
Flomaton	0-50	6.0-20	0.01-0.05	4.5-5.5	Very low	Low	Moderate	0.15	5
	50-72	6.0-20	0.02-0.07	4.5-5.5	Very low	Low	Moderate	0.17	
25*:									
Pits.									
26	0-6	0.6-2.0	0.09-0.16	5.1-6.5	Low	Low	Moderate	0.32	5
Ruston	6-33	0.6-2.0	0.12-0.17	4.5-6.0	Low	Moderate	Moderate	0.28	
	33-43	0.6-2.0	0.12-0.15	4.5-6.0	Low	Low	Moderate	0.32	
	43-72	0.6-2.0	0.12-0.17	4.5-6.0	Low	Moderate	Moderate	0.28	
27*:									
Ruston	0-6	0.6-2.0	0.09-0.16	5.1-6.5	Low	Low	Moderate	0.32	5
	6-33	0.6-2.0	0.12-0.17	4.5-6.0	Low	Moderate	Moderate	0.28	
	33-43	0.6-2.0	0.12-0.15	4.5-6.0	Low	Low	Moderate	0.32	
	43-72	0.6-2.0	0.12-0.17	4.5-6.0	Low	Moderate	Moderate	0.28	
Urban land.									
28	0-10	2.0-6.0	0.05-0.10	4.5-5.5	Low	Low	Moderate	0.20	4
Saffell	10-15	0.6-2.0	0.06-0.10	4.5-5.5	Low	Low	Moderate	0.28	
	15-47	0.6-2.0	0.06-0.12	4.5-5.5	Low	Low	Moderate	0.28	
	47-60	0.6-6.0	0.04-0.11	4.5-5.5	Low	Low	Moderate	0.17	
29, 30	0-8	0.6-2.0	0.16-0.20	4.0-5.5	Low	Moderate	High	0.37	3
Savannah	8-20	0.6-2.0	0.13-0.20	4.0-5.5	Low	Moderate	High	0.28	
	20-66	0.2-0.6	0.05-0.10	4.0-5.5	Low	Moderate	High	0.24	

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
31*:									
Savannah	0-8	0.6-2.0	0.16-0.20	4.0-5.5	Low	Moderate	High	0.37	3
	8-20	0.6-2.0	0.13-0.20	4.0-5.5	Low	Moderate	High	0.28	
	20-66	0.2-0.6	0.05-0.10	4.0-5.5	Low	Moderate	High	0.24	
Urban land.									
32	0-5	2.0-6.0	0.14-0.16	4.5-5.5	Low	Low	Moderate	0.28	5
Smithdale	5-50	0.6-2.0	0.15-0.17	4.5-5.5	Low	Low	Moderate	0.24	
	50-72	2.0-6.0	0.14-0.16	4.5-5.5	Low	Low	Moderate	0.28	
33*, 34*:									
Smithdale	0-5	2.0-6.0	0.14-0.16	4.5-5.5	Low	Low	Moderate	0.28	5
	5-50	0.6-2.0	0.15-0.17	4.5-5.5	Low	Low	Moderate	0.24	
	50-72	2.0-6.0	0.14-0.16	4.5-5.5	Low	Low	Moderate	0.28	
Luverne	0-9	2.0-6.0	0.06-0.15	4.5-5.5	Low	High	High	0.37	3
	9-48	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	High	High	0.28	
	48-60	---	---	---	---	---	---	---	
35	0-25	0.6-2.0	0.12-0.18	4.5-5.5	Low	Moderate	High	0.28	3
Stough	25-70	0.2-0.6	0.07-0.11	4.5-5.5	Low	Moderate	High	0.37	
36, 37	0-9	0.6-2.0	0.12-0.14	4.2-5.5	Low	Moderate	High	0.37	3
Townley	9-26	0.06-0.2	0.12-0.18	4.2-5.5	Moderate	Moderate	High	0.32	
	26-31	---	---	---	---	---	---	---	
	31-40	---	---	---	---	---	---	---	
38*:									
Townley	0-9	0.6-2.0	0.12-0.14	4.2-5.5	Low	Moderate	High	0.37	3
	9-26	0.06-0.2	0.12-0.18	4.2-5.5	Moderate	Moderate	High	0.32	
	26-31	---	---	---	---	---	---	---	
	31-40	---	---	---	---	---	---	---	
Hector	0-6	2.0-6.0	0.10-0.14	5.1-6.5	Low	Low	Moderate	0.17	1
	6-16	2.0-6.0	0.08-0.15	4.5-5.5	Low	Low	Moderate	0.17	
	16	---	---	---	---	---	---	---	

* See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness
					Ft			In	
2---------- Bama	B	None---------	---	---	>6.0	---	---	>60	---
3---------- Bassfield	B	None to common.	Very brief	Nov-Apr	>6.0	---	---	>60	---
4*---------- Bibb	C	Common------	Brief-----	Dec-May	0.5-1.5	Apparent	Dec-Apr	>60	---
5---------- Bigbee	A	Rare to common.	Brief-----	Jan-Mar	3.5-6.0	Apparent	Jan-Mar	>60	---
6*---------- Brilliant	B	None---------	---	---	>6.0	---	---	>60	---
7, 8---------- Cahaba	B	None---------	---	---	>6.0	---	---	>72	---
9---------- Choccolocco	B	Occasional	Very brief	Nov-Mar	>6.0	---	---	>60	---
10*: Hector---------- Rock outcrop.	D	None---------	---	---	>6.0	---	---	10-20	Hard
11*: Iuka---------- Mantachie--------	C C	Common------ Common------	Brief----- Brief-----	Dec-Apr Jan-Mar	1.0-3.0 1.0-1.5	Apparent Apparent	Dec-Apr Dec-Mar	>60 >60	--- ---
12---------- Kirkville	C	Common------	Very brief	Jan-Apr	1.5-2.5	Apparent	Jan-Apr	>60	---
13---------- Leaf	D	Rare to common.	Brief-----	Jan-Apr	0.5-1.5	Apparent	Jan-Apr	>60	---
14---------- Luverne	C	None---------	---	---	>6.0	---	---	>60	---
15*: Luverne---------- Urban land.	C	None---------	---	---	>6.0	---	---	>60	---
16*: Luverne---------- Smithdale--------	C B	None--------- None---------	--- ---	--- ---	>6.0 >6.0	--- ---	--- ---	>60 >60	--- ---
17*: Mantachie-------- Iuka----------	C C	Common------ Common------	Brief----- Brief-----	Jan-Mar Dec-Apr	1.0-1.5 1.0-3.0	Apparent Apparent	Dec-Mar Dec-Apr	>60 >60	--- ---
18---------- Myatt	D	Common------	Brief-----	Nov-Mar	0-1.0	Apparent	Nov-Apr	>60	---
19, 20---------- Nauvoo	B	None---------	---	---	>6.0	---	---	40-60	Rippable
21---------- Ochlockonee	B	Common------	Very brief	Dec-Apr	3.0-4.0	Apparent	Dec-Apr	>60	---

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness
					Ft			In	
22, 23---------- Ora	C	None--------	---	---	2.0-3.5	Perched	Feb-Apr	>60	---
24*:									
Pikeville--------	B	None--------	---	---	>6.0	---	---	>60	---
Flomaton---------	A	None--------	---	---	>6.0	---	---	>60	---
25*: Pits.									
26---------- Ruston	B	None--------	---	---	>6.0	---	---	>60	---
27*:									
Ruston-----------	B	None--------	---	---	>6.0	---	---	>60	---
Urban land.									
28---------- Saffell	B	None--------	---	---	>6.0	---	---	>60	---
29, 30---------- Savannah	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---
31*:									
Savannah---------	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---
Urban land.									
32---------- Smithdale	B	None--------	---	---	>6.0	---	---	>60	---
33*, 34*:									
Smithdale--------	B	None--------	---	---	>6.0	---	---	>60	---
Luverne----------	C	None--------	---	---	>6.0	---	---	>60	---
35---------- Stough	C	None--------	---	---	1.0-1.5	Perched	Jan-Apr	>60	---
36, 37---------- Townley	C	None--------	---	---	>6.0	---	---	20-40	Rippable
38*:									
Townley----------	C	None--------	---	---	>6.0	---	---	20-40	Rippable
Hector-----------	D	None--------	---	---	>6.0	---	---	10-20	Hard

* See description of the map unit for the composition and behavior characteristics of the map unit.

TABLE 18.--PHYSICAL AND CHEMICAL ANALYSES OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Particle-size distribution			Extractable bases			Extractable acidity	Base saturation	Reaction
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Ca	Mg	K			
	In		Pct	Pct	Pct	Meq/100 g	Meq/100 g	Meq/100 g	Meq/100 g	Pct	pH
Bassfield [1] (S75AL-93-25)	0-7	Ap	76.3	19.8	3.9	0.21	0.07	0.05	1.60	17.14	5.6
	7-10	B1	61.9	30.1	8.0	0.07	0.03	0.03	5.60	2.31	5.5
	10-18	B21t	45.7	38.3	16.0	0.33	0.06	0.02	4.00	9.31	4.7
	18-30	B22t	65.1	26.6	8.3	0.11	0.08	0.12	3.20	6.14	4.7
	30-42	IIC1	77.1	18.5	4.4	0.06	0.04	0.01	1.60	6.40	5.0
	42-60	IIC2	85.9	9.4	4.7	0.03	0.01	0.00	1.60	3.01	5.1
Brilliant (S74AL-93-3)	0-7	Ap	58.2	30.0	11.8	1.93	1.89	0.12	0.56	87.59	7.1
	7-72	C	47.7	39.1	13.2	2.54	2.73	0.15	0.32	94.43	8.2
Iuka (S74AL-93-19)	0-4	A1	21.0	60.5	18.5	1.54	0.60	0.09	8.10	21.94	4.8
	4-11	A12	23.7	56.1	20.2	0.41	0.11	0.06	6.16	8.74	4.9
	11-18	C1	59.8	30.1	10.1	0.12	0.04	0.04	4.32	4.61	4.9
	18-34	C2	31.5	55.7	12.8	0.08	0.03	0.04	5.28	2.82	4.9
	34-38	C3	35.2	53.5	11.3	0.06	0.03	0.05	3.68	4.10	5.1
	38-57	C4	62.4	29.1	8.5	0.04	0.03	0.06	3.04	4.58	5.0
	57-70	C5	57.3	34.6	8.1	0.16	0.19	0.06	4.08	9.31	4.7
Luverne [2] (S75AL-93-26)	0-5	Ap	44.7	42.3	13.0	0.46	0.17	0.05	5.60	10.71	4.8
	5-15	B21t	21.7	31.5	46.8	0.18	0.36	0.05	8.00	6.81	4.8
	15-25	B22t	25.7	37.1	37.2	0.01	0.29	0.03	8.00	3.97	4.8
	25-36	B23t	30.7	37.4	31.9	0.00	0.16	0.02	8.00	2.26	4.8
	36-50	B24t	34.5	28.7	36.8	0.00	0.14	0.03	11.20	1.47	4.6
	50-65	C1	44.1	27.3	28.6	0.00	0.11	0.03	8.00	1.72	4.6
	65-72	C2	50.2	25.2	24.6	0.00	0.11	0.02	7.20	1.79	4.7
Myatt [3] (S74AL-93-23)	0-6	Ap	27.7	57.5	14.8	3.78	0.12	0.04	3.12	55.87	5.8
	6-13	A2g	39.5	52.4	8.1	0.26	0.02	0.03	2.96	9.92	5.1
	13-32	B21tg	33.4	52.1	14.5	0.16	0.08	0.03	4.72	5.67	4.9
	32-49	B22tg	34.8	46.5	18.7	0.18	0.20	0.05	4.72	8.53	4.9
	49-60	B3g	51.4	40.1	8.5	0.12	0.14	0.04	2.56	11.00	5.0
	60-72	C	84.3	13.6	2.1	0.06	0.05	0.03	1.12	11.88	5.0
Ora (S74AL-93-5	0-8	Ap	31.6	54.6	13.8	3.31	0.33	0.23	3.68	51.28	5.8
	8-24	B2t	24.5	51.9	23.6	1.87	0.52	0.09	6.56	27.58	4.9
	24-36	Bx1	36.0	41.2	22.8	0.45	0.97	0.08	5.60	21.25	4.9
	36-48	Bx2	37.4	38.6	24.0	0.26	0.63	0.08	5.68	14.69	4.8
	48-72	B3	42.6	32.2	25.2	0.22	0.42	0.08	6.56	10.11	4.7
Pikeville (S74AL-93-2)	0-4	A1	42.2	49.6	8.2	1.56	0.28	0.12	5.36	26.93	5.4
	4-12	A2	41.6	49.2	9.2	0.30	0.11	0.07	3.36	12.83	5.4
	12-30	B21t	36.6	39.6	23.8	0.63	1.23	0.10	5.92	25.06	5.1
	30-40	B22t	44.5	30.7	24.8	0.10	0.45	0.08	6.40	9.14	5.1
	40-65	B23t	69.8	5.8	24.4	0.04	0.24	0.16	7.20	5.84	5.0
Ruston [4] (S74AL-93-8	0-6	Ap	49.1	43.2	7.7	1.00	0.30	0.11	2.40	36.95	4.3
	6-9	B1	35.2	39.7	25.1	0.96	1.23	0.18	5.04	32.05	5.0
	9-20	B21t	32.3	40.8	26.9	0.82	1.78	0.22	4.64	37.81	5.2
	20-31	B22t	50.0	32.7	17.3	0.25	0.90	0.22	4.48	23.44	5.2
	31-60	B3&A'2	73.1	17.5	9.4	0.10	0.20	0.08	1.76	17.30	5.3
	60-90	B'2t	64.6	11.5	23.9	0.08	0.53	0.14	4.80	13.52	5.1
Smithdale [5] (S75AL-93-29	0-2	A1	59.9	34.1	6.0	2.36	0.25	0.11	2.56	51.51	5.5
	2-13	A2	51.2	40.6	8.2	0.08	0.01	0.04	2.56	4.99	5.0
	13-30	B21t	38.9	36.5	24.6	0.12	1.49	0.10	4.88	25.84	5.1
	30-42	B22t	59.8	25.1	15.1	0.01	0.48	0.09	4.40	11.63	5.0
	42-68	B23t	87.2	3.8	9.0	0.01	0.25	0.05	2.64	10.58	5.1

See footnotes at end of table.

TABLE 18.--PHYSICAL AND CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution			Extractable bases			Extractable acidity	Base saturation	Reaction
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Ca	Mg	K			
	In		Pct	Pct	Pct	Meq/100 g	Meq/100 g	Meq/100 g	Meq/100 g	Pct	pH
Smithdale [6] (S75AL-93-31)	0-3	A1	43.9	47.3	8.8	2.23	0.40	0.11	3.04	47.46	5.7
	3-9	A2	43.1	44.5	12.4	0.37	0.17	0.04	2.56	18.77	5.2
	9-17	B21t	25.4	51.6	23.0	0.81	1.32	0.11	4.00	35.96	5.3
	17-42	B22t	25.0	51.4	23.6	0.15	1.39	0.20	5.52	23.93	5.2
	42-52	B23t	49.6	33.0	17.4	0.10	0.51	0.10	3.60	16.57	5.1
	52-72	B24t	65.3	22.5	12.2	0.04	0.35	0.05	2.96	13.26	5.1
Townley (S74AL-93-4)	0-2	A1	32.5	54.9	12.6	0.71	0.12	0.23	13.36	7.51	4.5
	2-9	A2	30.8	52.6	16.6	0.06	0.03	0.10	5.92	3.25	4.6
	9-19	B21t	7.3	44.0	48.7	0.16	0.35	0.11	10.72	5.53	4.7
	19-26	B22t	2.2	55.5	42.3	0.10	0.28	0.09	10.32	4.51	4.7
	26-31	C	2.4	57.7	39.9	0.18	0.75	0.05	10.08	9.02	4.8
	31-40	Cr	11.3	53.3	35.4	0.06	0.11	0.09	9.20	2.86	4.7

[1]The thickness of the solum is less than the range defined for the Bassfield series.
[2]The silt content in the control section is 3 percent higher than the range defined for the Luverne series.
[3]The clay content in the control section is 3 percent lower than the range defined for the Myatt series.
[4]The B3&A'2 horizon is thicker than the range defined for the Ruston series.
[5]Texture of the B23t horizon is outside the range defined for the Smithdale series. This horizon is loamy sand and has lamellae of sandy loam.
[6]The silt content in the control section is about 2 percent higher than the range defined for the Smithdale series.

TABLE 19.--ENGINEERING TEST DATA

[Dashes indicate data were not available. NP means nonplastic. TR means trace]

Soil name, report number, horizon, and depth in inches[1]	Classification		Grain size distribution										Liquid limit	Plasticity index	Moisture density	
			Larger than 3 inches	Percentage passing sieve						Percentage smaller than--					Max. dry density	Optimum moisture
	AASHTO	Unified		2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			
			Pct											Pct		Lb/ft^3	Pct
Brilliant very shaly sandy loam:[2] (S74AL-093-003)																
C------- 7 to 72	A-4 (00)	ML	30	100	100	100	100	99	94	59	--	21	--	23	3	120	11
Iuka silt loam: (S74AL-093-019)																
C2------ 18 to 34	A-4 (01)	ML	0	100	100	100	100	100	100	71	--	34	--	25	3	108	14
C4------ 38 to 57	A-4 (00)	SM	0	100	100	100	100	100	100	41	--	18	--	15	NP	121	10
Luverne fine sandy loam: (S72AL-047-001)																
A2------ 3 to 9	A-4 (00)	SM	0	100	--	--	87	84	81	42	--	14	--	--	NP	116	11
B21t---- 11 to 29	A-7-6(22)	CH	0	100	100	100	100	99	99	74	--	59	--	55	29	98	21
C------- 48 to 60	A-4 (04)	CL	0	100	100	100	100	100	100	65	--	37	--	29	10	113	14
Myatt silt loam: (S74AL-093-023)																
Ap------ 0 to 6	A-4 (02)	ML	0	100	--	--	99	99	97	73	--	34	--	28	4	104	16
B21tg--- 13 to 32	A-4 (01)	CL-ML	0	100	--	--	99	99	95	73	--	36	--	22	4	117	12
B3g----- 49 to 60	A-4 (00)	SM	0	100	--	--	99	98	88	49	--	20	--	16	NP	123	9
Ora silt loam: (S74AL-093-005)																
Ap------ 0 to 8	A-4 (00)	ML	0	100	100	100	100	100	95	68	--	31	--	17	NP	114	12
B2t----- 8 to 24	A-6 (07)	CL	0	100	100	100	100	100	96	75	--	42	--	33	11	110	14
Bx1----- 24 to 36	A-4 (04)	CL	0	100	100	100	100	99	95	65	--	40	--	30	10	115	13
B3------ 48 to 72	A-4 (03)	CL	0	100	100	100	100	99	94	56	--	38	--	31	9	114	13
Pikeville loam: (S74AL-093-002)																
A2------ 4 to 12	A-4 (00)	ML	0	100	--	--	95	94	81	55	--	22	--	20	1	114	10
B21t---- 12 to 30	A-6 (05)	CL	0	100	--	--	90	87	77	57	--	37	--	35	12	112	14
B23t---- 40 to 65	A-2-7(00)	GW-GM	0	100	--	--	36	26	19	9	--	8	--	44	16	110	16
Townley silt loam:[2] (S74AL-093-004)																
A2------ 2 to 9	A-4 (00)	ML	0	100	--	--	73	63	59	53	--	25	--	28	2	108	16
B21t---- 9 to 19	A-7-6(24)	ML-MH	0	100	100	100	99	99	98	96	--	67	--	50	21	100	18

[1]Refer to the soil series and morphology section for location description of pedon.
[2]Grain size distribution data differ from estimates given in Table 15. This sample used the Alabama State Highway Laboratory procedure that crushes fragments such as soft shale and sandstone.

TABLE 20.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Bama	Fine-loamy, siliceous, thermic Typic Paleudults
Bassfield	Coarse-loamy, siliceous, thermic Typic Hapludults
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Bigbee	Thermic, coated Typic Quartzipsamments
Brilliant	Loamy-skeletal, mixed, nonacid, thermic Typic Udorthents
Cahaba	Fine-loamy, siliceous, thermic Typic Hapludults
Choccolocco	Fine-silty, mixed, thermic Typic Hapludults
Flomaton	Sandy-skeletal, siliceous, thermic Psammentic Paleudults
Hector	Loamy, siliceous, thermic Lithic Dystrochrepts
Iuka	Coarse-loamy, siliceous, acid, thermic Aquic Udifluvents
Kirkville	Coarse-loamy, siliceous, thermic Fluvaquentic Dystrochrepts
Leaf	Clayey, mixed, thermic Typic Albaquults
Luverne	Clayey, mixed, thermic Typic Hapludults
Mantachie	Fine-loamy, siliceous, acid, thermic Aeric Fluvaquents
Myatt	Fine-loamy, siliceous, thermic Typic Ochraquults
Nauvoo	Fine-loamy, siliceous, thermic Typic Hapludults
Ochlockonee	Coarse-loamy, siliceous, acid, thermic Typic Udifluvents
Ora	Fine-loamy, siliceous, thermic Typic Fragiudults
Pikeville	Fine-loamy, siliceous, thermic Typic Paleudults
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Saffell	Loamy-skeletal, siliceous, thermic Typic Hapludults
Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Smithdale	Fine-loamy, siliceous, thermic Typic Paleudults
Stough	Coarse-loamy, siliceous, thermic Fragiaquic Paleudults
Townley	Clayey, mixed, thermic Typic Hapludults

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